



## NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY Research Information Center Gaithersburg, MD 20899

# **NISTIR 88-4005**



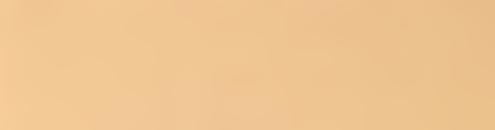
Energy Related Inventions Program A Joint Program of the Department of Energy and the National Institute of Standards and Technology Status Report

F. L. Hart

October 1988

U.S. DEPARTMENT OF COMMERCE National Institute of Standards and Technology (Formerly National Bureau of Standards) Office of Energy Related Inventions Gaithersburg, MD 20899





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National Bureau of Standards became the National Institute of Standards and Technology on August 23, 1988, when the Omnibus Trade and Competitiveness Act was signed. NIST retains all NBS functions. Its new programs will encourage improved use of technology by U.S. industry.

### U.S. DEPARTMENT OF COMMERCE C. William Verity, Secretary

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY Ernest Ambler, Director •

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### Section 1 Introduction

### 1.0 <u>BACKGROUND</u>

The Office of Energy-Related Inventions (OERI) was established within the National Bureau of Standards now known as the National Institute of Standards and Technology (NIST) under the terms of Section 14 of the Federal Nonnuclear Energy Research and Development Act of 1974. Section 14 directs NIST to "give particular attention to the evaluation of all promising energy-related inventions particularly those submitted by individual inventors and small companies for the purpose of obtaining direct grants" from the Department of Energy (DOE).

A separate office was established within DOE to coordinate financial and other DOE support to be provided for inventions recommended by NIST. The NIST and DOE offices together constitute the Energy-Related Inventions Program.

### 1.1 OVERVIEW OF PROGRAM OPERATION

The Energy-Related Inventions Program is jointly operated by NIST and the DOE. Funding is provided through the DOE budget (Conservation and Renewable Energy, Conservation, Energy Conversion and Utilization Technology).

Under the law NIST (OERI) is responsible for evaluation of inventions, whether submitted directly to OERI or submitted to DOE or other agencies and forwarded to OERI. OERI is also responsible for outreach activities aimed at bringing the Program to the attention of inventors and small businesses.

OERI reviews and processes all evaluation requests. Evaluation is based on three general criteria: technical feasibility, potential energy-conservation or supply impact, and commercial feasibility. All inventors are informed of the results of the evaluation of their invention. An invention which meets the NIST criteria for recommendation is forwarded to DOE for possible support action.

Inventions forwarded by the OERI to DOE are recommended as "technically valid and worthy of consideration for Government support" under the NIST/DOE Inventions Program. An OERI report is furnished with the recommendation to explain in detail the advantages of the technology as well as any qualifications of the recommendations, such as required testing. It also provides guidance to DOE and the inventor for deciding on the nature and extent of support to be given. Inventions may be recommended by OERI at any stage of their development; some may be conceptual, others at the laboratory testing stage, while others may be in production or in the process of being marketed. How much support will be furnished will depend largely on what is required to move invention development forward or to resolve the question of whether development should continue; the latter question is of particular interest if the NIST evaluation is based on data furnished by the inventor and the recommendation is qualified by an expressed need for data validation under controlled testing conditions.

In general, DOE accepts the NIST recommendation and provides the appropriate support. However, there have been and will continue to be cases in which DOE cannot or will not provide support. DOE attempts to reach agreement with the inventor on the nature and extent of support within constraints. Constraints include the capabilities of the inventor and/or the company involved, possible duplication of prior or on-going DOE-funded efforts, availability of private sector support, and DOE fund limitations.

It should be noted that DOE performs no technical evaluation beyond that done by NIST. DOE does reserve the right to question and reject the NIST recommendation and to restrict support because of policy and/or funding considerations.

Each case is decided on the basis of its own merit and need. If DOE decides to support the invention, support can include: a grant, a contract, or direct assistance of a technical or business nature. DOE's objective is that, at the completion of this support, the inventor will be in a position to do one or more of the following:

- Compete effectively in obtaining contracts from other sources (including existing government programs) to permit further development of the invention.
- Assemble, with confidence of success, the people and capital necessary to produce and market products derived from the invention through a business enterprise in which the inventor is a major participant.
- Negotiate arrangements with an existing company that will develop the inventor's product for commercialization.

### 1.2 EVALUATION PROCEDURES (NIST)

There are three principal steps in the evaluation process used by the NIST Office of Energy-Related Inventions. In the first step, Disclosure Review and Analysis, invention disclosures are either accepted or rejected for evaluation, depending upon whether or not the invention is within program scope and the disclosure is sufficiently well-prepared to enable evaluation. If accepted, a formal evaluation is initiated.

First-Stage Evaluation is a technical screening in which brief opinions are obtained from OERI staff evaluators, other government scientists or engineers, or consultants or contractors. If the invention is rated as "promising" in this First-Stage, Second-Stage Evaluation is initiated. ("Promising" means the invention seems to be technically feasible, have significant energy conservation or supply potential, and to be economically and commercially practical.)

In Second-Stage Evaluation an analysis is conducted in greater depth, resulting in a formal report. If Second-Stage Evaluation confirms the finding of "promising," the disclosure and evaluation results are forwarded to DOE with a recommendation for Government support.

Throughout the process, the inventor is kept informed of the status of the evaluation. The inventor is sent a letter notifying him of the results of First- or Second-Stage evaluations as they are completed. If Second-Stage Evaluation has been conducted, a copy of the Second-Stage invention review is also sent to the inventor. Statistics on NIST evaluations since the inception of the program are presented in Section 2.

### 1.3 <u>SUPPORT PROCEDURES (DOE)</u>

Upon receipt of a recommendation from NIST, DOE contacts the inventor, provides details of the support procedures, and requests a statement as to the nature and extent of support desired, generally in the form of a proposal or grant application. The DOE invention coordinator works with the inventor in proposal preparation to ensure effective review of support options and to develop a satisfactory statement of work and support plan. DOE then decides whether or not to provide support as well as the nature and extent of support.

If financial support is to be provided, DOE initiates procurement action, monitors progress of the procurement action, and helps to expedite processing of the paperwork until the award is made. As of September 1988 DOE has awarded a total of \$21,418,921 to 290 of the inventions recommended by NIST.

During the period that financial or other support is provided, the DOE invention coordinator monitors and assists the inventor's efforts, maintaining a status report for use by both DOE and NIST.

Section 3 of this report provides a brief description of each recommendation by OERI and briefly describes its status as of September 30, 1988. Status is described in terms of the following steps in the DOE support process.

- <u>Analysis</u> Recommendation received from NIST and processed, file initiated, etc. Inventor asked to submit description of proposed work. Receipt of inventor's preliminary proposal initiates next stage. Formulate options for support, based upon input from NIST, DOE program staff, and inventor. Determination of the feasible options initiates next stage.
- <u>Decision Phase</u> Statement of Work derived from above options. Inventor requested to submit supporting documents for procurement action. Prepare purchase request.
- <u>Other Assistance</u> National Laboratory testing, or business planning assistance, sometimes leading to a grant award.
- <u>Procurement</u> Step-by-step processing of all documents leading to an award of grant or contract.
- <u>Award</u> Inventor awarded grant or contract. Work commences. Final report due at end of work period.
- <u>No Basis For</u> <u>DOE Support</u> Inventor notified that sources of support within DOE have been investigated, but recommendation will not be supported, e.g., inventor not interested, no area of appropriate DOE support could be identified, conflict with other DOE contractors being supported.
- <u>Complete</u> Inventor has complied with all the requirements of his Statement of Work, and/or DOE assistance in this program is terminated.

### 1.4 <u>SUPPLEMENTARY ACTIVITIES</u>

### 1.4.1 <u>National Innovation Workshops (NIW)</u>

This project was initiated in early 1980 as a means of informing inventors about the Program and increasing the percentage of higher-quality inventions submitted to OERI. Another objective of the Workshop series is to assist inventors (thus to stimulate innovation in general) by putting them in touch with their community resources and by providing practical instruction in the various elements of the innovation process.

Workshops are conducted in a standard format as 2-day seminars. On each day a plenary session and a luncheon session feature national-level speakers on invention and innovation. Three 1 1/2 hour periods each day then are designated for the conduct of 8 to 10 concurrent Workshop sessions.

The Workshops are organized as regional activities by a committee composed of representatives from such regional organizations as universities, venture or other financing groups, private sector institutions concerned with technological innovation, state and local government agencies, patent law associations, etc. Federal involvement is restricted to provide guidance and financial support. The federal role is catalytic in nature in that Workshop feasibility is demonstrated with the expectation that the regional committee will continue Workshops and similar activities in the future without federal involvement.

Forty-seven NIWs have been held to date, including six in calendar year 1988. NIWs scheduled in 1989 include: Las Vegas, NE - January; Louisville, KY-February; Columbia, SC - April; Norman, OK - April; Ames, IA - September; Fairfax, VA - October. Attendance has averaged about 250 inventors and small businesses.

### 1.4.2 <u>Commercialization Planning Workshops (CPW)</u>

This series of workshops, managed entirely by DOE, was initiated in June 1984 as a mechanism for providing direct and immediate assistance to inventors whose inventions have been recommended by NIST. Each workshop brings together a group of 10-14 such inventors for a three day meeting with a "faculty" of six workshop leaders who are selected by DOE on the basis of their expertise in at least one aspect of innovation (business planning, marketing, finance, licensing, etc.). Workshop attendance is limited to inventors invited by DOE and the faculty. The three-day meeting is devised to provide a concentrated educational/informative experience for each recommended inventor; travel and other meeting expenses are paid for by the Government. The objective in each case is for the recommended inventor to develop, with the aid of the faculty, a detailed plan for commercialization of his invention. The plan then serves as the principal basis for the DOE office to conduct their initial review of the recommendation (Analysis).

Four such workshops were held during calendar 1988.

### 1.5 NATURE OF THIS REPORT

This report comprises an introductory section (Section 1), followed by two report sections (Sections 2 and 3), a cross reference listings section (Section 4), and two appendices.

Section 2 presents progress reports of ERIP activities. These reports summarize the results of invention evaluations by state, technical category, and invention stage of development.

Section 3 is the main body of the report. It contains brief descriptions of each of the inventions recommended, a summary of its status, the identity of the DOE staff coordinator for that invention, the date the invention was submitted to NIST and the date recommended to DOE. The name and address of the person to contact regarding the invention are also included whenever they are available, as are the patent numbers and DOE grant numbers. The inventions are presented in chronological order of their recommendation by NIST.

Section 4 of the report contains three cross reference listings for use in finding specific recommended inventions. The first listing is ordered by inventor name, the second listing is ordered by contact name, and the third by invention classification.

The appendices at the end of the report include: a listing of the detailed invention classifications (Appendix A) and a listing of the technical categories (Appendix B). Each invention received for evaluation is assigned an invention classification. The invention classifications are grouped to form the technical categories.

SECTION 2 ERIP PROGRESS REPORTS

### 2.0 <u>Introduction</u>

This section presents reports of the results of the ERIP evaluations. As described in section 1, each evaluation is conducted in several stages. The following reports summarize the results of the evaluations across each of the stages. Table 2-1 presents the distribution of invention evaluation requests across stages by State. Table 2-2 presents the distribution of invention evaluation requests across stages by Technical Category. Each evaluation request received is classified into one of 184 technical areas for evaluation These areas are combined to form nine technical categories for purposes. Appendix A list the technical area codes and titles; reporting purposes. Appendix B lists technical categories and associated technical area codes. Table 2-3 presents the distribution of invention evaluation requests across stages by stage of development at the time of submission.

EVALUATION PROGRESS REPORT BY STATE

	EVALUATION REQUESTS	COMPLETED DISCLOSURE	ACCEPTED FOR	COMPLETED	ACCEPTED FOR	COMPLETED	
STATE	RECEIVED	REVIEW	FIRST STAGE	FIRST STAGE	SECOND STAGE	SECOND STAGE	RECOMMENDED
	757	757	717	7 6 6	7		ſ
	5	103	-		2	0	V
ALASKA	58	58	27	26	2		1
AR I ZONA	390	390	246	241	29	28	5
ARKANSAS	145	145	68	67	10	10	4
CAL I FORNIA	3264	3264	1686	1647	169	163	49
COLORADO	492	492	328	324	40	40	9
CONNECT I CUT	478	478	269	267	25	24	13
DELAWARE	60	60	41	41	2	2	4
DISTRICT OF COLUMBIA	106	106	55	54	6	6	0
FLORIDA	1503	1503	726	219	45	42	15
GEORGIA	313	313	148	147	20	19	2
HAWAII	101	101	57	55	4	4	m
IDAHO	109	109	67	67	6	6	ñ
ILLINDIS	902	902	515	507	68	64	24
I ND I ANA	399	399	187	184	15	15	5
IOWA	209	209	107	98	4	2	2
KANSAS	258	258	116	113	6	6	2
KENTUCKY	218	218	96	88	2	6	4
LOUISIANA	266	266	130	127	15	15	6
MAINE	146	146	73	73	8	8	£
MARYLAND	666	666	405	406	48	46	17
MASSACHUSETTS	931	931	488	483	61	60	23
MICHIGAN	854	854	443	439	29	28	11
MINNESOTA	424	424	241	239	21	18	6
IddISSISSIW	167	167	41	40	3	3	0
MI SSOUR I	521	521	298	280	28	23	6
		!	!				

# EVALUATION PROGRESS REPORT BY STATE

	EVALUATION REQUESTS	COMPLETED DISCLOSURE	ACCEPTED FOR	COMPLETED	ACCEPTED FOR	COMPLETED	
STATE	RECEIVED	REVIEN	FIRST STAGE	FIRST STAGE	SECOND STAGE	SECOND STAGE	RECOMMENDED
NEBRASKA	130	130	65		2	2	4
NEVADA	122	122	58	58	£	£	0
NEW HAMPSHIRE	132	132	75	75	15	15	S
NEW JERSEY	874	874	473	472	56	55	18
NEW MEXICO	190	190	98	26	13	12	ŝ
NEW YORK	1894	1894	1057	1045	85	62	29
NORTH CAROLINA	387	387	197	194	11	10	4
NORTH DAKOTA	52	52	20	19	-	1	-
OHO	811	811	399	393	45	43	18
OKLAHOMA	341	341	182	175	29	28	13
OREGON	478	478	230	228	16	16	2
PENNSYLVANIA	1050	1050	564	557	71	68	31
RHODE ISLAND	77	77	32	32	4	4	-
SOUTH CAROLINA	163	163	80	76	10	8	r
SOUTH DAKOTA	47	47	24	24	m	2	-
TENNESSEE	377	377	171	170	12	12	4
TEXAS	1217	1217	618	601	62	58	24
UTAH	207	207	107	104	17	15	10
VERMONT	77	27	51	51	80	8	2
VIRGINIA	667	667	264	258	31	31	10
WASHINGTON	734	734	298	292	27	25	12
WEST VIRGINIA	26	26	43	43	2	2	-
N I SCONSI N	424	424	197	195	15	14	6
UYOM I NG	57	57	29	24	0	0	0
TERRITORIES	55	55	24	24	2	2	-
FOREIGN COUNTRIES	1181	1181	518	513	42	41	7
	25003	25003	12896	12674	1281	1221	***
	****			****			

# EVALUATION PROGRESS REPORT BY INVENTION CATEGORY

	EVALUATION			010010			*	X OF TOTAL
KI CLASSIFICATION RI	ECE I VED	ACCEPTED COMP	SIAGE COMPLETED	ACCEPTED COMP	LETED	LUMPLEIEU RECOMMENDED	RECEIVED	EXPECTED TO BE RECOMMENDED**
FOSSIL FUEL PRODUCTION	534		400	113	110	46	2.1	9.2
DIRECT SOLAR	2592	1436	1433	76	63	22	10.4	0.9
OTHER NATURAL SOURCES	3297	1406	1396	96	96	22	13.2	0.7
COMBUSTION ENGINES &	2596	1686	1665	107	105	21	10.4	0.8
COMPONENTS								
TRANSPORTATION SYSTEMS,	2038	1246	1225	66	89	32	8.2	1.8
VEHICLES & COMPONENTS								
BUILDINGS, STRUCTURES	4117	3107	3062	241	231	84	16.5	2.2
& COMPONENTS								
INDUSTRIAL PROCESSES	1670	1332	1283	336	318	146	6.7	9.6
MISCELLANEOUS	3378	2024	1973	186	174	68	13.5	2.2
OUT OF SCOPE &	4772	245	237	6	5	£	19.1	0.1
UNCLASSIFIABLE								
	       		8 9 8 8				8 8 8	
TOTALS	54994*	12896	12674	1281	1221	777	100.0	1.9
*EXCLUDES 9 NOT YET CLA	SSIFIED.	<pre></pre>	<pre></pre>	T COMPLETE	D).			
**FOR EXAMPLE: FOSSIL FUEL PRODUCTION	L PRODUC	725	X X X 400 10	100 =	9.2%			
COUNT FOR CUT OFF AT ER RECEIVED DATE	EIVED DATI							

# PROGRESS REPORT BY INVENTION STAGE OF DEVELOPMENT

		NUM. REACHING	ACHING			% REACHING	I N C	
STAGES OF	NUMBER	151	2 N D	NUM.	NUMBER	1 S T	2 N D	. MUM.
DEVELOPMENT	ACCEPTED	STAGE	STAGE	RECOM.	ACCEPTED	STAGE	STAGE	RECOM.
CONCEPT DEFINITION	3582	1310	68	21	22.6%	15.1%	7.8%	6.7%
CONCEPT DEVELOPMENT	4125	2036	142	45	26.2%	23.5	16.4%	14.4%
LABORATORY TEST	552	344	59	23	3.4%	3.9%	6.8%	7.3%
ENGINEERING DESIGN	1426	825	109	47	9°0%	9.5%	12.6%	•
WORKING MODEL	2050	1314	107	36	12.9%	15.1%	12.4%	
PROTOTYPE DEVELOPMENT	1040	635	29	27	6.5%	7.3%	9.1%	
PROTOTYPE TEST	1425	1005	124	42	8.9%	11.6%	14.3%	-
PRODUCTION ENGINEERING	309	224	31	11	1.9%	2.5%	3.6%	3.5%
LTD PROD. & MKTG.	739	609	105	44	4.6%	7.0%	12.1%	14.1%
PRODUCTION & MARKETING	604	349	38	16	3.8%	4.0%	4.4%	5.1%
Unclassified *	9151	4245	419	132				
TOTALS	25,003 1	12,896	1,281	777				
Note: Percentages shown reflect only those inventions	wn reflec	t only	those i	lvention	Ø			

Note: Percentages shown reflect only those inventions assigned a stage of development.

Stage of Development assignments shown in Section 3 for inventions not classified were assigned at the time of recommendation. Stage of Development assignment did not begin until 1978.



### SECTION 3

### STATUS OF RECOMMENDED INVENTIONS

### 3.0 <u>Introduction</u>

This section contains an index and brief descriptions of each of the inventions recommended by the Office of Energy Related Inventions at NIST to the Energy Related Inventions Program office at DOE. Each description includes a brief description of the invention, a summary of the invention status, significant dates, status, and summary of development. The name of the inventor, primary contact for information, and DOE staff coordinator are also provided. The " address of the contact is provided if an award has been made. At the time of reciept, DOE assigns a number (DOE No.) to each recommended invention. These numbers are used for tracking purposes and are also the key for sequencing the descriptions presented in this section. Section 4 presents three cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, Contact name, and invention classification.

### 3.1 <u>Index to Recommended Inventions</u>

The following is an index to the recommended inventions showing invention DOE No., invention status and title.

DOE <u>No.</u>	STATUS	TITLE
0001	No DOE Support	Demand Metering System for Electric Energy
0002	Other Assistance	Fuel Miser
0003	Complete	Hydrogen Generation from Producer Gas by Oxidation-Reduction of Tin
0004	Complete	Power Conversion of Energy Fluctuations
0005	Complete	Diesel Engine Conversion System for Gasoline Engines
0006	Complete	Micro-Carburetor
0007	Complete	Hydraulically Powered Waste Disposal Device
0008	Complete	Inertial Storage Transmission
0009	Complete	Heat/Electric Power Conversion via Charged Aerosols
0010	Complete	Scrap Metal Preheating Method and Apparatus
0011	Complete	Solar Collector
0012	Complete	High Frequency Energy Saving Device
0013	Complete	Anti-Pollution System
0014	Complete	Aerodynamic Lift Translator
0015	Complete	Estacron

### INDEX TO RECOMMENDED INVENTIONS

DOE		
<u>No.</u>	STATUS	TITLE
0016	Complete	Method and Apparatus for Vacuum Drying of Commodities
0017	Complete	Osmotic-Hydro Power Generation
0018	Complete	The Control of the Analysis of Low Carbon Aluminum
		Steels Using Oxygen Sensors and Iron-Aluminum Alloy
0019	Complete	Phonel Methylene Feen Digid Reard Inculation
0019	Complete	Phenol Methylene Foam Rigid Board Insulation Thermal Shade
0020	Complete	Waste Oil Utilization System
0021	No DOE Support	Fuel Burner Attachment
0022	No DOE Support	Microgas Dispersions
0023	Complete	Can and Bottle Crushing Apparatus
0024	Complete	Sulfur Removal from Producer Gas-High Temperature
0025	Complete	Compact Energy Reservoir
0020	Complete	Waste Heat Utilization for Commercial Cooking
0027	Compiere	Equipment
0028	Other Assistance	Ultraflo
0028	Complete	Tuned Sphere Stable Ocean Platforms
0029	Complete	Method of Removing Sulfur Dioxide from Flue Gases
0030	Complete	Ceramic Rotors and Vanes
0031	Complete	Wood Gas Reactor
0032	Complete	Temperature Indicating Device
0034	Complete	Delphic Thermogenic Paint (Heat Film)
0034	No DOE Support	Utilization of Solar Energy by Solar Pond System
0035	Complete	Computerstat
0030	No DOE Support	Hotwater Engine
0038	Complete	Reduction Volatilizations
0039	No DOE Support	Lawler Steam Generator and Lawler System of Thermal
0055	No Dol Support	Oil Recovery
0040	No DOE Support	Improved Equipment and Process for Production of Blue
0040	No bol buppore	Water Gas
0041	No DOE Support	Fabrication of Photovoltaic Devices by Solid Phase
0041	No Dol Support	Growth of Semi-conductors from Metal Layers
0042	Complete	Flue Baffle Assembly
0042	Complete	Thermal Gradient Utilization Cycle
0045	Complete	New Working Fluids for Increasing the Cycle
0044	comprete	Efficiencies of Thermal
.0045	Complete	Bulk Cure Tobacco Barn with Improvements
0045	Complete	Thexon Dehydration
0040	Complete	Wastewater Aeration Power Control Device
0047	No DOE Support	Howald Combustor
0048	No DOE Support	Automatic Control System for Water Heaters
0049		
0050	Complete No DOE Support	Scotsman Fuel Energizer Thermal Efficiency Construction
0051	No DOE Support	-
0052	Complete	Air Wedge High Efficiency Water Heater
0055	Complete	Optimizer
0055	No DOE Support	Electrically Heated Sucker-Rod
0000	TO DOT Pupper	Diecelically heated bucket Rod

DOE		TTT D
<u>No.</u>	<u>STATUS</u>	TITLE
0056	Complete	Flexaflo-The Wet Fuel Dryer
0057	Complete	X-5 Smoke Eliminator
0058	Complete	A Multiple Spark System Using Inductive Storage
0059	No DOE Support	The Volumetric Gas Turbine
0060	Complete	Electric Transport Refrigerator
0061	Complete	Fuel Preparation Process
0062	Complete	Tapered Plate Annular Matrix
0063	Complete	Fluorobulb
0064	Complete	The Mahalla ProcessA Hydrometallurgical Method for Extracting Copper
0065	Complete	WattVendor
0066	Complete	Heat Extractor
0067	Complete	Windmill Using Hydraulic System for Energy Transfer and Speed Control
0068	Other Assistance	Under Compressioon and Over Compression Free Helical Screw Rotary Compressor
0069	Complete	Ionic Fuel Control System for the Internal Combustion Engine
0070	Complete	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner
0071	No DOE Support	Knight Guard
0072	No DOE Support	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
0073	Complete	INTECH
0074	Complete	A Solid Electrolyte Galvanic Solar Energy Conversion Cell
0075	Complete	Coke Quenching Steam Generator
0076	Complete	The Ross Furnace
0077	Complete	Variable Heat Refrigeration System
0078	No DOE Support	System for High Efficiency Power Generation from Low Temperature Sources
0079	Complete	Oil Well Bit Insert (Tooth), Cutting Article, Ablative
0080	No DOE Support	Improved Unfired Refractory Brick
0081	Complete	Flash Polymerization
0082	Complete	Cool Air Induction
0083	Complete	Vertical Solar Louvers
0084	No DOE Support	Kinetic Energy Type Pumping System
0085	Complete	Dielectric Windowshade
0086	Complete	Coke Desulfurization
0087	Complete	Recovering Uranium From Coal in Situ
0088	Complete	System-100
0089	Complete	Continuous Casting Process and Apparatus
0090	No DOE Support	Grain Dryer
0091	Complete	Mine Brattice

DOE <u>No .</u>	STATUS	TITLE
0092	No DOE Support	Tri-Water, A Combination Air Conditioning and Fire
		Protection System for a Building.
0093	Complete	Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions
0094	Complete	Lantz Converter
0094	-	
	No DOE Support	Omni-Horizontal Axis-Wind Turbine
0096	Complete	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
0097	Complete	Water Drying System
0098	Award	Process Development to Conserve Energy and Material(in the manufacture of)Bearings
0099	Complete	Light Weight Composite Trailer Tubes
0100	Complete	Solaroll
0101	Complete	Controlled Combustion Engine
0102	Complete	Method of Burning Residual Fuel Oil in Distillate Fuel
0102	oompreee	Oil Burners
0103	Complete	Low Voltage Ionic Fluorescent Light Bulb
0104	Complete	Low Continuous Energy Mass Separation System
0105	Complete	High Frequency Furnace
0106	No DOE Support	Deep Shaft Hydro-Electric Power
0107	Complete	Waste Products Reclamation Process
0108	Complete	Processing Recovery of Aluminum
0109	Complete	Hydrostatic Meat Tenderizer
0110	Complete	Improved Windpower Generating System
0111	Complete	Haspert Mining System
0112	Complete	Pump
0113	Complete	Wallace Mold Additive System
0114	No DOE Support	New Energy-Saving Tire for Motor Vehicles
0115	Complete	Refrigeration System
0116	No DOE Support	Model 5000 ASEPAK System
0117	Complete	"Solarspan" Prism Trap
0118	Complete	Energy Adaptive Control of Precision Grinding
0119	No DOE Support	Air Ratio Controller (AERTROL)
0120	Complete	Vapor Heat Transfer Commercial Griddle
0121	No DOE Support	Solar Space Heating for both Retrofit and New Construction
0122	Complete	Lean Limit Controller
0123	Complete	Comminution of Ores by a Low-Energy Process
0123	No DOE Support	Solar Collector
0125	Complete	The Turbulator Burner System
0126	Complete	Vaclaim
0127	Complete	Process and Apparatus to Produce Crude Oil from Tar
0100	Complete	Sands
0128	Complete	Continuous Distillation Apparatus and Method
0129	Complete	Super U System - Snap Strap
0130	No DOE Support	Furnace Input Capacity Trimming Switch
0131	Complete	Valve Deactuator for Internal Combustion Engines

DOE <u>No .</u>	STATUS	TITLE
0100	N. DOD G	
0132	No DOE Support	Process for Reclaiming and Upgrading Thin-Walled
0122	Complete	Malleable Waste Material
0133	Complete	AUTOTHERM Car Comfort System
0134 0135	Complete Complete	Expanded Polystyrene Bead Insulation System Point Focus Parabolic Solar Collector
0135	Complete	
0138	Complete	Windamper A Portable Pollution Free Automobile Incinerator
0137	No DOE Support	Phantom Tube
0138	No DOE Support	
0139		Transformer With Heat Dissipator
0140	Complete	Counter Flow Dual Tube Heat Exchanger
0141	Complete Complete	New Hydrostatic Transmission Process for Heatless Production of Hollow Items
0142	Award	
0143	No DOE Support	Oil Well Pump Jack SpaCirc Space Circulation Fan
0144	Complete	Solar Conversion by Concentration Cells with Hydrides
0145	Complete	Line Integral Method of Magneto-Electric Exploration
0140	No DOE Support	Railroad Switch Heater
0147	Complete	Reclaimation of Oil and High-Grade Iron Concentrates
0140	comprete	from Steel Mill Wastes
0149	Complete	SCOTCH - (Simple, Cost-Effective, Optimum Temperature
014)	oomprete	Control for Housing)
0150	Complete	The Use of Solid Waste Material from a Lubricating Oil
0150	oomprete	and/or Vegetable Oil Refining Operation.
0151	No DOE Support	Film Type Storm Window
0152	Complete	Vehicle Exhaust Gas Warm-up System
0153	No DOE Support	A New Equipment Design Concept for Storage of Hot
0100	No bol bappore	Foods
0154	No DOE Support	Rotating Horsehead for Pumping Units
0155	Award	Slip Mining
0156	Complete	Direct-Current Electrical Heat-Treatment of Continuous
	•	Metal Sheets in a Protective Atmosphere.
0157	Complete	Magnaseal Method and Means for Sealing Steel Ingot
	•	Casting Molds to Stools.
0158	Award	Energy Conservative Electric Cable System
0159	Complete	Non-Tubing Type Lift Device, Described as the NTT
		Rabbit
0160	Complete	High Efficiency Absorption Refrigeration Cycle
0161	Complete	duPont Connell Energy Coal Gasification Process
0162	Complete	Tubular Pneumatic Conveyor Pipeline
0163	Complete	Thermotropic Plastic Films
0164	Complete	Elastomer Energy Recovery Elements and Vehicle
	•	Component Applications
0165	Complete	Process for Recovering Hydrogen and Elemental Sulfur
		from Hydrogen Sulfide and/or Mercaptans-Containing
0166	Complete	Hydrogen
0166	Complete	Borehole Angle Control
0101	Complete	Vaned Pipe for Pipeline Transport of Solids

DOE		
No.	STATUS	TITLE
<u>NO.</u>	<u>51A105</u>	
0168	Complete	The Hot Water Saver
0169	No DOE Support	MIRAFOUNT
0170	No DOE Support	Fog System - Low Energy Freeze Protection for
01/0	NO DOL Support	Agriculture
0171	Complete	A Method of Preserving Fruits and Vegetables without
01/1	oompiece	Refrigeration
0172	Complete	GEM Electrostatic Filtration System
0173	Complete	Thermal Ice Cap
0174	No DOE Support	Skate on Plastic Ice Skating System
0175	Complete	A Low-Energy Carpet Backing System
0176	No DOE Support	Self-Contained, Water Proof, Stoker Fired, Fully
01/0	No Don Dapport	Automatic, Portable Solid Fuel Furnaces
0177	Complete	The Solar I Option
0178	Complete	Process and Apparatus for Producing Cellulated
01/0	00mp1000	Vitreous Refractory Material
0179	Complete	Development and Commercialization of Low Cost,
		Non-Metallic, Solar Systems
0180	Complete	Adjustable Solar Concentrator (ASC)
0181	Complete	The Karlson Ozone Sterilizer
0182	Complete	Improved Seal for Geothermal Drill Bit
0183	Complete	Increased Vapor Generator Feature. Reheat Vapor
	<b>c</b>	Generator
0184	No DOE Support	Coasting Fuel Shutoff
0185	No DOE Support	Insulated Garage Door
0186	No DOE Support	Oil Recovery by In-Situ Exfoliation Drive
0187	No DOE Support	Variable Field Induction Motor
0188	Complete	Remote Controlled Underground Mining System for
	-	Horizontal or Pitching Seams
0189	Complete	Pump Jack
0190	Complete	Oxygen-Conducting Material and Oxygen-Sensing Method
0191	Award	Rotary Heat Pump Air Conditioner, Heater and
		Ventilator for Automotive, Mobile and Stationary Use.
0192	Complete	Closed Cycle Dehumidification Clothes Dryer
0193	Award	Engine Heating Device
0194	Complete	Radiant Energy Power Source for Jet Aircraft
0195	Complete	Proportional Current Battery
0196	Complete	Manufacturing and Using Nitrogen Fertilizer Solutions
	-	on a Farm
0197	Complete	Frequency Regulator and Protective Devices for
		Synchronous Generators
0198	No DOE Support	The Thermatreat System
0199	Award	Rotary Coal Combustor and Heat Exchangers
0200	Award	Removal of Sulfur Dioxide from the Stack Gas of
		Combusters Burning High Sulfur Fuel
0201	Complete	Hydraulic, Variable, Engine Valve Actuation System
0202	Complete	Wobbling Type Distillation Apparatus

DOE <u>No.</u>	STATUS	TITLE
0203	Complete	Microwave Methods and Apparatus for Paving and Paving Maintenance
0204	No DOE Support	The Induction Propeller
0205	No DOE Support	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
0206	Complete	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
0207	Analysis	Glass Sheet Manufacturing Method and Apparatus
0208	Complete	CNG Automotive Fuel Cylinders/Gas Transport Modules
0209	Complete	Reclaiming Process for Resin Treated Fiberglass
0210	Award	Ultra High Speed Drilling Device for Use in Hard Rock Formations
0211	Complete	Shock Mounted Stratapax Bit
0212	Other Assistance	Water Warden
0213	Complete	The Kaunitz Process for Welding Pipe
0214	Complete	Convertible Flat/Drop Trailer
0215	Award	Slag Waste Heat Boiler
0216	Complete	Method and Assembly for Mounting a Semiconductor Element
0217	Award	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
0218	Other Assistance	Behemoth
0219	Complete	Method for Making Acelaldehyde from Ethanol
0220	Complete	Deep Throat Resistance Welder
0221	Other Assistance	Strainercycle
0222	Other Assistance	Louver Trombe Solar Storage Unit
0223	Complete	Minimizing Subsidence Effects during Production of Coal In Situ
0224	Complete	Haile Alternate Fuel Grain Dryer
0225	Award	ROVAC High Efficiency Low Pressure Air Conditioning System
0226	No DOE Support	An Electronic Anemometer System for Locating Air-Infiltration Heat Leaks in Buildings
0227	Complete	CRM Pipe
0228	Award	EGD Fog Dispersal System
0229	No DOE Support	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
0230	Complete	Absorption Heat Pump Augmented Separation Process
0231	Complete	Natural Gas from Deep-Brine Solutions
0232	Award	Method of Separating Lignin and Making Epoxide-Lignin
0233	No DOE Support	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations
0234	Complete	Geodesic Solar Paraboloid
0235	Complete	Single Stage Anaerobic Digestion Process
0236	Complete	Steam Turbine Packing Ring
0237	Complete	Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles

DOE		
No.	STATUS	TITLE
0238	Complete	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
0239	Complete	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
0240	No DOE Support	All Steam Heated Sadiron for Commercial Use
0241	Award	Polysulfide Oil Field Corrosion Control System
0242	Complete	New Petersburg Beam Trawl
0243	Complete	An Electronic/Pneumatic Ejector System for Producing
		an Aluminum Rich Concentrate from Municipal Waste
0244	Award	CHARLIE - Trademark - Federally Registered 1123957
0245	Complete	Improved Oil Well Pumping Unit
0246	No DOE Support	Maximum Cruise Performance
0247	Complete	Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems
0248	Award	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
0249	Award	Subsurface Flow Control (Gas Wells) and High Gas-Oil-Ratio Oil Wells
0250	Award	A System to Adapt Diesel Engines to the Use of Crude
0051	4	0ils
0251	Award	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
0252	Complete	Thermal Bank
0253	Complete	High Performance Heat Pump
0254	Complete	"Turbo-Glo" Immersion Furnace
0255	Decision Phase	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
0256	Other Assistance	Method and Apparatus for Irrigating Container Grown Plants
0257	Complete	Method and Apparatus for Melting Snow
0258	Award	Corrosion Protection Process for Bore Hole Tool
0259	Complete	Hydrostatic Support Sleeve and Rod - Gas Release Probe
0260	Complete	Method and Apparatus for Handling and Dry Quenching Coke
0261	Other Assistance	A New Apparatus for Making Asphalt Concrete
0262	Award	Energy Saving Pump and Pumping System
0263	Other Assistance	Method for Reconditioning Rivetless Chain Links
0264	Award	Desulfurization of Coal
0265	Award	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
0266	Other Assistance	Energy Conversion Method
0267	Award	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge
0268	Award	Apparatus for Enhancing Chemical Reactions
0269	Analysis	Refrigerant Accumulator and Charging Apparatus
0270	Award	Method of Energy Recovery for Wastewater Treatment

DOE <u>No.</u>	STATUS	TITLE
0271	Complete	
0271	Complete	Hydrogen Storage System
0272	Award	V-Plus System
0273	No DOE Support	Open Cycle Latent Heat Engine
0274	Complete	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency
0275	Complete	Low Head - High Volume Pump
0276	Award	Gas Concentration cells as Converters of Heat into Electrical Energy
0277	Analysis	Electronic Conveyor Control Apparatus
0278	Complete	Complete System for Large Solar Water Heating and Storage
0279	Complete	Method and Means for Preventing Frost Damage to Crops
0280	Award	Down Hole and Above Ground Resistance Heating for Paraffin Elimination
0281	Award	Sun Synchronous Solar Powered Refrigerator
0282	Award	Insulated Siding
0283	Complete	Aluminum Roofing Chips
0284	Award	Atomized Oil-Injected Rotary Screw Compressors
0285	Award	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
0286	Complete	Use of Pulse-Jet for Atomization of Coal/Water Mixture
0287	Award	Automatic Variable Pitch Marine Propeller
0288	Decision Phase	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
0289	Complete	An Earthquake Barrier
0290	Complete	Low Energy Ice Making Apparatus
0291	Award	Selective Zone Isolation for HVAC System
0292	Complete	Roof Construction Having Membrane and Photo Cells
0293	Complete	"Therm-A-Valve" - Insulated Valve Coverings
0294	Complete	Highway Power Patcher
0295	Complete	Improved Method of Electroplating Aluminum for Corrosion Resistance
0296	Complete	Shower Bath Economizer
0297	Award	Series (Two-Wire) V-Controller
0298	Award	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
0299	Award	Process for Using Cocurrent Contacting Distillation Column
0300	Complete	Casing Stabbing Apparatus
0301	Complete	Pump Control System for Windmills
0302	Award	Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers
0303	Award	Battery Heating Device
0304	Award	Exfoliated Graphite Fibers
0305	Award	Automatic Filter Network Protection, Failure Detection and Correction System and Method

DOE		
<u>No.</u>	STATUS	TITLE
0306	Award	An Efficiency Computer for Heated or Air Conditioned Buildings
0307	Award	Vortex Generators for Aft Regions of Aircraft Fuselages
0308	Award	Binary Azeotropic, Hot Gas, Fat Extraction Process
0309	Analysis	Process of Smelting with Submerged Burner
0310	Award	Portable Wastewater Flow Metering Device
0311	Analysis	Auxiliary Truck Heater
0312	Complete	The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells
0313	Complete	Process Controller for Stripper Oil Well Pumping Units
0314	Award	Rolling Filter Apparatus
0315	Award	Method of Processing Biodegradable Organic Material
0316	Complete	Thrust Impact Rock Splitter
0317	Procurement	Edge-Illuminated Multi-Junction (VMJ) Solar Cell
0318	Award	Bi-Polar Electrode for Hall-Heroult Electrolysis
0319	Award	Removal of Hydrogen Sulfide from a Gas Stream
0320	Analysis	Coal Gasification with Carbon Dioxide and Lime Recycling
0321	Analysis	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
0322	Award	Electrical Resistance Cooking Apparatus with Automatic Circuit Control
0323	Award	Rolling Mill for Reduction of Moisture Content in Waste Material
0324	Award	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
0325	Award	Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites
0326	Award	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
0327	Award	Square Pattern Irrigation Sprinkler
0328	Award	Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting
0329	No DOE Support	Modularized Pneumatic Tractor with Debris Liquifier
0330	Award	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
0331	Award	Cyclic Char Combustion for Engines, Boilers and Gasifiers
0332	Decision Phase	Volk Pistachio Huller
0333	Award	Laser Based Machine for Die and Prototype Manufacturing
0334	Decision Phase	So-Luminaire Natural Daylighting Unit
0335	Decision Phase	Robotic Bridge Observation and Information System
0336	Award	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
0337	Award	An Air Operated Hydraulic Power Unit

DOE <u>No.</u> STATUS TITLE 0338 Downhole Pneumatic Turbine Motor for Geothermal Energy Complete 0339 No DOE Support Recycoil II 0340 Award Separation of Adsorbed Components by Variable Temperature Desorption 0341 Award High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials 0342 Award Raw Fines Medium Coal Washing System 0343 Analysis Electronic Octane 0344 Machine for Separating Concrete from Steel Award 0345 Award Tulleners Wave Piercer 0346 Award Ultra-Pure Water System for Hospitals 0347 Oxide Dispersion Strengthened Aluminum Alloys Award Hydrogen Sulfide Removal for Natural Gas 0348 Award 0349 Three Roll Tension Stand Analysis 0350 Method and Apparatus for Testing Soil Award 0351 Award Flash Gate Board 0352 A Waterjet Mining Machine Award 0353 Analysis Compu-Turbo-Aligner 0354 Preparation of Biliquid Foam Compositions Award 0355 Energy-Efficient Ice Cube Making Machine Analysis 0356 Award Portable Automatic Firewood Processor 0357 Award TUBEXPRESS Pneumatic Capsule Pipeline Transport System 0358 Device for Well Site Monitoring and Control of Decision Phase Rod-Pumped Wells 0359 Award Solid Fuel Hot Air Furnace 0360 Analysis Temperature Controllable Heat Valve Measurement of Liquid Volumes with Compensation for 0361 Analysis Temperature Induced Variations 0362 Award Improved Solvents for the Puraq Seawater Desalination Process 0363 Impactor Separator Award 0364 Intermittant Solar Ammonia Absorption Cycle (ISAAC) Award 0365 Analysis Safety Stovepipe Damper Assembly 0366 Award High Energy Semiconductor Switch 0367 Award Disintegration of Wood 0368 Analysis Aircraft Minimum Drag Speed System 0369 Decision Phase "Fire Jet" Automatic Anthracite Burner 0370 Analysis Dehumidification System for Indoor Pools and Other High Humidity Areas 0371 Analysis Wallace Energy Systems Solar Assisted Heat Pump Water Heater 0372 Analysis FS 630 Heat Pump Thermostat Control 0373 Decision Phase Tobacco Harvesting Machine 0374 Analysis Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines 0375 Analysis MDT Twister 0376 Producing Analysis Machine and Method for Energy-Saving Transformers Incorporating Amorphous Metal Cores

DOE <u>No .</u>	STATUS	TITLE
0377	Award	A Norral Mathad of Desducing Tax Matan Clumping
0377	Analysis	A Novel Method of Producing Ice-Water Slurries An Improved Cutter for Plaster Board and the Like
0378	Procurement	-
0379		Inner Roof Solar System
	Analysis	Blow-In Blanket System
0381	Analysis	Multiple Heat-Range Spark Plug
0382	Analysis	System for Recovery of Waste Hot Water Heat Energy
0383	Award	Electro-Optic Inspection of Heat Exchangers
0384	Award	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity
0385	Analysis	Process for Treating Humus Materials
0386	Award	Device and Method to Enable Detection and Measurement of Deformities in Well Components
0387	Award	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
0388	Analysis	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts
0389	Analysis	Reduced Size Heating Assembly for an Electric Stove
0390	Analysis	Wicks Efficient Fuel Utilization System
0391	Analysis	Compressed Gas Energy Storage
0392	Analysis	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
0393	Procurement	Method and Apparatus for Ultrasonic Testing of Tubular Goods
0394	Analysis	Variable Wall Mining Machine
0395	Analysis	Holland Oil Well Pumping System
0396	Analysis	Dyna Flow
0397	Analysis	In Service Tank Bottom Leak Detection and Repair System
0398	Analysis	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
0399	Award	Hydrodynamic/Multi Deflection Pad Bearing
0400	Analysis	Continuous Casting and Inside Rolling of Hollow Rounds
0401	Award	A Miniature, Inexpensive Oxygen-Sensing Element
0402	Analysis	KTM Logger
0403	Analysis	Enterprise Lubricator
0404	Analysis	Steam-Methand Reforming in Molten Carbonate Salt
0405	Analysis	Prehydrolysis and Digestion of Plant Material
0406	Award	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
0407	Analysis	An Extended Range Tankless Water Heater
0408	Procurement	Floodshield System
0409	Analysis	Self-Dressing Resistance Welding Electrode
0410	Analysis	The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
0411	Analysis	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency

DOE <u>No.</u>	STATUS	TITLE
0412	Analysis	Meta-Lax Stress Relief for Almost any Size Metal Structure
0413	Analysis	Non Metallic Railroad Switch Covers
0414	Analysis	Low Profile Fluid Catalytic Cracker
0415	Analysis	Oil Recovery by Modified Steam Drive Employing High
0.10		Velocity Non-Condensible Gas
0416	Analysis	Self-Contained Pipe Freezing Unit
0417 -	Analysis	Rotary Drill Bit
0418	Analysis	Use of Chemical Vapor Deposition to Coat Metal
	)	Surfaces with High Temperature Superconducting Materials
0419	Analysis	A Planing Machine to Produce Ultra-Fine Coal
0420	Analysis	The Utah Transmission/Continuously Variable Speed Wind
	<b>j</b>	Generator
0421	Analysis	Flexible Drill Pipe
0422	Award	High Efficiency Ozone Generating System
0423	Analysis	Superverter - A Digitally Synthesized DC to AC
	5	Sinewave Inverter
0424	Analysis	An Automated Process for Garment Manufacturers
0425	Analysis	High Temperature Condensing Biomass Combustion System
0426	Analysis	Eddy Current Transducing System
0427	Analysis	Non-Catalytic Steam Hydrolysis of Fats
0428	Analysis	Uni-Frac Column and T-By Tray
0429	Analysis	A Low Cost Galloping Indicator
0430	Analysis	Whitten Dugas Mud Pump Ehnancer
0431	Analysis	Method and Apparatus for Removing Excess Water from Subterranean Wells.
0432	Analysis	Water Hammer Pile Driver
0433	Analysis	Improved Methods to Manufacture and Use Carbon-
		Alumina Composite Anodes for Aluminum Reduction
0434	Analysis	Modular Apparatus for Laundry Dryer Heat Recovery
0435	Analysis	A New Thermodynamic Process of Actual Approach to the
		Carnot Cycle
0436	Analysis	The Russell Self-Piloted Check Valve
0437	Analysis	Steam Generator With Integral Down-Draft Dryer
0438	Analysis	Microwave Reflection by Synthetic Metals
0439	Analysis	Project Twenty-One Rapid Transit System
0440	Analysis	Microtube Strip Heat Exchanger
0441	Analysis	Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby
0442	Analysis	Long Life "PC" Drill Bit
0443	Analysis	A Method for the Use of Oxygen Ion Vacanciesin
	-	Lanthanide Oxides to Increase their Utilization
0444	Analysis	Apparatus and Method for Using Microwave Radiation to
		Measure water Conent of a Fluid

### 3.2 Brief Descriptions of Recommended Inventions

The following presents brief descriptions of each of the inventions recommended by the Office of Energy Related Inventions at NIST to the Energy Related Inventions Program office at DOE. Each description includes a brief description of the invention, a summary of the invention status, significant dates, status, and summary of development. The name of the inventor, primary contact for information, and DOE staff coordinator are also provided. The address of the contact is provided if an award has been made. The descriptions are presented in DOE number sequence. Section 4 presents three cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, Contact name, and invention classification.

DOE No: 0001	DOE Coord: G. K. ELLIS			
Title:	Demand Metering System for Electric Energy			
Description:	The invention provides a means whereby a consumer's electric meter can be adjusted by the electric company to run at a faster rate at times of greater loads upon the utility system load leveling.			
Inventor: Wi State : MD		Contact: Murray G Lowenthal		
Status: No DO	E Support Status Date: 07/0	7/77 OERI No.: 000019		
Patent Status : Patent # - 3683343 Development Stage : Concept Development Technical Category: Miscellaneous				
Recv by NBS Recom. by NBS	: 05/23/75 : 02/12/76			
Summary:	No area of appropriate DOE support	t could be identified.		

DOE No: 0002 DOE Coord: G. K. ELLIS

Title: Fuel Miser

Description: The device is an attachment which can be used to retrofit a room thermostat with a synchronous motor- driven clock timer and an auxiliary heating element to enable it to have a temperature set-back cycle.

Status Date: 07/15/76

Inventor: Rita Paleschuck State : NY Contact: Rita Paleschuck

OERI No.: 000100

Status: Other Assistance

Patent Status : Not Applied For Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 07/14/75 Recom. by NBS : 02/19/76

Summary: No research and development required, since the device is on the market. A generic brochure was written and published on the "need for automatic temperature setback." Extensive distribution was accomplished through DOE's Office of Public Affair's "supermarket handout" program and General Services Administration's Consumer Information Center.

- DOE No: 0003 DOE Coord: J. AELLEN
- Title: Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
- Description: A new approach to the generation of tonnage hydrogen from carbonaceous fuels. Two reactions:/ steam with tin, whereby hydrogen is produced, and the reduction of the tin oxide produced in the first reaction back to tin.
- Inventor: Donald C Erickson State : MD

Contact: Donald C Erickson Director of Research Energy Concepts Co. 1704 South Harbor Lane Annapolis MD 21401 301-266-6521

Status: Complete Status Date: 03/18/81 OERI No.: 000003

Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Other Natural Sources

Recv by NBS : 05/07/75 Recom. by NBS : 05/21/76 Award Date : 07/12/78 Award Amount: \$ 80,820 Grant No: FG01-78IR10103 Contract Period: 07/12/78 - 03/18/81

Summary: A grant of \$80,820 was awarded and completed for the grantee to identify the optimum operating conditions, and to do an economic study. Results showed efficiency less than predicted - which in turn, leads to marginal economics. There is a possibility for improvement with more R & D. Inventor seeking licensee.

DOE No: 0004 DOE Coord: G. K. ELLIS

Title: Power Conversion of Energy Fluctuations

Description: A solid state device is claimed that can transfer thermal energy into usable electrical power with high efficiency, by cascading large numbers of such circuits.

Inventor: Joseph C Yater State : MA Contact: Joseph C Yater Autumn Lane Lincoln MA 01773 617-259-8544

Status: Complete

Status Date: 06/15/77 OERI No.: 000230

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Direct Solar

Recv by NBS : 09/18/75 Recom. by NBS : 06/04/76 Award Date : 06/04/76 Award Amount: \$ 40,400 Grant No: Contract Period: 06/04/76 - 06/15/77

Summary: A grant of \$40,400 was awarded to define an adequate development plan. The plan was received and reviewed. Subsequent review indicated the scheme to be incompatible with present state-of-art of micro- device manufacturing.

DOE No: 0005 DOE Coord: G. K. ELLIS Title: Diesel Engine Conversion System for Gasoline Engines The system is proposed for converting a standard gasoline auto engine into a diesel engine Description: Inventor: George C Austin Contact: : CA State George C Austin Austin Tool Company 2239 North Loma Ave. South El Monte CA 91605 213-442-7338 OERI No.: 000088 Status: Complete Status Date: 11/20/78 Not Applied For Engineering Design Patent Status Development Stage : Technical Category: Combustion Engines & Components Recv by NBS Recom. by NBS Award Date : 06/30/75 : 08/12/76 : 11/20/77 Award Amount: \$ 18,000 Grant No: EM78-G-01-4263 - 11/20/78 Contract Period: 11/20/77 A grant of \$18,000 for a marketing study was awarded, and completed. Significant interest by those surveyed was expressed in the Austin diesel conversion, if they were having their engine Summary: rebuilt.

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DOE No: 0006 DOE Coord: D. G. MELLO

Title: Micro-Carburetor

Description: A new kind of carburetor which is claimed to be fuel-saving and pollution-reducing.

Inventor: State :	Albert B C NY	Csonka	Contact: Albert B Csonka FERRO Techincal Co. 109 Larchmont Road Buffalo NY 14214 716-833-3122
			/10-033-3122

Status: Complete

Status Date: 02/13/80 OERI No.: 000225

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Combustion Engines & Components

Recv by NBS : 09/15/75 Recom. by NBS : 08/17/76 Award Date : 09/15/77 Award Amount: \$193,500 Grant No: Contract Period: 09/15/77 - 12/17/80

Summary: A fixed price development contract of \$193,500 was awarded to build a working micro-carburetor, sized to fit a late model, standard 350 cubic inch V-8 engine. Contract is being administered by Office of Transportation Programs, DOE. Carburetor was tested by NASA's Jet Propulsion Lab and report #JPL 81-75, August, 1981 shows improvements ranging from 9 to 18% over standard carburetor. DOE No: 0007 DOE Coord: G. K. ELLIS Title: Hydraulically Powered Waste Disposal Device The device is to replace conventional food waste disposal units which are powered by electric motors. Description: David Virley Inventor: Contact: State CA Len Spelber : Wastemate Corporation 4830 Viewridge Avenue San Diego CA 92123 619-292-3122 Status: Complete Status Date: 08/20/79 OERI No.: 000387 Patent Status : Patent # - 3700178 Development Stage : Production & Marke Technical Category: Miscellaneous Production & Marketing Recv by NBS Recom. by NBS Award Date Recv by NBS : 11/10/75 Recom. by NBS : 08/26/76 Award Date : 08/20/78 Contract Period: 08/20/78 Award Amount: \$ 28,000 Grant No: EM78-G-01-5034 - 08/20/79 A grant of \$28,000 was awarded and completed for the grantee to prepare a qualified business plan to assist in acquiring the necessary capital funding. The company went public and raised \$1.5 million which was used mainly to buy production tools. The company is now in production. Follow-on financing desired by Summary:

- DOE No: 0008 DOE Coord: D. G. MELLO
- Title: Inertial Storage Transmission

grantee.

The device is a system for improving the efficiency and reducing the fuel consumption of a motor vehicle, utilizing a regenerative hydraulic system to store the kinetic energy from deceleration Description: for use in accelerating the vehicle.

Inventor: State :	Vincent E Carman OR	Contact: Fred Tunmore Advanced Energy Systems Unit #3, 595 Taylor Way Belmont, CA, 94002
		503-256-1111

Status: Complete Status Date: 08/31/82 OERI No.: 000423 Patent Status : Patent # - 3903696 Development Stage : Prototype Test Technical Category: Transportation Systems, Vehicles & Components Recv by NBS Recom. by NBS Award Date Recv by NBS : 11/12/75 Recom. by NBS : 09/03/76 Award Date : 07/21/81 Contract Period: 07/21/81 Award Amount: \$ 49,541 Grant No: FG01-81CS15069 - 08/31/82 A grant of \$49,541 was awarded for final preparation of vehicle to present to EPA for testing. Olsen Corporation has tested the device. Ownership changed recently and financing is at a reputed level of \$3.2 million with 7 employees. Product is available for Summary: distribution. Engineering details available from company.

DOE No: 0009 DOE Coord: D. G. MELLO

Title: Heat/Electric Power Conversion via Charged Aerosols

Description: This device is to convert thermal energy to electric energy without the use of moving parts.

Inventor: Alvin M Marks State : NY Contact: Alvin M Marks Marks Polarized Corp. 153-16 Tenth Avenue Whitestone NY 11358 212-767-9600

Status: Complete

Status Date: 05/09/79 OERI No.: 000151

Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Miscellaneous

Recv by NBS :	08/04/75		
Recom. by NBS :	09/13/76		
Award Date :	03/01/78	Award Amount: \$ 50,000 - 08/31/78	Grant No: EU78-G016225
Contract Period:	03/01/78	- 08/31/78	

Summary: A grant of \$50,000 was awarded to construct and test an Electro Gas Dynamics Generator, and then use this device to investigate the condensation charging of a steam jet. This project was followed by a three year project funded by another DOE program, to build and test a 10kw laboratory model of the device, of which the first year funding was \$199,077. (The company's work force averages 25 people.)

DOE No: 0010 DOE Coord: G. K. ELLIS

Title: Scrap Metal Preheating Method and Apparatus

Description: The device provides a means of extracting waste heat from hot ingots and billets and utilizing this waste heat to preheat scrap steel prior to placing it in an electric-arc furnace.

Inventor: Harrison Robert Woolworth State : WA

Contact: Harrison Robert Woolworth International Preheater P.O. Box #88218 Tukwila Branch Seattle WA 98188 206-852-1992

Status: Complete

Status Date: 10/23/78 OERI No.: 000421

Patent Status : Not Applied For Development Stage : Production Engineering Technical Category: Industrial Processes

Recv by NBS : 11/11/75 Recom. by NBS : 09/29/76 Award Date : 12/23/77 Award Amount: \$170,000 Grant No: EM78-G-01-1797 Contract Period: 12/23/77 - 12/23/78

Summary: A grant of \$170,000 was awarded to design and fabricate hardware; and to operate a system, utilizing waste heat for preheating scrap steel, in a working specialty steel mill. A 20% or more energy saving was demonstrated. Steel company interest has developed. Inventor obtained a \$360,000 SBA guaranteed loan, has built an operating unit costing \$500,000 at a steel pant in Knoxville, Tennessee, and has several additional \$500,000 units on order. The company employs three people. DOE No: 0011 DOE Coord: D. G. MELLO

Title: Solar Collector

Description: This is a composite extruded aluminum section -- incorporating a cylindrical absorption tube that carries the working fluid. The collector surface is in the form of an Archimedes Spiral and a parabolic curve to maximize the collection angle and eliminate the need to reposition the collector.

Inventor: Ronald H Smith State : CA

Contact: Ronald H Smith 150 Green Street San Francisco CA 94111 415-398-6813

Status: Complete

Status Date: 11/19/80 OERI No.: 000233

Patent Status : Not Applied For Development Stage : Production Engineering Technical Category: Direct Solar

Recv by NBS : 09/09/75 Recom. by NBS : 09/29/76 Award Date : 05/17/78 Award Amount: \$ 46,884 Grant No: EM78-G019214 Contract Period: 05/17/78 - 11/19/80

Summary:

A grant of \$46,884 was awarded to Solergy, Inc., to initiate a series of marketing studies to determine the attitudes of Western U.S. manufacturers, distributors and designers, regarding prospects for successful installation of passive solar systems in new buildings. Survey results were used by Solergy to aid their marketing and manufacturing plans. Company is now out of business.

DOE No: 0012 DOE Coord: G. K. ELLIS

Title: High Frequency Energy Saving Device

Description: This invention consists of a high-frequency generator, to excite one of several fluorescent lights, replacing the normal ballast transformer, and allowing the system to operate at substantially higher efficiency.

Inventor: State :	Frank R Summa NY	Contact: Thomas J Russo 100 Forest Avenue Staten Island NY 10310
•		212-273-0248

Status: Complete

Status Date: 12/31/82 OERI No.: 000448

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

Recv by NBS : 10/28/75 Recom. by NBS : 09/30/76 Award Date : 12/31/80 Award Amount: \$ 30,000 Grant No: Contract Period: 12/31/80 - 12/31/82

Summary: A grant of \$30,000 was awarded to engage the services of Niesi-Fitzmaurice and Associates, Inc., to conduct a marketing study and prepare a preliminary business plan for the purpose of commercializing the technology. DOE No: 0013 DOE Coord: P. M. HAYES

Title: Anti-Pollution System

Description: This device utilizes a high speed turbine to refine exhaust gases and recirculate the unburned portions of that gas to the engine.

Inventor: Ranendra K Bose State : VA Contact: Ranendra K Bose 14346 Jacob Lane Centreville VA 22020 703-266-2379

Status: Complete Status Date: 01/03/79 OERI No.: 000053

Patent Status : Patent # - 3861142 Development Stage : Limited Production/Marketing Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/03/75 Recom. by NBS : 09/30/76 Award Date : 04/04/78 Award Amount: \$ 40,000 Grant No: EM77-G014222 Contract Period: 04/04/78 - 01/03/79

Summary: A grant of \$40,000 was awarded, and a prototype was built and tested. Project goals were met. Final Report was accepted. Inventor plans to seek private assistance for commercialization.

DOE No: 0014 DOE Coord: G. K. ELLIS

Title: Aerodynamic Lift Translator

Description: This device is a wind-activated power generating system intended to provide large power outputs in regions where the prevailing wind direction does not vary appreciably during the year. The device also has application in low-head hydro.

Rou Jus	iel J Schneider te #1, Box #81 tin TX 76247 -430-0174
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Status: Complete

Status Date: 01/11/79 OERI No.: 000146

Patent Status : Not Applied For Development Stage : Production Engineering Technical Category: Other Natural Sources

Recv by NBS : 08/15/75 Recom. by NBS : 09/30/76 Award Date : 01/11/78 Award Amount: \$ 50,000 Grant No: EG-77-GO1-7114 Contract Period: 01/11/78 - 01/11/79

Summary: A grant of \$50,000 was awarded to develop performance and cost data for the "Schneider Aerodynamic Power Generator". The inventor is currently pursuing the hydro application, and asked for program assistance in obtaining venture capital. The translator still requires technical development.

DOE No: 0015	DOE Coord: D. G. MELLO	
Title:	Estacron	
Description:	Estacron consists of an aggregate of Portland cement, fly ask stack dust, and polyethlene. It has significant potential as light-weight and energy-conservative construction material.	1, a
Inventor: Dan State : NC	nte A Raponi James L Bullock Suite #403, Minges Building P. O. Box #7151 Greenville NC 27834 919-752-1138	
Status: Comple	ete Status Date: 09/28/79 OERI Nc.: 000393	
Patent Status Development St Technical Cate	: Patent Applied For tage : Laboratory Test egory: Buildings, Structures & Components	
Recv by NBS Recom. by NBS Award Date Contract Peric	: 10/28/75 : 09/30/76 : 09/28/79 Award Amount: \$101,388 Grant No: FG01-79IR10221 od: 09/28/79 - 01/31/82	
Summary:	A grant of \$101,388 was awarded to conduct an application engineering and economic analysis of the material, Estacron, is order to assess its material characteristics and to recomment product applications. Results appear indeterminate. Inventor seeks funding for pilot plant design.	nd nd
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DOE No: 0016	DOE Coord: G. K. ELLIS	
Title:	Method and Apparatus for Vacuum Drying of Commodities	
Description:	This invention describes a new method of drying commodities primarily applicable to such grains as corn, rice, and soybeans by alternately exposing the commodities to dry heated air and t a vacuum.	5,
Inventor: Joh State : SD	nn W Bruce John W Bruce West Highway, #16 Mitchell SD 57301 605-996-8335	
Status: Comple	ete Status Date: 03/30/81 OERI No.: 000486	
Development St	: Patent # - 3914874 tage : Engineering Design egory: Industrial Processes	
Recv by NBS Recom. by NBS Award Date Contract Peric	: 10/10/75 : 11/30/76 : 03/30/80 Award Amount: \$ 52,917 Grant No: FG01-78IR04211 od: 03/30/80 - 03/30/81	
Summary:	A grant of \$52,917 was awarded to design, fabricate, an demonstrate a device for efficiently drying agricultur commodities. The Montana Energy and MHD Development Institute i managing the technical aspects of the program. In addition, th inventor received \$32,000 to dry whey from a private secto source. Results from all tests appear indeterminate. Inventor i interested in selling or licensing patent rights and has cease work on the technology.	e .s le or .s

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DOE No: 0017 DOE Coord: D. G. MELLO

Title: Osmotic-Hydro Power Generation

Description: The invention uses a reverse osmosis to produce high pressure liquid that can subsequently be passed through a hydraulic turbine to produce electric power.

Inventor: David W Doyle State : VA Contact: David W. Doyle, V.P. Intertechnology Corp. 100 Main Street Warrenton VA 22186

Status: CompleteStatus Date: 05/01/78OERI No.: 000619Patent Status: Patent Applied For

Development Stage : Laboratory Test Technical Category: Other Natural Sources

Recv by NBS : 01/21/76 Recom. by NBS : 01/14/77 Award Date : 08/11/77 Award Amount: \$ 48,950 Grant No: EG77-G014066 Contract Period: 08/11/77 - 05/01/78

Summary: A grant of \$48,950 was given for research and development of membranes suitable for use in a "Osmo-Hydro Power" system. Studies included membrane long-term effects, polarization dilution, and concentration. The research was judged as high quality by the cognizant DOE program office.

DOE No: 0018 DOE Coord: G. K. ELLIS

- Title: The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
- Description: The production of A1 "killed" steel is intended to be controlled by the use of Fe-Al alloys instead of Al and by the use of oxygen probes to control the amounts of Al or oxygen in the melt.

Inventor: G R Fitterer State : PA

Contact: G R Fitterer P.O. Box #206 Oakmont PA 15139 412-828-0233

Status: Complete

Status Date: 09/14/78 0ERI No.: 000177

Patent Status : Patent # - 3773641 and others Development Stage : Production & Marketing Technical Category: Industrial Processes

Recv by NBS : 08/01/75 Recom. by NBS : 01/31/77 Award Date : 09/14/77 Award Amount: \$ 99,600 Grant No: EC77-G-01-5034 Contract Period: 09/14/77 - 09/14/78

Summary: A grant of \$99,600 was awarded for a system to conserve energy by monitoring and controlling the amount of oxygen in a low carbon aluminum killed steel melt. The system was highly successful. On basis of the success, the steel company involved has initiated a research effort to apply the technology to other ferro melts. The technology is reported to have saved a steel company, doing \$18 million/yr business from bankruptcy.

DOE No: 0019 DOE Coord: P. M. HAYES Phenol Methylene Foam Rigid Board Insulation Title: This invention is a urea-formaldehyde phenol methylene modified form of insulating board material. Properties are similar to others on the market except for its fire retardancy and the low Description: toxicity of its combustion products. Inventor: Walter J Hasselman, Jr State : NY Contact: Clair H Reinbergen, Pres. C. P. Chemical Co., Inc. 25 Home Street White Plains NY 10606 914-428-2517 Status: Complete Status Date: 09/12/79 OERI No.: 000205 Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components Recv by NBS : 08/18/75 Recom. by NBS : 02/04/77 Award Date : 09/13/78 Contract Period: 09/13/78 Award Amount: \$ 29,900 Grant No: EU78-G-01-6603 - 09/12/79 A one-year grant of \$29,900 was awarded to study physical properties of proprietary insulating material, and to determine the optimum ratios of base chemicals. The result was a product which maximizes insulating properties while minimizing costs. EPA temporary ban of formaldehyde led to a new product that eliminates formaldehyde without sacrificing performance. Additional testing on fire properties revealed a double five-hour rating over competitive products. The products are available for sale Summary: sale. DOE No: 0020 DOE Coord: D. G. MELLO Title: Thermal Shade The device is a multi-layer window shade to be fitted to conventional windows and to retract into a small space -- uses reflective surface coatings and with dead air spaces between the Description: layers to reduce heat transfer. Inventor: Thomas P Hopper Contact: Thomas P Hopper 103 Old Loudon Road Concord NH 03301 State NH : 603-225-7554 Status Date: 01/06/79 OERI No.: 000839 Status: Complete Patent Status Patent Applied For Development Stage : Production Engineering Technical Category: Buildings, Structures & Components Recv by NBS : 03/26/76 Recom. by NBS : 02/28/77 Award Date : 05/17/78 Contract Period: 05/17/78 Award Amount: \$ 50,707 Grant No: EM78-G014268 - 01/06/79 A grant of \$50,707 was awarded for the investigations and research of sheet material, seal configurations, and assemblies with third party testing. In addition, marketing assistance was supplied by MIT Innovation Center. Product is now being market tested. It is available for licensing. Last reported sales of \$20,000 per month with 40 people working 2 shifts. Similar devices are being sold by other companies. Summary:

DOE No: 0021 DOE Coord: G. K. ELLIS

Title: Waste Oil Utilization System

Description: This invention would utilize existing emulsification machinery to add a mixture of used lubricating oil and water to fuel oil used in large power plant boilers. Key point is the use of existing additives in fuel oil to prevent boiler tube deposits.

Inventor: Robert S Norris State : MA

Contact: Robert S Norris Energy Conservation Systems Ten Starboard Way Box #472 West Dennis MA 02670 617-398-3430

Status: Complete

Complete Status Date: 03/30/81 OERI No.: 000613

Patent Status : Patent # - 3002826 and others Development Stage : Production & Marketing Technical Category: Industrial Processes

Recv by NBS : 08/25/75 Recom. by NBS : 02/28/77 Award Date : 03/30/80 Award Amount: \$ 50,000 Grant No: EM78-G-01-4261 Contract Period: 03/30/80 - 03/30/81

Summary: A grant of \$50,000 was awarded for the purpose of a market survey for use of waste automotive crankcase lubricating oil as a fuel additive to prevent boiler tube deposits, augment energy availability, and minimize environmental pollution. Utility plants, the prime potential user, were found to have little incentive to purchase the cheaper additive. Product available for licensing.

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DOE No: 0022 DOE Coord: D. G. MELLO

Title: Fuel Burner Attachment

Description: Device to reduce oil consumption by introducing air to oil stream of the burner.

Inventor: Herbert G Lehmann State : CT Contact: Herbert G Lehmann Status: No DOE Support Status Date: 09/19/77 OERI No.: 000537

Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Buildings, Structures & Components

Recv by NBS : 12/29/75 Recom. by NBS : 02/28/77

Summary: The inventor had his device tested without DOE funding by a private contractor and advised DOE that these tests demonstrated his device to be unsuccessful and that he is withdrawing his device from DOE consideration.

DOE No: 0023 DOE Coord: D. G. MELLO

Title: Microgas Dispersions

Device consists of a motor, pump, bubble machine, and valves, uses #2 fuel oil, compressed air, surfactant, to maintain bubbles. Resulting mixture burns like natural gas, which burner can use interchangeably, thereby allowing industrial burners to switch fuels. Can also use small amounts of coal dust in the Description: mixture.

Inventor: Int'l MGD Companies Contact: : MI James E Luber State

Status: No DOE Support Status Date: 10/24/78 OERI No.: 000951

Patent Status : Patent # - 3900420 Development Stage : Laboratory Test Technical Category: Other Natural Sources

Recv by NBS : 12/22/75 Recom. by NBS : 03/28/77

Brookhaven National Laboratory agreed to test the burner but advised on June 17, 1977, that they were unable to contact the inventor. An attorney representing the company stated in a letter dated November 10, 1977, that he wished to delay all actions until January 1978 pending resolution of patent related negotiations. On October 24, 1978, DOE advised inventor that support was terminated due to lack of response to repeated Summary: inquiries.

DOE No: 0024 DOE Coord: G. K. ELLIS

Title: Can and Bottle Crushing Apparatus

The invention consists of a portable trailer-mounted device for crushing cans and bottles thereby increasing the density of the scrap, making handling more efficient. Description:

Drew W Morris Inventor: Country :

## Contact: Drew W Morris

Status: Complete

Status Date: 05/07/81 0ERI No.: 000819

Patent Status : Patent Applied For Development Stage : Production Engineering Technical Category: Industrial Processes

Recv by NBS : 03/22/76 Recom. by NBS : 03/30/77 Award Date : 05/07/80 Contract Period: 05/07/80 Award Amount: \$ 35,000 Grant No: EC77-G-01-5090 - 05/07/81

Summary: A grant of \$35,000 was awarded to construct and operate five mobile can-and-bottle crushers, and assemble data on the machine's efficiency and reliability. No final report has been received. DOE unable to locate the inventor. DOE No: 0025 DOE Coord: J. AELLEN

Title: Sulfur Removal from Producer Gas-High Temperature

Description: The concept envisions the removal of hydrogen sulfide from a high temperature "reducing gas" stream using two scrubbing stages in series, a molten carbonate salt bath and a molten copper bath, each complete with a continuous regeneration cycle.

Inventor: Donald C Erickson State : MD Contact: Donald C Erickson Energy Concepts Co. 1704 South Harbor Lane Annapolis MD 21401 301-266-6521

Status: CompleteStatus Date: 07/09/83OERI No.: 000002Patent Status: Not Applied For<br/>Development Stage : Laboratory Test<br/>Technical Category: Industrial ProcessesParen by NBC: 05 (07 / 75)

Recv by NBS : 05/07/75 Recom. by NBS : 04/06/77 Award Date : 07/09/81 Award Amount: \$ 91,032 Grant No: FG01-81CS15059 Contract Period: 07/09/81 - 07/09/83

Summary: An award of \$91,032 was given to conduct a research program to establish the technical and economic feasibility of a hot fuel gas desulfurization. Inventor has been successful in generating \$4 million follow-on financing on this and DOE No. 0003. This project has been completed.

DOE No: 0026 DOE Coord: D. G. MELLO

Title: Compact Energy Reservoir

Description: A room-heating convector which stores energy in eutectic salts and radiates the heat to the room under thermostatic control.

Inventor: Seymour Jarmul State : NY Contact: Seymour Jarmul 96 Windsor Gate North Hills NY 11040 516-365-9886

Status: CompleteStatus Date: 10/26/79OERI No.: 000782Patent Status :Not Applied For<br/>Development Stage :Prototype Test<br/>Technical Category:Miscellaneous

Recv by NBS : 03/17/76 Recom. by NBS : 04/12/77 Award Date : 08/02/78 Award Amount: \$ 20,740 Grant No: EU78-G016499 Contract Period: 08/02/78 - 05/02/79

Summary: A grant of \$20,740 was awarded for a 9 month project. Inventor designed, constructed and functionally tested a prototype CER suitable for heating a 375 sq.ft. room in a well-insulated house similar to Solar One at the University of Delaware. DOE decided it was not necessary to subsequently subject the device to quantitative tests. A qualitative assessment was given to the inventor for his consideration.

- DOE No: 0027 DOE Coord: D. G. MELLO
- Title: Waste Heat Utilization for Commercial Cooking Equipment

Description: Waste heat utilization for commercial cooking equipment to recover some of the energy in such a way as to avoid interaction with grease vapors.

Inventor: R J Jones State : CA Contact: R J Jones 2772 Salmon Drive Los Alamitos CA 90720 213-721-2641

Status: CompleteStatus Date: 03/25/80OERI No.: 001205Patent Status:Patent # - 4084745Development Stage :Limited Production/MarketingTechnical Category:Buildings, Structures & Components

Technical Category: Buildings, Structures & Components Recy by NBS : 08/13/76

Recv by NBS : 08/13/76 Recom. by NBS : 04/14/77 Award Date : 02/01/78 Award Amount: \$ 65,000 Grant No: EM78-G031852 Contract Period: 02/01/78 - 03/25/80

Summary: A grant of \$65,000 for a 9 month project was awarded. Inventor fabricated two production-ready Hydrocoils: one for water, one for air. Calspan Corporation conducted a series of tests. Research facility of American Gas Association evaluated and provided a comprehensive engineering report. Results of Fall '78 AGA tests proved that unit operates as expected. At last report, inventor had sold three products. Technology is available for licensing.

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DOE No: 0028 DOE Coord: D. G. MELLO

Title: Ultraflo

Description: Ultraflo, a hot water energy-saving system for buildings, is a water delivery system controlling temperature and flow by switches, low voltage current, and solenoid valves.

Inventor: Gilbert W Didion Contact: State : OH Gilbert W Didion

Status: Other Assistance Status Date: 10/24/78 OERI No.: 000161

Patent Status : Patent # - 3668884 Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 06/30/75 Recom. by NBS : 04/27/77

Summary: The invention was tested in California under DOE mission program auspices. The same program provided the inventor with an opportunity for publicizing the technology in a marketing project in Denver in 1977. Inventor has obtained \$160,000 in private financing and an additional \$200,000 from Federal contracts. Product is now being marketed with limited success. DOE No: 0029

DOE Coord: D. G. MELLO

Title: Tuned Sphere Stable Ocean Platforms

Description: This invention presents a unique design approach for an ocean platform, by which the body's natural tendency to roll with wave excitation is diminished or offset.

Inventor: Kenneth E Mayo State : NH

Contact: Kenneth E Mayo Tuned Sphere Intl., Inc 111 Lock Street Nashua NH 03060

Status: Complete

Status Date: 02/06/79 OERI No.: 000800

Patent Status : Patent # - 3837308 and others Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 12/18/75 Recom. by NBS : 05/10/77 Award Date : 09/30/77 Award Amount: \$ 90,000 Grant No: EF77-G-01-6175 Contract Period: 09/30/77 - 06/30/78

Summary: An award of \$90,000 was granted for a nine (9) month study program to test vessel models, list pertinent parametric data, produce motion picture evidence of vessel stability, and provide reduced graphical data. Completion date was extended to August 1978, at no cost to allow for extension of tank tests and subsequent data reduction. Final report has been received and accepted. Company obtained an additional \$200,000 from R & D sales.

DOE No: 0030 DOE Coord: G. K. ELLIS

Title: Method of Removing Sulfur Dioxide from Flue Gases

Description: Embodies the scrubbing of flue gases with an aqueous solution of metal salt.

Inventor: Leopold Pessel State : PA Contact: Ken Walmer AEL-EMTEC Corp. P.O. Box #507 Lansdale PA 19446 215-822-2929

Status: Complete

Status Date: 03/01/83 OERI No.: 000482

Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 12/08/75 Recom. by NBS : 05/17/77 Award Date : 03/01/82 Award Amount: \$ 94,150 Grant No: Contract Period: 03/01/82 - 03/01/83

Summary: A grant of \$94,150 was awarded to 1) conduct a laboratory-scale testing program to further clarify the basic chemical reactions of the process in controlled but realistic environments, and 2) to provide background material for an economic analysis of the process. The results appear promising. Now, with the death of the inventor, technology is available for licensing or outright sale. DOE No: 0031 DOE Coord: G. K. ELLIS

Title: Ceramic Rotors and Vanes

Description: Technique for fabricating turbine rotors that will operate at high temperatures, thereby making it possible to operate at higher efficiencies.

Inventor: James C Withers State : VA Contact: Richard E Engdahl Deposits and Composites, Inc. 318 Victory Drive Herndon VA 22070 703-471-9310

 Status: Complete
 Status Date: 02/01/85
 OERI No.: 000275

 Patent Status
 : Not Applied For

 Development Status
 : Not Applied For

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Combustion Engines & Components

Recv by NBS : 09/19/75 Recom. by NBS : 05/24/77 Award Date : 05/24/78 Award Amount: \$131,250 Grant No: FG01-85CE15214 Contract Period: 05/24/78 - 02/01/85

Summary: A grant (\$62,500 for each of two years) was awarded for the grantee to conduct a research program designed to improve the material properties of his Chemical Vapor Deposition (CVD) material for use in energy-related applications. A variety of Chemical Vapor Deposition products are resulting. Entrepreneur is interested in licensing and/or forming and financing R & D limited partnerships. DOE inventions program is assisting by identifying financial resources. An additional \$6,250 was awarded on April 15, 1985.

DOE No: 0032 DOE Coord: D. G. MELLO

Title: Wood Gas Reactor

Description: The device produces a fuel gas from wood suitable for use in existing gas or oil-fired combustion equipment.

Inventor: State :	Robert A Caughe NH	Ţ		Forest P.O. E Antrin	et: C Calhoun, President Fuels, Inc. Box #207 NH 03440 76-3353
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Status: Complete

Status Date: 03/16/81 OERI No.: 001174

Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Fossil Fuels

Recv by NBS : 08/09/76 Recom. by NBS : 05/26/77 Award Date : 05/24/79 Award Amount: \$ 49,405 Grant No: FG01-79IR10171 Contract Period: 05/24/79 - 03/16/81

Summary: A grant of \$49,405 was awarded and completed, to design and build a gasifier system to produce gaseous fuel from biomass. The unit is being used to demonstrate the practical use of alternate fuels in existing industrial boiler installations, and is in demonstration service at Forest Fuel Technical Center in Antrim, NH. About 30 units sold at \$100,000 to \$200,000 each as of Nov, 1982. The business is reported to be successful and employs twenty-five.

DOE No: 0033 DOE Coord: D. G. MELLO Temperature Indicating Device Title: Description: Device to identify malfunction of steam trap. Inventor: Joseph B Vogt Contact: Joseph B Vogt 5391 Ostrum Road Attica MI 48412 State : MI 313-724-0106 Status Date: 08/23/80 OERI No.: 000905 Status: Complete Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components Recv by NBS Recom. by NBS Award Date : 04/19/76 Recom. by NBS : 05/31/77 Award Date : 08/24/79 Award Amount: \$ 10,135 Grant No: FG01-79IR10272 Contract Period: 08/24/79 - 08/23/80 A one year grant of \$10,135 was awarded to conduct an engineering development project to test and improve the operation of the inventor's temperature monitoring device. Inventor determined that there is no market for his product. Summary:

DOE No: 0034 DOE Coord: P. M. HAYES

Title: Delphic Thermogenic Paint (Heat Film)

Description: A thin conductive paint containing crystalline graphite and pigments bonded to a surface such as Mylar with parallel bussbar connections to 120/220v AC to be used as radiant heating.

Status Date: 03/31/83

Inventor: Hal Ellis State : FL Contact: Alex DeFonso Jerry Woolman 4261 Howard Avenue Kensington MD 20795 301-595-5252

Patent Status : Patent # - 3923697 and others Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 11/11/76 Recom. by NBS : 06/16/77 Award Date : 09/30/82 Award Amount: \$ 25,000 Grant No: FG01-82CE15147 Contract Period: 09/30/82 - 03/31/83

Summary: A grant of \$25,000 was awarded to verify the claim that radiant heating allows air temperature to be significantly lower than by convection heating, thus reducing buildin heat consumption with no loss in occupant comfort. The company developed new applications for the technology including thermal targets and decoys for the U S Air Force. Total product sales were \$4.1 million in 1986.

Status: Complete

OERI No.: 001588

DOE No: 0035 DOE Coord: D. G. MELLO Title: Utilization of Solar Energy by Solar Pond System Description: The proposal is for a solar pond demonstration plant. Inventor: Gulab Chand Jain Contact: India Country : Gulab Chand Jain Status: No DOE Support Status Date: 12/12/77 OERI No.: 000336 Patent Status Not Applied For Development Stage : Concept Development Development Stage : Concept Deve Technical Category: Direct Solar Recv by NBS Recv by NBS : 10/23/75 Recom. by NBS : 06/23/77

Summary: Program has declined support of this invention because the inventor's proposal does not respond to several significant problems which are inherent in the system.

DOE No: 0036 DOE Coord: D. G. MELLO Title: Computerstat Computerstat is a computerized thermostat set-back device that appears to be more energy-conserving than a conventional Description: clock-thermostat. Inventor: Richard P Gingras State : CT Contact: Richard P Gingras 41 Kenoria Avenue Danbury CT 06810 203-792-8877 Status: Complete Status Date: 09/01/79 OERI No.: 001283 Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components Recv by NBS : 08/04/76 Recom. by NBS : 06/24/77 Award Date : 02/24/78 Contract Period: 02/24/78 Recv by NBS Recom. by NBS Award Date Award Amount: \$ 65,000 Grant No: EM78-G014208 - 09/01/79 Program office awarded a grant of \$65,000 to build, test, and demonstrate the energy saving potential of a microprocessor controlled thermostat designed for use in residential and small commercial buildings. Grant also included the design of a computer program to simulate operation in a small commercial building. Company subsequently has gone bankrupt. Concept is now advertised by several commanies Summary: advertised by several companies.

DOE No: 0037 DOE Coord: G. K. ELLIS Title: Hotwater Engine The proposal is for the production of mechanical power from low Description: grade heat. Inventor: Lawrence E Bissell Contact: Lawrence E Bissell State : CA Status: No DOE Support Status Date: 10/31/77 OERI No.: 000565 Patent Status Patent Applied For Development Stage : Concept Development Development Stage : Concept Devel Technical Category: Miscellaneous Recv by NBS : 01/02/76 Recom. by NBS : 08/05/77 Summary: The DOE program office recommended that the inventor be assisted

bummary: The DOE program office recommended that the inventor be assisted by providing a specialized, highly sophisticated computer analysis of his device. ERIP requested a proposal to this effect, in October, 1977. To date there has been no response from the inventor indicating the type of device he would like tested, nor giving any specification or goals for the development.

DOE No: 0038 DOE Coord: D. G. MELLO

Title: Reduction Volatilizations

Description: The purpose of this invention is to produce volatile gases, liquids, and combustible coke, by passing pulverized coal through a eutectic molten metal bath of lead and sodium.

Inventor: State :	John McCallum OH	Contact: John McCallum 5926 Beechview Drive Worthington OH 43085 614-885-8416
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Status: CompleteStatus Date: 07/01/79OERI No.: 000558Patent Status: Not Applied For<br/>Development Stage : Prototype Development<br/>Technical Category: Industrial ProcessesRecv by NBS: 01/02/76

Recv by NBS : 01/02/76 Recom. by NBS : 08/11/77 Award Date : 08/28/78 Award Amount: \$ 49,740 Grant No: EU78-G016594 Contract Period: 08/28/78 - 04/20/79

Summary: A grant of \$49,740 was awarded and completed for a 5 month experiment program to study chemical reactions of the process, measure all variables, outline plan for design of prototype plant and examine economic feasibility or large scale production. Ohio State University was the sub-contractor. Final report suggests that process is not economically feasible at this time. DOE No: 0039 DOE Coord: G. K. ELLIS

Title: Lawler Steam Generator and Lawler System of Thermal Oil Recovery

Description: A small, high pressure, high temperature, mobile steam generator which can be economically operated at an oil well installation.

Inventor: James H Lawler Contact: State : CA James H Lawler Status: No DOE Support Status Date: 02/01/79 OERI No.: 000219

Patent Status : Patent # - 3543732 Development Stage : Engineering Design Technical Category: Fossil Fuels

Recv by NBS : 08/29/75 Recom. by NBS : 08/18/77

Summary: On Feb. 1, 1979, the inventor was advised that DOE would not support his invention as it represented no advance in the state-of-the-art, and because having sold his equipment, he no longer had it available for test.

DOE No: 0040 DOE Coord: G. K. ELLIS

Title: Improved Equipment and Process for Production of Blue Water Gas

Description: The main features of the invention are to use automatic valves for controlling the blue gas process, a square reactor bed with a rotating grate which will give positive ash removal -- all of which permits a faster cycling between the "run" and the "blow" of the process.

Inventor: Roland P Soule State : NY Contact: Roland P Soule

Status: No DOE Support Status Date: 06/12/81 OERI No.: 000734

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Other Natural Sources

Recv by NBS : 03/08/76 Recom. by NBS : 08/18/77

Summary: No feasible method of DOE support could be identified. Various options were considered, and several tentative expressions of interest from others were made known to the inventor. He declined each of them. In his mid-eighties, he was not interested in personally pursuing the development. Nor was he interested in dealing with a small company. Also, he disagreed upon the need for establishing economic and technical feasibility. DOE No: 0041 DOE Coord: D. G. MELLO Title: Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers The purpose of the invention is to provide a more efficient and economical process for fabricating solar cells. Description: William F Armitage, Jr. Inventor: Contact: William F Armitage Jr State : MA Status Date: 11/07/78 Status: No DOE Support OERI No.: 000580 Patent Status Not Applied For Development Stage : Concept Development Technical Category: Direct Solar Recv by NBS : 01/12/76 Recom. by NBS : 08/30/77 Summary: Inventor failed to respond to repeated requests for a proposal.

DOE No: 0042 DOE Coord: P. M. HAYES

Title: Flue Baffle Assembly

Description: The invention is a baffle device to be inserted in hot air passage of old, solid fuel-burning furnaces that have been converted to oil. The device increases heat transfer and reduces fuel gas temperature, thereby saving fuel.

Inventor: Everett Millard State : IL Contact: Everett Millard 4030 Irving Park Road Chicago IL 60641 312-777-4030

Status: CompleteStatus Date: 09/08/80OERI No.: 000347Patent Status: Not Applied For<br/>Development Stage : Limited Production/Marketing<br/>Technical Category: Buildings, Structures & Components

Recv by NBS : 09/03/75 Recom. by NBS : 09/23/77 Award Date : 06/29/79 Award Amount: \$ 30,000 Grant No: FG01-79IR10277 Contract Period: 06/29/79 - 09/08/80

Summary: A grant of \$30,000 was awarded and completed, to perform a six-task study and survey of existing coal fired heating systems that have been converted to oil and which may be modified profitably to accept the inventor's energy-saving flue baffle device. The survey failed to show a sufficient number of heating systems to warrant commercialization of the baffle. However, a secondary business developed as a result of the survey, in which the inventor measures flue gases that form the basis for optimizing air/fuel ratio to save energy.

DOE No: 0043 DOE Coord: J. AELLEN

Title: Thermal Gradient Utilization Cycle

Description: The invention describes a new kind of power plant cycle using low grade, low temperature energy which does not need copious amounts of water for its operation.

Inventor: Sidney A Parker State : TX

Contact: Sidney A Parker 5820 Diamond Oaks Dr., S Fort Worth TX 76117 817-834-5081

Status: CompleteStatus Date: 08/04/80OERI No.: 001263Patent Status: Patent # - 3953971

Patent Status : Patent # - 3953971 Development Stage : Limited Production/Marketing Technical Category: Other Natural Sources

Recv by NBS : 07/23/76 Recom. by NBS : 09/30/77 Award Date : 09/16/78 Award Amount: \$ 40,000 Grant No: EU78-C-01-6604 Contract Period: 09/16/78 - 01/15/80

Summary: A grant of \$40,000 for one year was given to Mr. Parker, with support from Texas A&M, assessing the technical and economic feasibility of the thermal gradient utilization cycle when applied to selected energy conversion systems. Final report has been received. Inventor will make final report available to others in the trade and DOE.

- DOE No: 0044 DOE Coord: D. G. MELLO
- Title: New Working Fluids for Increasing the Cycle Efficiencies of Thermal

Description: The invention is a new type of absorption refrigerator.

Inventor: Leon Lazare State : CT Contact: Leon Lazare 81 Willow Street New Haven CT 06511 203-776-0256

Status: Complete

Status Date: 05/01/79 OERI No.: 001357

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Miscellaneous

Recv by NBS : 08/24/76 Recom. by NBS : 09/30/77 Award Date : 05/16/78 Award Amount: \$ 75,000 Grant No: EU78-G-01-6317 Contract Period: 05/16/78 - 05/01/79

Summary: A grant of \$75,000 was awarded to research a dual- solvent system for heat pump application, and to determine phase relationships and thermodynamic properties of certain specific three-component systems. Grant complete. Equipment failed to confirm theoretical predictions but yielded results which led to another invention which was subsequently funded by DOE. DOE No: 0045 DOE Coord: D. G. MELLO

Title: Bulk Cure Tobacco Barn with Improvements

Description: The tobacco curing barn is a trailer-like structure that is fitted with a roof-top solar collector, a recouperator formed by the double roof structure, and the entire structure well insulated on all external walls and floor.

Inventor: Joe W Fowler State : NC

Contact: Joe W Fowler Carolina Thermal Company Iron Works Road Route #2, Box #39 Reidsville NC 27320 919-342-0352

Status: Complete

Status Date: 06/01/79 OERI No.: 001739

Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS :	01/19/77		
Recom. by NBS :			
Award Date :	05/31/78	Award Amount: \$ 54,980	Grant No: EM78-G014254
Contract Period:	05/31/78	- 06/01/79	

- DOE No: 0046 DOE Coord: G. K. ELLIS
- Title: Thexon Dehydration

Description: The process uses mechanical methods to reduce a liquid, containing the product to be dried, to a very fine spray of droplets, which are then carried to an air stream at ambient temperature, pressure and humidity so that some unidentified phenomenon, possibly surface evaporation, can cause crystallization.

Inventor: David J Secunda State : NJ Contact: David J Secunda 90 Prospect Hill Avenue Summit NJ 07901 201-277-4475

Status: Complete

Status Date: 08/01/80 OERI No

OERI No.: 000679

Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 02/04/76 Recom. by NBS : 09/23/77 Award Date : 08/01/79 Award Amount: \$ 47,660 Grant No: FG01-79IR10023 Contract Period: 08/01/79 - 08/01/80

Summary: A grant of \$47,660 was awarded for the grantee to contract with TRW to make exploratory holograms and do some limited analysis, in order to assess the nature of the phenomena. The work has been completed, and the phenomenon found to be evaporation, but which occurs at room temperature without the deliberate addition of any external heat. Inventor is not presently pursuing the development of this technology and would be interested in considering licensing opportunities. DOE No: 0047 DOE Coord: G. K. ELLIS

Title: Wastewater Aeration Power Control Device

Description: An on-line respirometer to measure the oxygen demand of microorganisms in waste water, and to regulate the power required for supplying the oxygen needed to keep the organisms alive.

Inventor: Robert M Arthur State : WI

Contact: Robert M Arthur 548 Prairie Road Fond du Lac WI 54935 414-922-6970

Status: Complete Status Date: 06/26/81 OERI No.: 001773

Patent Status : Patent # - 3740320 and others Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 02/07/77 Recom. by NBS : 10/25/77 Award Date : 06/26/80 Award Amount: \$ 58,200 Grant No: EU78-G-01-6418 Contract Period: 06/26/80 - 06/26/81

Summary: A grant of \$58,200 was awarded and inventor was successful in developing a low-cost, less sophisticated model of an energy-saving on-line respirometer for use in wastewater treatment plants. Grantee has about \$2.5M out in proposals. Response has been slow from municipalities but good from industry. At last account, inventor was doing \$0.5 million/yr business; in 5-7 years, inventor estimates \$25 million.

- DOE No: 0048 DOE Coord: D. G. MELLO
- Title: Howald Combustor
- Description: A fuel nozzle and chamber that pre-mixes air and fuel for more efficient, and less polluting combustion in aviation and automotive gas turbines.

Inventor: Werner E Howald State : OH Contact: Werner E Howald

Status: No DOE Support Status Date: 02/08/79 OERI No.: 000197

Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Combustion Engines & Components

Recv by NBS : 07/10/75 Recom. by NBS : 11/09/77

Summary: MIT Innovation Center provided inventor with technical review and analysis of support possibilities. MIT determined that the combustor designs were engineering improvement, not patentable. The scale of laboratory testing required to develop jet-engine combustors is beyond the scope of this program and is not being pursued in any DOE laboratory. Inventor was referred to private consulting firm which specializes in combuster design.

Description:	Invention is a to shut off cold also be applical	d water input i	in the event	ater ene of a bur	ergy source, rst tank. It	and may
Inventor: Way State : CA	yne S Boals		Contact: Wayne S			
Status: No DOB	E Support	Status Date: 0	9/01/78	OERI No.	.: 001192	
Patent Status Development St Technical Cate	: Not Appl: tage : Productio egory: Building:	ied For on Engineering s, Structures &	Components			
Recv by NBS Recom. by NBS	: 07/22/76 : 10/31/77					

DOE Coord: D. G. MELLO

Automatic Control System for Water Heaters

Summary: DOE determined that the device offered little or no direct energy saving potential. A manufacturer of valves declined an offer of the technology citing marketing studies indicating poor sales potential. Program office stated that solar heating system application was ineffective as conservation device. Development of similar devices is now being pursued by others.

DOE No: 0050 DOE Coord: P. M. HAYES

Title: Scotsman Fuel Energizer

Description: An accessory screen to atomize fuel in carbureted internal combustion engines.

Inventor: Robert Cameron State : IL

DOE No: 0049

Title:

Contact: Robert Cameron Scotsman Automotive Corp. 855 Sterling Avenue, Suite #8 Palatine IL 60067 312-991-5770

Status: Complete Status Date: 01/10/79 OERI No.: 000094

Patent Status : Patent # - 3934569 Development Stage : Production & Marketing Technical Category: Combustion Engines & Components

Recv by NBS : 07/02/75 Recom. by NBS : 11/23/77 Award Date : 07/11/78 Award Amount: \$ 74,579 Grant No: FG01-78IR10102 Contract Period: 07/11/78 - 01/10/79

Summary: A grant of \$74,579 was awarded to the grantee to determine the principles of operation and to measure overall fuel saving performance of the device. DOE determined, based upon the findings and conclusions of the Inspector General, the grant to be fraudulently obtained and that all funds must be returned to DOE. Grantee has been notified. DOE No: 0051 DOE Coord: J. AELLEN

Title: Thermal Efficiency Construction

Description: A method for building on energy-efficient residence, incorporating a counterflow heat exchanger, double- wall insulation, and other unique features. Copyright plans sold under license.

Inventor: Richard B Bentley Contact: State : NY Richard B Bentley

Status: No DOE Support Status Date: 07/31/78 OERI No.: 001116

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : 03/19/76 Recom. by NBS : 12/20/77

Summary: In July '78 inventor advised DOE of his intention to prepare a proposal. Nothing has been received to date. Inventor reported he had applied for a grant under the Appropriate Technology Program. DOE support cannot be considered without a proposal from the inventor, or his or her agent.

DOE No: 0052 DOE Coord: G. K. ELLIS Title: Air Wedge The device is an aerodynamic drag device for use with trucks, Description: mounted on the front face of the trailer or the cargo box. Inventor: Robert G Landry Contact: State : ME Sherman R Jenney Status: No DOE Support Status Date: 11/28/79 OERI No.: 000172 Patent Status Patent # - 3740320 Development Stage : Concept Development Technical Category: Transportation Systems, Vehicles & Components Recv by NBS : 08/13/75 Recom. by NBS : 12/21/77 Recv by NBS On November 28, 1979, the inventor was advised that there is no basis for DOE support because there are devices already installed Summary: on trucks on the highway, which accomplish the same purpose.

DOE No: 0053 DOE Coord: G. K. ELLIS

Title: High Efficiency Water Heater

Description: A direct contact, gas-fired hot water heater that can extract the latent heat of the water vapor formed during combustion.

Inventor: Harry E Wood State : LA Contact: Harry E Wood 6465 Oakland Drive New Orleans LA 70118 504-488-7853

Status: Complete

Status Date: 03/01/79 OERI No.: 002070

Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Buildings, Structures & Components

Recv by NBS : 04/15/77 Recom. by NBS : 12/23/77 Award Date : 03/01/78 Award Amount: \$ 72,600 Grant No: EM78-G-01-4255 Contract Period: 03/01/78 - 03/01/79

Summary: A grant of \$72,600 was awarded to install a direct contact gas fired hot water heater in a new 210-unit apartment building, and measure the system characteristics, efficiency and reliability. The results of this DOE support, and some free publicity on a national CBS program shortly thereafter, have materially assisted the inventor in marketing the technology. At last account, Kemco Co., Milwaukee, exclusive licensee, had sold 67 units (altogether saving 0.5 billion cu-ft gas/year), 48 in the last year, at \$30,000 each, with 30 more on order.

DOE No: 0054 DOE Coord: D. G. MELLO

Title: Optimizer

Description: A closed-loop electronic ignition for automobile engines. Spark advance is optimized for maximum power output, and minimum fuel consumption.

Inventor: Paul H Schweitzer State : PA Contact: Edward Perry Sikes, Jr. Optimizer Control Corp. Suite #104, 201 Burnside Pkwy Burnsville MN 55337 612-894-3610

Status: Complete Status Date: 06/15/81 OERI No.: 001355

Patent Status : Patent # - 3974412 and others Development Stage : Working Model Technical Category: Combustion Engines & Components

Recv by NBS :	08/25/76		
Recom. by NBS :	01/11/78		
Award Date :	09/01/78	Award Amount: \$ 88,895	Grant No: EU78-G016602
Contract Period:	09/01/78	- 06/18/81	

Summary: A grant of \$88,895 for one-year program was awarded and completed to design, develop, fabricate and test a pilot model of the Optimizer. Pennsylvania State University sub-contracted electronic design tasks and analytical evaluation. First progress report indicated that prototype performed as predicted. Penn. State Univ. has been assigned greater role in development of instrumentation and additional test units. Final results showed insufficient improvement to warrant further development. DOE No: 0055 DOE Coord: J. AELLEN

Title: Electrically Heated Sucker-Rod

Description: An electric heater is the sucker rod used to drive a pump at the bottom of an oil well, intended to prevent paraffin from congealing and restricting flow, thus avoiding consequent costly maintenance cleanout.

Inventor: Richard D & Chester Palone Contact: State : AR Richard D Palone

Status: No DOE Support Status Date: 12/29/80 OERI No.: 002523

Patent Status : Patent # - 3859503 Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 07/22/77 Recom. by NBS : 01/30/78

Summary: This invention received a favorable review within DOE. During the last contact with the inventor, he said he had located an interested subcontractor and would soon be submitting a proposal requesting a DOE grant. Then, on December 29th, 1980 he advised that he no longer needed a grant.

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- DOE No: 0056 DOE Coord: G. K. ELLIS
- Title: Flexaflo-The Wet Fuel Dryer

Description: A dryer/boiler using sugar cane waste (bagasse) for fuel; exhaust gases from process are used to "pre- dry" fuel prior to entering boiler.

Inventor: William P Boulet State : LA Contact: Jay Dornier Quality Industries P. O. Box #406 Thibodoux LA 70301 504-447-4021

Status: CompleteStatus Date: 12/29/80OERI No.: 002238Patent Status: Patent # - 3976018

Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 05/24/77 Recom. by NBS : 03/31/78 Award Date : 12/29/79 Award Amount: \$111,220 Grant No: EU78-G-01-6593 Contract Period: 12/29/79 - 12/29/80

Summary: A grant of \$111,220 was awarded to Quality Industries to modify design of existing bagasse dryer in sugar cane refinery to control airborne bagacillio to enable bagasse to replace oil-gas as alternate fuel for dryer. Results indeterminate due to poor industry economic conditions which tended to interfere with fair appraisal. Further testing needed to prove concept. Quality is interested in forming and financing R & D limited partnership in another industry with the same technology.

DOE No: 0057 DOE Coord: G. K. ELLIS Title: X-5 Smoke Eliminator A two-stage combustion chamber suitable for adapting existing incinerators to meet current EPA pollution requirement. Description: Robert H Wieken Inventor: Contact: Robert H Wieken State MN 411 Betty Lane, West Saint Paul MN 5511 612-457-8227 55118 OERI No.: 000274 Status: Complete Status Date: 04/01/81 Patent Status Patent # - 3812297 : Development Stage : Prototype Development Technical Category: Buildings, Structures & Components Recv by NBS : 07/23/75 Recom. by NBS : 03/31/78 Award Date : 04/01/79 Award Amoun Contract Period: 04/01/79 - 04/01/81 Award Amount: \$ 55,000 Grant No: FG01-79IR10097 A grant of \$55,000 was awarded for the grantee to convert the X-5 Smoke Eliminator from its existing use as a gas burner to the Summary: burning of all grades of fuel oil. DOE No: 0058 DOE Coord: D. G. MELLO Title: A Multiple Spark System Using Inductive Storage Multiple spark system using a gated series of spark discharges on a single plug, to improve the fuel economy of a spark-ignition engine, by reducing the misfire rate. Description:

Inventor: Charles M Kirk State : FL	Contact: Charles M Kirk 1965 Arrowhead Lane, NE Saint Petersburg FL 33703 813-525-7878			
tatus: Complete Status Date: 02/26/79 OERI No.: 001922				
Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Transportation Systems, Vehicles & Components				
Recv by NBS : 03/10/77 Recom. by NBS : 03/31/78 Award Date : 02/26/78 Contract Period: 02/26/78 -	Award Amount: \$ 59,079 Grant No: FG01-78IR10025 02/26/79			
"MŠS" units. 1	9,079 was awarded to manufacture ten (10) prototype Three units were installed on selected vehicles and ested at University of Florida. ERIP assistance			

completed.

DOE No: 0059DOE Coord: G. K. ELLISTitle:The Volumetric Gas TurbineDescription:A positive displacement, modified Brayton cycle engine, for use<br/>primarily in automobiles.

Inventor: Bernard Zimmern Country: France Status: No DOE Support Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Combustion Engines & Components

Recv by NBS : 11/15/76 Recom. by NBS : 04/12/78

Summary: The inventor was interested in a large grant in the vicinity of \$1 million, an amount greater than the program could justify or provide. The inventor was advised that no support would be forthcoming.

DOE No: 0060 DOE Coord: D. G. MELLO

Title: Electric Transport Refrigerator

Description: Prime mover engine of Refrigerated Truck is modified to function as an A.C. Generator as well as being an engine. Electricity produced, powers sealed refrigerator on trailer, replacing present diesel- powered refrigeration unit.

Inventor: William H Cone State : IA

Contact: William H Cone Coneco, Inc. 1151 Meadow Lane, A3 Waterloo IA 50701 319-233-8224

Status: Complete Status Date: 04/09/80 OERI No.: 001654

Patent Status : Patent # - 3778651 and others Development Stage : Prototype Test Technical Category: Miscellaneous

Recv by NBS : 12/13/76 Recom. by NBS : 04/28/78 Award Date : 09/25/78 Award Amount: \$ 50,000 Grant No: EU78-G016601 Contract Period: 09/25/78 - 04/09/80

Summary: A grant of \$50,000 was awarded for one-year design, development, and testing of invention. Iowa State University was sub-contractor for electronic design tasks. Inventor procured a diesel engine for test and modification. Grantee completed all tasks except in-service demonstration. Technical problems with invention design prevented performance of last task. Inventor plans to seek private funds for continuation of project. DOE No: 0061 DOE Coord: D. G. MELLO

Title: Fuel Preparation Process

Description: A method for separating mineral matter from coal using a flotation process.

Inventor: Willing B Foulke State : DE Contact: Murry S. Laskey 2401 Pennsylvania Avenue Suite #1010 Wilmington DE 19806 302-652-0115

Status: Complete Status Date: 06/17/83 OERI No.: 001088

Patent Status : Patent # - 3932145 Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 06/14/76 Recom. by NBS : 04/26/78 Award Date : 06/17/81 Award Amount: \$ 96,421 Grant No: FG01-81CS15041 Contract Period: 06/17/81 - 06/14/82

Summary: A grant of \$96,421 was awarded for an experimental program on a laboratory scale basis with Research Triangle Institute as the contractor for the purpose of assessing the technical feasibility of the Foulke process. Grant complete, and the results appear promising. Inventor seeks licensing or other opportunities with industry.

DOE No: 0062 DOE Coord: G. K. ELLIS

Title: Tapered Plate Annular Matrix

Description: A compact heat tank exchanger that offers significant improvement over conventional shell-and- tank exchangers, especially for very high pressure applications.

Inventor: Thaddeus Papis State : CA Contact: Thaddeus Papis 10115 Victoria Avenue Riverside CA 92503 714-687-0408

Status: Complete Stat

Status Date: 10/01/81 OERI No.: 001029

Patent Status : Not Applied For Development Stage : Production Engineering Technical Category: Miscellaneous

Recv by NBS : 05/28/76 Recom. by NBS : 04/28/78 Award Date : 07/22/79 Award Amount: \$ 79,800 Grant No: FG01-79IR10172 Contract Period: 07/22/79 - 10/01/81

Summary: A grant of \$79,800 was awarded and completed for the inventor to analyze the potential uses, energy- related benefits, production techniques, and comparative economics of the heat exchanger. The study culminated in the definition of, and a plan for, a hardware demonstration program. The final report is being circulated among potential sources of private sector support for the hardware phase.

DOE No: 0063 DOE Coord: J. AELLEN Title: Fluorobulb Fluorescent bulb designed to directly replace an incandescent bulb. 20 watt bulb and ballast can be easily separated. Built on Description: Edison screwbase. Inventor: Thomas LoGiudice Contact: Thomas LoGiudice 520 East 72d Street New York NY 10021 State NY 212-737-6703 Status: Complete Status Date: 08/18/81 OERI No.: 001330 Patent Status : Patent # - 3953761 Development Stage : Prototype Development Technical Category: Buildings, Structures & Components Recv by NBS Recom. by NBS Award Date Recv by NBS : 08/13/76 Recom. by NBS : 05/03/78 Award Date : 04/11/79 Contract Period: 04/11/79 Award Amount: \$ 49,500 Grant No: FG01-79IR10093 - 08/01/81 A grant of \$49,500 was awarded and completed for research and product development. Grantee produced ten prototype bulbs, investigated problems of uniform coating, and produced certified data regarding lamp efficiency, luminous efficiency and accurate cost data for predicting production quantity costs. Data suggests that lamp is not likely to be manufactured at a competitive Summary: price. \*\*\*\*\* DOE No: 0064 DOE Coord: G. K. ELLIS Title: The Mahalla Process--A Hydrometallurgical Method for Extracting Copper Description: A hydrometallurgical process for refining copper that eliminates the electrofining step. Inventor: Shalom Mahalla Contact: Lester Hendrickson State AZ Arizona State U. School of Engineering Tempe AZ 85281 602-965-3764 Status: Complete Status Date: 09/01/79 OERI No.: 002543 Patent Status : Development Stage : Technical Category: Patent Status Patent Applied For Laboratory Test Industrial Processes Recv by NBS : 08/01/77 Recom. by NBS : 05/08/78 Award Date : 09/01/78 Contract Period: 09/01/78 Award Amount: \$ 88,933 Grant No: - 09/01/79 A grant of \$88,933 was awarded and the work completed, to develop and optimize the process variables on a laboratory scale. With the copper industry depressed, the technology is being adapted for industrial toxic waste recovery. At last account, Hendrickson sought \$500,000 to build a pilot plant having enough flexibility to be adaptable to the processing of feed sources from various industrial plant wastes. Summary:

DOE No: 0065 DOE Coord: J. AELLEN

WattVendor Title:

Description: A coin operated device for dispensing electricity.

Inventor: Lee A Henningsen State : PA

Contact: Lee A Henningsen Firetrol, Inc. 1617 Cascade Street Erie PA 16502 814-459-1770

Status: Complete Status Date: 09/10/79 OERI No.: 000741

Patent Status Not Applied For Development Stage : Prototype Test Technical Category: Miscellaneous

Recv by NBS Recom. by NBS Award Date : 02/18/76 05/12/78 09/14/79 Award Amount: \$ 55,800 Grant No: FG01-79IR10266 Contract Period: 09/14/79 - 12/31/80

A grant of \$55,800 was awarded and completed, to manufacture and install sufficient units to completely convert Hillman Ferry Campground (TVA operated) from free to metered electric service. TVA will record user reactions, electric usage before and after, and operate units in one year demonstration program. Summary:

DOE No: 0066 DOE Coord: D. G. MELLO

Title: Heat Extractor

A system for recovering "Waste Heat" from industrial combustion processes by using water in direct contact with combustion products and an auxiliary heat exchanger. Description:

Inventor: Philip Zacuto State : NY

Contact: Daniel Ben-Shmuel Heat Extractor Corporation P.O. Box #455 Johnstown NY 12095 518-568-2288

Status: Complete

Status Date: 09/29/78

OERI No.: 002277

Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 06/20/77 Recom. by NBS : 05/26/78 Award Date : 09/29/78 Award Amount: \$125,000 Grant No: EU78-G016677 Contract Period: 09/29/78 - 09/29/79

Summary: A grant of \$125,000 was awarded and completed to install, operate A grant of \$125,000 was awarded and completed to install, operate and test, a heat extractor in an operating paper mill with Mohawk Paper Mills, Inc. Included were funds to adapt the heat extractor for coal-fired boilers. The work is complete. Results confirm significant fuel savings. As of January, 1985, inventor had sold the industrial unit to a Pittsburg firm and the residential one to Armitron. The unit is re-engineered and being marketed through Heat Extractor, Inc., Melrose, MA (800-633-3324) DOE Coord: G. K. ELLIS

Title: Windmill Using Hydraulic System for Energy Transfer and Speed Control A windmill design based on a hydraulic system for wind energy, Description: particularly suited for low to medium speed winds. Inventor: James A Browning Contact: James A Browning State NH Browning Engineering Corp. P.O. Box #863 Hanover NH 603-298-8400 NH 03755 Status: Complete Status Date: 12/01/84 OERI No.: 000799 Patent Status Patent Applied For Development Stage : Prototype Development Other Natural Sources Technical Category: : 02/05/76 : 06/20/78 : 12/07/79 Recv by NBS Recom. by NBS Recom. by 1 Award Date Award Amount: \$ 39,000 Grant No: FG01-80IR10320 Contract Period: 12/07/79 - 12/01/84 A grant of \$39,000 was awarded to complete the construction of the grantee's 70-ft diameter hydraulic windmill, and then to test it. Accidents and delays in receipt of materials have delayed the Summary: project. DOE No: 0068 DOE Coord: D. G. MELLO Title: Under Compression and Over Compression Free Helical Screw Rotary Compressor A compressor for use in medium-to-large sized heat pump-air Description: conditioning systems. Inventor: Leroy M Bissett Contact: State VA Charlie Baziel Status: Other Assistance Status Date: 10/01/79 OERI No.: 000631 Patent # - 3936239 Patent Status Development Stage : Prototype Development Technical Category: Buildings, Structures & Components Recv by NBS : 01/22/76 Recom. by NBS : 06/28/78 As a result of the NBS recommendation and in consideration of an unsolicited proposal from the grantee, the CE program within DOE funded a \$300,000 two-year contract, which has now been completed. Results show good energy savings, but further work is required to develop a commercial prototype of a marketable size. Summary:

DOE No: 0067

DOE No: 0069 DOE Coord: G. K. ELLIS

Title: Ionic Fuel Control System for the Internal Combustion Engine

Description: A system for controlling the air-fuel ratio of a gasoline internal combustion engine to maintain lean operation, improved fuel economy, and good performance.

Inventor: Enoch J Durbin State : NJ Contact: Enoch J Durbin Instrumentation & Control Lab.

Aero Lab., Forrestal Campus Princeton University Princeton NJ 08540 609-452-5154

Status: Complete

Status Date: 07/01/80 0ERI No.: 000844

Patent Status : Patent # - 3470741 Development Stage : Prototype Development Technical Category: Combustion Engines & Components

Recv by NBS : 03/25/76 Recom. by NBS : 06/29/78 Award Date : 07/01/79 Award Amount: \$ 87,051 Grant No: FG01-79IR10022 Contract Period: 07/01/79 - 07/01/80

Summary: A grant of \$87,051 was awarded to develop the Ionic Fuel Control System and to assess its commercial feasibility. A successful prototype was developed. Despite much work, the inventor's only success with an automotive company was Chrysler's successful bid on a military contract which incorporated the technnology. Adaptation of the device gives wind action in three directions, which could also be critical in determining velocities of STOL aircraft, where there have been a number of landing crashes for lack of this information.

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- DOE No: 0070 DOE Coord: J. AELLEN
- Title: Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner

Description: A heat recovery system for large compressors.

Inventor: State :		Contact: Kenneth A Stofen 3642 Country Lane Racine WI 53405
		414-554-7987

Status: CompleteStatus Date: 08/08/80OERI No.: 002847Patent Status: Patent Applied For<br/>Development Stage : Limited Production/Marketing<br/>Technical Category: MiscellaneousRecv by NBS: 10/21/77<br/>Recom. by NBS: 06/28/78<br/>Award DateAward Date: / / Award Amount: \$ 53,000Grant No: FG01-79IR10026<br/>Contract Period: / / - / /Summary:A grant of \$53,000was awarded to design and build ecology<br/>Cabinets: and then assemble operate and test air coole

A grant of \$53,000 was awarded to design and build ecology cabinets; and then assemble, operate, and test air cooled compressor systems in environments with particulate-laden and high temperature air. Sold 31 units to various size companies. Expanding his product to include 5 through 2000 HP compressors. Secured GSA contract two years in a row. A new company named Air Systems Inc at 937 Hays Ave., Racine, WI 53405 has been formed to build the units. Trying to expand market through more distributors. DOE No: 0071 DOE Coord: D. G. MELLO Knight Guard Title: A system for remote controlling the lighting in a building by Description: means of low frequency radio signals. Inventor: Arleigh Wangler Contact: State Arleigh Wangler CA : Status: No DOE Support Status Date: 09/01/78 OERI No.: 002538 Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components Recv by NBS : 08/10/77 : 06/29/78 Recom. by NBS

Summary: Inventor is investigating law enforcement agencies' interest.

DOE No: 0072 DOE Coord: G. K. ELLIS

- Title: Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
- Description: System exploits the relationship between specific gravity of the flare gas and its BTU content, to compute BTU per hour and subsequently control the fuel-air ratio of boilers.

Inventor: Joe Agar State : TX Contact: Basil W Balls

Status: No DOE Support Status Date: 08/08/80 OERI No.: 000733

Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 03/08/76 Recom. by NBS : 06/28/78

Summary:

A procurement request for a grant was initiated on April 20, 1979. Shortly thereafter, Mr. Agar sold the company and the new manager indicated that the earlier proposal was not in accord with the company's new goals. Then, on Dec 28 1979, the company advised by telephone that they were not interested in pursuing the development at all, since it did not coincide with their company's new goals. Formal notification was received in an August 5, 1980 letter.

DOE No: 0073	DOE Coord: G. K. ELLIS
Title:	INTECH
Description:	A system which uses light-weight aggregate insulation to provide the form-work for the concrete structural members of a building, with pre-finished exterior and interior surfaces.
Inventor: Me State : MI	
Status: Compl	ete Status Date: 06/22/79 OERI No.: 001323
Patent Status Development S Technical Cat	: Patent # - 3800015 and others tage : Production & Marketing egory: Buildings, Structures & Components
Recv by NBS Recom. by NBS Award Date Contract Peri	: 08/09/76 : 08/10/78 : 06/22/78 Award Amount: \$ 87,230 Grant No: od: 06/22/78 - 06/22/79
Summary:	A grant of \$87,230 was awarded for the purpose of contracting with Underwriters Laboratories, Inc. to perform fire tests, and to contract with Lev Zetlin Consultants for structural testing and analysis. This invention won the "outstanding individual inventor" award from the Dvorkovitz Technology Show of 1980. At last account, Sachs was looking for \$2 million private sector money to design machinery for mass production. Some designs have been sold and built.
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DOE No: 0074	DOE Coord: D. G. MELLO
Title:	A Solid Electrolyte Galvanic Solar Energy Conversion Cell
Description:	A high-temperature, high voltage (1.51V) fuel cell utilizing a unique calcium stabilized zirconia solid electrolyte. Device promises high efficiency, minimum environmental problems and wide application. It can also simultaneously produce chemical feedstock.
Inventor: G State : PA	R Fitterer Contact: G. R. Fitterer, President Scientific Applications, Inc. 825 Twelfth Street Oakmont PA 15139 412-828-0233
Status: Compl	ete Status Date: 10/30/80 OERI No.: 002560
Patent Status Development S Technical Cat	: Patent Applied For tage : Limited Production/Marketing egory: Direct Solar
Recv by NBS Recom. by NBS Award Date Contract Peri	: 09/19/77 : 08/29/78 : 08/24/79 Award Amount: \$ 50,000 Grant No: FG01-79IR10264 od: 08/24/79 - 10/30/80
Summary:	A grant of \$50,000 was awarded to conduct a two-part research project to investigate the characteristics of his Fuel Cell. Part one is a study of the primary cell and its voltage characteristics. Part two is research leading to selection of the best electrolyte. Results indicate that although workable, advantages over existing fuel cells are not significant.

DOE Coord: G. K. ELLIS DOE No: 0075

Title: Coke Quenching Steam Generator

The steam generator is a direct contact heat exchanger for generation of process steam from hot coke. Objective: to build Description: new coke ovens.

Richard Jablin Inventor: NC State :

Contact: Richard Jablin 2511 Woodrow Street Durham NC 27705 919-286-4693

Status: Complete Status Date: 06/03/82 OERI No.: 002265

Patent Status Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 06/06/77 Recom. by NBS : 08/29/78 Award Date : 05/14/79 Award Amoun Contract Period: 05/14/79 - 06/03/82 Recv by NBS Recom. by NBS Award Date Award Amount: \$119,400 Grant No: FG01-79IR10212

A grant of \$119,400 was awarded to complete a program of laboratory and pilot plant scale development. The work was successful, with steam quality adequate for process steam, and coke quality superior to the only competing process. Inventor seeks limited partnership arrangement, and anticipates a \$10 Summary: million/year business.

- DOE No: 0076 DOE Coord: G. K. ELLIS
- Title: The Ross Furnace
- A new gas burner design for use in high temperature industrial Description: process furnace.
- Inventor: Donald R Ross State : TX

Contact: Donald R Ross 3344 South Grove Fort Worth TX 76110 817-921-9671

Status: Complete

Status Date: 05/05/81 OERI No.: 002075

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 04/18/77 Recom. by NBS : 09/18/78 Award Date : 05/05/80 Award Amount: \$ 82,000 Grant No: Contract Period: 05/05/80 - 05/05/81

A grant of \$82,000 was awarded to build, assemble, operate and test two systems; one for a tilted furnace and one for a rotary furnace. The work was completed satisfactorally. Summary:

DOE No: 0077 DOE Coord: J. AELLEN

Title: Variable Heat Refrigeration System

Description: An improved vapor degreasing system incorporating a heat pump to conserve energy, retain solvents, and reduce hazards associated with solvent vapors.

Inventor: James W McCord State : KY Contact: James W McCord Corpane Industries, Inc. 250 Production Court Bluegrass Industrial Park Louisville KY 40299 502-491-4433

OERI No.: 001173

Status: Complete

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Status Date: 09/23/80

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Miscellaneous

Recv by NBS : 08/09/76 Recom. by NBS : 09/25/78 Award Date : 09/23/80 Award Amount: \$ 97,400 Grant No: FG01-80CS15026 Contract Period: 09/23/80 - 06/01/82

Summary: An award of \$97,400 was granted to design and construct demonstration models of the variable heat refrigeration system.

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- DOE No: 0078 DOE Coord: G. K. ELLIS
- Title: System for High Efficiency Power Generation from Low Temperature Sources
- Description: Concept for reducing the heat sink temperature in power plant operation and other applications; ice would be generated during cold weather and used to reduce the heat sink temperature during warmer weather.

Inventor: Robert McNeill State : CA Contact: Robert McNeill

Status: No DOE Support Status Date: 03/11/81 OERI No.: 001154

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Other Natural Sources

Recv by NBS : 06/30/76 Recom. by NBS : 09/28/78

Summary: Inventor advised DOE that he is no longer interested in pursuing the invention because of other interests.

DOE No: 0079 DOE Coord: G. K. ELLIS

Title: 0il Well Bit Insert (Tooth), Cutting Article, Ablative

Description: A new composite bit insert to replace the tungsten carbide inserts now commonly used in the rotary cone cutter bits for oil and gas well drillings. It is claimed to have sharper edges, more resistant to wear, and to be stronger.

Inventor: Marvin L Wahrman State : CA Contact: Marvin L Wahrman 47 Red Rock Irvine CA 92714 714-979-1280

Status: Complete

Status Date: 01/29/81 OERI No.: 001732

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 01/21/77 Recom. by NBS : 08/25/78 Award Date : 01/29/80 Award Amount: \$ 57,150 Grant No: FG01-79IR10288 Contract Period: 01/29/80 - 01/29/81

Summary: A grant of \$57,150 was awarded to prove the technical feasibility and to address the repeatability and controlability of the manufacturing process for these bits. A bit was developed which cuts 3-4 times faster and lasts longer than conventional ones. At last account, company had 4 employees and had expanded to produce saw blades.

- DOE No: 0080 DOE Coord: J. AELLEN
- Title: Improved Unfired Refractory Brick
- Description: Chemically bonded, unfired brick for ladles handling molten steel, consisting of 90% silica and containing 10% clay with minor amounts of hardening agent and Gulac.

Inventor: Patsie C Campana Contact: State : OH Patsie C Campana

Status: No DOE Support Status Date: 03/23/82 OERI No.: 001964

Patent Status : Not Applied For Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 03/18/77 Recom. by NBS : 09/28/78

Summary:

A proposal has been received from the inventor for several million dollars to build a production facility. The inventor was advised the program was unable to fund capital equipment, and potential alternatives of business plan and marketing study were described. The inventor has indicated no interest except on the basis of a large grant for capital equipment. DOE No: 0081 DOE Coord: D. G. MELLO

Title: Flash Polymerization

Description: A process utilizing pulsed xenon arc discharge lamps for polymerizing thermosetting resins.

Inventor: C Richard Panico State : MA

Contact: C Richard Panico Xenon Corporation 66 Industrial Way Wilmington MA 01887 617-658-8940

Status: CompleteStatus Date: 02/03/81OERI No.: 002526Patent Status:Patent # - 3782889Development Stage :Prototype TestTechnical Category:Industrial Processes

Recv by NBS : 07/26/77 Recom. by NBS : 09/29/78 Award Date : 09/29/79 Award Amount: \$ 99,990 Grant No: FG01-79IR1030 Contract Period: 09/29/79 - 02/02/81

Summary: A grant of \$99,990 was awarded and completed, to conduct a 3-part investigation of the energy-saving and market penetration potential for this curing machine. A \$500,000 contract for automotive parts curing was captured as a result of DOEsupported Development work. Several venture capitalists have expressed considerable interest. Sale of the company has been discussed.

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DOE No: 0082 DOE Coord: D. G. MELLO

Title: Cool Air Induction

Description: Modification kit for engines used for powering irrigation pumps. Uses cool well water in air cooler placed between commercial supercharger and the engine.

Inventor: Robert L Ullrich State : NM

Contact: Robert L Ullrich Ullrich Eng. & Mfg., Inc. 1717 East Second Street Roswell NM 88201 505-662-1821

Status: Complete

Status Date: 09/24/79 OERI No.: 003061

Patent Status : Not Applied For Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 11/23/77 Recom. by NBS : 10/27/78 Award Date : 09/24/79 Award Amount: \$ 68,402 Grant No: FG01-79IR10284 Contract Period: 09/24/79 - 04/30/80

Summary: A two-phase grant in the amount of \$99,282 was requested. The first phase was awarded (\$68,402) and provided for analysis of existing operating data, a survey of the potential market, development and comparison of alternate strategies and a preparation of a formal business plan. Product is available for licensing.

- DOE No: 0083 DOE Coord: P. M. HAYES
- Title: Vertical Solar Louvers

Description: Massive rectangular columns oriented in NE-SW direction, located indoors behind a glazed southern exposure. Aesthetic improvement over conventional TROMBE wall should lead to increased acceptance of passive solar heating.

Inventor:	Charles James	Bier	Contact:
State :	VA		Charles James Bier Route #2, Box #35
			Ferrum VA 24088

Status: Complete Status Date: 02/28/84 OERI No.: 002821

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS :	10/1////		
Recom. by NBS :	10/27/78		
Award Date :	08/31/82	Award Amount: \$ 26,510	Grant No: FG01-82CE15135
Contract Period:	08/31/82	- 02/28/84	

Summary: A grant of \$26,510 was awarded for inventor to prepare test plan, instrumentation strategy, and computer design guide. Final report was delivered September 30th, 1984. Results will be published in several semi-technical journals to encourage the passive solar concept.

DOE No: 0084 DOE Coord: G. K. ELLIS

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- Title: Kinetic Energy Type Pumping System
- Description: Simplified pumping system utilizes the kinetic energy of a circulating fluid to reduce the bottom- hole pressure and to lift the down-hole fluid.
- Inventor: Kenneth W Odil Contact: State : TX Kenneth W Odil
- Status: No DOE Support Status Date: 09/24/82 OERI No.: 002032
- Patent Status : Patent # 3123009 Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 04/11/77 Recom. by NBS : 10/30/78

Summary: A proposal was received from the inventor which was unacceptable because it was considerably beyond the level of support funds that could be justified. The inventor then endeavored to find a cost sharing arrangement with an interested private industry. A 5/13/82 check with him indicated that due to other business interests, Mr. Odil temporarily at least, is not interested in pursuing his invention. DOE No: 0085 DOE Coord: D. G. MELLO

Title: Dielectric Windowshade

Description: A method by which an applied voltage causes a reflective aluminized mylar film to unroll and press flat against a window.

Inventor: Charles G Kalt State : MA Contact: Charles G Kalt 29 Hawthorne Road Williamstown MA 01267 413-664-6371

Status: Complete Status Date: 08/18/81 OERI No.: 003691

Patent Status : Patent # - 3989357 Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : 04/12/78 Recom. by NBS : 10/31/78 Award Date : 08/18/81 Award Amount: \$ 99,500 Grant No: FG01-81CS15076 Contract Period: 08/18/81 - 11/18/82

Summary: A grant of \$99,500 was awarded and completed, to design, build and test, a demonstration model of the Dielectric Windowshade. A unique product resulted. Test-marketing for commercial greenhouses has been completed.

DOE No: 0086 DOE Coord: G. K. ELLIS

Title: Coke Desulfurization

Description: Method to remove sulfur from high sulfur coal during the coking process, which makes it possible to use high sulfur coals in the manufacture of metallurgical coke. Process can pay for itself with the sulfur by-product.

Inventor: Douglas MacGregor State : UT Contact: Howard Bovars Diamond Energy Corporation 1012 North Beck Street Sale Lake City UT 84103 801-359-3718

Status: Complete Status Date: 03/23/81 OERI No.: 002726

Patent Status : Patent # - 4011303 Development Stage : Laboratory Test Technical Category: Fossil Fuels

Recv by NBS :	09/21/77		
Recom. by NBS :	11/27/78		
Award Date :	12/07/79	Award Amount: \$ 82,500 Grant No	: FG01-80IR10305
Contract Period:	12/07/79	- 09/30/81	

Summary: A grant of \$82,500 was awarded for Diamond West Corporation, exclusive licensee, to perform sufficient additional technical, engineering and application investigation, to ready the technology for the marketplace. Licensee, with the help of the inventor, unable to duplicate results of initial experiment. But, Diamond West took a new approach and developed a successful process. \$1.5 million private monies invested to date, and doubling that is anticipated. At last account, Diamond West had tentative plans for joint venture to build a calciner for sale to coke industry. DOE No: 0087 DOE Coord: J. AELLEN

Title: Recovering Uranium From Coal in Situ

Description: A method for recovering uranium from the sites of depleted coal desposits that have been mined by in situ gasification.

Inventor: Ruel Carlton Terry State : CO Contact: Ruel Carlton Terry 3090 South High Street Denver CO 80210 303-759-3826

Status: CompleteStatus Date: 02/06/80OERI No.: 002224

Patent Status : Patent # - 4113313 Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 05/17/77 Recom. by NBS : 11/29/78 Award Date : 02/01/80 Award Amount: \$ 85,240 Grant No: FG01-80IR10301 Contract Period: 02/01/80 - 08/01/81

Summary: A grant of \$85,240 was awarded to reduce two of the uncertainties related to eventual commercialization of the process. The first uncertainty concerns potential sites and the second uncertainty relates to technical feasibility. DOE Livermore Lab believes this method has good commercial possibilities, but uranium price must rise to make it commercially feasible.

- DOE No: 0088 DOE Coord: D. G. MELLO
- Title: System-100

Description: A strategy (control system) for regulating centrifugal and reciprocating equipment used in natural gas compressor stations.

Inventor: Alex Rutshein, et al State : IA Contact: Lawrence Ladin c/o Compressor Controls Corp. P. O. Box #1936 Des Moines IA 50306 515-244-1180

Status: CompleteStatus Date: 08/12/80OERI No.: 001818Patent Status: Patent Applied For<br/>Development Stage : Concept Development<br/>Technical Category: Fossil Fuels

Recv by NBS : 02/10/77 Recom. by NBS : 11/30/78 Award Date : 08/26/80 Award Amount: \$ 50,000 Grant No: FG01-80CS15012 Contract Period: 08/26/80 - 08/15/81

Summary: A grant of \$50,000 was awarded to develop a microprocessor-based strategy control system for control of compressors in gas transmission pipelines. Two pipelines have purchased product. Potential is easily \$1 million annual savings. Product has gone on to win industry award for significant invention.

DOE No: (	089	DOE	Coord:	D.	G.	MELLO

Title: Continuous Casting Process and Apparatus

Description: A continuous horizontal casting process for steel billets, slabs, and tubing, which achieves a very high quality product at twice the speed of existing continuous casting processes.

Inventor: Henry E Allen State : CT

Contact: Henry E Allen Techmet Corporation Fifteen Valley Drive Greenwich CT 06830 203-629-4633

Status: Complete Status Date: 07/31/84 OERI No.: 002648

Patent Status : Patent # - 3517725 Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 08/22/77 Recom. by NBS : 11/30/78 Award Date : 07/29/82 Award Amount: \$115,000 Grant No: FG01-82CE15101 Contract Period: 07/29/82 - 07/31/84

Summary: A grant of \$115,000 was awarded to build and test a device for continuous casting of 4-inch bars of steel. The work on this project is complete. The project was generally successful. Lack of interest due to unfavorable economic conditions in steel industry however, prevents its commercialization.

DOE No: 0090 DOE Coord: J. AELLEN

Title: Grain Dryer

Description: A device to be added to a grain combine, to utilize the exhaust energy from the combine engine for drying the grain in the combine hopper tank.

Inventor: Clinton Van Winkle State : NE

Contact: Clinton Van Winkle

Status: No DOE Support Status Date: / / OERI No.: 003790

Patent Status : Patent # - 4003139 Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 03/16/78 Recom. by NBS : 12/18/78

Summary: Inventor not responsive. No basis for consideration of DOE grant support.

DOE No:	0091	DOE	Coord:	D.	G.	MELLO

Title: Mine Brattice

Description: A reusable brattice for use in coal mining. Quick, and inexpensive to install - seals better than present stoppings. Improved air seal saves power and improves safety.

Inventor: James Allen Bagby State : KY Contact: Rees Kinney, Atty. Bagby Brattices, Inc. P.O. Box #569 Greenville KY 42345 502-338-5619

Status: Complete Status Date: 09/20/79 OERI No.: 003210

Patent Status : Patent # - 3972272 Development Stage : Prototype Development Technical Category: Fossil Fuels

Recv by NBS : 12/20/77 Recom. by NBS : 12/19/78 Award Date : 09/29/79 Award Amount: \$ 62,664 Grant No: FG01-79IR10302 Contract Period: 09/29/79 - 05/25/83

Summary: A grant of \$62,664 was awarded and completed to fabricate 25 prototype brattices and install them in Peabody Coal underground coal mine in Southern Illinois. Data were collected and possibly detrimental effects of natural subsidence on the performances of the brattices was measured and found to be minimal. Product advanced rapidly, with sales organization formed and 1982 sales of \$150,000. Product is accepted in the mining industries and is available for distribution. Corporation has doubled sales.

- DOE No: 0092 DOE Coord: G. K. ELLIS
- Title: Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.
- Description: Utilizes common plumbing system with water serving as heat source/sink for heat pumps as well as sprinkler system.

Inventor: John L Carroll State : KY Contact: Roger Stamper

Status: No DOE Support Status Date: 07/15/86 OERI No.: 001160

Patent Status : Patent # - 3939914 Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 03/22/76 Recom. by NBS : 12/28/78

Summary: Inventor has licensed the technology to American Air Filter Co Inc. A grant was declined on the belief that it would compromise the inventor's patent position. At last account, American Air had installed \$22 million of the technology, including \$2 million for equipment and \$20 million for construction, representing 36 jobs. Another 30 were on the drawing board. DOE No: 0093 DOE Coord: G. K. ELLIS

Title: Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions

Description: A solution/precipitation process for recovery of zinc, lead, and copper from the baghouse dust collected from smelter emissions.

Inventor: Edward H Shelander State : GA Contact: Edward H Shelander P.O. Box #603 Brunswick GA 31520 912-265-8464

Status: Complete Status Date: 06/01/81 OERI No.: 001300

Patent Status : Patent # - 3849121 Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 08/09/76 Recom. by NBS : 01/24/79 Award Date : 03/28/80 Award Amount: \$ 89,742 Grant No: FG01-80CS15004 Contract Period: 03/28/80 - 06/01/81

Summary: A grant of \$89,742 was awarded, and has been completed to provide an engineering and economic analysis of the subject process. At last account, grantee was looking for several million dollars venture start-up capial.

DOE No: 0094 DOE Coord: J. AELLEN

Title: Lantz Converter

Description: Unit for pyrolyzing municipal refuse that uses natural gas to bring converter up to pyrolyzing temperature and then switches to pyrolytic gases to maintain the process.

Inventor: William M FioRito State : CA Contact: William M FioRito 12650 Mantilla Road San Diego CA 92128 914-591-5080

Status: CompleteStatus Date: 07/10/85OERI No.: 003675Patent Status:Patent # - 2886122Development Stage :Concept DevelopmentTechnical Category:Industrial Processes

Recv by NBS : 03/02/78 Recom. by NBS : 01/30/79 Award Date : 09/20/82 Award Amount: \$134,000 Grant No: FG01-82CE15126 Contract Period: 09/20/82 - 09/17/83

Summary: A one year grant of \$134,000 was awarded to instrument the Lantz Converter under engineering- test conditions to determine significant operating and economic factors. DOE No: 0095 DOE Coord: D. G. MELLO

Title: Omni-Horizontal Axis-Wind Turbine

Description: A low cost, self starting, horizontal axis wind turbine with novel blade orientation. Operation is relatively insensitive to wind direction.

Inventor: Val O Bertoia State : PA Contact: Val O Bertoia

Status: No DOE Support Status Date: 08/06/80 OERI No.: 003875

Patent Status : Disclosure Document Program Development Stage : Concept Development Technical Category: Other Natural Sources

Recv by NBS : 04/10/78 Recom. by NBS : 01/30/79

Summary: Inventor requested project be terminated for his convenience. Preliminary DOE review suggested that project would not be economically justifiable.

- DOE No: 0096 DOE Coord: J. AELLEN
- Title: Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
- Description: Pneumatic tools (paving breaker, etc.) reconfigured to obtain additional energy from high temperature compressed air. High temperature and low pressure requires larger displacement and therefore overall size to achieve same output power.

Inventor: Floyd R Anderson State : AR Contact: Floyd R Ander Vast Researc Seven Tiffar Bella Vista 501-855-9202	ch Company ny Lane AR 72712
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Status: CompleteStatus Date: 07/28/80OERI No.: 001869Patent Status: Patent # - 3266581 and othersDevelopment Stage : Prototype Test

Technical Category: Combustion Engines & Components

Recv by NBS :	02/28/77	
Recom. by NBS :	02/28/79	
Award Date :	09/12/79	Award Amount: \$ 76,675 Grant No: FG01-80IR10305
Contract Period:	09/12/79	- 06/11/80

Summary: A grant of \$76,675 was awarded to design, build, and test six pneumatic tools. Independent test evaluation by a third party did analyze energy input and output, rate of work, noise and vibration. Results have been compared with performance of conventional tools; all criteria show outstanding advantages of the Anderson system. Company has raised \$3 million in private investments and 130 units have been put into demonstration service. Product is available for distributor sales. DOE No: 0097 DOE Coord: J. AELLEN

Title: Water Drying System

Description: A technique for removing wash water from manufactured parts by dipping parts into degreaser solvent and mechanically separating water by virtue of differences in liquid densities.

Inventor: James W McCord State : KY Contact: James W McCord Corpane Industries, Inc. 250 Production Court Bluegrass Industrial Park Louisville KY 40299 502-491-4433

Status: Complete

Status Date: 09/10/80 OERI No.: 003679

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 08/09/76 Recom. by NBS : 02/28/79 Award Date : 09/10/80 Award Amount: \$ 93,800 Grant No: FG01-80CS15025 Contract Period: 09/10/80 - 06/10/82

Summary: A grant of \$93,800 was awarded to design and construct demonstration models of a system to degrease and dry metal parts prior to painting. Product is available for custom installation in production lines. The inventor has been successful in marketing his product.

- DOE No: 0098 DOE Coord: D. G. MELLO
- Title: Process Development to Conserve Energy and Material- --(in the manufacture of)---Bearings
- Description: A methodology for continuously casting a sheet of the desired bearing alloy, in the desired thickness, cutting it to the proper length, rolling it to the specified diameter, and welding it together.

Inventor: James L Chill State : OH Contact: James L. Chill, President Chillcast, Inc. 404 Executive Boulevard Marion OH 43302 614-383-6337

Status: Award

Status Date: 01/07/80 OERI No.: 003547

Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 02/17/78 Recom. by NBS : 03/14/79 Award Date : 01/07/80 Award Amount: \$123,994 Grant No: FG01-80IR10321 Contract Period: 01/07/80 - 06/30/83

Summary: A grant of \$123,994 was awarded for the grantee to work with Battelle Memorial Institute to optimize the rolling-pass and heat treatment schedules, establish and compare the performance characteristics of the prototype bearings with those made by current methods, evaluate cylindrical bearings with and without a seam weld, and investigate performance of prototypes containing only 3% tin. An entrepreneur is needed to market this invention successfully. DOE No: 0099 DOE Coord: D. G. MELLO

Title: Light Weight Composite Trailer Tubes

Description: A design and manufacturing method for manufacture of composite pressure vessels employed in highway transport of gaseous fuel.

Inventor: Oscar Weingart State : CA

Contact: Ed Morris, President Struct. Comp Ind., Inc. 325 Enterprise Avenue Pamona CA 91768 714-594-7777

Status: Complete Status Date: 01/14/80 OERI No.: 004059

Patent Status : Disclosure Document Program Development Stage : Engineering Design Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/05/78 Recom. by NBS : 03/30/79 Award Date : 01/14/80 Award Amount: \$ 96,000 Grant No: FG01-80IR10319 Contract Period: 01/14/80 - 12/31/80

Summary: A grant of \$96,000 was awarded to design, fabricate, and test a large scale section of a new light-weight composite trailor tube for highway transportation of compressed gases. Product requires sponsor for commercial introduction. Licensing is available. Prototype product sales total \$50,000.

- DOE No: 0100 DOE Coord: J. AELLEN
- Title: Solaroll
- Description: A flexible rubber tubing solar collector for hot water and building heating systems. Collector is extrusion of ethylene-propylene-diamine rubber.
- Inventor: Michael F Zinn State : NY

Contact: Michael F Zinn Bio-Energy Systems, Inc. Box #191 Ellenville NY 12428 914-647-6482

Status: Complete Status Date: 03/25/80 OERI No.: 003236

Patent Status : Not Applied For Development Stage : Limited Production/Marketing Technical Category: Direct Solar

Recv by NBS : 12/05/77 Recom. by NBS : 03/30/79 Award Date : 05/24/80 Award Amount: \$110,390 Grant No: FG01-80CS15002 Contract Period: 05/24/80 - 11/25/81

Summary: A grant of \$110,390 was awarded to test the product's performance in a variety of applications; in limited production/marketing stage when recommended. Sales for 1981 exceeded \$4 million through 400 distributors and dealers in the U.S and from licensees in five foreign countries. Company now publicly held, from \$2.5 million stock issue and employs 100 in three divisions. New products are developed and on the market.

DOE No: 0101	DOE Coord: P. M. HAYES
Title:	Controlled Combustion Engine
Description:	A modified intake valve for spark ignition engines. Creates increased turbulence at low throttle settings to allow lean burning mixtures.
Inventor: Sh State : MI	arad M Dave Sharad M Dave 27689 Doreen Farmington Hills MI 48024 313-478-5976
Status: Compl	ete Status Date: 11/30/82 OERI No.: 002114
Patent Status Development S Technical Cat	: Patent # - 3762381 tage : Concept Development egory: Combustion Engines & Components
Recv by NBS Recom. by NBS Award Date Contract Peri	: 02/28/77 : 04/20/79 : 05/05/81 Award Amount: \$ 85,000 Grant No: FG01-81CS15040 od: 05/05/81 - 11/30/82
Summary:	An award of \$85,000 to modify a conventional engine was granted to provide variable valving in a variety of designs and test on an engine dynamometer both for efficiency and performance. The project is completed. Inventor is seeking licensing.
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DOE No: 0102	DOE Coord: D. G. MELLO
Title:	Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners
Description:	The invention is a method to convert standard distillate fuel oil burners to residual fuel oil, which is accomplished by heating that portion of the combustion air used to atomize the fuel oil.
Inventor: Fr State : MO	ank C Bernhard Frank C Bernhard 11936 Claychester Drive St. Louis MO 63131 314-822-3484
Status: Compl	ete Status Date: 02/21/80 OERI No.: 003205
Patent Status Development S Technical Cat	: Patent # - 3977823 tage : Concept Development egory: Buildings, Structures & Components
Recv by NBS Recom. by NBS Award Date Contract Peri	: 04/24/79
Summary:	A grant of \$43,550 was awarded to design and build a packaged, self-contained fuel oil burning test stand that can burn residual fuel oil in any low-pressure, atomizing fuel oil burner. Test showed technical viability. Market presently very poor.

DOE No: 0103 DOE Coord: P. M. HAYES

Title: Low Voltage Ionic Fluorescent Light Bulb

Description: Fluorescent light bulb built on Edison base. Excited by array of gas discharge tubes. Uniform output, high efficiency, and long life are claimed.

Inventor: Edwin E Eckberg State : ID

Contact: Edwin E Eckberg Ecklux R & D Vacuum Lab Inc 5504 Currier Road Boise ID 83705 208-343-7442

Status: Complete Status Date: 09/10/81 OERI No.: 001446

Patent Status : Patent # - 3447098 and others Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

Recv by NBS : 09/17/76 Recom. by NBS : 04/30/79 Award Date : 03/12/80 Award Amount: \$ 73,554 Grant No: FG01-80CS15007 Contract Period: 03/12/80 - 09/10/81

Summary: A grant of \$73,554 was awarded to design, develop, fabricate and test a series of one, two and four- bulb configuration low-voltage fluorescent ionic light bulbs. The one-bulb version will be developed to a point suitable for semi-automatic machine production. The grant was completed. The inventor is deceased. An entrepreneur is needed to develop further and market this invention.

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DOE No: 0104 DOE Coord: G. K. ELLIS

Title: Low Continuous Energy Mass Separation System

Description: The invention is a combination of any two or all three separation techniques involving chromatography, electrophoresis, and centrifugation (common in all combinations) to provide a low-energy continuous separation of chemical species, either in the gas phase or liquid phase.

State : PA Es 46 Er	ntact: kil L Karlson 34 State Street ie PA 16509 4-871-7000
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Status: CompleteStatus Date: 04/26/81OERI No.: 002186Patent Status: Patent Applied For<br/>Development Stage : Laboratory Test<br/>Technical Category: MiscellaneousRecv by NBS: 05/11/77<br/>Recom. by NBSRecv by NBS: 04/30/79<br/>Award DateAward Date: 02/26/80<br/>- 04/26/81Summary:A grant of \$83,015 was awarded to build and test two laborated

Summary: A grant of \$83,015 was awarded to build and test two laboratory models. More development needed but the results encouraging with 90 percent separation each pass at several gal/min throughput. Needs another \$30,000 - \$40,000 for R & D, \$50,000 to build a production prototype, and \$50,000 for an alternate version. Inventor wants connection with company interested in producing a unit to do genetic separations. Potential market at medical schools and labs, around 30,000 units at \$2,000 to \$10,000 per unit.

DOE No: 0105 DOE Coord: J. AELLEN Title: High Frequency Furnace A furnace for the melting of reactive metals and semi-conductors which must be obtained in high purity form. It employs high frequency heating in a manner that allows the metal being melted Description: to form its own crucible. Inventor: Al State : UT Allen D Zumbrunnen Contact: Allen D Zumbrunnen 419 Sherman Avenue Salt Lake City UT 801-466-2663 84115 Status: Complete Status Date: 07/10/85 OERI No.: 002467 Patent Status : Development Stage : Technical Category: Patent # - 4133969 Concept Development Industrial Processes Recv by NBS : 06/24/77 Recom. by NBS : 04/30/79 Award Date : 09/30/81 Contract Period: 09/30/81 Recv by NBS Recom. by NBS Award Date Award Amount: \$121,554 Grant No: FG01-81CS15077 - 12/31/83 A grant of \$121,554 was awarded to build and test a prototype high frequency induction furnace for the production of silicon for solar cells. Summary: DOE No: 0106 DOE Coord: D. G. MELLO Title: Deep Shaft Hydro-Electric Power A proposal to investigate the use of underground salt domes/caves Description: as pumped storage of water for production of peak demand electricity. James L Ramer Inventor: Contact: State MO James L Ramer Status: No DOE Support Status Date: 07/18/79 OERI No.: 002753 Patent Status Not Applied For Development Stage : Concept Definition Technical Category: Miscellaneous Recv by NBS : 09/30/77 Recom. by NBS : 05/10/79 Material submitted as proposal to DOE described a concept that related several known ideas and proposed to unite them into one large experiment. The work was not definitive or feasible enough to justify grant award by DOE. Summary:

DOE No: 0107 DOE Coord: J. AELLEN Title: Waste Products Reclamation Process This is a process for desulfurizing combustion gases, with a by-product "Linfans" which is claimed to have economic uses as a 1) construction material, 2) reagent for treating waste water, and 3) agent to react with sulphur dioxide in stack gas scrubbing Description: processes. Inventor: Ping-Wha Lin Contact: Ping-Wha Lin 506 South Darling Street Angola IN 46703 219-665-5425 State : IN Status: Complete Status Date: 09/30/82 OERI No.: 001416 Patent Status : Patent # - 3861930 and others Development Stage : Laboratory Test Technical Category: Industrial Processes Recv by NBS : 09/09/76 Recom. by NBS : 05/31/79 Award Date : 09/30/82 Award Amount: \$129,888 Grant No: FG01-81CS15143 Contract Period: 09/30/82 - 12/31/83 A grant of \$129,888 was awarded to define the operating parameters and optimize the variables. Final report shows considerable uses for the invention. Inventor attempting to find Summary: customers and suppliers, etc. DOE No: 0108 DOE Coord: G. K. ELLIS Title: Processing Recovery of Aluminum invention is a mechanical process, operated at room erature, (except for the reduction step) for separating Description: The temperature, aluminum metal from the dross. Inventor: Paul J Cromwell Contact: Robert J Cromwell : NY State 120 Huntington Street Chardon OH 44024 216-285-9306 OERI No.: 004688 Status: Complete Status Date: 06/12/81 Patent Status : Patent # - 4126673 Development Stage : Prototype Test Technical Category: Industrial Processes Recv by NBS : 12/27/78 Recom. by NBS : 05/31/79 Award Date : 06/11/80 Award Amount: \$158,029 Grant No: FG01-80CS15009 Contract Period: 06/11/80 - 06/12/81 A grant of \$158,029 was used to develop a mechanical process for recovering aluminum from dross (i.e. waste). The inventor secured \$1.5 million in financing and opened a plant in Buffalo. The plant was closed down however, due to the depressed nature of the aluminum industry. Subsequently, the inventor patented a new process for melting aluminum beverage cans. Summary:

- DOE No: 0109 DOE Coord: D. G. MELLO Title: Hydrostatic Meat Tenderizer The invention is a method for tenderizing low-grade, grass fed beef by subjecting the boned meat to a hydrostatic pressure of over 15,000 psi for several minutes. Description: Inventor: H. W. Kennick Contact: H. W. Kennick Clark Meat Science Lab State : OR Oregon State University Corvallis OR 97331 503-754-3675 Status: Complete Status Date: 06/24/80 OERI No.: 003321 Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Miscellaneous Recv by NBS : 01/11/78 Recom. by NBS : 06/19/79 Award Date : 06/24/80 Contract Period: 06/24/80 Award Amount: \$ 86,000 Grant No: FG01-80CS15013 - 03/01/83 A grant of \$86,000 was awarded to investigate and develop a feasible commercial process. The projects results show that the process is feasible and the product is at least as tender and tasty as traditionally processed grain-fed beef. Technical data are available for the cost of handling from the Oregon State Summary: University. DOE No: 0110 DOE Coord: D. G. MELLO Title: Improved Windpower Generating System Description: Self-regulating, two-part windmill rotor with inner part for low-speed wind and outer part for high- speed wind. Karl H. Bergey Inventor: Contact: Karl H. Bergey Route #1, Box #151B Norman OK 73069 405-364-3675 State OK : Status: Complete Status Date: 08/27/80 OERI No.: 003425 Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Other Natural Sources Patent Status Recv by NBS : 01/19/78 Recom. by NBS : 06/29/79 Award Date : 08/26/80 Contract Period: 08/26/80 Recv by NBS Recom. by NBS Award Date Award Amount: \$ 74,875 Grant No: FG01-08CS15011
- Summary: A 13-month grant of \$74,875 was awarded for the development of an analytical program to characterize the operation of the Bergey windmill, design and test the prototype, and perform an economic analysis of the benefits of the design. Invention is available for wholesale and retail distribution.

- 09/30/82

- DOE No: 0111 DOE Coord: P. M. HAYES
- Title: Haspert Mining System

Description: The invention is intended for developing rectangular openings for mineral development. It is a mechanical apparatus that cuts linear grooves in rock using drag bits and then breaks the rock between the grooves primarily in the tension mode. Potential applications are in oil shale, rock and possibly coal.

Inventor: John C Haspert State : CA

Contact: John C. Haspert P.O. Box #1252 Arcadia CA 91006

Status: Complete

Status Date: 09/11/81 OERI No.: 003688

Patent Status : Patent # - 4062594 Development Stage : Limited Production/Marketing Technical Category: Fossil Fuels

Recv by NBS :	03/27/78		
Recom. by NBS :	06/29/79		
Award Date :	03/27/80	Award Amount: \$125,000	Grant No: FG01-80CS15006
Contract Period:	03/27/80	- 06/30/81	

Summary: A grant of \$125,000 was awarded to provide a complete set of preliminarry design drawings for a prototype machine for "driving" a drift for the mining of oil shale and coal. The cutter produces uniformly sized material at lower costs than present methods. The work was completed and the inventor seeks licensing and/or venture capital.

- DOE No: 0112 DOE Coord: D. G. MELLO
- Title: Pump
- Description: A conventional steam injector to serve as both feedwater pump and direct contact feedwater heater in conventional steam power plants.
- Inventor: Paul Zanoni State : CT

Contact: Paul Zanoni Boulder Engineering, Inc. Fifty-Five Highland Street Weathersfield CT 06109 203-569-0446

Status: Complete

Status Date: 11/07/85 OERI No.: 000548

Patent Status : Patent # - 3314236 Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 12/29/75 Recom. by NBS : 07/26/79 Award Date : 08/03/81 Award Amount: \$ 99,870 Grant No: FG01-81CS15057 Contract Period: 08/03/81 - 11/07/85

Summary: A grant of \$99,870 was awarded to design, build, and install system for field tests at Worchester Polytech in Massachusetts. System will operate in conjunction with existing steam power plant. The inventor complains that he is not getting proper cooperation from Worcester Polytech, making it impossible to complete the project. The project was closed unfinished. DOE No: 0113 DOE Coord: P. M. HAYES

Title: Wallace Mold Additive System

Description: A device and method for feeding small pieces of metal scrap of known composition and at a fixed rate into a mold, while molten metal is being poured.

Inventor: Henry J Wallace State : PA Contact: Henry J Wallace 570 Squaw Run Road Pittsburgh PA 15238 412-963-0969

## Status: Complete Status Date: 09/21/83 OERI No.: 003865

Patent Status : Patent # - 3871058 and others Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS :	04/20/78		
Recom. by NBS :			
Award Date :	09/22/82	Award Amount: \$ 89,000 Grant No: FG01-82CE15093	
Contract Period:	09/22/82	- 09/21/83	

Summary: A grant of \$89,000 was awarded to build and test a feeding device to be installed on a mini-mill located in Florida. The grant work is completed. The Wallace injection system is patented in the U.S. and many other countries. The inventor is seeking licensing arrangement for his process through Blair- Knox Equipment Division of Blairnox, Pa. 412-781- 2700. Blair-Knox Equipment is licensed to supply apparatus for the Wallace Additive Injection System.

DOE No: 0114 DOE Coord: P. M. HAYES

Title: New Energy-Saving Tire for Motor Vehicles

Description: An automobile tire of innovative design intended to reduce rolling friction below that of equivalent radial tires. Special rims are required.

Inventor: Renato Monzini Contact: Country : Milan, Italy Mario Bruno

Status: No DOE Support Status Date: 06/19/80 OERI No.: 003863

Patent Status : Patent # -Development Stage : Prototype Development Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 04/20/78 Recom. by NBS : 07/31/79

Summary: DOE could find no basis for support.

 DOE No: 0115
 DOE Coord: D. G. MELLO

 Title:
 Refrigeration System

 Description:
 Device to be installed between the compressor and the air cooled condenser in a small refrigeration unit. It consists of a dryer-filter heat exchanger, a venturi-ejector, and connecting piping.

 Inventor:
 Clyde G Phillips

 State
 DE

Clyde G Phillips Rural Route #2 Box #148-G, Angola Beach Lewes DE 19971 302-945-9093

OERI No.: 001188

Status: Complete Status Date: 02/22/80

Patent Status : Patent # - 3783629 Development Stage : Laboratory Test Technical Category: Miscellaneous

Recv by NBS : 07/02/76 Recom. by NBS : 07/31/79 Award Date : 12/07/79 Award Amount: \$ 6,910 Grant No: FG01-80IR10318 Contract Period: 12/07/79 - 12/01/80

Summary: The grantee installed his device in one large- capacity, and one small-capacity commercially available air conditioners and shipped them to an independent testing laboratory where the change in performance was documented. No energy savings were apparent.

- DOE No: 0116 DOE Coord: G. K. ELLIS
- Title: Model 5000 ASEPAK System
- Description: The inventions are for new methods for fabricating and aseptically filling sterile plastic bags with certain classes of food materials that have been previously sterilized by ultra-high temperature processes for very short periods of time.

Inventor: Roy J Weikert Contact: State : OH Roy J Weikert

Status: No DOE Support Status Date: 10/04/80 OERI No.: 002946

Patent Status : Patent # - 3813845 and others Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 11/04/77 Recom. by NBS : 08/30/79

Summary: Unable to identify suitable scope of work which was both agreeable to the inventor and supportable by DOE.

DOE No: 0117 DOE Coord: J. AELLEN

Title: "Solarspan" Prism Trap

Description: An all-plastic, black liquid, solar collector with provisions for freeze and overheat protection. Plastic can be molded to give good structural properties with thin sections.

Inventor: John Mattson State : MA Contact: George E Mattson 361 Moraine Street Brockton MA 02401 617-585-3598

Status: Complete

Status Date: 09/30/80 OERI No.: 002189

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Direct Solar

Recv by NBS : 03/28/77 Recom. by NBS : 09/20/79 Award Date : 09/30/80 Award Amount: \$ 98,700 Grant No: FG01-80CS15024 Contract Period: 09/30/80 - 10/30/81

Summary: A grant of \$98,700 was awarded to design, test and construct, low-cost plastic solar water heating panels. The project was successful. Evaluation by the Oak Ridge National Laboratory comments that this invention "will save the solar program by showing all concerned that low costs can be achieved." Product is available for wholesale distribution.

DOE No: 0118 DOE Coord: J. AELLEN

Title: Energy Adaptive Control of Precision Grinding

- Description: An otherwise conventional, universal, external cylindrical grinder retrofitted with a computer control to save energy in removing metal.
- Inventor: Roderick L Smith State : IL

Contact: Roderick L Smith Energy Adaptive Grinding, Inc.

2012 Greenfield Lane Rockford IL 61107 815-399-5614

Status: Complete

Status Date: 07/10/85 OERI No.: 003876

Patent Status : Patent # - 3653855 Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 04/24/78 Recom. by NBS : 09/27/79 Award Date : 09/15/81 Award Amount: \$ 99,328 Grant No: FG01-81CS15075 Contract Period: 09/15/81 - 09/15/82

Summary: A grant of \$99,328 was awarded to perform a complete engineering design and test of the invention prototype equipment. The technology has been licensed to the Catarpillar Tractor Company.

DOE No: 0119 DOE Coord: G. K. ELLIS

Title: Air Ratio Controller (AERTROL)

Description: A controller that controls the running time of a blower in proportion to the rate of flow of liquid in forced aeration type sewage plants; developed specifically to serve many small package treatment plants with liquid flow of less that 100,000 gallons per day.

Inventor: Eldon L Asher Contact: State : FL Otis W Smith

Status: No DOE Support Status Date: 07/17/81 OERI No.: 004056

Patent Status : Disclosure Document Program Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 06/05/78 Recom. by NBS : 09/28/79

Summary: Proposal for marketing was rejected by DOE.

DOE No: 0120 DOE Coord: D. G. MELLO

Title: Vapor Heat Transfer Commercial Griddle

Description: A griddle for restaurants with its surface heated by vapor condensation. This vapor is boiled with electric elements in a sump below the griddle surface. Vapor and condensed liquid are hermetically sealed.

Inventor: Robert Zartarian State : NJ Contact: Robert Zartarian Systech Industries Six Hialeah Court West Long Beach NJ 07764 201-449-3700

Status: CompleteStatus Date: 10/30/86OERI No.: 004562Patent Status: Patent Applied For<br/>Development Stage : Limited Production/Marketing<br/>Technical Category: MiscellaneousNBSRecv by NBS: 11/02/78<br/>Pacem by NBS: 10/17/79

Recv by NBS : 11/02/78 Recom. by NBS : 10/17/79 Award Date : 09/02/82 Award Amount: \$ 72,603 Grant No: FG01-82CE15124 Contract Period: 09/02/82 - 08/31/83

Summary: A 12-month grant of \$72,603 was awarded for a two- phase, 7-task development project in which the grantee performed R & D tasks relating to product improvement and safety, as well as market development. Marketing plans depend on future financial assistance from the private sector.

DOE No: 0121 DOE Coord: J. AELLEN Title: Solar Space Heating for both Retrofit and New Construction Passive solar collector using air as the transfer fluid. Designed for vertical south wall of a structure. Description: Inventor: James B Whitmore Contact: James B Whitmore State MI : Status: No DOE Support OERI No.: 004843 Status Date: | | Not Applied For Limited Production/Marketing Patent Status Development Stage : Technical Category: Direct Solar Recv by NBS : 02/08/79 Recom. by NBS : 10/25/79

Summary: Inventor is in commercial production. Over 6000 installations, costing \$30 million, have been made.

DOE No: 0122 DOE Coord: J. AELLEN

Title: Lean Limit Controller

Description: A device to apply adaptive control to air-fuel metering in internal combustion engines.

Inventor: Ervin Leshner State : NJ Contact: Fuel Injection Development Cor

256 South Van Pelt Philadelphia PA 19103 215-735-8704

Status: Complete Status Date: 09/24/80 OERI No.: 004035

Patent Status : Patent # - 4015572 Development Stage : Prototype Test Technical Category: Combustion Engines & Components

Recv by NBS : 01/12/78 Recom. by NBS : 11/23/79 Award Date : 09/24/80 Award Amount: \$ 99,500 Grant No: FG01-80CS15022 Contract Period: 09/24/80 - 12/24/81

Summary: An grant of \$99,500 was awarded to design and test a lean limit control device for an internal combustion engine. Device is workable but engineering estimates show it will not be cost effective.

DOE No: 0123 DOE Coord: G. K. ELLIS Title: Comminution of Ores by a Low-Energy Process Heating with microwaves to differentially expand and fracture the sulphur containing elements of ore and porphory rock, intended as a preliminary stage in the processing of ore before the grinding Description: stage. Contact: J. Paul Pemsler, President Castle Technology Corp. Inventor: J State : MA J Paul Pemsler P. O. Box #403 Lexington MA 02133 617-861-1274 Status: Complete Status Date: 11/25/81 OERI No.: 004573 Disclosure Document Program Laboratory Test Patent Status Development Stage : Technical Category: Industrial Processes Recv by NBS : 11/06/78 Recom. by NBS : 11/29/79 Award Date : 09/15/80 Contract Period: 09/15/80 Award Amount: \$ 90,394 Grant No: FG01-80CS15020 - 11/25/81 A grant of \$90,394 was awarded to explore the technical feasibility and determine the energy input for the process. The energy requirements to accomplish any practical degree of fracturing were found to be beyond the range of equipment that was available for this project. Summary: DOE No: 0124 DOE Coord: J. AELLEN Title: Solar Collector This solar collector is a two foot square module constructed entirely of a non-porous ceramic which has been fired at high Description: temperatures so that it is vitrified. Inventor: Charlton Sadler Contact: Charlton Sadler State FL : OERI No.: 004352 Status: No DOE Support Status Date: 06/02/82 Patent # - 4170983 and others Patent Status Development Stage : Working Model Technical Category: Direct Solar : 08/30/78 : 11/30/79 Recv by NBS Recom. by NBS

Summary: Unable to agree with the inventor upon an acceptable statement of work.

- DOE No: 0125 DOE Coord: G. K. ELLIS
- Title: The Turbulator Burner System

Description: Invention is a stirred heat exchanger (SHE) consisting of a heat exchanger with an annular cross section surrounding a region where the higher temperature fluid flows axially. Blades attached to an axial shaft stir the fluid at the surface of convective heat transfer. Offers possibility of enhanced heat transfer using dirty gases.

Inventor: Frank W Bailey State : NJ Contact: Frank W Bailey P.O. Box #94 Fourth Avenue Haskell NJ 07420

Status: Complete

Status Date: 09/30/81 OERI No

OERI No.: 000707

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Buildings, Structures & Components

Recv by NBS : 02/11/76 Recom. by NBS : 12/31/79 Award Date : 09/11/80 Award Amount: \$ 75,000 Grant No: FG01-81CS15016 Contract Period: 09/11/80 - 09/14/81

Summary: A grant of \$75,000 was awarded to design, build, test, and evaluate both an externally and an internally stirred heat exchanger.

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- DOE No: 0126 DOE Coord: J. AELLEN
- Title: Vaclaim
- Description: A system for use in metal casting foundries. Reclaims heat from metal castings and energy from the binder in no-bake molds. Eliminates smoke and fumes from the foundry.

Inventor: Karl D Scheffer State : NY Contact: Karl D Scheffer 121 Governor Drive Scotia NY 12302 518-399-0016

Status: Complete Status Date: 04/01/81 OERI No.: 004970

Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 03/19/79 Recom. by NBS : 12/31/79 Award Date : 04/01/81 Award Amount: \$ 97,734 Grant No: FG01-81CS15036 Contract Period: 04/01/81 - 06/30/83

Summary: A grant of \$97,734 was awarded for fabrication and testing heat recovery in vacuum metal casting process using no-bake molds. Inventor seeks license arrangements.

DOE No: 0127 DOE Coord: D. G. MELLO Title: Process and Apparatus to Produce Crude Oil from Tar Sands Two-vessel, fluidized bed system connected by heat pipes to transfer heat between the upper pyrolizer vessel and the lower combustor vessel in which char residue is burned. Clean sand comes out in the tailings and a usable grade of synthetic crude Description: oil out the overhead. Inventor: J D Seader Contact: UT J D Seader State : Merrill Engineering Building University of Utah Sale Lake City UT 84112 801-581-6348 Status: Complete Status Date: 09/16/84 OERI No.: 005003 Patent Status : Patent # -Development Stage : Laboratory T Technical Category: Fossil Fuels Laboratory Test Recv by NBS Recom. by NBS Award Date : 03/26/79 : 12/31/79 : 09/16/82 Award Amount: \$ 49,949 Grant No: FG01-82CE15136 Contract Period: 09/16/82 - 09/30/83 A 12-month grant of \$49,949 was awarded to the University of Utah to design, construct, and operate a device for the purpose of producing crude oil from tar sands. Goals to prove the design, optimize the variables (including the product mix), and to prove Summary: the concept have been achieved. \*\*\*\*\*\* DOE No: 0128 DOE Coord: D. G. MELLO Title: Continuous Distillation Apparatus and Method New design for distilling column where the rectifying and stripping sections are side by side, and heat pipes transfer heat Description: from the rectifying to the stripping section. Inventor: J D Seader Contact: J D Seader UT State Merrill Engineering Building University of Utah Salt Lake City UT 84112 801-581-6348 Status Date: 04/02/85 OERI No.: 005004 Status: Complete Patent Applied For Concept\_Development Patent Status : Development Stage : Technical Category: Fossil Fuels Recv by NBS Recom. by NBS : 03/26/79 Recom. by NBS : 12/31/79 Award Date : 09/16/82 Contract Period: 09/16/82 Award Amount: \$ 49,652 Grant No: FG01-82CE15138 - 09/30/83 A 12-month grant of \$49,652 was awarded to the University of Utah to design, construct, and operate a model distillation apparatus to simulate the rectifying and stripping sections of a proposed continuous distillation apparatus. Summary:

DOE No: 0129 DOE Coord: J. AELLEN

Title: Super U System - Snap Strap

Description: Super U-Snap strap insulation system which is an innovative application technique.

Inventor: James E Kessler State : MO Contact: James E Kessler 9913 Walnut Drive, #201 Kansas City MO 64114

Status: CompleteStatus Date: 11/28/80OERI No.: 004007Patent Status :Patent # - 4069636Development Stage :Prototype DevelopmentTechnical Category:Buildings, Structures & Components

Recv by NBS : 05/24/78 Recom. by NBS : 01/31/80 Award Date : 11/28/80 Award Amount: \$ 84,642 Grant No: FG01-81CS15209 Contract Period: 11/28/80 - 11/28/81

Summary: A grant of \$84,642 was awarded to test market the Super U System. The project has created ten jobs, and sales have increased 100% (to \$300,000). Product is available for franchise.

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DOE No: 0130 DOE Coord: J. AELLEN

Title: Furnace Input Capacity Trimming Switch

Description: A simple inexpensive device for gas and oil furnaces to reduce the flue gas heat loss. During morning startup, when the room thermostat is calling for heat, the device will cycle the furnace on and off to minimize flue gas heat loss.

Inventor: Arnold R Post Contact: State : MD Arnold R Post

Status: No DOE Support Status Date: / / OERI No.: 004389

Patent Status : Disclosure Document Program Development Stage : Laboratory Test Technical Category: Buildings, Structures & Components

Recv by NBS : 09/11/78 Recom. by NBS : 02/26/80

Summary: Project terminated because inventor failed to respond. After repeated requests, inventor was finally informed that he had until August 30, 1981 to submit a preliminary proposal or his invention would no longer be considered for DOE support. Inventor failed to respond - project terminated. DOE No: 0131 DOE Coord: J. AELLEN

Title: Valve Deactuator for Internal Combustion Engines

Description: A retrofit device that can provide variable displacement operation on existing gasoline engines by one cylinder at a time deactuating.

Inventor: Edgar R Jordon State : MI

Contact: N. John Beck Fuel Injection Development Co 5141 Santa Fe Street San Diego CA 92109 619-270-6760

Status: Complete Status Date: 09/25/80 OERI No.: 005110

Patent Status : Patent # - 4114588 Development Stage : Prototype Development Technical Category: Combustion Engines & Components

Recv by NBS :	05/01/79		
Recom. by NBS :	02/29/80		
Award Date :	09/25/80	Award Amount: \$ 65,972 (	Grant No: FG01-80CS15023
Contract Period:	09/25/80	- 06/25/82	

Summary: A grant of \$65,972 was awarded to develop and test a valve deactivator for internal combustion engines. The invention is available for sale or lease.

- DOE No: 0132 DOE Coord: D. G. MELLO
- Title: Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material
- Description: A system for mechanically pelletizing ferrous and non-ferrous metals and some plastics, grading according to size, and then separating according to density by conventional gravity techniques.

Inventor: Michael Knezevich State : IN Contact: Michael Knezevich

Status: No DOE Support Status Date: / / OERI No.: 003045

Patent Status : Patent # - 4119453 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 11/22/77 Recom. by NBS : 03/25/80

Summary: Other financial commitments prevent inventor from proceeding.

DOE No: 0133 DOE Coord: D. G. MELLO AUTOTHERM Car Comfort System Title: An auxiliary coolant circulator for an automobile which will provide heat to the vehicle operator for a period of time without Description: requiring the engine to idle. Inventor: F J Perhats Contact: James V Enright State IL Autotherm, Inc. 314 East Main Street P.O. Box #333 Barrington 312-381-6366 IL 60010 Status: Complete Status Date: 06/19/83 OERI No.: 004641 Patent Applied For Limited Production/Marketing Patent Status Development Stage : Technical Category: Transportation Systems, Vehicles & Components Recv by NBS : 07/27/78 Recom. by NBS : 03/26/80 Award Date : 06/19/81 Contract Period: 06/19/81 Award Amount: \$ 71,034 Grant No: FG01-81CS15050 - 06/19/83 A 24-month grant of \$71,034 was awarded to perform the necessary research and development to ready the invention for the marketplace. A component, the pump, is on the market with sales of \$36,000. An additional \$300,000 in sales, supporting a 5-man operation, has come from Europe and Canada. Product is available for wholesale distribution. To date the company has sold 10K units at \$160 each, altogether saving 0.625 trillion Btu/Yr. They expect to sell 5-10K units/Yr. for the next 5 years. Summary: DOE No: 0134 DOE Coord: D. G. MELLO Title: Expanded Polystyrene Bead Insulation System A means for retro-insulating housing walls, utilizing expanded polystyrene bead insulation coated with a flame-retardant Description: adhesive and applied with a unique blower-mixer nozzle. Inventor: John C Rupert Contact: State MN John C Rupert 1511 Grantham Street Saint Paul MN 55108 612-645-0414 Status: Complete OERI No.: 005239 Status Date: 01/02/84 Patent Applied For Limited Production/Marketing Patent Status Development Stage : Technical Category: Buildings, Structures & Components Recv by NBS : 05/30/79 Recom. by NBS : 03/31/80 Award Date : 09/26/80 Award Amount: \$ 80,844 Grant No: FG01-80CS15027 Contract Period: 09/26/80 - 12/31/82 A grant of \$80,844 was awarded to select an adhesive/flame retardant, test it at an independent laboratory, develop the blower system, develop a business plan, and demonstrate the technology. A final report is due. A first commercial sale grossed \$14,000, with total residential sales grossing \$100,000. Firm employs three individuals. Summary:

DOE No: 0135	DOE Coord: D. G. MELLO	C		
Title:	Point Focus Parabolic Solar Colle	ector		
Description:	It is a lightweight parabolic so prestressed structural members rigidity at a low cost.	olar collector design which uses and cables to achieve high		
Inventor: M H State : CA	Hossein Khorsand	Contact: M Hossein Khorsand 33042 Commodore Court San Juan Capistrano CA 92675		
Status: Comple	ete Status Date: 06/2	22/84 OERI No.: 005216		
Patent Status : Not Applied For Development Stage : Working Model Technical Category: Direct Solar				
Recv by NBS : 05/29/79 Recom. by NBS : 04/30/80 Award Date : 06/22/82 Award Amount: \$ 97,892 Grant No: FG01-82CE15088 Contract Period: 06/22/82 - 06/22/84				
Summary:	A 24-month grant of \$97,892 wa analyze a prototype point focus o	s awarded to design, build and collector.		
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DOE No: 0136	DOE Coord: J. AELLEN			
Title:	Windamper			
Description:	Wind damper for high voltage prevent galloping in wind and ice	electric transmission line to e storms		
Inventor: All State : MA	bert S Richardson, Jr.	Contact: Albert S Richardson, Jr. 83 Second Avenue Burlington MA 01803 617-862-7200		
Status: Complete Status Date: 09/01/82 OERI No.: 003885				
Patent Status : Patent # - 3440328 Development Stage : Limited Production/Marketing Technical Category: Miscellaneous				
Recv by NBS : 04/25/78 Recom. by NBS : 05/08/80 Award Date : 09/01/82 Award Amount: \$ 76,000 Grant No: FG01-82CE15102 Contract Period: 09/01/82 - 08/31/83				
Summary: A 12-month grant of \$76,000 was awarded to extend the analysis of the windamper antigallop merits from single conductor to bundled conductor applications. To date, a total of 1400 units has been installed with a total market value of \$130,000. The invention is available for licensing, both domestic and foreign.				

DOE No: 0137 DOE Coord: J. AELLEN

Title: A Portable Pollution Free Automobile Incinerator

Description: Portable automobile incinerator

Inventor: H Roy Weber State : HI

Contact: H Roy Weber Box #336 Kailua HI 96734 808-262-6548

Status: Complete

Status Date: 06/30/86 01

OERI No.: 005130

Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 05/17/79 Recom. by NBS : 05/08/80 Award Date : 06/20/81 Award Amount: \$ 99,408 Grant No: FG01-81CS15044 Contract Period: 06/20/81 - 09/30/82

Summary: A 15-month grant of \$99,408 was awarded to fabricate, construct and test, an incinerator to prove the invention is a viable method of reducing scrap cars into satisfactory condition for recycling into the iron and steel industry. The company filed bankruptcy before the grant was completed.

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DOE No: 0138 DOE Coord: J. AELLEN

Title: Phantom Tube

Description: Phantom tube is a non light emitting, low energy device to be paired with a fluorescent tube in rapid or instant start fixtures. Device completes the electrical circuit to allow fixtures to operate on fewer lamps than original design specified, thus reducing electric power consumption. Product lifetime is virtually unlimited.

Inventor: Gerald R Seeman Contact: State : CA Bernard Joseph Margowsky

Status: No DOE Support Status Date: 12/31/81 OERI No.: 001994

Patent Status : Patent # - 3956665 Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 03/28/77 Recom. by NBS : 05/28/80

Summary: No appropriate DOE support can be identified. Product supports 5 employees and is on the market. The relatively slow sales of 1.5 million units/year appear adequate to support any needed market research the company might wish to initiate. DOE No: 0139 DOE Coord: D. G. MELLO

Title: Transformer With Heat Dissipator

Description: An improved method for cooling dry-type transformers, thereby increasing their efficiency without increasing their weight and cost.

Inventor: Louis L Marton State : CA Contact: Louis L Marton

Status: No DOE Support Status Date: / / OERI No.: 003487

Patent Status : Patent # - 3659239 and others Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS : 01/16/78 Recom. by NBS : 05/29/80

Summary: Inventor does not seek grant money but wishes us to exert legislative influence to require more efficient transformers in general. It does not appear that this service can be provided.

DOE No: 0140 DOE Coord: D. G. MELLO

Title: Counter Flow Dual Tube Heat Exchanger

Description: It is a simple plastic heat exchanger to preheat ventilating air for poultry or livestock barns.

Inventor: W E Mattson State : MN Contact: Tony Wilhelm Wilhelm Engineering Company 707 Second Street, West Ashland WI 54806 715-682-8175

Status: Complete

Status Date: 07/31/84 0ERI No.: 003830

Patent Status : Not Applied For Development Stage : Concept Definition Technical Category: Industrial Processes

Recv by NBS : 04/06/78 Recom. by NBS : 06/20/80 Award Date : 09/22/82 Award Amount: \$ 49,758 Grant No: FG01-82CE15148 Contract Period: 09/22/82 - 07/22/83

Summary: A 10-month grant of \$49,758 was awarded to design, fabricate, instrument and operate, a prototype dual tube hear exchanger. The invention is available for licensing. It has proved to be cost effective.

- DOE No: 0141 DOE Coord: D. G. MELLO
- Title: New Hydrostatic Transmission

Description: A continuously variable hydraulic positive displacement transmission with lockup, overdrive, and regenerative braking for automotive and other vehicular uses.

Inventor: Samuel Shiber State : IL

Contact:						
Samuel Shiber						
P. O. Box	#371					
Mundelein		60060				

Status: CompleteStatus Date: 07/09/81OERI No.: 003673Patent Status:Patent Applied ForDevelopment Stage:Concept DevelopmentTechnical Category:Transportation Systems, Vehicles & Components

Recv by NBS : 03/06/78 Recom. by NBS : 06/23/80 Award Date : 07/09/81 Award Amount: \$ 95,000 Grant No: FG01-81CS15064 Contract Period: 07/09/81 - 07/09/83

Summary: A grant of \$95,000 was awarded to design, build and test a Volkswagen Sirocco with a prototype hydrostatic transmission installed. Project was funded with 90 percent inventor-originated funds and 10 percent DOE funds. Inventor's share was 50 percent domestic and 50 percent foreign funded. Transmission is now available for licensing.

DOE No: 0142 DOE Coord: J. AELLEN

Title: Process for Heatless Production of Hollow Items

Description: A metal casting method for hollow parts

Inventor: Anatol Michelson State : FL Contact: Anatol Michelson 3235 Pine Valley Drive Sarasota FL 33579 815-388-1252

Status: Complete

Status Date: 07/01/81 OERI No.: 005822

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 09/24/79 Recom. by NBS : 06/26/80 Award Date : 06/30/81 Award Amount: \$108,920 Grant No: FG01-81CS15055 Contract Period: 06/30/81 - 12/31/82

Summary: An 18-month grant of \$108,920 was awarded to construct and test a working model to demonstrate the heatless production of hollow casting. The work has been completed. The invention has potential for greatly increasing productivity of the casting process. Inventor interested in licensing. DOE No: 0143 DOE Coord: J. AELLEN

Title: 0il Well Pump Jack

Description: A new design for a pump that would replace the conventional beam pumps in pumping oil wells. It utilizes longer strokes than generally used by the beam pumps and has slower rates of acceleration/deceleration, reducing the power required to overcome the inertia of the sucker rods and other moving parts.

Inventor: Robert A Clay State : CA Contact: Amar Amancharla Alphatech Corporation Houston TX 77052 713-530-9060

Status: Award Status Date: 07/31/84 OERI No.: 005888

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 10/19/79 Recom. by NBS : 06/27/80 Award Date : // Award Amount: \$ 52,500 Grant No: FG01-84CE15188 Contract Period: // - //

Summary: A phase one grant of \$52,500 was made to perform engineering designs of the pump jack. Phase two will be funded upon availability of funds.

- DOE No: 0144 DOE Coord: P. M. HAYES
- Title: SpaCirc Space Circulation Fan
- Description: The invention is a different type of ceiling fan designed for improved circulation and mixing of air throughout an air conditioned room. The increased air velocity allows the perception of comfort at higher temperatures and humidities.

Inventor: Robert C Saunders, Junior Contact: State : MD Robert C Saunders, Junior

Status: No DOE Support Status Date: / / OERI No.: 005852

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : 10/09/79 Recom. by NBS : 07/23/80

Summary: Unable to reach agreement on work to be done. Inventor's interest has waned, due to several competitors now in the field and expected high costs of production of the Spacirc. No further action is anticipated.

DOE No:	0145	DOE	Coord:	J.	AELLEN

Title: Solar Conversion by Concentration Cells with Hydrides

Description: The invention is a hydrogen concentration cell which converts solar energy to electricity by using heat to generate the gas pressure to drive the cell. (It is an electrochemical heat engine with sunlight furnishing the heat.)

Inventor: Robert E Salomon State : PA

Contact:		
Robert E Salo	mon	
Chemistry Dep	ertme	ent
Temple Univer	sity	
Philadelphia	PA	19122
215-787-7125		

Status: Complete

Status Date: 07/01/81 OERI Nc.: 006213

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Direct Solar

Recv by NBS : 12/26/79 Recom. by NBS : 07/29/80 Award Date : 07/01/81 Award Amount: \$ 67,868 Grant No: FG01-81CS15043 Contract Period: 07/01/81 - 09/30/83

Summary: A 17-month grant of \$67,868 was awarded to build and test a laboratory model of the inventor's system, to determine efficiency and feasibility. Inventor requested an extension through 8/83 to allow summer school student assistance to continue. Inventor interested in industry financial support, and eventual licensing. This project has been completed.

DOE No: 0146 DOE Coord: J. AELLEN

Title: Line Integral Method of Magneto-Electric Exploration

Description: A method of exploring for gas and oil deposits by plotting the intensity and polarities of local perturbations in the earth's magnetic field. These perturbations are caused by naturally occuring electrotelluric (ET) currents associated with the oil and gas.

Inventor: Sylvain J Pirson State : TX

Contact: Ronald M Hertzfeld 5310 Harvest Hill Suite #285 Dallas TX 75230 214-386-9311

Status: Complete

Technical Category:

Status Date: 08/15/83 OERI No.: 004794

Patent Status : Patent # - 3943436 Development Stage : Limited Production/Marketing

Fossil Fuels

Recv by NBS : 01/25/79 Recom. by NBS : 07/30/80 Award Date : 08/13/82 Award Amount: \$ 74,689 Grant No: FG01-82CE15127 Contract Period: 08/13/82 - 08/15/83

Summary: A grant of \$74,689 was awarded to make a priori predictions on at least 10 locations where wildcat wells are planned. Results show not only accuracy of prediction of dry/wet holes, but also predicted depth of drilling required. The inventor has sold about ten projects based on these results. Project has been completed. DOE No: 0147 DOE Coord: J. AELLEN

Title: Railroad Switch Heater

Description: The invention is an electric resistance heater for attachment to railroad switches. The heater can be activated to prevent ice and snow from clogging the area where the railroad switch is closed or opened.

Inventor: Henry Keep, Junior State : CT Status: No DOE Support Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 09/04/79 Recom. by NBS : 07/31/80

Summary: Inventor advised that DOE would decline funding because the proposed testing of a commercially available device was outside this program's area of interest. Quantities of the device have been sold to Amtrak.

- DOE No: 0148 DOE Coord: J. AELLEN
- Title: Reclaimation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes
- Description: The invention is a process for steel mills to use in order to recover the energy value of the oil and mill scale from the mill scale produced in rolling mill operations.
- Inventor: Leonard A Duval State : OH

Contact: Leonard A Duval Colerapa Industries, Inc Box #172 Aurora OH 44202 216-562-9822

Status: Complete Status Date: 03/10/82 OERI No.: 005418

Patent Status : Patent # - 3844943 Development Stage : Working Model Technical Category: Industrial Processes

Recv by NBS :	08/22/79		
Recom. by NBS :	08/15/80		
Award Date :	03/10/82	Award Amount: \$ 99,000	Grant No: FG01-82CE15084
Contract Period:	03/10/82	- 09/09/82	

Summary: In FY 82, a 6-month grant of \$99,000 was awarded to test the Duval millscale deoiling process, using Duval's pilot plant with a design capacity of 2 tons/hr of oily millscale. In FY 84 the inventor reported to NBS that he had achieved commercial success with the first plant being built in Aurora, Ohio. Others were planned for Chicago, Detroit, Pittsburgh and Hamilton, Ontario. An export license was signed with SPEICHIM in Paris that covers Europe, China and the USSR. Negotiations were underway with C. Itoh of Tokyo. Each plant will require \$5 million capital and 35 employees.

- DOE No: 0149 DOE Coord: P. M. HAYES
- Title: SCOTCH (Simple, Cost-Effective, Optimum Temperature Control for Housing)
- Description: A system to retrofit residential and other steam heating systems to allow zone heating.

Inventor: Ogden H Hammond State : MA

Monument Beach MA 02553 617-757-8400

Contact: Ogden H Hammond

Status: Complete Status Date: 07/28/82 OERI No.: 005610

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : Recom. by NBS :	08/06/79		
Award Date : Contract Period:	01/26/81	Award Amount: \$ 91,962 - 07/28/82	Grant No: FG01-81CS15038

Summary: A grant of \$91,962 was awarded to design, build and test prototype installations in several residences in the Boston area where steam heated homes are numerous and winters severe. Grant is complete, the company made some sales, and is licensing the control system, which uses house wiring to convey signals.

DOE No: 0150 DOE Coord: D. G. MELLO

- Title: The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.
- Description: The invention involves the use of solid waste material from a lubricating oil and/or vegetable oil refining operation being used as a raw material for a Portland cement plant.

Inventor: Edward W Midlam State : LA Contact: Edward W Midlam 2300 21st Street Lake Charles LA 70601 318-436-6656

Status: Complete

Status Date: 08/06/81 OERI No.: 007141

Patent Status : Disclosure Document Program Development Stage : Production Engineering Technical Category: Industrial Processes

Recv by NBS : 06/16/80 Recom. by NBS : 09/30/80 Award Date : 08/06/81 Award Amount: \$ 64,200 Grant No: FG01-81CS15073 Contract Period: 08/06/81 - 06/30/83

Summary: A grant of \$64,200 was awarded to investigate one or more specific marketing opportunities. Unfavorable market conditions prevented inventor from pursuing the project further.

DOE No: 0151 DOE Coord: J. AELLEN Title: Film Type Storm Window A plastic film type of storm window that is tensioned at the corners and sealed on the perimeter to produce a wrinkle free and Description: air tight membrane for window insulation. Yao Tzu Li Inventor: Contact: State MA SETRA Systems, Inc. Status: No DOE Support Status Date: OERI No.: 005494 / / Patent # - 4210191 Patent Status Development Stage : Concept Development Technical Category: Buildings, Structures & Components Recv by NBS : 07/30/79 Recom. by NBS : 09/30/80

Summary: Inventor sold Product.

DOE No: 0152 DOE Coord: D. G. MELLO

Title: Vehicle Exhaust Gas Warm-up System

Description: An accelerated warm-up system for an internal combustion engine which uses the hot exhaust gases to heat the cooling water. Engine cooling water is ducted to a heat exchanger/muffler in the exhaust system during the warm-up period.

Inventor: David S Majkrza State : ND	ak Contact: David S Majkrzak 345 Cherry Court West Fargo ND 58078 701-282-5593
Status: Complete	Status Date: 08/06/83 OERI No.: 006439
Patent Status : Not A Development Stage : Proto Technical Category: Trans	Applied For Otype Development Sportation Systems, Vehicles & Components
Recv by NBS : 02/12/80 Recom. by NBS : 09/30/80 Award Date : 08/06/81 Contract Period: 08/06/81	Award Amount: \$ 77,500 Grant No: FG01-81CS15063 - 08/06/83
Summary: A grant of	\$77,500 was awarded to design, build and test

ummary: A grant of \$77,500 was awarded to design, build and test a prototype model of the vehicle gas warm-up system. ERIP assistance is complete. Other innovations in this area may have made this invention obsolete. DOE No: 0153 DOE Coord: D. G. MELLO

Title: A New Equipment Design Concept for Storage of Hot Foods

Description: A series of food handling systems designed to reduce heat loss/gain during storage or transport. The basic concept is that of including a heat storage material with the food enclosed in an insulated container to allow the food to stay warm/cool longer.

Inventor: Carl E Pearl State : CA Contact: Carl E Pearl Contact: Carl E Pearl

Status: No DOE Support Status Date: 02/01/83 OERI No.: 005553

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Miscellaneous

Recv by NBS : 08/10/79 Recom. by NBS : 09/30/80

Summary: The inventor has decided to suspend effort on this project in favor of another, more promising invention not supported by ERIP.

DOE No: 0154 DOE Coord: J. AELLEN

Title: Rotating Horsehead for Pumping Units

Description: An ellipsoidal head for an oil well pump beam unit used in sucker-rod pumping. The ellipsoidal head increases the strokes of the sucker-rod over that of the conventional "horse" head and thus causes an increase in flow.

Inventor: Forrest E Chancellor Contact: State : CA Forrest E Chancellor

Status: No DOE Support Status Date: 06/30/86 OERI No.: 005750

Patent Status : Patent # - 4121471 Development Stage : Limited Production/Marketing Technical Category: Fossil Fuels

Recv by NBS : 09/07/79 Recom. by NBS : 10/29/80

Summary: Needs licensing and marketing assistance.

DOE No: 0155	DOE Coord: J. AELLEN
Title:	Slip Mining
Description:	A method of surface mining coal that involves skidding a series of overburden blocks off the coal. The blocks are buoyantly supported, stabilized and displaced by a dense mud slurry. Slabs of coal uncovered by block movement are floated to the surface of the dense mud and recovered from the surface of the mud filled pit.
Inventor: Ja State : MA	
Status: Award	Status Date: 07/10/86 OERI No.: 007292
Patent Status Development S Technical Cat	: Patent # - 4059309 and others tage : Concept Development egory: Fossil Fuels
Recv by NBS Recom. by NBS Award Date Contract Peri	
Summary:	A grant of \$109,385 was awarded in three phases to build and field test a prototype slurry trenching machine.
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DOE No: 0156	DOE Coord: J. AELLEN
Title:	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.
Description:	A new application of electrical conduction for the continuous heat treatment of rolled steel strip that uses less energy than conventional methods.
Inventor: Ja State : FL	
Status: Compl	ete Status Date: 07/23/81 OERI No.: 005375
Patent Status Development S Technical Cat	: Patent # - 4154432 and others tage : Limited Production/Marketing egory: Industrial Processes
Recv by NBS Recom. by NBS Award Date Contract Peri	: 07/03/79 : 10/31/80 : 07/23/81 Award Amount: \$ 99,485 Grant No: FG01-81CS15058 od: 07/23/81 - 07/23/82
Summary:	A 12-month grant of \$99,485 was awarded to design a plant for Southwest Pipe Company, prepare a design manual, and to collect data on energy savings. Two installations are now running: one in Texas and one in Alabama. Negotiations underway for three more in Indian Steel Mills.

DOE No: 0157 DOE Coord: J. AELLEN Magnaseal Method and Means for Sealing Steel Ingot Casting Molds Title: to Stools A means of sealing steel ingot casting molds to stools by use of fine metallic particles and an electromagnetic field to emplace Description: the particles. Inventor: Albert L McQuillen, Jr Contact: Albert L McQuillen, Jr 1701 Partridge Run Road Pittsburgh PA 15241 412-745-7200 State PA Status: Complete Status Date: 06/18/81 OERI No.: 005968 Patent # - 3837393 Patent Status : Development Stage : Prototype Test Technical Category: Industrial Processes Recv by NBS : 11/01/79 Recom. by NBS : 10/31/80 Award Date : 06/18/81 Contract Period: 06/18/81 Award Amount: \$ 91,202 Grant No: FG01-81CS15051 - 12/31/82 A grant of \$91,202 was awarded to build and install a Magnaseal system in the U. S. Steel plant in Lorrain, Ohio; and to demonstrate and test it. Summary: DOE No: 0158 DOE Coord: G. K. ELLIS Title: Energy Conservative Electric Cable System A low-loss shielded power cable using a naturally cooled sodium conductor and a pressurized gas insulator. Description: Contact: Inventor: Paul F Pugh Paul F Pugh 4082 Sequoyah Road Oakland CA 94605 State : CA 415-638-5015 Status: Complete Status Date: 12/15/85 OERI No.: 002049 Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Miscellaneous Recv by NBS : 04/13/77 Recom. by NBS : 10/31/80 Award Date : 09/16/81 Contract Period: 09/16/81 Award Amount: \$140,000 Grant No: FG01-81CS15074 - 12/15/85 A grant of \$140,000 was awarded and has been completed, to construct and lay cable from the mainland to Alcatraz Island in San Francisco Bay. Inventor also built and conducted lab tests on high voltage cable for subsequent evaluation by independent third party. Cable has been approved under the National Electric Code. Inventor negotiating with venture capital sources to raise \$4.5 million to build new plant and set up national distribution petwork Summary: network.

DOE No: 0159 DOE Coord: J. AELLEN

Title: Non-Tubing Type Lift Device, Described as the NTT Rabbit

Description: A gas powered lift device designed to collect oil from low producing (or non-producing) wells. It is a piston device which is lowered inside the oil well casing into the liquid. A pressure operated valve closes, the gas pressure below increases, and the device rises lifting the fluid trapped above.

Inventor: William D Gramling State : MD

Contact: William D Gramling 5144 Newport Avenue Chevy Chase MD 20016 301-686-4125

Status: Complete Status Date: 07/24/81 OERI Nc.: 005380

Patent Status : Patent # - 4113010 and others Development Stage : Prototype Development Technical Category: Fossil Fuels

Recv by NBS : 05/07/79 Recom. by NBS : 11/25/80 Award Date : 07/24/81 Award Amount: \$ 71,298 Grant No: FG01-81CS15062 Contract Period: 07/24/81 - 04/24/83

Summary: A grant of \$71,298 was awarded to modify, design, install and test the device in several gas/oil wells in Glenville, West Virginia and to investigate and test the feasibility of installing the devices in other areas. After several modifications the unit was tested and operates successfully. However, there appears to be no market for this invention.

DOE No: 0160 DOE Coord: D. G. MELLO

Title: High Efficiency Absorption Refrigeration Cycle

Description: An improved absorption refrigeration cycle employing a novel combination of absorbent and refrigerant fluids. Both a simple stage and two-stage cycle system are presented.

Inventor: Leon Lazare State : CT Contact: Leon Lazare c/o The Puraq Company lll Hanna's Road Stamford CT 06903 203-322-4125

Status: Complete Status Date: 04/30/82 OERI No.: 006900

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

Recv by NBS : 05/22/80 Recom. by NBS : 11/25/80 Award Date : 04/30/81 Award Amount: \$ 87,537 Grant No: FG01-81CS15046 Contract Period: 04/30/81 - 04/30/82

Summary: A grant of \$87,537 was awarded for a plan leading to the installation of the system in four chemical plants to demonstrate the technical and economic feasibility of the process when applied to four different, but representative chemical lines. The grant is complete. Best market for the technology was found to be in ammonia plants. Sales have not yet been closed. DOE No: 0161 DOE Coord: J. AELLEN

Title: duPont Connell Energy Coal Gasification Process

Description: A method of making low-to-medium Btu gas from coal is described. A key feature is control of retort heat fluxes.

Inventor: Anthony A duPont State : CA Contact: Anthony A duPont DuPont Aerospace Company, Inc 1111 East Wakeham, Suite J Santa Ana CA 92705 714-953-9380

Status: CompleteStatus Date: 06/30/86OERI No.: 000854Patent Status: Patent Applied For<br/>Development Stage : Working Model<br/>Technical Category: Fossil FuelsRecv by NBS: 03/31/76<br/>Recom. by NBSRecom. by NBS: 11/28/80<br/>Award DateAward Date: 08/05/81<br/>02/05/83

Summary: A grant of \$98,074 was awarded to design, build, and test a laboratory scale model of the inventor's concept.

DOE No: 0162 DOE Coord: G. K. ELLIS

Title: Tubular Pneumatic Conveyor Pipeline

Description: A pneumatic tubular conveyor pipeline for transporting dry granular materials such as coal, barite or cement over long distances. The pipeline has an outer impervious pipe and an inner porous pipe radially spaced.

Inventor: Lemuel Leslie Ply State : TX Contact: Lemuel Leslie Ply Ply International, Inc Box #899 Wimberly TX 78676 512-847-9347

Status: Complete

Status Date: 09/30/84 OERI No.: 006992

Patent Status : Patent # - 4116491 Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 05/23/80 Recom. by NBS : 11/28/80 Award Date : 09/30/82 Award Amount: \$ 44,480 Grant No: FG01-82CE15128 Contract Period: 09/30/82 - 09/30/84

Summary: A grant of \$44,480 was awarded to design, build, and test a prototype section of pipeline using several 10-foot sections of pipe. This project is complete.

- DOE No: 0163 DOE Coord: P. M. HAYES
- Title: Thermotropic Plastic Films

Description: A thermotropic plastic film which can be formulated to become opaque above a particular temperature. When sealed between two layers of glass it could serve as a window shade for greenhouses or other solar heated structures.

Inventor: Dennis D Howard State : PA

Contact: Dennis D Howard 200 West Grandview Boulevard Erie PA 16512 814-868-3611

Status: Complete Status Date: 07/13/82 OERI No.: 006831

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

Recv by NBS : Recom. by NBS :	05/15/80		
Recom. by NBS :	12/04/80		
Award Date :	07/09/81	Award Amount: \$ 99,093	Grant No: FG01-81CS15045
Contract Period:	07/09/81	- 07/13/82	Grant No: FG01-81CS15045

- Summary: A grant of \$99,093 was given to perform research and development leading to a practical design with special attention given to edge sealing and general weather proofing of the laminated panes. The grant is complete; double glass enclosures were found to be too costly. Inventor is using his own funds to develop an embossed plastic seal via small compartments of fluid separated by heat-sealed pattern. Company seeks joint venture and/or licensing.
- DOE No: 0164 DOE Coord: J. AELLEN
- Title: Elastomer Energy Recovery Elements and Vehicle Component Applications
- Description: A regenerative braking device, for a small urban automobile, that stores energy during downhill operation for additional acceleration and power when needed with a minimum of fuel consumption. Energy is mechanically stored by an elastomeric storage device.

Inventor: State :	John D Gill MD	Contact: John D Gill Elastomer Energy Recovery Inc 419 Fourth Street Annapolis MD 21403 301-263-5735
		301-203-3733

Status: CompleteStatus Date: 04/15/82OERI No.: 006433Patent Status:Disclosure Document ProgramDevelopment Stage:Concept DevelopmentTechnical Category:Transportation Systems, Vehicles & Components

Recv by NBS : 12/12/79 Recom. by NBS : 12/04/80 Award Date : 07/09/81 Award Amount: \$ 89,507 Grant No: FG01-81CS15054 Contract Period: 07/09/81 - 04/15/82

Summary: A grant of \$89,507 was awarded to design, build, and test a scale model to determine optimum design after which a full scale model will be built and tested. The grant is complete. Inventor now seeks \$100,000 private sector support to demonstrate proof of concept of a two-person, enclosed, three wheel moped using a small gasoline motor. Energy is stored in elastomer via pedals on downhill runs and upon deceleration.

- DOE No: 0165 DOE Coord: D. G. MELLO
- Title: Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen

Description: A new process for recovering hydrogen and elemental- sulfur from hydrogen sulfide using iodine slurry

Inventor: Wu-Chi Chen State : TX Contact: Wu-Chi Chen 859 Brittmore Road Houston TX 77079 713-461-6811

Status: CompleteStatus Date: 10/29/84OERI No.: 006985Patent Status: Patent # - 4066739Development Stage: Concept DevelopmentTechnical Category:Fossil FuelsRecv by NBS: 05/16/80Recom. by NBS: 12/29/80Award Date: 08/04/81Award Amount:\$ 70,000Grant No:FG01-81CS15065Contract Period:08/04/81

Summary: A grant of \$70,000 was awarded to investigate the feasibility of the process by performing laboratory and economic studies. Inventor is discussing licensing possibilities with private research corporations. The project is now complete.

- DOE No: 0166 DOE Coord: J. AELLEN
- Title: Borehole Angle Control

Description: A modified oil well drill bit which can correct the course of the borehole as the hole is being drilled. It selectively injects cuttings to one side of the drill bit to provide a wedging action between the bit and the borehole.

Inventor: State :	Robert F Evans TX	Contact: Robert F Evans Evergreen Drilling Research 12820 Montford Apartment #150 Dallas TX 75230 214-943-2181

Status: CompleteStatus Date: 11/26/85OERI No.: 004656

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 11/27/78 Recom. by NBS : 12/29/80 Award Date : 07/28/81 Award Amount: \$ 98,148 Grant No: FG01-81CS15067 Contract Period: 07/28/81 - 11/26/85

Summary: A grant of \$98,148 was awarded to design, fabricate and conduct field tests on the drill bits and control system.

DOE No: 0167 DOE Coord: J. AELLEN

Title: Vaned Pipe for Pipeline Transport of Solids

Description: A slurry pipeline with helical vanes to maintain a rotating motion in the slurry to hold the solids in suspension in the laminar flow range, thus increasing the range of flow rates at which solids can be transported without settling.

Inventor: Edward B Connors State : ID Contact: Edward B Connors 1337 Holman Pocatello ID 83201 208-237-6661

Status: Complete Status Date: 10/01/83 OERI No.: 006483

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 02/25/80 Recom. by NBS : 01/19/81 Award Date : 08/11/82 Award Amount: \$111,577 Grant No: FG01-82CE15083 Contract Period: 08/11/82 - 08/30/84

Summary: A grant of \$111,577 was awarded to design, build and test several configurations of the basic idea under various flow conditions with various slurry mixtures. The project was completed on October 1st, 1983.

- DOE No: 0168 DOE Coord: G. K. ELLIS
- Title: The Hot Water Saver

Description: Modifications to a residential hot water system so that hot water trapped in the pipes between the water-heater and the point of use is returned to the water heater thus reducing heat loss and water consumption.

Inventor: Spencer Kim Haws State : WA Contact: Spencer Kim Haws P. O. Box #315 Mesa WA 99343 509-265-4327

Status: CompleteStatus Date: 10/09/84OERI No.: 006783Patent Status:Patent Applied ForDevelopment Stage :Limited Production/MarketingTechnical Category:Buildings, Structures & Components

Recv by NBS : 04/07/80 Recom. by NBS : 01/28/81 Award Date : 09/30/82 Award Amount: \$ 90,000 Grant No: FG01-82CE15134 Contract Period: 09/30/82 - 09/29/83

Summary: A grant of \$90,000 was awarded to laboratory and field test the unit, and to document savings and find optimum application. The test results showed 17% of the energy used for water heating could be saved by using this invention. Mr. Haws sold his invention to Metlund Enterprises of Stockton, CA in exchange for royalties. Methlund Enterprises had sold about 400 units as of April, 1986. DOE No: 0169 DOE Coord: P. M. HAYES

Title: MIRAFOUNT

Description: A cattle waterer which is functional in the coldest climate without the use of an immersed electric or gas heater. It consists of a heavily insulated tank with a floating, insulated cover and a float valve assembly.

Inventor: Mervin W Martin State : MO Contact: Carter Thompson

Status: No DOE Support Status Date: 03/15/85 OERI No.: 006239

Patent Status : Patent # - 3745977 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 12/27/79 Recom. by NBS : 01/30/81

Summary: The inventor wanted support for a marketing study, which it is not DOE policy to provide.

DOE No: 0170 DOE Coord: J. AELLEN

Title: Fog System - Low Energy Freeze Protection for Agriculture

Description: A low energy-consuming agricultural freeze protection system using a non-polluting man-made water fog to cover crops and prevent heat loss and freeze damage. The fog system is designed to use significantly less energy than oil-burning agricultural heaters. The inventor has also developed instruments to increase quality of the clouds.

Inventor:Thomas R MeeContact:State:CAThomas R Mee

Status: No DOE Support Status Date: 07/09/86 OERI No.: 005622

Patent Status : Patent # - 4039144 and others Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 08/22/79 Recom. by NBS : 01/30/81

Summary: Inventor reports net income of \$400,000 in 1984 with gross sales of \$1.9 million. First three months of 1985 have yielded \$700,000 gross. Sales have doubled annually over the last three years. Firm now employs thirty individuals.

- DOE No: 0171 DOE Coord: P. M. HAYES
- Title: A Method of Preserving Fruits and Vegetables without Refrigeration

Description: A method for preserving fruits and vegetables without refrigeration by using controlled atmosphere packages to keep oxygen levels low and the water vapor and carbon dioxide levels at desired optimums.

Inventor: Karakian Bedrosian State : NJ

Contact: Karakian Bedrosian Sherwood Court Alpine NJ 07620 201-767-3260

Status: Complete Status Date: 10/31/82 OERI No.: 006950

Patent Status : Patent # - 4079152 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS :	04/28/80	
Recom. by NBS :		
Award Date :	08/25/81	Award Amount: \$ 97,300 Grant No: FG01-81CS15061
Contract Period:	08/25/81	- 10/31/82

Summary: A grant of \$97,300 was awarded to conduct laboratory studies and field trials of various package configurations suitable for shipment of tomatoes by truck from point of growth to point of consumption. Demonstrations were successful. Marketed under the trade name of "TomAHtoes", 751,000 25-pound boxes were shipped in 1987, with \$35 million in retail sales. With its potential for use with other fresh fruits and vegetables, this innovative packaging can provide significant national energy savings.

DOE No: 0172 DOE Coord: D. G. MELLO

Title: GEM Electrostatic Filtration System

Description: An electrostatic filter for removing suspended particles from fluids such as hydraulic fluids, liquid fuels, engine lubricants and waste oil.

	Edward A Griswold CA	Contact: Edward A Griswold Special Equipment Company 26022 Cape Drive, #G Laguna Niguel CA 92677 714-581-6730
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Status	:	Comp	lete
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Status Date: 09/29/82 OERI No.: 004255

Patent Status : Patent # - 3891528 and others Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 08/03/78 Recom. by NBS : 02/26/81 Award Date : 10/01/82 Award Amount: \$ 88,285 Grant No: FG01-83CE15139 Contract Period: 10/01/82 - 06/30/83

Summary: An 8-month grant of \$88,285 was awarded for demonstration of the GEM filtration system. The unit was designed and installed on several types of diesel engines under controlled conditions. Filtered material was analyzed. ERIP assistance is complete.

- DOE No: 0173 DOE Coord: J. AELLEN
- Thermal Ice Cap Title:

An insulating blanket to reduce refrigeration loads in ice skating rinks during periods of non-use, combined with an advanced method of applying and removing the 17,000 sq. ft of Description: thermal insulation.

Inventor: Bill Burley State : PA

Contact: Bill Burley Peterson Drive Johnstown PA 15905 814-288-1750

Status: Complete

Status Date: 08/10/81 OERI No.: 006277

Not Applied For Working Model Patent Status Development Stage : Technical Category: Buildings, Structures & Components

Recv by NBS : Recom. by NBS :	01/07/80	
Recom. by NBS :	02/26/81	
Award Date :	08/19/81	Award Amount: \$ 79,726 Grant No: FG01-81CS15066
Contract Period:	08/19/81	- 05/15/82

A grant of \$79,726 was awarded to build and test a prototype model of the thermal ice cap, and was successfully completed. Energy savings were experimentally determined to be almost exactly as predicted by NBS analysis. This experimental device is still in use on the Mall in Washington, DC. Inventor seeks opportunities to direct sales. Summary:

DOE No: 0174 DOE Coord: J. AELLEN

Title: Skate on Plastic Ice Skating System

A non-refrigerated plastic skating surface to replace energy Description: intensive ice skating surfaces.

E O Nathaniel Inventor: MO State

Status: No DOE Support

Contact: Gene Plattner

Status Date: 09/28/81 OERI No.: 006241

Patent Status Patent # - 4030729 Limited Production/Marketing Development Stage : Technical Category: Buildings, Structures & Components

Recv by NBS : 12/31/79 Recom. by NBS : 03/05/81

Invention coordinator and inventor agreed to scope of work for a grant. Prior funding by the Small Business Administration has led to sales of some units. Units were not a commercial success because of perceived "extra skating effort". Summary:

DOE No: 0175 DOE Coord: J. AELLEN

Title: A Low-Energy Carpet Backing System

Description: A low energy carpet backing system which uses a hot- melt thermoplastic coating. The hot-melt coating replaces the present latex adhesive coating which locks the tufts or stitches into the primary backing fabric.

Inventor: Den M Acres State : GA

Contact: W W Seward c/o DASH, Inc. 1303 Dug-Gap Road Dalton GA 30720 404-278-2556

Status: Complete

Status Date: 08/01/81 OERI No.: 006931

Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 05/05/80 Recom. by NBS : 03/26/81 Award Date : 08/01/81 Award Amount: \$ 79,173 Grant No: FG01-81CS15070 Contract Period: 08/01/81 - 01/31/83

Summary: A grant of \$79,173 was awarded and completed to refit a carpet backing machine with automatic control elements and test on a variety of carpet products. Grantee intends to market the product directly to carpet mills, and predicts an estimated 86% energy savings in manufacture of coated carpeting. Commercial viability of the technology was demonstrated. Inventor is in commercial production. He seeks venture capital assistance.

- DOE No: 0176 DOE Coord: J. AELLEN
- Title: Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces

Description: An automatically fired portable furnace for burning coal and agricultural waste (e.g. corn, wood waste, poultry manure) for use in drying grain and heating homes and buildings.

Inventor: John D. Finnegan Contact: State : MN Dale Flickinger

Status: No DOE Support Status Date: 06/30/86 OERI No.: 007428

Patent Status : Not Patentable Development Stage : Working Model Technical Category: Buildings, Structures & Components

Recv by NBS : 08/18/80 Recom. by NBS : 04/03/81

Summary: DOE found no basis for support.

DOE No: 0177 DOE Coord: D. G. MELLO

Title: The Solar I Option

Description: A solar heating system using commercially available collectors and components and a concrete floor slab as a heat storage device and heat exchanger.

Inventor: Robert John Starr State : VT Contact: Robert John Starr R.F.D. Sutton VT 05867 802-626-8045

Status: Complete Status Date: 08/15/84 OERI No.: 006040

Patent Status : Not Applied For Development Stage : Limited Production/Marketing Technical Category: Direct Solar

Recv by NBS : Recom. by NBS :	12/03/79		
Recom. by NBS :	05/0//81		
Award Date :	09/24/82	Award Amount: \$ 52,960	Grant No: FG01-82CE15140
Contract Period:	09/24/82	- 06/30/84	

Summary: A grant of \$52,960 was awarded to test the effectiveness of a previously installed system. The University of Massachusetts furnished instrumentation, data analysis and computer programs for future design analysis. Energy savings were essentially as predicted. Some sales have been made, but generally "solar" market is slow. This project has been completed.

- DOE No: 0178 DOE Coord: D. G. MELLO
- Title: Process and Apparatus for Producing Cellulated Vitreous Refractory Material
- Description: A process and apparatus to produce cellular vitreous refractory material in prescribed shapes lighter than conventional brick or tile and more impermeable. The material will have high structural strength and will be highly insulative and light weight.

Inventor: State :	John W North GA		c/o Sil P O Box	North th Company ica-North, Ltd. #838 ia AL 35674
Status: Co	mplete	Status Date:	07/23/84	OERI No.: 007726

Patent Status : Patent # - 4212635 and others Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 10/30/80 Recom. by NBS : 04/15/81 Award Date : 09/08/82 Award Amount: \$ 94,688 Grant No: FG01-82CE15117 Contract Period: 09/08/82 - 09/08/83

Summary: A 12-month grant of \$94,688 was awarded to design, build and operate a pilot plant for manufacture of cell glass building material. There appears to be no market for this product.

- DOE No: 0179 DOE Coord: G. K. ELLIS
- Title: Development and Commercialization of Low Cost, Non- Metallic, Solar Systems

Description: A solar hot water heating system consisting of a non-metallic flat plate solar collector made from ethylene-propylene-diene monomer and non-pressurized thermal storage.

Inventor: Charles E Edwards State : MA Contact: Charles E Edwards Six Reeves Road Bedford MA 01730 617-458-6463

Status: Complete Status Date: 01/03/84 0ERI No.: 007158

Patent Status : Patent Applied For Development Stage : Prototype Development Technical Category: Direct Solar

Recv by NBS : 06/19/80 Recom. by NBS : 04/17/81 Award Date : 08/17/81 Award Amount: \$ 99,999 Grant No: FG01-81CS15071 Contract Period: 08/17/81 - 01/03/84

Summary: A grant of \$99,999 was awarded to Solex Corporation to finalize design and manufacturing methods for a low cost solar collector. Prototypes were manufactured and tested for efficiency and weatherability. The inventor got \$500,000 over a 5- year contract in Saudi Arabia. Governments of Saudi Arabia and Jordon have indicated interest in licensing his technology. He has received numerous inquiries about his technology from all over the world.

DOE No: 0180 DOE Coord: J. AELLEN

Title: Adjustable Solar Concentrator (ASC)

Description: A Concentrating Solar Collector using movements and loads on edges of elastic sheets to form cylindrical parabolic reflector.

Inventor: Richard E Dame State : MD Contact: Richard E Dame 10701 Harper Avenue Silver Spring MD 20901 301-681-6903

Status: CompleteStatus Date: 08/15/84OERI No.: 002116Patent Status :Patent Applied For<br/>Development Stage :Working Model<br/>Direct Solar

Recv by NBS : 04/27/77 Recom. by NBS : 04/20/81 Award Date : 08/26/81 Award Amount: \$ 97,066 Grant No: FG01-81CS15172 Contract Period: 08/26/81 - 12/28/83

Summary: A grant of \$97,066 was awarded to develop a fabrication technique for a low-cost, high- performance adjustable concentrating solar collector. Effort successful, but market for medium-temperature collectors is very poor. The project has been completed. DOE No: 0181 DOE Coord: J. AELLEN

Title: The Karlson Ozone Sterilizer

An ozone sterilizer for medical use in both field and hospital. It is low-powered and lightweight. It sterilizes in less than ten minutes, requires no steam and can automatically package sterilized instruments for storage up to several months. Description:

Inventor: Eskil L Karlson State : PA

Contact: Eskil L Karlson 4634 State Street Erie PA 16509 814-868-1121

OERI No.: 008061

Status: Complete

Status Date: 04/27/82

Patent Status : Patent # - 3719017 and others Development Stage : Prototype Development Technical Category: Miscellaneous

Recv by NBS : 02/09/81 Recom. by NBS : 05/29/81 Award Date : 05/01/82 Award Date : 05/01/82 Award Amount: \$133,304 Grant No: FG01-82CE15082 Contract Period: 05/01/82 - 05/01/84

A 24-month grant of \$133,304 was awarded to design, develop, and test the Karlson ozone sterilizer system. Inventor seeks venture capital and/or licensing for third world and other markets. This project has been completed. Summary:

- DOE No: 0182 DOE Coord: J. AELLEN
- Title: Improved Seal for Geothermal Drill Bit

A new type of sealing arrangement for the cone bearings of a standard rotary drill bit used for geothermal exploration which prolongs the bearing life for a given load and rotary speed. Description:

Inventor: Robert F Evans CA State

Contact: Robert F Evans Box #62 La Mirada CA 90637 213-697-8486

OERI No.: 007089

Status: Complete

Status Date: 07/09/86

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Other Natural Sources

Recv by NBS : 06/03/80 Recom. by NBS : 05/29/81 Award Date : 09/01/82 Contract Period: 09/01/82 Award Amount: \$ 94,898 Grant No: FG01-82CE15104 - 08/31/83

A 12-month grant of \$94,898 was awarded to select by research the Summary: best elastomer for use as a bearing seal, and then to test it in the laboratory and in the field. Inventor has made no decision yet on marketing strategy. DOE No: 0183 DOE Coord: J. AELLEN

Title: Increased Vapor Generator Feature for a Reheat Vapor Generator

Description: A method to provide peak power more economically from a base steam/turbine electric plant.

Inventor: E. Stephen Miliaras State : MA Contact: E. Stephen Miliaras c/o Energotechnology Corp. 238 Main Street, Suite #514 Cambridge MA 02142 617-492-3700

Status: Complete

Status Date: 12/31/83 OERI No.: 005961

Patent Status : Patent # - 3826093 and others Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 10/16/79 Recom. by NBS : 06/18/81 Award Date : 06/07/82 Award Amount: \$ 98,977 Grant No: FG01-82CE15194 Contract Period: 06/07/82 - 12/31/83

Summary: A grant of \$98,977 was awarded to design the system for a specific installation that will need increased capacity. For the purpose, negotiations are under way with Southern Califirnia Edison. Extensive subcontracting of the installation will be done by Dynatech R & D of Boston. Design completed and 10% capacity increase predicted. Construction awaits SCE needs for additional capacity. The project is completed.

DOE No: 0184 DOE Coord: J. AELLEN

Title: Coasting Fuel Shutoff

Description: A device suitable for new production or retrofit to turn off the fuel during coasting conditions for automobiles.

Inventor: Nathan Gold State : CA Contact: Nathan Gold

Status: No DOE Support Status Date: 06/30/86 OERI No.: 002111

Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Combustion Engines & Components

Recv by NBS : 04/27/77 Recom. by NBS : 06/23/81

Summary: Several contacts have been made with the inventor, none of which elicited a response. Other similar devices are now on the market. Inventor was pursuing licensing agreements

DOE No: 0185 DOE Coord: P. M. HAYES

Title: Insulated Garage Door

Description: An insulated overhead roll-up garage door with special seals to reduce direct heat transmission and infiltration. The door is sectionalized and is comprised of pivotally connected panels each having a cavity filled with insulation.

Inventor: Cecil H Wolf State : IL

Contact: Charles Bach

Status: No DOE Support Status Date: 03/15/85 OERI No.: 002443

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Buildings, Structures & Components

Recv by NBS : 07/11/77 Recom. by NBS : 07/27/81

Summary: Inventor has yet to furnish an acceptable work proposal to DOE. There is no basis for DOE support. The product is being marketed by Therma-Seal, Inc., 4100-B McDonald Avenue, Des Moines, Iowa -(515) 262-0600.

DOE No: 0186 DOE Coord: J. AELLEN

Title: 0il Recovery by In-Situ Exfoliation Drive

Description: A process for recovering oil in-situ from oil shale which involves alternatively heating and cooling a rubble chamber to exfoliate the crushed rock. The rock releases hydrocarbons which are then pumped to the surface.

Inventor: Sylvain J Pirson State : TX Contact: Ronald Hertzfeld

Status: No DOE Support Status Date: 03/15/85 OERI No.: 007361

Patent Status : Disclosure Document Program Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 07/31/80 Recom. by NBS : 07/28/81

Summary: The inventor has chosen not to pursue this idea at this time, probably because the national interest in shale oil is very low. He is concentrating on #146 which has also been recommended to ERIP.

DOE No: 0187 DOE Coord: G. K. ELLIS Title Variable Field Induction Motor A means of controlling the field current in an AC induction motor to improve the effiency under partial load conditions. Description: Lowis W Parker Inventor: Contact: : FL State Rhey Hedges Status: No DOE Support Status Date: 03/17/85 OERI No.: 003145 Patent Status Patent Applied For Development Stage : Prototype Test Technical Category: Miscellaneous Recv by NBS : 12/07/77 Recom. by NBS : 08/06/81

Summary: No work proposal was submitted. Technology was licensed to companies in the USA, UK, South Africa and Hong Kong. There is no basis for DOE support.

DOE No: 0188 DOE Coord: P. M. HAYES

Title: Remote Controlled Underground Mining System for Horizontal or Pitching Seams

Description: A remote controlled underground mining system which uses a unique guidance system for directional drilling of horizontal and pitching seams. Gaseous deposits can be mined without exposure of manpower to hazards.

Status Date: 11/16/83

Inventor: John C Haspert State : CA

Status: Complete

Contact: John C Haspert Underground Systems P. O. Box #1252 735 West Duarte Road Arcadia CA 91006

OERI No.: 007486

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Fossil Fuels

Recv by NBS : 09/08/80 Recom. by NBS : 08/28/81 Award Date : 08/16/82 Award Amount: \$ 98,251 Grant No: FG01-82CE15130 Contract Period: 08/16/82 - 11/16/83

Summary: A grant of \$98,251 was awarded to design special mining equipment, specifying standard parts that are required to build the remote mining system. Grant completed. Designs and drawings submitted to DOE. There is no obvious commercial interest. DOE No: 0189 DOE Coord: D. G. MELLO

Title: Pump Jack

Description: An oil well pumping system in which a hydraulic pump drives a double-acting hydraulic cylinder in an upward motion. During the down-stroke the pressure below the piston in bled through a flow control valve.

Inventor: Gerald Eastman State : OK Contact: Gerald Eastman P. O. Box #145 Ochelata OK 74051 918-535-2393

Status: Complete

Status Date: 12/15/83 OERI No.: 007658

Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Miscellaneous

Recv by NBS : Recom. by NBS :	10/10/80 08/31/81		
Award Date : Contract Period:	06/15/82	Award Amount: \$ 83,604 Grant No: - 12/15/83	FG01-82CE15087

Summary: An grant of \$83,604 was awarded to field test and document the results of testing several of these units at varying depths from 2000 to 7000 feet. Rhino Engineering supervised the tests and documented the results. After several failures and corrections, units operated trouble free for 10 months. Medium-sized company seeks license from inventor. This project is complete.

DOE No: 0190 DOE Coord: G. K. ELLIS

Title: Oxygen-Conducting Material and Oxygen-Sensing Method

Description: An improved oxygen sensing device formed by tape casting an oxygen-conducting material into a dense ceramic body with metal electrodes interdispersed between ceramic layers.

Status Date: 05/17/83

Inventor: State :	W N Lawless OH	Contact: W N Lawless Lake Shore Ceramics, Inc 64 East Walnut Street Westerville OH 43081 614-891-2243
		614-891-2243

Patent Status : Disclosure Document Program Development Stage : Engineering Design Technical Category: Miscellaneous

Recv by NBS : 01/07/81 Recom. by NBS : 09/30/81 Award Date : 05/18/82 Award Amount: \$ 89,076 Grant No: FG01-82CE15098 Contract Period: 05/18/82 - 05/17/83

Summary: A grant of \$89,076 was awarded to fabricate and test several ceramic compositions that will be useful for oxygen sensing and possibly be useful as a fuel cell material. First items fabricated under subcontract by Penn State U. are promising. The potential fuel cell application was identified in ERIP's pilot testing of licensing opportunities, the inventor being told that it represented a potential significant advance in state-of-the-art for fuel cells. As indicated, recent tests have confirmed this. This project has been completed.

Status: Complete

OERI No.: 007963

DOE No: 01	91	
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DOE Coord: G. K. ELLIS

Title: Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.

Description: The invention is an air conditioning unit for mobile or internal stationary application, utilizing waste heat from an internal combustion engine. The refrigeration cycle is a conventional lithium- bromide absorption cycle. Various cycle components are enclosed in a hermetic cylinder, which is rotated by an electric motor. Heat is absorbed or rejected by rotating finned surfaces.

Inventor: Milton Pravda State : MD Contact: John Hair, III Manco Corporation P O Box #1574 Walla Walla WA 99362 509-529-9999

Status: Award

Status Date: 05/08/86 OERI No.: 004890

Patent Status : Patent # - 3740966 Development Stage : Prototype Test Technical Category: Buildings, Structures & Components

Recv by NBS : 02/13/79 Recom. by NBS : 09/30/81 Award Date : 05/08/86 Award Amount: \$ 94,171 Grant No: FG01-86CE15266 Contract Period: 05/08/86 - 04/07/88

Summary: A phase one grant of \$29,900 was awarded on July 26th, 1984. Phase one funds were used to modify the heat exchanger design and test it in a commercial dryer exhaust for performance and efficiency. The test results were encouraging. Lint and dust particles do not adhere to the surface, thus keeping its effiency high in service. A detailed mathematical analysis has been prepared for the rotary heat pump. A phase II grant of \$64,271 was awarded on May 8, 1986 to produce a prototype. \*\*\*\*\*\*\*\*\*\*

DOE No: 0192 DOE Coord: D. G. MELLO

Title: Closed Cycle Dehumidification Clothes Dryer

Description: A clothes dryer that uses a vapor compression refrigeration cycle to dehumidify the air that passes through the dryer. Air temperature will gradually increase as the condenser restores heat lost to the evaporator and adds energy introduced into the refrigerant by the compressor.

Inventor: Donald C Lewis State : ME Contact: Donald C Lewis P. O. Box #1107 Bangor ME 04401 800-648-9200

Status: Complete

Status Date: 06/15/83 OERI

OERI No.: 007943

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Miscellaneous

Recv by NBS : 12/30/80 Recom. by NBS : 10/07/81 Award Date : 07/16/82 Award Amount: \$ 81,648 Grant No: FG01-82CE15100 Contract Period: 07/16/82 - 06/15/83

Summary: An 8-month grant of \$81,648 was awarded to design, construct and test the clothes dryer. Preliminary tests of the unit, which operates at 115v, show 65- 70 percent energy savings over the conventional dryer. Inventor expects profitable operation at 1% of total dryer market, and is looking for licensing opportunities with eventual sell-out if market share expands. DOE No: 0193 DOE Coord: J. AELLEN

Title: Engine Heating Device

A truck diesel engine heater (Heat-exchanger/heat- sink) which stores heat from the exhaust for later use in warming a cold engine prior to startup. Crankcase oil or engine coolant is circulated through the heat exchanger and engine for warmup. Description:

Inventor: Nicholas Archer Sanders : VT State

Contact: Nicholas Archer Sanders Weatheready, Incorporated Eleven Green Ridge Road Route One, Box #175 Norwich VT 05055 603-643-4351

Status: Award

Status Date: 09/30/82 OERI No.: 006928

Patent Applied For Concept Development Patent Status : Development Stage : Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 05/07/80

Recom. by NBS : 10/30/81 Award Date : 09/30/82 Contract Period: 09/30/82 Award Amount: \$ 91,150 Grant No: FG01-82CE15141 - 09/30/83

Summary:

A 12-month grant of \$91,150 was awarded to construct and test a prototype unit. Results of testing showed large energy savings, but equipment cost needs to be reduced. Marketing proceeding: Honeywell, State of Minnesota and US Army are among interested parties.

DOE No: 0194 DOE Coord: J. AELLEN

Title: Radiant Energy Power Source for Jet Aircraft

Installation of photovoltaic cells in proximity to the liner of a jet engine combustion chamber to generate electrical power for Description: replacing aircraft primary - and/or auxiliary-power units.

Inventor: State :	Oscar Leonard Doo AZ	ellner		1943 So	eonard Doe uth Plumer AZ 85713	Avenue
Status: Co	mplete	Status	Date:	09/28/87	OERI No.:	005673

Patent Status : Patent # - 4090359 Development Stage : Concept Development Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 08/30/79 Recom. by NBS : 11/12/81 Award Date : 09/20/82 Contract Period: 09/20/82 Award Amount: \$ 65,000 Grant No: FG01-82CE15144 - 09/28/87

A phase one grant of \$10,000 was awarded. Ground tests on the J-85 engine determine sufficient radiant energy is available to power photovoltaic cells. Tests were conducted at Williams AFB. The project has received national and international recognition. A phase two grant package for \$55,000 was used to build and test the hardware to harness radiant energy from a jet engine. Summary:

- DOE No: 0195 DOE Coord: J. AELLEN
- Title: Proportional Current Battery

Description: A proportional current electric storage battery with tapered plate thickness that can maintain high current drain and charging rates with minimal material and weight.

Inventor: Edward L Barrett State : IL Contact: Mark Pridmore 27 Elder Lane La Grange IL 60525 312-579-5287

Status: Complete Status Date: 07/09/86 OERI No.: 007280

Patent Status : Patent # - 3846174 Development Stage : Concept Development Technical Category: Miscellaneous

Recv by NBS : 07/14/80 Recom. by NBS : 11/13/81 Award Date : 09/15/82 Award Amount: \$ 87,757 Grant No: FG01-82CE15103 Contract Period: 09/15/82 - 01/15/84

Summary: A grant of \$87,757 was awarded to build and test a working model of the tapered plate battery. The inventor has no plans yet for marketing. Awaiting final report.

DOE No: 0196 DOE Coord: J. AELLEN

Title: Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm

Description: The continuous manufacture, on a farm, of nitrogenous fertilizer by the reaction of nitrogen dioxide with water to produce nitric acid which is neutralized to ammonium nitrate or other nitrogenous compounds that can be applied to a field by way of an irrigation system.

Inventor: John A Eastin State : NE Contact: John A Eastin P O Box #30327 Lincoln NE 68509 402-467-2508

Status: Complete Status Date: 08/31/82 OERI No.: 000461

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS :	12/05/75		
Recom. by NBS :	12/23/81		
Award Date :	08/31/82	Award Amount: \$ 99,592	Grant No: FG01-82CE15142
Contract Period:	08/31/82	- 08/31/83	

Summary: A 12-month grant of \$99,592 was awarded to construct and test a prototype integrated unit, and measure its efficiency. Grantee plans to manufacture and sell units if process is successful. Farm co-ops will produce fertilizer, thus diversifying the process and reducing costs of transportation and storage. This project has been completed.

- DOE No: 0197 DOE Coord: D. G. MELLO
- Title: Frequency Regulator and Protective Devices for Synchronous Generators

Description: A solid-state frequency controller and protective device for small scale synchronous generators used for isolated power generation such as hydroelectric generation.

Inventor: Robert F Karlicek State : CA Contact: Robert F Karlicek Edison Engineering 1920 Camino Centraloma Fullerton CA 92633 818-302-4331

Status: Complete Status Date: 09/15/82 OERI No.: 007086

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Other Natural Sources

Recv by NBS :	06/03/80		
Recom. by NBS :	12/28/81		
Award Date :	09/20/82	Award Amount: \$ 65,990	Grant No: FG01-82CE15132
Contract Period:	09/20/82	- 09/20/83	

Summary: A 12-month grant of \$65,990 was awarded to build, test and develop a solid state frequency controller and protective device for small scale synchronous generators of three sizes: 5,100 and 150kw. ERIP assistance is complete. No further report is available.

DOE No: 0198 DOE Coord: J. AELLEN

Title: The Thermatreat System

Description: An on-site aerobic sewage treatment plant for home use which recovers heat for space and water heating.

Inventor: Robert H Nealy State : PA Contact: Robert H Nealy

Status: No DOE Support Status Date: 06/30/86 OERI No.: 005281

Patent Status : Patent # -Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 06/06/79 Recom. by NBS : 12/30/81

Summary: Recommendation under consideration by DOE, with some further need for negotiation indicated. Inventor seeks \$500,000 for R & D, and invention is in the concept stage. DOE action in abeyance in FY 84 pending inventor obtaining SEC approved prospectus. DOE No: 0199 DOE Coord: J. AELLEN

Title: Rotary Coal Combustor and Heat Exchangers

Description: A rotary multi-fuel fluidized-bed-combuster and heat exchanger that can be used in parallel with steam turbines for power generation or to provide a pressurized clean gas for use with high temperature gas turbines.

Inventor: John Hunter Country : Scotland Contact: Edward Levi Lehigh University Energy Research Center 440 Broadhead Avenue Bethlehem PA 18015 215-861-4090

Status: Award Status Date: 08/16/85 OERI No.: 007718

Patent Status : Patent # - 1521088 and others Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

Recv by NBS :	10/24/80		
Recom. by NBS :	01/18/82		
Award Date :	08/16/85	Award Amount: \$ 63,847	Grant No: FG01-85CE15242
Contract Period:	08/16/85	- 06/30/87	

Summary: A grant of \$63,847 was awarded on August 16, 1985, to Lehigh University to perform engineering analysis on Mr. Hunter's combustor/Gasifier. Designs will be prepared and economic analysis will be performed. The proposed combustor/Gasifier will be compared with state-of-the-art units.

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- DOE No: 0200 DOE Coord: J. AELLEN
- Title: Removal of Sulfur Dioxide from the Stack Gas of Combusters Burning High Sulfur Fuel
- Description: A process for removing sulfur dioxide from flue gasses and converting sulfur dioxide to elemental sulfur.

Inventor: Shao-E Tung State : MA Contact: Shao-E Tung Ninety-One Blake Road Brookline MA 02146 617-923-4032

Status: Award Status Date: 08/10/82 OERI No.: 007385

Patent Status : Patent # - 4324775 and others Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 08/08/80 Recom. by NBS : 01/27/82 Award Date : 08/10/82 Award Amount: \$ 99,820 Grant No: FG01-82CE15125 Contract Period: 08/10/82 - 02/10/84

Summary: An 18 month R & D contract of \$99,820 was awarded to obtain laboratory data on equilibrium and rates, upon which the absorption/stripping portion of the invention is based. The possibility exists for follow-on investment by the Peoples' Republic of China. Inventor seeks licensing opportunities. DOE No: 0201 DOE Coord: D. G. MELLO

Title: Hydraulic, Variable, Engine Valve Actuation System

Description: A modified hydraulic valve lifter which provides a means to vary valve timing and lift to improve fuel economy and reduce emissions. The device is actuated by engine oil pressure and is controlled by manifold vacuum in response to engine demand.

Inventor: Louis A Hausknecht State : OH Contact: Louis A Hausknecht 4504 State Road Cleveland OH 44109 216-749-1686

Status: CompleteStatus Date: 12/31/84OERI No.: 006680Patent Status: Patent # - 4153016 and others<br/>Development Stage : Working Model<br/>Technical Category: Transportation Systems, Vehicles & ComponentsRecy by NBS: 03/31/80

Recv by NBS : 03/31/80 Recom. by NBS : 02/26/82 Award Date : 08/27/82 Award Amount: \$ 85,060 Grant No: FG01-82CE15137 Contract Period: 08/27/82 - 08/27/83

Summary: A 12-month grant of \$85,060 was awarded for the design, assembly and testing of a prototype hydraulic variable valve actuating system to be used in automobile engines.

DOE No: 0202 DOE Coord: D. G. MELLO

Title: Wobbling Type Distillation Apparatus

Description: A multiple-effect vacuum distillation system employing sets of wobbling tubes to produce a thin liquid film thereby improving the evaporation efficiency.

Inventor: Yao Tzu Li State : MA Contact: Yao Tzu Li Huckleberry Hill Lincoln MA 01773 617-259-9592

Status: Complete

Status Date: 09/16/83 OERI No.: 005495

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Miscellaneous

Recv by NBS : 07/30/79 Recom. by NBS : 03/31/82 Award Date : 09/17/82 Award Amount: \$ 99,880 Grant No: FG01-82CE15129 Contract Period: 09/17/82 - 09/16/83

Summary: A grant of \$99,880 was awarded to design, build and test a prototype distillation device capable of 25 gallons/minute throughput. The inventor is seeking licenses or capital to build and market his machine.

- DOE No: 0203 DOE Coord: G. K. ELLIS
- Title: Microwave Methods and Apparatus for Paving and Paving Maintenance

Description: A method to repave asphalt roads in place using recycled material and microwave heating.

Inventor: Morris R Jeppson State CA

Contact: Morris R Jeppson Box #221489 Carmel CA 93922 408-624-3152

Status: Complete

Status Date: 12/21/84 OERI No.: 005898

Development Status : Technical Category: Patent # - 4319856 and others Working Model Industrial Processes

Recv by NBS : Recom. by NBS :	10/02/79 04/28/82		
Award Date : Contract Period:	09/22/82	Award Amount: \$ 52,000 - 12/21/84	Grant No: FG01-84CE15173

A grant for \$52,000 was awarded on December 12, 1984 to design a prototype machine. The inventor prepared a design for a full-scale automatic paving machine. He has a smaller prototype which appears to perform well. He is seeking capital or an industrial partner to build a full-scale prototype of his machine. He has received numerous inquiries about his machine from prospective users. Summary:

DOE No: 0204 DOE Coord: D. G. MELLO

- Title: The Induction Propeller
- An induction propeller for ship propulsion designed to include forward hydrodynamic rake for increased mass flow and higher Description: efficiency.

Inventor: Raymond P Holland Jr Contact: State : NM Raymond P Holland Jr

Status: No DOE Support Status Date: 11/10/82 OERI No.: 003872

Patent Status Patent # - 3226031 Development Stage :

Prototype Development Technical Category: Transportation Systems, Vehicles & Components

: 04/11/78 : 04/29/82 Recv by NBS Recom. by NBS

Inventor has abandoned this project in favor of another more Summary: promising invention not being supported by ERIP.

DOE No: 0205 DOE Coord: J. AELLEN Energy Efficient Solid State Multiple Operator Metallic Arc Title: Welding System A system for distributing and controlling AC electric power for metal arc welding to multiple welding stations. Description: Inventor: Charles B James Contact: State MO Mister Raymo : Status: No DOE Support Status Date: 06/09/83 OERI No.: 007178 Disclosure Document Program Patent Status Development Stage : Engineering Design Technical Category: Industrial Processes : 06/26/80 : 05/21/82 Recv by NBS Recom. by NBS

Summary: Declined DOE assistance.

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DOE No: 0206 DOE Coord: D. G. MELLO

Title: Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion

Description: An electrical controller for a separately-excited (shunt) DC motor which optimizes the ratio of armature and field currents to achieve minimum electrical I-squared-R losses for any load conditions.

Inventor: Jonathan Gabel State : CA Contact: Jonathan Gabel 5800 Ocean View Drive Oakland CA 94618 415-653-8879

Status: CompleteStatus Date: 10/30/86OERI No.: 007962Patent Status:Patent Applied ForDevelopment Stage :Working ModelTechnical Category:Combustion Engines & Components

Recv by NBS : 01/07/81 Recom. by NBS : 05/26/82 Award Date : 04/08/85 Award Amount: \$ 49,500 Grant No: FG01-85CE15159 Contract Period: 04/08/85 - 04/07/86

Summary: A grant of \$49,500 was awarded on April 8, 1985 to build and test a prototype. Grantee completed design of unit, but installation and testing of prototype will be done with private funds. There is no present plan to distribute the device. DOE No: 0207 DOE Coord: J. AELLEN

Title: Glass Sheet Manufacturing Method and Apparatus

Description: A glass manufacturing process and apparatus having a vertical air-cooled electric furnace and transverse air-cooled refiner section. The furnace melts glass by passing an electric current through the composition and thus eliminates the emission of hot spent gasses that normally results from gas-fired furnaces.

Inventor: Frank L Anderson State : WV Status: Analysis Patent Status : Patent # - 4162907 Development Stage : Concept Development Technical Category: Industrial Processes Recv by NBS : 06/15/81 Recom. by NBS : 06/23/82

Summary: Recommendation under consideration by DOE.

DOE No: 0208 DOE Coord: D. G. MELLO

Title: CNG Automotive Fuel Cylinders/Gas Transport Modules

Description: A lightweight aluminum gas transport vessel for storing compressed natural gas to fuel light transportation vehicles.

Inventor: Norman C Fawley State : CA Contact: Norman C Fawley NCF Industries 2320 Cherry Industrial Circle Long Beach CA 90805 213-630-5768

OERI No.: 008406

Status: Complete

Status Date: 12/31/85

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 06/01/81 Recom. by NBS : 06/23/82 Award Date : 09/15/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15196 Contract Period: 09/15/84 - 07/15/85

Summary: An award of \$50,000 was made to pressure test the inventor's transport module. Grantee successfully completed all tests; sold rights to major manufacturer of gas cylinders.

DOE No: 0209 DOE Coord: A. R. BARNES

Title: Reclaiming Process for Resin Treated Fiberglass

Description: A process for reclaiming fiberglass from waste material for use as insulation by separating it from the urea-formaldehyde resin coating with which it is impregnated during manufacture.

Inventor: John W Yount State : NC

Contact: John W Yount P O Box #7 Bullock NC 27507 919-693-4839

Status: Complete Status Date: 10/30/86 OERI No.: 007861

Patent Status : Patent Applied For Development Stage : Production Engineering Technical Category: Buildings, Structures & Components

Recv by NBS : 12/03/80 Recom. by NBS : 06/28/82 Award Date : 04/04/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15174 Contract Period: 04/04/84 - 01/02/86

Summary: A grant of \$50,000 was authorized on April 4th, 1984, for building and testing a fiberglass reclaiming machine. Inventor terminated grant during performance due to problems with subcontractor.

DOE No: 0210 DOE Coord: G. K. ELLIS

Title: Ultra High Speed Drilling Device for Use in Hard Rock Formations

Description: A diamond cutting disk which is rotated at high linear velocities by twin downhole turbines to drill hard rock formations for deep oil recovery.

Inventor: Lloyd Flatland State : CA Contact: Lloyd Flatland Lloyd Flatland Dental Products

496 "B" Street San Rafael CA 94901 415-457-5790

Status: Complete

Status Date: 09/30/88 OERI No.: 007631

Patent Status : Disclosure Document Program Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 10/03/80 Recom. by NBS : 06/29/82 Award Date : 09/30/86 Award Amount: \$ 96,000 Grant No: FG01-84CE15185 Contract Period: 09/30/86 - 09/30/88

Summary: A phase I grant of \$46,000 was awarded On August 28, 1984, to build and test a prototype high-speed drill. Suitability to drill hard rock will be determined. Phase I has been successfully completed. A phase II grant of \$50,000 was awarded on November 4th, 1985 for further development and has been completed. However, some difficulties were encountered, and the inventor seeks additional development funds. DOE No: 0211 DOE Coord: J. AELLEN

Title: Shock Mounted Stratapax Bit

Description: An oil well drilling bit to support polycrystalline diamond cutters. It is designed with concentric spring tempered steel rings containing helical slots.

Inventor: Robert F Evans State : TX Contact: Robert F Evans P O Box #45674 Dallas TX 75235 214-351-6487

Status: CompleteStatus Date: 06/30/86OERI No.: 007918Patent Status :Patent Applied For<br/>Development Stage :Concept Definition<br/>Technical Category:Fossil FuelsPacer by NRS :12/18/80

Recv by NBS : 12/18/80 Recom. by NBS : 06/29/82 Award Date : 09/24/82 Award Amount: \$ 57,545 Grant No: FG01-82CE15149 Contract Period: 09/24/82 - 02/28/84

Summary: A grant of \$57,545 was awarded for the grantee to design, fabricate and test, four variations of the invention.

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DOE No: 0212 DOE Coord: G. K. ELLIS

Title: Water Warden

Description: A plastic disc about two inches in diameter that installs in a commercial type of toilet water control valve to reduce the flushing cycle.

Inventor: Louis E Govear State : CA

Hugh Huislander

Contact:

Status: Other Assistance Status Date: / / OERI No.: 008517

Patent Status : Patent # - 4202525 Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 06/14/81 Recom. by NBS : 06/30/82

Summary: Inventor requested assistance in marketing his invention in the Federal sector. A DOE letter of introduction and a listing of States' contacts has been provided. DOE No: 0213 DOE Coord: G. K. ELLIS

Title: The Kaunitz Process for Welding Pipe

Description: A pipe joining process particularly for large transmission pipelines that involves expanding and machining each end and then aligning both sections axially and radially prior to welding.

Inventor: Clyde F Kaunitz State : MI Contact: Clyde F Kaunitz 2339 Bay Woods Court Bay City MI 48706 517-684-7354

Status: Complete

Status Date: 08/06/87 OERI No.: 008110

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 02/20/81 Recom. by NBS : 06/30/82 Award Date : 06/11/86 Award Amount: \$ 49,975 Grant No: FG01-86CE15267 Contract Period: 06/11/86 - 03/11/87

Summary: A grant of \$49,975 was awarded on June 11th, 1986 to build and test a prototype. The device was built by CRC-Evans in Tulsa, and reportedly was successfully tested.

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- DOE No: 0214 DOE Coord: G. K. ELLIS
- Title: Convertible Flat/Drop Trailer

Description: A removable bed trailer, constructed in three sections, that enables a single unit to function as a flat-bed trailer, drop-center trailer or a detachable-neck light-duty trailer.

Inventor: Dor State : OR			5119	act: ld E Wise Jasper ngfield ( 747-9255	DR 97447
Status: Comple	ete	Status Date:	07/15/86	OERI 1	No.: 008723
Development St	: Patent # tage : Producti egory: Transpor	on Engineering	g, Vehicles	s & Compon	nents
Recv by NBS Recom. by NBS Award Date Contract Perio	: 11/02/81 : 07/29/82 : 09/18/84 A od: 09/18/84 -	ward Amount: 5 12/15/85	\$ 63,069 (	Grant No:	FG01-84CE15175
Summary:	A grant of \$63,	069 was award	ed on Sept	ember 18,	1984 to build a

Summary: A grant of \$63,069 was awarded on September 18, 1984 to build and test a prototype convertible trailer to determine fuel savings. The inventor has licensed his technology to Trail King Company in Nebraska.

- DOE No: 0215 DOE Coord: G. K. ELLIS
- Title: Slag Waste Heat Boiler

Description: A slag waste heat boiler which produces wet steam from steel plant heat during the steel making process. Molten slag, a by-product, is poured over water-filled rotating cylinders. Steam is formed inside the cylinders and the solidified slag is scraped from the cylinders.

Inventor: Richard Jablin State : NC Contact: Richard Jablin 2511 Woodrow Street Durham NC 27705 919-286-4693

Status: Award

Status Date: 07/15/86 OERI No.: 002333

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 06/07/77 Recom. by NBS : 06/29/82 Award Date : 06/11/86 Award Amount: \$ 50,000 Grant No: FG01-86CE15264 Contract Period: 06/11/86 - 06/11/87

Summary: A grant was awarded for \$50,000 on June 11th, 1986 to support the inventor in marketing the technology as part of EPA SBIR Phase II project. The deal the inventor anticipated has not yet materialized.

- DOE No: 0216 DOE Coord: D. G. MELLO
- Title: Method and Assembly for Mounting a Semiconductor Element
- Description: A method of packaging semiconductor wafers to achieve double-sided cooling of the wafer without clamps, springs or studs; power semi-conductors, such as used in motor controllers, can thus operate at higher current levels.

Inventor: State :	Richard F Kiley MA	Contact: Richard F Kiley Thermal Associates Inc 197 Main Street, P O Box #248 North Reading MA 01864 617-664-3342

Status: CompleteStatus Date: 12/31/85OERI No.: 008499Patent Status: Patent Applied For<br/>Development Stage : Limited Production/Marketing<br/>Technical Category: Combustion Engines & Components

Recv by NBS : Recom. by NBS :	07/07/81		
Award Date :	07/30/82	Award Amount: \$ 53,900	Grant No: FG01-84SE15199
Award Date Contract Period:	09/20/84	- 09/20/85	

Summary: A grant of \$53,900 was awarded to build and test prototype semiconductor elements. Market conditions precluded grantee from developing viable market plans for the product. DOE No: 0217 DOE Coord: J. AELLEN

Title: Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells

Description: A jointless composite material tape (ribbon rod) made from carbon fibers, epoxy and fiber tape for use in place of steel sucker rods normally used in conjunction with beam pumping of oil wells.

Inventor: Curtis J Tanner State : CA

Contact: H N Hensley 2010 Princeton Midland TX 79701 915-683-3534

Status: Award Status Date: 04/17/87 OERI No.: 008074

Patent Status : Disclosure Document Program Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : Recom. by NBS :	02/12/81		
Award Date :	04/17/87	Award Amount: \$ 82,742	Grant No: FG01-87CE15122
Contract Period:	04/17/87	- 10/16/88	

Summary: A grant of \$82,742 was awarded on April fourteenth, 1987, to construct and test the product.

DOE No: 0218 DOE Coord: G. K. ELLIS

Title: Behemoth

Description: An apparatus and process for reclaiming waste oil at drilling sites by separating water and solids. Solids and water can be returned to the site and land restored to its natural state.

Inventor: Wilford Dean Tannehill Contact: State : TX Wilford Dean Tannehill

Status: Other Assistance Status Date: 09/17/85 OERI No.: 008950

Patent Status : Patent Applied For Development Stage : Production & Marketing Technical Category: Industrial Processes

Recv by NBS : 03/17/82 Recom. by NBS : 07/30/82

Summary: The inventor is looking for a licensee or buyer of his invention.

DOE No: 0219 DOE Coord: J. AELLEN

Title: Method for Making Acelaldehyde from Ethanol

Description: A process to convert low proof ethanol directly to anhydrous acetaldehyde by an electrogenerative conversion process using fuel cell technology. During the conversion heat and electricity are produced.

Inventor: Thomas M Meshbesher State : DE Contact: Thomas M Meshbesher 4507 Weldin Road Wilmington DE 19899 302-658-9141

Status: Complete Status Date: 06/30/86 OERI No.: 008054

Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Combustion Engines & Components

Recv by NBS : 02/05/81 Recom. by NBS : 07/30/82 Award Date : 09/18/84 Award Amount: \$ 49,983 Grant No: FG01-84CE15191 Contract Period: 09/18/84 - 09/18/85

Summary: A grant of \$49,983 was awarded to perform an economic study and mineral lab work to determine the most efficient conditions for converting ethanol into acetaldehyde and electricity.

- DOE No: 0220 DOE Coord: D. G. MELLO
- Title: Deep Throat Resistance Welder

Description: A high-frequency spot-welding system which permits relatively small and flexible power cabling between the gun and the power source as compared with the heavy cabling required of either 60-hertz or DC systems. This allows a greater proportion of the power-line energy being transferred to the weld rather than dissipated in the system conductors.

Inventor: Charles A Schwartz State : OH	Contact: Charles A Schwartz 24545 Bryden Road Beachwood OH 44122 216-831-3099
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Status: Complete

Status Date: 08/31/85 OERI No.: 007767

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 11/04/80 Recom. by NBS : 08/30/82 Award Date : 09/19/84 Award Amount: \$ 45,920 Grant No: FG01-84CE15192 Contract Period: 09/19/84 - 09/18/85

Summary: A grant of \$45,920 was awarded on September 14,1984 to build and test a prototype. The tests confirmed theoretical analysis showing the merits of the new system. Grantee attempting licensing of product.

DOE Coord: J. AELLEN DOE No: 0221 Title: Strainercycle Description:

A means for providing cooling in a building, when the outside temperature drops below 65 degrees Fahrenheit, by injecting strained cooling tower water into chilled water circuits in order to eliminate the use of mechanical refrigeration during this time.

Inventor: Rudolf O Iverson Contact: State NY Paul Ginouves Status: Other Assistance Status Date: 09/23/82 OERI No.: 008964 Patent # - 3995443 Patent Status : Patent # - 3995443 Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components Recv by NBS : 03/25/82 Recom. by NBS : 09/13/82

ERIP identified government market for inventor. Summary:

DOE No: 0222 DOE Coord: D. G. MELLO

Title: Louver Trombe Solar Storage Unit

A jalousie shutter, Trombe-type, phase change storage unit. Each shutter is prism shaped and exposes, alternately, a transmission, absorption or combination, side toward the sun. Description:

Inventor: Donald R Thomas Contact: State : VT Donald R Thomas Status: Other Assistance OERI No.: 007979 Status Date: //Not Applied For Laboratory Test Patent Status Development Stage : Laboratory T Technical Category: Direct Solar

Recv by NBS : 01/15/81 Recom. by NBS : 10/07/82

ERIP assistance has been completed. Referred to National Appropriate Technology Assistance Service (NATAS) for assistance. Summary: Referred to National DOE No: 0223 DOE Coord: J. AELLEN

Title: Minimizing Subsidence Effects during Production of Coal In Situ

Description: The invention is a process for using a foaming mud cement to prevent or minimize subsidence in underground gasification sites.

Inventor: Ruel Carlton Terry State : CO

Contact: Ruel Carlton Terry 3090 South High Street Denver CO 80210 303-759-3826

Status: CompleteStatus Date: 06/30/86OERI No.: 008456Patent Status: Patent Applied For<br/>Development Stage : Concept Development<br/>Technical Category: Fossil FuelsPatent NPSPacew by NPS: 06/17/81

Recv by NBS : 06/17/81 Recom. by NBS : 10/14/82 Award Date : 04/04/84 Award Amount: \$ 53,964 Grant No: FG01-84CE15169 Contract Period: 04/04/84 - 01/31/85

Summary: A grant of \$53,964 has been awarded to perform lab work. Follow-up funding of \$225,000 was received from the state of Wyoming using funds provided by the Department of Interior.

DOE No: 0224 DOE Coord: J. AELLEN

Title: Haile Alternate Fuel Grain Dryer

Description: This is a design for a grain dryer which is capable of using grain dust collected from grain elevators as an alternate fuel.

Inventor: Jack D Haile State : NE Contact: Gwyer Grimminger, Presiden COMET, Inc 3221 Ramada Road Grand Island NE 68801 308-381-2990

OERI No.: 006782

Status: Complete

Status Date: 06/30/86

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 04/09/80 Recom. by NBS : 10/14/82 Award Date : 06/01/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15190 Contract Period: 06/01/84 - 12/01/85

Summary: A grant of \$50,000 was awarded for design and engineering analysis of the grain dryer using grain dust as fuel. The technology is available for licensing. DOE No: 0225DOE Coord: J. AELLENTitle:ROVAC High Efficiency Low Pressure Air Conditioning System

Description: An air conditioning unit which utilizes rotary vane compressor with multiple vanes and low pressure refrigerant such as R-114. The vanes in the compressor are mechanically restrained so that they do not touch the casing.

Inventor: Thomas C Edwards State : FL Contact: Thomas C Edwards 1426 Gleneagle Rockledge FL 32955 305-631-0302

Status: AwardStatus Date: 07/22/88OERI No.: 008593Patent Status:Patent Applied ForDevelopment Stage :Prototype TestTechnical Category:Transportation Systems, Vehicles & Components

Recv by NBS : 08/24/81 Recom. by NBS : 10/28/82 Award Date : 07/22/88 Award Amount: \$ 64,900 Grant No: FG01-88CE15346 Contract Period: 07/22/88 - 01/20/90

Summary: A grant of \$64,900 was awarded on July 22nd, 1988.

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DOE No: 0226 DOE Coord: D. G. MELLO

Title: An Electronic Anemometer System for Locating Air- Infiltration Heat Leaks in Buildings

Description: An electronic anemometer system for detection and location of air infiltration in residential and commercial structures. A fan creates a negative pressure inside the structure and an electronic leak detector detects air motion at cracks in the building.

Inventor: Stewart Ryan Contact: State : OK Stewart Ryan

Status: No DOE Support Status Date: 07/31/85 OERI No.: 008826

Patent Status : Not Applied For Development Stage : Prototype Development Technical Category: Buildings, Structures & Components

Recv by NBS : 12/28/81 Recom. by NBS : 11/29/82

Summary: Action temporarily suspended at inventors request. Inventor sold six month option. Inventor subsequently abandoned project. Competing products now exist. DOE No: 0227 DOE Coord: D. G. MELLO

Title: CRM Pipe

Description: A process for manufacturing pipe for high pressure gas transmission lines. Metal pipe is wound with resin impregnated composite-fibre reinforcement.

Inventor: Norman C Fawley State : CA Contact: Norman C Fawley NCF Industries 2320 Cherry Industrial Circle Long Beach CA 90805 213-630-5768

Status: Complete Status Date: 12/31/85 OERI No.: 009055

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Miscellaneous

Recv by NBS : 03/01/82 Recom. by NBS : 12/14/82 Award Date : 07/15/84 Award Amount: \$ 50,000 Grant No: FG01-84CE15197 Contract Period: 07/15/84 - 07/15/85

Summary: A grant of \$50,000 was awarded to test inventor's device to arrest crack propagation in gas pipelines. Tests at Battelle prove value of system. Grantee attempting to license to major steel pipe manufacturer.

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DOE No: 0228 DOE Coord: J. AELLEN

Title: EGD Fog Dispersal System

Description: An electrogasdynamic device for dispersing fog that propels a stream of negatively charged water droplets into the air causing fog droplets to become charged and electrically attracted to the ground.

Inventor: Meredith C Gourdine State : TX States: Award Contact: Meredith C Gourdine Post Office Box #1228 Friendswood TX 77546 713-790-9892 Status: Award Status Date: 07/26/85 OERI No.: 008466

Patent Status : Patent # -Development Stage : Prototype Development Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/19/81 Recom. by NBS : 12/15/82 Award Date : / / Award Amount: \$ 88,840 Grant No: FG01-84CE15184 Contract Period: / / - / /

Summary: An \$88,840 cost sharing grant was awarded to install and demonstrate the technology at the Elmira, New York airport.

DOE No: 0229 DOE Coord: D. G. MELLO Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines Title: An inexpensive mechanism for varying the valve- timing of internal combustion engines in response to variations in engine Description: operating conditions. Edward M Tourtelot Inventor: Contact: IL Edward M Tourtelot State : OERI No.: 008982 Status: No DOE Support Status Date: 07/31/86 Patent Applied For Concept Development Patent Status Development Stage : Technical Category: Combustion Engines & Components

Recv by NBS : 04/14/82 Recom. by NBS : 01/20/83

Summary: Inventor's son will carry project forward. A proposal is being prepared for DOE consideration. Inventor's successor abandoned project. No DOE support required.

DOE No: 0230 DOE Coord: J. AELLEN

Title: Absorption Heat Pump Augmented Separation Process

Description: A reverse absorption heat pump which transfers heat from the condenser of a distillation column to the reboiler using a lithium-bromide-water system.

Inventor: Donald C Erickson State : MD Contact: Donald C Erickson 627 Ridgely Avenue Annapolis MD 21401 301-266-6521

Status: Complete Status Date: 11/26/85 OERI No.: 007530

Patent Status : Patent # - 4402795 and others Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : Recom. by NBS :	09/24/80 01/24/83		
Award Date :	04/09/84	Award Amount: \$ 25,000	Grant No: FG01-84CE15172
Contract Period:	04/09/84	- 11/26/85	

Summary: A first phase grant of \$25,000 was awarded on April 9, 1984 to find a suitable application and perform initial design. The inventor is still looking for an industrial partner to install and test a full- scale absorption heat pump. Phase one of this project has been completed. DOE No: 0231 DOE Coord: G. K. ELLIS

Title: Natural Gas from Deep-Brine Solutions

Description: A process for recovering geopressure methane gas by use of a deep-submerged separator of special design which separates the methane at depth and continuously recirculates the spent brine back into the formation of origin.

Inventor: Guy R B Elliott State : NM

Contact: Guy R B Elliott Los Alamos Cons Alpha Inc 133 La Senda Road Los Alamos NM 87544 505-672-3603

Status: Complete Status Date: 09/30/86 OERI No.: 009008

Patent Status : Patent # - 4262747 Development Stage : Prototype Development Technical Category: Fossil Fuels

Recv by NBS : 05/05/82 Recom. by NBS : 01/24/83 Award Date : 04/02/84 Award Amount: \$ 75,000 Grant No: FG01-84CE15171 Contract Period: 04/02/84 - 10/01/86

Summary: An grant of \$75,000 was awarded to build and test a prototype on the lab scale. Carbon dioxide dissolved in water will be used to operate the pump. The tests were performed and the results were encouraging.

DOE No: 0232 DOE Coord: J. AELLEN

Title: Method of Separating Lignin and Making Epoxide- Lignin

Description: A process for low cost separation of lignin from the black cooking liquor which is a waste product from the kraft and sulfite paper pulping process, and for producing lignin-epoxide resins.

Inventor: Kenneth R Kurple State : MI Contact: Kenneth R Kurple 9533 Springborn Road Anchorville MI 48004 313-727-7631

Status: Award

Status Date: 07/19/84 OERI No.: 007662

Patent Status : Patent # - 4111928 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 10/14/80 Recom. by NBS : 01/26/83 Award Date : 07/19/84 Award Amount: \$ 96,914 Grant No: FG01-84CE15193 Contract Period: 07/19/84 - 04/30/87

Summary: A \$61,739 first phase grant was awarded to perform lab analysis. A second phase of \$35,175 was awarded to complete the laboratory work. DOE No: 0233 DOE Coord: J. AELLEN

Title: Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations

Description: An hydraulically-actuated, rear-mounted, steerable ripper for crawler tractors intended for agricultural deep tillage operations. The steering action of the ripper assists or affects tractor steering, permitting more effective utilization of power transmitted to the tractor tracks.

Inventor: Daniel A Lockie State : CA Status: No DOE Support Status Date: / / OERI No.: 008984

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 04/15/82 Recom. by NBS : 02/01/83

Summary: Comparable technology is already on the market.

DOE No: 0234 DOE Coord: G. K. ELLIS

Title: Geodesic Solar Paraboloid

Description: A parabolic point-focusing solar concentrator consisting of a dish reflecting surface, a track and a geodesic reflector support system.

Inventor: Douglas E Wood State : WA Contact: Douglas E Wood Box #32 Fox Island WA 98333 206-549-2190

OERI No.: 002968

Status: Complete

Status Date: 02/14/86

Patent Status : Patent # - 4171876 Development Stage : Prototype Test Technical Category: Direct Solar

Recv by NBS : 11/18/77 Recom. by NBS : 02/24/83 Award Date : 04/17/85 Award Amount: \$ 50,000 Grant No: FG01-85CE15203 Contract Period: 04/17/85 - 09/16/86

Summary: A grant of \$50,000 was awarded on April 17, 1985 to make design improvements to the existing prototype. It is currently being tested for improvement of efficiency. DOE No: 0235 DOE Coord: G. K. ELLIS

Title: Single Stage Anaerobic Digestion Process

Description: A process for accelerating the manufacture of relatively high-purity methane fuel gas through a process of anaerobic digestion, involving retention of organic material in an aqueous slurry which is maintained at a predetermined V/I ratio, temperature, and minimizes the production of carbon dioxide.

Inventor: Jay E Ort State : PA

Contact: Harry Curtin Penn State Engineering Inc 522 East College Avenue P O Box #177 State College PA 16801 814-238-5013

Status: Complete

Status Date: 12/04/85 OERI No.: 008644

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS :	09/18/81		
Recom. by NBS :	03/30/83		
Award Date :	04/02/84	Award Amount: \$ 50,000	Grant No: FG01-84CE15170
Contract Period:	04/02/84	- 12/04/85	

Summary: A phase one grant of \$50,000 was awarded on April 2, 1984 to study and optimize the basic parameters of the process. The first run of tests were not successful due to defective equipment. Another series of tests was performed. The process is not as efficient as anticipated, and it is not economically feasible. Consequently, phase two of this project will not be initiated.

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- DOE No: 0236 DOE Coord: A. R. BARNES
- Title: Steam Turbine Packing Ring

Description: A self-adjusting steam turbine packing ring that provides large shaft clearance during turbine start- up and reduced shaft clearance at normal turbine operating speeds. This action avoids packing ring damage during start-up and results in higher operating efficiency. A private sector public- utility is funding further development.

Inventor: Ronald E Brandon State : NY

Contact: Ronald E Brandon 1734 Lenox Road Schenectady NY 12308 518-374-1220

Status: Complete

Status Date: 07/02/87 OERI No.: 009167

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Combustion Engines & Components

Recv by NBS : 10/25/82 Recom. by NBS : 04/07/83 Award Date : 08/08/84 Award Amount: \$ 51,900 Grant No: FG01-84CE15189 Contract Period: 08/08/84 - 07/02/86

Summary: Development was completed in 1987. Operating tests on 200MW PEPCO unit indicate 1.25% gain in heat rate efficiency. Exclusive license with Quabbin Industries, a manufacturer of steam turbine components, was signed in 1987. In the first year of his license, 37 sets were sold, which includes a number of repeat orders. DOE No: 0237 DOE Coord: D. G. MELLO

Title: Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles

Description: An automotive electrical generating and battery charging system that is driven primarily by vehicle momentum during braking, thus reducing required engine power output.

Inventor: David E Hicks State : CO Contact: David E Hicks 5244 Cracker Barrel Circle Colorado Springs CO 80917 303-596-4390

Status: Complete Status Date: 09/20/85 OERI No.: 009232

Patent Status : Patent # -Development Stage : Prototype Test Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 01/19/82 Recom. by NBS : 05/12/83 Award Date : 09/20/84 Award Amount: \$ 56,438 Grant No: FG01-84CE15183 Contract Period: 09/20/84 - 09/20/85

Summary: A grant of \$56,438 was awarded to build and test prototype battery charging system using automobile momentum only. Project successfully completed. Grantee attempting to license product.

DOE No: 0238 DOE Coord: G. K. ELLIS

Title: Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness

Description: A sensing system to shut off clothes dryer when the clothes have been dried completely. The proposed system measures the time interval between consecutive peaks as the dryer is cycled on and off between high and low temperature limits and shuts the dryer off when the time intervals become constant.

Inventor: Harry E Wood State : LA New Orleans LA 70118 504-488-7853

Status: Complete

Status Date: 09/17/85 OERI No.: 009120

Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Miscellaneous

Recv by NBS : 08/31/82 Recom. by NBS : 05/12/83 Award Date : 03/07/84 Award Amount: \$ 57,000 Grant No: FG01-84CE15168 Contract Period: 03/07/84 - 03/26/85

Summary: A grant of \$57,000 was awarded on September 17, 1985 for building and testing a prototype. The project was successfully concluded. The inventor licensed his technology.

- DOE No: 0239 DOE Coord: J. AELLEN
- Title: Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures

Description: An electrochemical process for removing sulfur oxides from flue gas discharges from power plants which burn sulfur-containing fuels, principally high sulfur coals.

Inventor: Jack Winnick State : GA

Contact: Jack Winnick 3028 Vinings Way Atlanta GA 30339 404-894-2839

Status: CompleteStatus Date: 06/30/86OERI No.: 008674Patent Status:Patent # - 4246081Development Stage:Working ModelTechnical Category:Industrial Processes

Recv by NBS : 10/01/81 Recom. by NBS : 05/18/83 Award Date : / / Award Amount: \$ 50,000 Grant No: FG01-84CE15178 Contract Period: / / - / /

Summary: ERIP provided and transferred a \$50,000 grant to PETC which added \$200,000. Work was performed at Georgia Tech Research Institute where electrode models were fabricated and tested in a bench scale model of the process.

- DOE No: 0240 DOE Coord: G. K. ELLIS
- Title: All Steam Heated Sadiron for Commercial Use
- Description: A commercial use sadiron which is operated solely by superheated high pressure steam generated from an external boiler to supply both the heat to the iron sole plate and steam for moisture spray application as needed during the ironing practice.

Inventor: Jay R Royston Contact: State : CA Uwe H Butenhoff

Status: No DOE Support Status Date: 09/17/85 OERI No.: 008823

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Miscellaneous

Recv by NBS : 12/28/81 Recom. by NBS : 07/19/83

Summary: Initial request for grant was rejected due to probable insufficient energy-saving potential. A study conducted by NATAS indicated insufficient market for this product. Two other companies are producing somewhat related product. DOE No: 0241 DOE Coord: J. AELLEN

Title: Polysulfide Oil Field Corrosion Control System

A polysulfide additive to inhibit the corrosion of ferrous based Description: metals in oil field and geothermal applications.

Inventor: Richard J Gay State TX

Contact: Richard J Gay 9215 Clarewood - #358 Houston TX 77036 713-498-8553

Status: Award Status Date: 12/07/84 OERI No.: 008601 Patent Status Not Applied For Development Stage : Prototype Development Technical Category: Fossil Fuels : 08/24/81 : 07/28/83 : 12/07/84 Recv by NBS Recom. by NBS

Award Date Award Amount: \$ 73,900 Grant No: FG01-85CE15200 Contract Period: 12/07/84 - 09/05/85

A grant of \$73,900 was awarded on December 7th, 1984 to perform lab test, analysis and field test. Summary:

DOE No: 0242 DOE Coord: G. K. ELLIS

Title: New Petersburg Beam Trawl

An improved trawl design to reduce drag for either single rigged Description: or double rigged vessels.

Donald Shuler Inventor: State AK

Contact. Donald Shuler General Delivery AK 99833 Contact: Petersburg AK 907-772-3038

Status: Complete

Status Date: 06/30/86 OERI No.: 009310

Patent Status Disclosure Document Program Development Stage : Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 12/22/82 Recom. by NBS : 09/29/83 Award Date : 09/05/84 Contract Period: 09/05/84 Award Amount: \$ 63,000 Grant No: FG01-84CE15180 - 09/05/85

A grant of \$63,000 was awarded on September 5, 1984 to build and test a prototype beam-trawl fishing net to determine fuel efficiency per pound of catch. The inventor failed to submit quarterly technical reports. The beam trawl nets were built but never tested in the presence of an independent observer from the Sea Grant Program. Inventor's whereabouts are unknown. The contracting officer was informed of this fact. Further pursuit was determined not to be in the government's best interests. Summary:

DOE No: 0243 DOE Coord: P. M. HAYES An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste Title: Method and apparatus for processing municipal waste to overcome the disadvantages of the mass burning and the refuse derived-fuel methods by combining the two processes and recovering aluminum Description: and steel. Contact: Garry R Kenny Magnetic Separation Syst Inc 105 28th Avenue, South Nashville TN 37212 615-329-0695 Edward J Sommer, Junior Inventor: State TN Status: Complete Status Date: 09/13/85 OERI No.: 008031 Development Stage : Technical Category: Disclosure Document Program Working Model Industrial Processes Recv by NBS : 01/23/81 Recom. by NBS : 09/29/83 Award Date : 09/15/84 Contract Period: 09/15/84 Award Amount: \$ 50,640 Grant No: FG01-84CE15179 - 09/13/85 A grant of \$50,000 was awarded on August 15th, 1984 to design, build and test a prototype of the aluminum recovery system. The inventors have licensed the process to National Recovery Technology in Nashville, Tennessee and they are marketing the system. A new application to remove aluminum contaminants from crushed recycled glass and granulated beverage bottles was developed and the marketing rights for the European Common Market were licensed to a West German company. Summary: DOE No: 0244 DOE Coord: J. AELLEN Title: CHARLIE - Trademark - Federally Registered #1123957 An electronic system for controlling engine- compression type Description: brakes used on trucks. Inventor: Charles E Robinson Contact: Brad L Pfeifley State CO : CAMACAN, Inc. 7730 Belleview Suite #204 Englewood CO 80111 303-850-0404 Status Date: 09/13/84 Status: Award OERI No.: 009459 Patent Status : Patent # - 4305353 and others Development Stage : Limited Production/Marketing Technical Category: Transportation Systems, Vehicles & Components Recv by NBS Recom. by NBS : 02/03/83 : 09/29/83 Award Date Award Amount: \$ 51,655 Grant No: FG01-84CE15194 1 Contract Period: / / Summary: A grant of \$51,655 was awarded to build and test a prototype.

DOE No: 0245 DOE Coord: J. AELLEN

Title: Improved Oil Well Pumping Unit

Description: A vector force balanced oil well pumping assembly.

Inventor: Thomas Neil Parker, Junior State : OK

Contact: Thomas Neil Parker, Junior Thomas Parker Insurance P O Box #356 Boswell OK 74727 405-566-2535

OERI No.: 009241

Status: Complete

Status Date: 06/30/86

Patent Status : Disclosure Document Program Development Stage : Working Model Technical Category: Fossil Fuels

Recv by NBS : 11/23/82 Recom. by NBS : 09/29/83 Award Date : 06/25/84 Award Amount: \$ 61,801 Grant No: FG01-84CE15177 Contract Period: 06/25/84 - //

Summary: A grant of \$59,121 was awarded on June 25th, 1984 to build and test a prototype. Work to be conducted in cooperation with Rural Enterprises Inc. Potential exists for cost sharing in development and marketing. A supplemental grant of \$2,680 was awarded on April 8th, 1985. Testing indicates that the pump is very efficient.

DOE No: 0246 DOE Coord: D. G. MELLO

Title: Maximum Cruise Performance

Description: Maximum cruise performance of jet powered aircraft is achieved by maintaining the ratio of "fuel flow to ground speed" to a minimum by using a closed loop feedback system and a software algorithm package connected into the aircraft's avionic mission computer network.

Inventor: Juan M Garcia, Junior State : MO Juan M Garcia, Junior

Status: No DOE Support Status Date: 07/01/85 OERI No.: 008733

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 11/09/81 Recom. by NBS : 10/31/83

Summary: Preliminary proposal received from inventor. Coordinator seeking private sector assistance. Grantee unable to define suitable test program leading to marketable product.

- DOE No: 0247 DOE Coord: D. G. MELLO
- Title: Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems
- Description: In an interconnected electric power system, the parameters' system time deviation and area inadvertent interchange can be decomposed into components respectively caused by regulating deficiencies in each of the individual control areas. These components can serve as the basis for an equitable payment technique for unscheduled transfers to replace the present practice of "repayment in kind".
- Inventor: Nathan Cohn State : PA

Contact: Nathan Cohn 8033 Via de Viva Scottsdale AZ 85258 602-991-7063

Status: Complete

Status Date: 10/30/86

OERI No.: 009342

Patent Status : Patent # - 4267571 Development Stage : Prototype Development Technical Category: Miscellaneous

Recv by NBS : 01/19/83 Recom. by NBS : 11/18/83 Award Date : 09/05/84 Award Amount: \$ 60,000 Grant No: FG01-84CE15187 Contract Period: 09/05/84 - 02/15/86

Summary: A grant of \$60,000 was awarded to study the uneconomical inadvertent interchange of electric power between a number of cooperating electric utility companies, and to recommend a method to correct the resulting energy losses. Grantee will license method to interested utilities.

- DOE No: 0248 DOE Coord: J. AELLEN
- Title: Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
- Description: A device consisting of individual tire segments that are strapped to the driving wheels of a tractor or similar vehicle to improve traction and minimize the need for adding weight to get better traction.

Inventor: State :	Thorvald G Granryd IL	Contact: Thorvald G Granryd P O Box #258 1260 North Western Avenue Apartment #109 Lake Forest IL 60045 312-234-8250
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Status: Award Status Da

Status Date: 09/18/84 OERI No.: 008617

Patent Status : Patent # - 4225082 and others Development Stage : Production Engineering Technical Category: Industrial Processes

Recv by NBS : Recom. by NBS :	08/12/81		
Recom. by NBS :	11/22/83		
Award Date :	09/18/84	Award Amount: \$ 70,189	Grant No: FG01-84CE15186
Contract Period:	09/18/84	- 12/31/85	

Summary: A grant of \$32,064 was awarded on September 18, 1985 to build and test prototype traction intensifiers. Tests performed for traction were successful, but the device had minor durability problems. A phase two grant of \$35,525 was awarded to develop design modifications capable of overcoming problems.

DOE No: 0249 DOE Coord: G. K. ELLIS Title: Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells Description: Subsurface gas well flow control and purge valve. Inventor: Patrick S Swihart, Senior Contact: State : NM Patrick S Swihart, Senior Box #262 Timberon NM 505-987-2449 88350 Status Date: 08/19/85 Status: Complete OERI No.: 009220 Patent Status Patent # - 4036297 and others : Development Stage : Prototype Test Fossil Fuels Technical Category: Recv by NBS : 11/16/82 Recom. by NBS : 12/30/83 Award Date : 08/19/85 Contract Period: 08/19/85 Recv by NBS Recom. by NBS Award Date Award Amount: \$ 16,074 Grant No: FG01-85CE15202 - 08/18/87 Summary: An award was granted for \$16,074 on August 19, 1985 to build and test a prototype. Grantee experienced various problems trying to get valid tests. Project has been completed.

DOE No: 0250 DOE Coord: P. M. HAYES

Title: A System to Adapt Diesel Engines to the Use of Crude Oils

Description: A three-part system for converting conventional diesel engines so they can be operated on either No. 2 diesel fuel or heavy fuels such as crude oil or vegetable oils.

Inventor: State :	Hugh Edwin Whitted NC	Contact: Hugh Edwin Whitted III Route #2, Box #444-A East Bend NC 27018

Status: AwardStatus Date: 08/27/86OERI No.: 009458Patent Status: Not Applied For<br/>Development Stage : Prototype Test<br/>Technical Category: Combustion Engines & ComponentsRecv by NBS: 11/14/83<br/>Recom. by NBS: 12/30/83<br/>Award DateAward Date: 08/27/86Award Amount: \$ 82,057Gontract Period:08/27/86- 11/27/88

Summary: A fifteen month, \$82,057 grant was awarded to modify both a direct and indirectly injected Diesel engine to operate directly on crude oil. A twelve task statement of work is specified. The engines will find application in multi-fuel trucks and stationary engines.

- DOE No: 0251 DOE Coord: G. K. ELLIS
- Title: Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation

Description: A method for heat recovery in distillation by providing heat exchange tubing directly on the trays of the tower. This method is used primarily in crude oil stills.

Inventor: Victor R Thayer State : DE Contact: E A Kiessling Texim Associates 15402 Wandering Trail Friendswood TX 77546 713-749-6729

Status: Complete Status Date: 03/13/87 OERI No.: 009260

Patent Status : Patent # - 4265736 Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 12/03/82 Recom. by NBS : 01/31/84 Award Date : 03/13/87 Award Amount: \$ 41,565 Grant No: FG01-87CE15303 Contract Period: 03/13/87 - 09/12/88

Summary: A grant of \$41,565 was awarded on March 13, 1987, to investigate the technology further. The technology was determined not to be cost effective under current economic conditions.

DOE No: 0252 DOE Coord: D. G. MELLO

Title: Thermal Bank

Description: The "Thermal Bank" is a latent heat type thermal energy storage system. Calcium chloride hexahydrate, the phase change salt, or any suitable phase change material, is used as the working medium. Selected plastic film is employed to form, fill and seal the tube sheets for the "Thermal Bank" packaging.

Inventor: William C Whitman State : NJ

Contact: William C Whitman Three Fourth Street New Brunswick NJ 08901 201-545-3849

Status: CompleteStatus Date: 08/26/86OERI No.: 009217Patent Status: Patent # - 4287942Development Stage :Production EngineeringTechnical Category:Miscellaneous

Recv by NBS : 11/02/82 Recom. by NBS : 01/31/84 Award Date : 03/19/85 Award Amount: \$ 70,778 Grant No: FG01-85CE15211 Contract Period: 03/19/85 - 09/18/85

Summary: A grant of \$70,778 was awarded on March 19, 1985 to Rutgers University to test efficiency of various packaging materials and eutectic salts. The grantee reached agreement with Rutgers to continue R & D beyond grant period using private sector and State of New Jersey co-funding.

- DOE No: 0253 DOE Coord: J. AELLEN
- Title: High Performance Heat Pump

Description: A modified Brayton refrigeration cycle using injected liquid to achieve better performance.

Inventor: Anthony Peters State : NJ Contact: Anthony Peters 300 Winston Drive Cliffside Park NJ 07010 201-886-1320

OERI No.: 008635

Status: Complete Status Date: 11/26/85

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

Recv by NBS : Recom. by NBS :	09/10/81		
Award Date :	09/27/84	Award Amount: \$ 63,200	Grant No: FG01-84CE15198
Contract Period:	09/27/84	- 11/26/85	

Summary: An award of \$63,200 was granted to perform a thermodynamic analysis, study component design and perform an economic analysis. Received the final report for the work done in phase I. The inventor worked on a different version of heat pump rather than the one that was recommended by N.B.S. without prior approval of DOE. Work terminated on this project. About \$25,000 of the total grant has been spent so far.

DOE No: 0254 DOE Coord: D. G. MELLO

- Title: "Turbo-Glo" Immersion Furnace
- Description: A gas-fired melting furnace designed for melting aluminum. The design uses a new type combustion chamber and heat transfer device.
- Inventor: Daniel Douenias State : NY

Contact: Daniel Douenias Gim Metal Products, Inc. 164 Glen Cove Road Carle Place NY 11514 516-741-3005

Status: Complete Status Date: 09/30/86 OERI No.: 009327

Patent Status : Not Applied For Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS : 01/10/83 Recom. by NBS : 03/23/84 Award Date : 01/29/85 Award Amount: \$ 74,700 Grant No: FG01-85CE15201 Contract Period: 01/29/85 - 07/29/86

Summary: A grant of \$74,700 was awarded on January 29, 1985 to build and test a prototype under actual foundry conditions. Invention saves 66% of fuel formerly required for the same operation. Grantee plans to license technology to competitors. DOE No: 0255 DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus

Description: A patented stack gas scrubber which contains a rotatable impeller to duplicate high energy venturi scrubber performance and which is claimed, as a result of test, to use 50% the power consumption.

Inventor: Arthur F Stone Contact: State : NJ Arthur F Stone Status: Decision Phase Status Date: 07/15/86 OERI No.: 009806

Patent Status : Patent # - 4289506 and others Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 11/03/83 Recom. by NBS : 03/27/84

Summary: Several proposals have been received from the inventor. Parties unable as yet to reach agreement on a proposal DOE can support. Awaiting next action from inventor.

DOE No: 0256 DOE Coord: J. AELLEN

Title: Method and Apparatus for Irrigating Container Grown Plants

Description: A method and apparatus for irrigating container grown plants.

Contact: Evert S Green Inventor: State NY Evert S Green . OERI No.: 009696 Status: Other Assistance Status Date: / / Patent # - 4245434 and others Patent Status Development Stage : Production & Marketing Technical Category: Miscellaneous Recv by NBS : 09/14/83 : 04/25/84 Recom. by NBS

Summary: Referred to NATAS for licensing assistance.

DOE No: 0257 DOE Coord: A. R. BARNES

Title: Method and Apparatus for Melting Snow

Description: A process to remove snow from city streets by melting instead of hauling to dump sites.

Inventor: Richard H Baasch State : NE Contact: Richard H Baasch Post Office Box #1013 Grand Isle NE 68802 308-382-5749

Status: CompleteStatus Date: 08/25/86OERI No.: 009758Patent Status: Patent Applied For<br/>Development Stage: Production Engineering

Development Stage : Production Engineering Technical Category: Miscellaneous

Recv by NBS : 10/07/83 Recom. by NBS : 04/30/84 Award Date : 08/26/85 Award Amount: \$ 60,491 Grant No: FG01-85CE15204 Contract Period: 08/26/85 - 08/25/86

Summary: A grant of \$60,492 was awarded on August 26, 1985 to build and test three prototypes in cooperation with various municipalities. Technology shelved on basis of cost effectiveness.

DOE No: 0258 DOE Coord: J. AELLEN

Title: Corrosion Protection Process for Bore Hole Tool

Description: A process for providing an aluminum alloyed surface on iron-base alloys for down-hole tools and parts for improved corrosion resistance replacing more expensive alloys such as chromium and nickel-based alloys and others. This process would be used primarily for parts used in gas and oil wells.

Inventor: State :	Anthony T Rallis TX	Contact: Anthony T Rallis 4700 Polo Parkway Apartment #103 Midland TX 79705 915-684-8811

Status: AwardStatus Date: 04/22/85OERI No.: 009525Patent Status:Disclosure Document ProgramDevelopment Stage:Concept DevelopmentTechnical Category:Industrial Processes

Recv by NBS : 04/29/83 Recom. by NBS : 05/15/84 Award Date : 04/22/85 Award Amount: \$ 67,766 Grant No: FG01-85CE15213 Contract Period: 04/22/85 - 04/30/87

Summary: A grant of \$67,766 was awarded on April 22d, 1985 to prepare samples suitable for laboratory and field tests.

DOE No: 0259 DOE Coord: G. K. ELLIS Title: Hydrostatic Support Sleeve and Rod - Gas Release Probe Description: A mechanism for reducing or eliminating gas-lock problems with oil well pumps. Inventor: William A Jones Contact: State : CA William A Jones P O Box #621 Lotus CA 95651 916-622-9171 Status Date: 07/15/86 Status: Complete OERI No.: 009812 Patent Status Disclosure Document Program 1 Development Stage : Prototype Test Technical Category: Industrial Processes Recv by NBS Recom. by NBS Award Date : 11/07/83 : 05/17/84 : 04/15/85 Award Amount: \$ 81,220 Grant No: FG01-85CE15216 Contract Period: 04/15/85 - 04/04/86 Summary:

Summary: A grant of \$81,220 was awarded on April 15, 1985 to build and test a prototype in cooperation with oil producing companies. Project completed with average production increase of 24.5% and average energy saving of 44.3%.

DOE No: 0260 DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Handling and Dry Quenching Coke

Description: Method and apparatus for handling and dry quenching coke which is pollution free, producing higher yields of quality coke with a recovery means of sensible heat for a useful purpose.

Inventor: Edward S Kress State : IL Contact: Edward S Kress KRESS CORPORATION P O Box #368 227 Illinois Street Brimfield IL 61517 309-446-3395

Status: CompleteStatus Date: 08/06/87OERI No.: 009736Patent Status:Patent # - 4285772Development Stage :Production & MarketingTechnical Category:Industrial Processes

Recv by NBS : 10/03/83 Recom. by NBS : 05/24/84 Award Date : 05/31/85 Award Amount: \$ 57,773 Grant No: FG01-85CE15227 Contract Period: 05/31/85 - 08/06/87

Summary: A grant of \$57,773 was awarded on May 31st, 1985 to build and test a prototype, which has been successfully tested and is being put in operation at a commercial coke plant.

DOE No: 0261 DOE Coord: G. K. ELLIS

Title: A New Apparatus for Making Asphalt Concrete

Description: An asphalt concrete manufacturing process that reduces energy requirements by recovering the latent heat of vaporization from the moisture removed during the manufacturing process and eliminates air pollution by using modern heat transfer methods.

Inventor: Paul E Bracegirdle Contact: PA Paul E Bracegirdle State Status: Other Assistance Status Date: 09/17/85 OERI No.: 009690 Patent Status Patent # - 4378162 and others Development Stage : Production Engineerin Technical Category: Industrial Processes Production Engineering Recv by NBS : 09/06/83 Recom. by NBS : 05/24/84 Inventor licensed his technology to a foreign company. There is no further action required of DOE. Summary:

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DOE No: 0262 DOE Coord: J. AELLEN

Title: Energy Saving Pump and Pumping System

Description: A centrifugal pump and pumping system that automatically provide recirculating flow at low output flows when pump cooling is needed, and that recover hydraulic energy in response to reduced output flows.

Inventor: Kai-Chih Cheng State : WA Contact: Kai-Chih Cheng Innovative Tech Laboratory 2339 Davison Avenue Richland WA 99336 509-582-2660

Status: Award Status Date: 04/17/85 OERI No.: 009691

Patent Status : Patent # - 4396347 Development Stage : Working Model Technical Category: Miscellaneous

Recv by NBS : 09/06/83 Recom. by NBS : 06/20/84 Award Date : 04/17/85 Award Amount: \$ 85,837 Grant No: FG01-85CE15207 Contract Period: 04/17/85 - / /

Summary: A grant of \$85,837 was awarded on April 17th, 1985 to build and test the proposed pump.

- DOE No: 0263 DOE Coord: J. AELLEN
- Title: Method for Reconditioning Rivetless Chain Links
- An upsetting process used to recondition chain links of the type used on industrial conveyors. Description:

William Tunderman Contact: Inventor: William Tunderman State IL • Status: Other Assistance Status Date: 09/18/85

OERI No.: 009849

Patent Status Patent # - 4229962 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

: 10/03/83 : 06/22/84 Recv by NBS Recom. by NBS

Inventor received about \$12,000 to conduct a market survey from the State of Illinois. Further assistance will be considered by DOE at the completion of the market survey. Summary:

- DOE No: 0264 DOE Coord: J. AELLEN
- Title: Desulfurization of Coal

A process for the selective wet oxidation of the sulfur content of high sulfur coal into sulfur trioxide or other use in order to Description: produce a low sulfur coal for the slurry pipeline transport or other use.

Donald F Othmer Inventor: State NY

Contact: Agit Chowdhury Zimpro. Incorporated Military Road Rothschild W WI 54474 715-359-7211

Status: Award Status Date: 07/03/85 OERI No.: 009202 Patent # - 4251277 Patent Status Development Stage : Engineering Design Industrial Processes Technical Category:

Recv by NBS Recom. by NBS 11/09/82 Recom. by NBS : 06/22/84 Award Date : 07/03/85 Contract Period: 07/03/85 Award Amount: \$ 71,244 Grant No: FG01-85CE15206 - 12/02/85

A grant of \$71,244 was awarded on July 3rd, 1985 to perform laboratory tests for desulfurization of coal by Zimpro, Inc., located in Wisconsin. Summary:

DOE No: 0265 DOE Coord: G. K. ELLIS Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation Title: A new type tractor-mounted applicator that wipes herbicide onto Description: growing weeds. Inventor: John W Richardson Contact: State John W Richardson : LA J Sherman Richardson Route Three, Box #81 Colfax LA 71417 Colfax LA 318-627-9171 Status: Complete Status Date: 07/15/86 OERI Nc.: 009918 : Patent Applied For Patent Status Development Stage : Prototype Development Industrial Processes Technical Category: Recv by NBS Recom. by NBS : 01/06/84 Recom. by NBS : 07/18/84 Award Date : 07/15/86 Contract Period: 07/15/86 Award Amount: \$113,417 Grant No: FG01-85CE15217 - 09/23/88 A grant of \$86,967 was awarded on April 2, 1985 to build and test a prototype. Inventor was awarded an additional \$26,450 in view of some unanticipated development problems encountered. Results appear satisfactory although a final report has not been Summary: received; inventor ill. DOE No: 0266 DOE Coord: J. AELLEN Title: Energy Conversion Method A novel "Heat Pump" using engine-driven compressor and steam Description: ejectors to compress low pressure steam to more useful levels. Dan Egosi Inventor: Contact: Country : IsraeI Dan Egosi Status: Other Assistance Status Date: 09/13/85 OERI No.: 009582 Patent # - 4282070 Patent Status Development Stage : Concept Development Technical Category: Buildings, Structures & Components Recv by NBS : 01/06/83 Recom. by NBS : 08/22/84 Inventor needs licensing help. DOE sent him names of appropriate companies in the U.S. to be contacted for licensing. Summary:

DOE No: 0267 DOE Coord: J. AELLEN Title: Integrated Gasification of Coal, Municipal Solid Wastes and Sludge Description: Hardware and a process for gasifying coal, solid wastes and sewage sludge. Contact: Shang-I Cheng Seventeen Woodsend Drive Matawan NJ 07747 Shang-I Cheng Inventor: NJ State • 212-254-6300 Status Date: 05/10/85 OERI No.: 009565 Status: Award Patent Status Patent # - 4357713 : Development Stage : Prototype Development Technical Category: Industrial Processes Recv by NBS : 05/23/83 Recom. by NBS : 08/22/84 Award Date : 05/10/85 Contract Period: 05/10/85 Award Amount: \$ 70,000 Grant No: FG01-85CE15222

grant of \$70,000 was awarded on May 10, 1985 to perform Summary: Α laboratory tests, computer simulation and preliminary design.

DOE No: 0268 DOE Coord: J. AELLEN

Title: Apparatus for Enhancing Chemical Reactions

energy to enhance chemical Description: A process for using ultrasonic reactions and extraction processes.

Inventor: Harold T Sawyer State : CA

Status: Award

Contact: Harold T Sawyer 845 Via de la Paz Pacific Palisades 213-459-3020 CA 92663 OERI No.: 009794 Status Date: 05/02/86 Patent Status : Patent # - 4369100 and others Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 10/31/83 Recom. by NBS : 08/22/84 Award Date : 05/02/86 Contract Period: 05/02/86 Award Amount: \$ 75,402 Grant No: -

A \$75,402 award was granted to build a model and have it tested at the University of Utah. Summary:

DOE No: 0269 DOE Coord: G. K. ELLIS

Title: Refrigerant Accumulator and Charging Apparatus

Description: An accumulator-charger installed in the suction line of a vapor-compression refrigeration unit. It provides for accumulation of liquid refrigerant/oil thereby preventing liquid refrigerant from bring drawn into the compressor, and intended to prevent overcharging or undercharging the refrigerant system.

Inventor: Richard J Avery, Junior State : TX Status: Analysis Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Contact: Richard J Avery, Junior OERI No.: 009971

Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 02/07/84 Recom. by NBS : 08/30/84

Summary: Recommendation under consideration by DOE. Inventor attended commercialization workshop in Leesburg, VA during 1985. Inventor unable as yet to develop an appropriate plan of action.

DOE No: 0270 DOE Coord: G. K. ELLIS

Title: Method of Energy Recovery for Wastewater Treatment

Description: A process and apparatus to recover available hydraulic energy for wastewater aeration by using a specially designed hydraulic gas compressor.

Inventor: Shih-Chih Chang State : WA Contact: Shih-Chih Chang 2339 Davison Avenue Richland WA 99352 509-582-2664

Status: Complete

Status Date: 04/05/85

OERI No.: 009767

Patent Status : Disclosure Document Program Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 10/13/83 Recom. by NBS : 09/07/84 Award Date : 04/05/85 Award Amount: \$ 65,055 Grant No: FG01-85CE15210 Contract Period: 04/05/85 - 09/23/88

Summary: A grant of \$65,055 was awarded on April 5th, 1985 to optimize the variables in a bench-scale test set-up. The inventor has prepared and instrumented this test set-up. He has conducted tests to determine optimum process variables.

DOE No: 0271 DOE Coord: G. K. ELLIS

Title: Hydrogen Storage System

Description: A new geometric design hydrogen storage system for rapid heat cycling, using metal hydride systems in finned tubes.

Status Date: 07/15/86

Inventor: William B Retallick State : PA Contact: William B Retallick 1432 Johnny's Way West Chester PA 19380 215-399-1371

OERI No.: 009734

Status: Complete

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Miscellaneous

Recv by NBS : 10/04/83 Recom. by NBS : 09/26/84 Award Date : 06/21/85 Award Amount: \$ 50,338 Grant No: FG01-85CE15230 Contract Period: 06/21/85 - 12/20/85

Summary: A grant of \$50,338 was awarded on June 21st, 1985 to build and test a prototype storage system. Results were encouraging, prompting new research initiative. EPRI is presently actively sponsoring the technology, and seeks to transfer it to industry.

DOE No: 0272 DOE Coord: P. M. HAYES

Title: V-Plus System

Description: A method to cool lubricating oil in a positive displacement rotary screw compressor. A variable speed pump injects liquid refrigerant into the compressor discharge line.

Inventor: Robert M Roeglin State : WI Contact: David R Tree Ray W Herrick Laboratories Purdue Univertsity West Lafayette IN 47907 317-494-2138

Status: CompleteStatus Date: 04/24/87OERI No.: 009730Patent Status:Patent # - 4275570Development Stage :Production & MarketingTechnical Category:Buildings, Structures & Components

Recv by NBS : 09/14/83 Recom. by NBS : 09/27/84 Award Date : 02/24/87 Award Amount: \$ 74,993 Grant No: FG01-87CE15245 Contract Period: 02/24/87 - 08/23/88

Summary: A grant of \$74,993 was awarded on February 24th, 1987 to test the lubricant cooling system at the Herrick Laboratory at Purdue University.

DOE No: 0273	DOE (	Coord: P. M. HAYES		
Title:	Open Cycle Later	nt Heat Engine		
Description:	A novel engine heat source.	that uses relatively	low temperature water a	is a
Inventor: Jul State : NY	lius Czaja		tact: ius Czaja	
Status: No DOB	E Support	Status Date: 09/13/85	OERI No.: 009866	
Patent Status Development St Technical Cate	: Patent # tage : Concept I egory: Combustic	- 4106294 Development on Engines & Component	S	
Recv by NBS Recom. by NBS	: 12/07/83 : 09/27/84			
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Summary: DOE had two meetings and several telephone conversations with the inventor. He cannot decide what course of action to follow. No work proposal has been submitted by the inventor.

- DOE No: 0274 DOE Coord: T. LEVINSON
- Title: Flexible Lighting Fluorescent Lighting Operating at Radio Frequency
- Description: A lighting system consisting of electrodeless gas- containing capsules, strung in a clear plastic tubular jacket. The capsules are excited by standing waves produced by a radio frequency generator.
- Inventor: Nathan E Passman State : CO

Contact: Nathan E Passman Illuminating Technology Corp 2516 Forty-Ninth Street Unit Six Boulder CO 80301 303-440-4486

Status: Complete

Status Date: 05/28/87 OERI No.: 007911

Patent Status : Patent # - 3157823 and others Development Stage : Production & Marketing Technical Category: Miscellaneous

Recv by NBS : 12/31/80 Recom. by NBS : 09/28/84 Award Date : 09/30/85 Award Amount: \$ 79,590 Grant No: FG01-85CE15244 Contract Period: 09/30/85 - 09/29/86

Summary: A one-year grant of \$79,590 was awarded to design, build, and demonstrate the unique lighting system. Bridge structures and coal mine passageways will be the first two applications. The final report was received on May 28th, 1987. DOE No: 0275 DOE Coord: J. AELLEN

Title: Low Head - High Volume Pump

A low-head, high volume double-acting piston pump for use in wind-driven water pumping stations. Description:

Inventor: Don E Avery ΗI State •

Contact: Don E Avery 45-437 Akimala Kaneohe HI 9 808-247-1909 96744

Status: Complete

Status Date: 10/30/86

OERI No.: 010115

Disclosure Document Program Prototype Test Miscellaneous Patent Status Development Stage : Technical Category:

Recv by NBS Recom. by NBS Award Date

Recv by NBS : 04/23/84 Recom. by NBS : 10/15/84 Award Date : 06/04/86 Contract Period: 06/04/86 Award Amount: \$ 56,325 Grant No: FG01-86CE15278 - 06/03/87

A one-year, \$56,325 grant was issued to design and demonstrate a low-head, high volume pump. The County of Maui in Hawaii is cost-sharing. See recommendation Summary:

301 for related work. First season test proved concept. Winter '86, tested 2d generation product. Present throughput rate uneconomical in urban test. \*\*\*\*\*\*\*\*\*\*\*

DOE No: 0276 DOE Coord: J. AELLEN

Title: Gas Concentration Cells as Converters of Heat into Electrical Energy

A system for using gas concentration cells to convert waste heat directly into electricity through heat driven electrochemical Description: reactions.

Robert E Salomon Inventor: State PA :

Contact: Robert E Salomon Chemistry Department Temple University Philadelphia PA 19122 Philadelphia PA 215-787-7125

OERI No.: 009713 Status: Complete Status Date: 06/01/85 Not Applied For Concept Development Fossil Fuels Patent Status Development Stage : Technical Category: Recv by NBS : 09/27/83 Recom. by NBS : 10/25/84 Award Date : 04/26/85 Contract Period: 04/26/85 Award Amount: \$ 79,957 Grant No: FG01-85CE15218 - 09/30/87 Summary: grant of \$79,957 was awarded on June 1st, 1985 to Temple University for building and testing a prototype model.

DOE No: 0277 DOE Coord: J. AELLEN Title: Electronic Conveyor Control Apparatus Electronic conveyor control, U S Patent #4,372,439 dated February 8, 1983, describes an automatic start/stop system for conveyor belts. Tests in three post offices over two 30 day periods (with and without the control) show a 50% reduction in energy used to Description: drive the belts. Inventor: Guy C Dempsey Contact: State VA. Smart Technologies, Inc Status Date: 09/18/85 OERI No.: 010221 Status: Analysis Patent # - 4372439 Patent Status Development Stage : Limited Production/Marketing Technical Category: Industrial Processes : 06/08/84 : 11/23/84 Recv by NBS Recom. by NBS

Summary: Recommendation under consideration by DOE.

DOE No: 0278 DOE Coord: P. M. HAYES

Title: Complete System for Large Solar Water Heating and Storage

Description: An integrated system of solar collection and thermal storage for service water heating. It is a large- scale water heating system utilizing a heat pipe arrangement to extract thermal energy from an air- based solar collector.

Inventor: James M Stewart State : SC	Contact: James M Stewart 115 Sylvan Way Greenville SC 29605 803-242-9492
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Status: Complete Status Date: 08/07/87 OERI No.: 009238

Patent Status : Patent # - 4340033 and others Development Stage : Production Engineering Technical Category: Direct Solar

Recv by NBS : 11/23/82 Recom. by NBS : 11/29/84 Award Date : 06/27/85 Award Amount: \$ 71,581 Grant No: FG01-85CE15223 Contract Period: 06/27/85 - 06/26/87

Summary: A grant of \$71,581 was awarded on June 27th, 1985 to build and test a prototype solar water heating system. Grant objectives were successfully completed. Technology featured in the NASA spin-off '88 publication.

DOE No: 0279 DOE Coord: P. M. HAYES Title: Method and Means for Preventing Frost Damage to Crops A mobile machine for preventing frost damage to crops by taking in warmer air from above crop level, heating the air slightly with a burner, and blowing the air horizontally through the crops Description: at low level. Contact: Douglas R Reich 16200 Baypointe Boulevard Inventor: Douglas R Reich State : FL A305 North Fort Myers FL 33903 813-675-6205 Status: Complete Status Date: 08/07/87 OERI No.: 009638 Patent Status Patent # -Development Stage : Working Model Industrial Processes Technical Category: Recv by NBS : 01/29/83 Recom. by NBS : 11/29/84 Award Date : 08/26/85 Contract Period: 08/26/85 Award Amount: \$ 74,280 Grant No: FG01-85CE15231 - 08/07/87 A grant of \$74,280 was awarded on August 26th, 1985 to fabricate, test and evaluate a new prototype. Field tests were conducted in conjunction with the University of Florida. The inventor leased a 7800 square foot production facility, and has had sales in excess Summary: of \$2 million. DOE No: 0280 DOE Coord: J. AELLEN Down Hole and Above Ground Resistance Heating for Paraffin Title: Elimination A method for removing paraffin from down-hole oil well tubing by use of resistance heating induced in the tubing to heat and melt Description: the paraffin. Inventor: Andrew W Marr, Junior Contact: Andrew W Marr, Junior State OK : P O Box #1464 Ardmore OK 73401 405-657-4202 Status Date: 08/28/85 Status: Award OERI No.: 009509 Patent Status Patent # - 4303128 and others Development Stage : Prototype Test Technical Category: Fossil Fuels Recv by NBS Recom. by NBS : 04/19/83 : 11/30/84 : 08/28/85 Award Date Award Amount: \$ 58,286 Grant No: FG01-85CE15220 Contract Period: 08/28/85 A grant of \$58,286 was awarded on August 28, 1985. Summary:

DOE No: 0281 DOE Coord: J. AELLEN Title: Sun Synchronous Solar Powered Refrigerator Photovoltaic powered refrigerator. Key features are durability, good insulation, efficient vapor/compression cycle, thermal storage, low cost, and sun synchronous operation without the use Description: of batteries. Inventor: Arthur D Sams Contact: Arthur D Sams Polar Products State : CA 2908 Oregon Court, Torrance CA 9050 213-320-3514 I-11 90503 Status: Complete Status Date: 08/12/85 OERI No.: 010256 Patent Status : Not Applied For Development Stage : Prototype Development Technical Category: Buildings, Structures & Components Recv by NBS : 07/02/84 Recom. by NBS : 12/18/84 Award Date : 08/12/85 Contract Period: 08/12/85 Award Amount: \$ 69,415 Grant No: FG01-85CE15219 - 12/11/86 A grant of \$69,415 was awarded on August 12, 1985 to build and test a prototype. Recipient contributed \$24,960 in addition to Summary: the grant. DOE No: 0282 DOE Coord: J. AELLEN Title: Insulated Siding An insulated siding for use on houses. Both vinyl and aluminum siding are fabricated with urethane foam averaging 1/2" thick and Description: lined with aluminum foil backing. Inventor: Eugene Tippmann Contact: TN Robert J Koester State Ball State University Ctr for Energ Res & Ed Svcs Muncie IN 47306 317-285-1135 Status: Complete Status Date: 08/29/85 OERI No.: 010002 Patent Status : Patent # -Development Stage : Prototype Development Technical Category: Buildings, Structures & Components Recv by NBS : 02/28/84 Recom. by NBS : 12/18/84 Award Date : 08/29/85 Contract Period: 08/29/85 Award Amount: \$ 57,798 Grant No: FG01-85CE15240 - 09/30/86 Summary: A grant of \$57,798 was awarded on August 29, 1985 to Ball State University to build and test prototype insulated sidings.

DOE No: 0283 DOE Coord: P. M. HAYES

Title: Aluminum Roofing Chips

Description: A reflective coating for application to built-up roofing. Aluminum chips are spray-applied to surfaces with good adhesion.

Inventor: Tom Atterbury State : OH Contact: Donald Cullen Transmet Corporation 4290 Perimeter Drive Columbus OH 43228 614-276-5522

Status: CompleteStatus Date: 08/07/87OERI No.: 010182

Patent Status : Patent # -Development Stage : Working Model Technical Category: Buildings, Structures & Components

Recv by NBS : 05/17/84 Recom. by NBS : 12/18/84 Award Date : 06/27/85 Award Amount: \$ 78,878 Grant No: FG01-85CE15232 Contract Period: 06/27/85 - 02/01/87

Summary: A grant of \$78,878 was awarded on June 27th, 1985 to optimize the size, shape and composition of the aluminum roofing chip system. Tests showed 30-40% energy saving in summer due to the high reflectivity of the Al chips and 10% savings in winter due to low emissivity. The product is gaining acceptance in the market. The company expects several million dollars in sales in 1989.

DOE No: 0284 DOE Coord: P. M. HAYES

Title: Atomized Oil-Injected Rotary Screw Compressors

Description: An atomized oil-injection system to improve the power and volumetric efficiencies of the rotary compressors.

Inventor: Anthony N Fresco State : NY Contact: David R Tree Ray W Herrick Laboratories Purdue University West Lafayette IN 47907 317-494-2138

Status: Award Status Date: 02/24/87 OERI No.: 009662

Patent Status : Not Applied For Development Stage : Concept Definition Technical Category: Buildings, Structures & Components

Recv by NBS : 08/22/83 Recom. by NBS : 01/24/85 Award Date : 02/24/87 Award Amount: \$ 74,993 Grant No: FG01-86CE15245 Contract Period: 02/24/87 - 08/23/88

Summary: A grant of \$74,993 was awarded on February 24th, 1987, to test the atomized oil injection concept for improved efficiency at Purdue University's Herrick Laboratory.

DOE No: 0285	DOE Coord: T. LEVINSON
Title:	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
Description:	A lubricant seal for railroad car axle bearings, the seal having no direct frictional contact betweem rotating and non-rotating parts and depending on dynamic effects for sealing.
Inventor: He State : CT	
Status: Award	Status Date: 06/03/87 OERI No.: 010167
Patent Status Development S Technical Cat	: Not Applied For tage : Laboratory Test egory: Transportation Systems, Vehicles & Components
Recv by NBS Recom. by NBS Award Date Contract Peri	: 05/10/84 : 01/25/85 : 06/03/87 Award Amount: \$ 72,000 Grant No: FG01-87CE15334 .od: 06/03/87 - 12/02/88
Summary:	A \$72,000 grant was awarded on June third, 1987, to design a fluid-ring seal and test it in actual operation on a Burlington Northern railcar.
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DOE No: 0286	DOE Coord: G. K. ELLIS
Title:	Use of Pulse-Jet for Atomization of Coal/Water Mixture
Description:	Propane or a fuel gas is burned in a pulse-jet. The pulse-jet exhaust is used aerodynamically to atomize a stream of coal-water-mixture injected into a large steam boiler combustor.
Inventor: Mo State : MD	mtaz N Mansour Contact: Momtaz N Mansour
Status: Compl	ete Status Date: 03/14/86 OERI No.: 010313

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : 08/02/84 Recom. by NBS : 01/25/85

Summary: Inventor received contract from Pittsburg Energy Technology Center, a DOE laboratory. No further action by ERIP necessary. DOE No: 0287 DOE Coord: J. AELLEN

Title: Automatic Variable Pitch Marine Propeller

A variable geometry marine propeller having the blades pivoted and balanced so as to automatically adjust propeller pitch, diameter, and basic area ratio in response to shaft speed and hydrodynamic load, thereby enabling the driving engine to function at optimum RPM and fuel efficiency over a broad range of hull speeds and ladings. Description:

Don J Marshall Inventor: State : MD

Contact: Don J Marshall 1087 Rodgers Road P O Box #159 Churchton MD 20733 301-867-2135

Status: Complete Status Date: 09/06/85 OERI No.: 010259

Patent # - 4297079 and others Prototype Test Patent Status Development Stage : Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/26/84 Recom. by NBS : 01/25/85 Award Date : 09/06/85 Contract Period: 09/06/85 Award Amount: \$ 41,593 Grant No: FG01-85CE15243 - 12/15/87

A grant of \$41,593 was awarded on September 6, 1985, to build and test the proposed propeller. The test took place at Mississippi State University in cooperation with Sea Grant Advisory Service. Summary:

- DOE No: 0288 DOE Coord: G. K. ELLIS
- Title: Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
- A method of burning coal or coal/water/mixture at high pressure Description: without resultant air pollution.
- Norman L Dickinson Inventor: State : CA

Contact: Norman L Dickinson

Status Date: 08/06/87 Status: Decision Phase OERI No.: 010307

Patent # - 4380960 and others Patent Status Engineering Design Buildings, Structures & Components Development Stage :

Technical Category:

Recv by NBS Recom. by NBS : 07/23/84 : 01/30/85

Procurement request prepared. Decision pending whether or not to Summary: support.

DOE No: 0289 DOE Coord: P. M. HAYES

An Earthquake Barrier Title:

A concept to absorb the energy of an earthquake with bilinear force-deflection devices at the foundation of a building, thereby Description: providing positive protection against inelastic distortions that cause building damage. This concept is claimed to avoid damage to the buildings during an earthquake and save human life.

Inventor: Marc S Caspe State : CA

Contact: Marc S Caspe 1640 Oakwood Drive San Mateo CA 94403 415-573-8888

Status: Complete

Status Date: 08/07/87 OERI No.: 010311

Patent # - 3638377 Patent Status Development Stage : Engineering Design Buildings, Structures & Components Technical Category:

Recv by NBS Recom. by NBS : 07/26/84 : 02/28/85 : 01/10/86 Award Date Award Amount: \$ 68,749 Grant No: FG01-86CE15250 - 01/09/87 Contract Period: 01/10/86

A grant of \$37,004 was awarded January 10th, 1986 to perform a conceptual study of the earthquake barrier's configuration, preliminary design, construction schedule and estimate of construction costs for four retrofit projects. An additional \$31,745 was awarded on July 28, 1986 to conduct shake table tests on the technology. Japanese architecural and construction firms have taken the lead in developing this type of technology. Summary:

DOE No: 0290 DOE Coord: J. AELLEN

Title: Low Energy Ice Making Apparatus

In this ice-making apparatus, ice is progressively formed on evaporator plates and harvested by a secondary condensor grid heated by the warm liquid refrigerant discharged by the primary Description: water cooler condensor.

Inventor: State :	Jerry IL	Aleksandrow				Contact: Greg Ros Universa 900 Jori Suite Se Oakbrool 312-990	ss al Ice Le Bou eventy & IL	ılevar y-Two	d	fg
Status: Co	mplete		Status 1	Date:	05/20	/87	OERI	No.:	00980	7

Patent Status : Patent # - 4357807 Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS :	11/03/83			
Recom. by NBS :	02/28/85			
Award Date :	05/21/86	Award Amount: \$ 62	2,500 Grant	No: FG01-86CE15258
Award Date : Contract Period:	05/21/86	- 05/20/87	,	

Summary: A \$62,500 grant was awarded on May 21st, 1986, to compare efficiency and safety with comparable machines.

DOE No: 0291 DOE Coord: G. K. ELLIS

Title: Selective Zone Isolation for HVAC System

Description: A method for controlling air flow from a central HVAC system in a programmed way so that only selected zones within a building receive air flow during specified time periods

Inventor: Jerry Tartaglino State : TX Contact: Jerry Tartaglino 4911 West Hanover Dallas TX 75209 214-357-2665

Status: Complete Status Date: 04/09/87 OERI No.: 010331

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Buildings, Structures & Components

Recv by NBS :	08/02/84		
Recom. by NBS :	02/28/85		
Award Date :	04/15/86	Award Amount: \$ 90,769 Gra	ant No: FG01-86CE15261
Contract Period:	04/15/86	- 10/08/88	

Summary: An award of \$45,384 was granted on April 15th, 1986 to build and demonstrate a prototype. A Phase II grant was awarded on April 9, 1987 for \$45,385 to build and advanced prototype. The prototype was completed and tested satisfactorally. The inventor now actively marketing the invention and has it in production.

DOE No: 0292 DOE Coord: J. AELLEN

Title: Roof Construction Having Membrane and Photo Cells

Description: A building roof construction that also serves as a substrate, electrical interconnection, and protective covering for an array of flexible voltaic elements intended to generate electrical power for use in the building or elsewhere.

Inventor: Thomas F Francovitch State : MD	Contact: Thomas F Francovitch 216 Circle Road Pasadena MD 21122 301-437-3727
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Status: CompleteStatus Date: 08/26/86OERI No.: 010297Patent Status :Patent Applied ForDevelopment Stage :Laboratory TestTechnical Category:Direct Solar

Recv by NBS : 07/19/84 Recom. by NBS : 02/28/85 Award Date : 08/26/85 Award Amount: \$ 40,130 Grant No: FG01-85CE15239 Contract Period: 08/26/85 - 08/26/86

Summary: A grant of \$40,130 was awarded on August 26, 1985 to perform laboratory tests on the roof membrane and photocells.

DOE No: 0293 DOE Coord: J. AELLEN

Title: "Therm-A-Valve" - Insulated Valve Coverings

Description: A solar powered system to keep critical flow control valves from freezing on gas wells during cold weather.

Inventor: Randell D Ball State : OK Contact: PFI, Inc 128 Northwest 67th Street Oklahoma City OK 73116 405-354-4584

Status: Award Status Date: 07/21/87 OERI No.: 010130

Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Fossil Fuels

Recv by NBS : 04/24/84 Recom. by NBS : 03/29/85 Award Date : 01/21/86 Award Amount: \$ 56,193 Grant No: FG01-86CE15254 Contract Period: 01/21/86 - 03/31/90

Summary: A grant for \$56,193 was awarded on January 1, 1986 to build and test prototype valve covers, first in the laboratory and then in the field, under actual conditions.

DOE No: 0294 DOE Coord: G. K. ELLIS

Title: Highway Power Patcher

Description: A portable self-propelled pavement patching machine which blows debris from a distressed area of pavement, mixes and applies an unheated crusted rock and asphalt patching material, and compacts the patch by means of a roller.

Inventor: Carl L Sterner State : CA

Contact: Carl L Sterner Route Four, Box #372 Bakersfield CA 93309 805-589-3355

Status: Complete Status Date: 08/15/86 OERI No.: 010077

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 03/20/84 Recom. by NBS : 03/29/85 Award Date : 08/15/85 Award Amount: \$ 60,031 Grant No: FG01-85CE15241 Contract Period: 08/15/85 - 08/15/86

Summary: A grant of \$60,031 was awarded on August 15, 1985 to build and test a self-propelled highway pavement patching machine. Mr. Sterner has received numerous inquiries about his machine from all over the U.S., and seeks to license the technology. DOE No: 0295 DOE Coord: J. AELLEN Title: Improved Method of Electroplating Aluminum for Corrosion Resistance Description: A method for electroplating ferrous metals with aluminum for improved corrosion resistance. Contact: J Paul Pemsler Castle Technology Corporation Fifty-Two Dragon Court Woburn MA 01801 617-933-5634 Inventor: J Paul Pemsler MA State • Status: Complete Status Date: 08/27/86 OERI No.: 010185

Patent Status : Disclosure Document Program Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS :	05/21/84			
Recom. by NBS :	03/29/85			
Award Date :	08/28/85	Award Amount: \$ 69,000	Grant No: FG01-85CE15236	
Contract Period:	08⁄28⁄85	- 08/27/86		

Summary: A grant of \$69,000 was awarded on August 28, 1985 to build and test a prototype.

DOE No: 0296 DOE Coord: P. M. HAYES

Title: Shower Bath Economizer

Description: A heat exchanger installed at a shower-bath or tub drain which transfers heat from the drain water to the incoming cold water, thereby reducing the amount of energy required to heat the water.

Inventor: Raymond Hunter State : TN	2112 Chat	act: ond Hunter Ivy Street tanooga TN 37404 698-0023
Status: Complete	Status Date: 01/01/86	OERI No.: 009516
Patent Status : Patent # Development Stage : Producti Technical Category: Building	- 4372372 on Engineering s, Structures & Compone	nts
Recv by NBS : 04/26/83 Recom. by NBS : 03/29/85 Award Date : 02/01/86 A Contract Period: 02/01/86 -	ward Amount: \$ 58,000 ( 07/31/86	Grant No: FG01-86CE15251
Summary: A grant of \$5 final design an	8,000 was awarded on J 1d development of the sh	Vanuary lst, 1986, for the ower bath economizer.

DATE: 30 SEPTEMBER 1988

DOE No: 0297 DOE Coord: J. AELLEN

Title: Series (Two-Wire) V-Controller

Description: An electronic light dimmer for fluorescent lamps, that will mount in a single two-wired switch box without the need for re-wiring or replacing conventional lamp ballasts with "dimming" ballasts.

Inventor: E M Talbott State : MD Contact: Varigas Research, Inc P O Box #489 1717 York Road Lutherville-Timonium MD 21093

OERI No.: 010261

## 301-252-6230

Status: Award

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : 07/05/84 Recom. by NBS : 03/29/85 Award Date : 08/19/85 Award Amount: \$ 70,785 Grant No: FG01-85CE15233 Contract Period: 08/19/85 - 10/01/88

Summary: A grant of \$51,180 was awarded on August 198, 1985 to design and build a prototype. Tests will be conducted in phase II.

Status Date: 04/02/87

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DOE No: 0298 DOE Coord: J. AELLEN

Title: Three Tenths Degree Kelvin Closed Cycle Refrigeration System

Description: Closed cycle refrigeration system to provide cooling to, 0.3 Kelvin. Does not consume helium or other liquid cryogens.

Inventor: David L Swartz State : AZ Contact: David L Swartz Cryosystems, Inc. 1802 West Grant, Suite #122 Tucson AZ 85745 602-882-4628

Status: Award

Status Date: 04/05/86 OERI No.: 010254

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components

Recv by NBS : 06/28/84 Recom. by NBS : 04/19/85 Award Date : 04/05/86 Award Amount: \$ 63,500 Grant No: FG01-85CE15248 Contract Period: 04/05/86 - 11/05/87

Summary: A grant of \$63,500 was awarded on April 5, 1986 to build and test a prototype.

DOE No: 0299 DOE Coord: G. K. ELLIS

Title: Process for Using Cocurrent Contacting Distillation Column

A new fractionator tray design which achieves higher distillation column output through high-velocity cocurrent vapor-liquid flow in the zones between the trays. Description:

Inventor: William R Trutna State TX •

Contact: William R Trutna 2213 Fenwood Pasadena TX 77502 713-472-5098

Status: Complete Status Date: 09/17/86 OERI No.: 009873

Patent # - 4361469 Patent Status Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS Recom. by NBS Award Date : 12/07/83 Recom. by NBS : 04/19/85 Award Date : 09/17/86 Contract Period: 09/17/86 Award Amount: \$ 74,192 Grant No: FG01-86CE15296 - 09/30/88

A grant of \$74,192 was awarded on September 17, 1986 to build and demonstrate a workable prototype. Tests were completed satisfactorally at the Iniversity of Texas' Separation Center, showing a 30% improvement in separations efficiency. The inventor Summary: seeks to license the technology.

- DOE No: 0300 DOE Coord: G. K. ELLIS
- Title: Casing Stabbing Apparatus

A retrofittable hardware design for the rapid alignment of well Description: casing sections during rig operations to prevent thread damage due to misalignment and cross threading.

Inventor: James McArthur State OK :

Contact: James McArthur Box Fifty Tishomingo 405-371-9223 OK 73460

OERI No.: 010194 Status: Complete Status Date: 07/31/87

Patent Status Patent # - 4440220 Limited Production/Marketing Development Stage : Technical Category: Fossil Fuels

Recv by NBS : Recom. by NBS :	05/25/84 04/30/85		
Award Date :	07/18/86	Award Amount: \$ 64,337	Grant No: FG01-86CE15276
Contract Period:	07/18/86	- 07/31/87	

A grant of \$64,337 was awarded on July 18, 1986 to design, build and test a prototype. The prototype was completed and successfully tested. Inventor has sold the invention to the Oklahoma Casing Company in Lindsay, OK. (405/756-4443) Summary:

DOE No: 0301 DOE Coord: J. AELLEN

Title: Pump Control System for Windmills

Description: A mechanism for automatically controlling the stroke of wind-driven water-pumps so as to match pump operation to the available wind energy

Inventor: Don E Avery State : HI Contact: Don E Avery 45-437 Akimala Street Kaneohe HI 96744 808-247-1909

Status: Complete Status Date: 06/03/87 OERI No.: 010469

Patent Status : Patent # - 4392785 Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS : 11/02/84 Recom. by NBS : 04/30/85 Award Date : 06/04/86 Award Amount: \$ 43,625 Grant No: FG01-86CE15279 Contract Period: 06/04/86 - 06/03/87

Summary: A \$43,625 grant was issued to build, install and demonstrate a variable stroke pump control system for an EDA aquaculture project at Kealia Pond, Maa Laea, Maui, Hawaii. The County of Maui is cost- sharing. See invention

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## DOE No: 0302 DOE Coord: J. AELLEN

Title: Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers

Description: A vertical shaft impact rock breaker having a direct-drive vertical shaft motor - and - an impact rock breaker in which the thrown rock is directed back toward the impeller so that most rock breakage occurs during collisions of thrown and returning rock.

Inventor: John H Burk State : CA

Contact: Phil Tippet Carri-Cel, Inc P O Box #4552 Cleveland TN 37311 615-489-1187

Status: Complete

Status Date: 09/29/86 OERI No.: 010539

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

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Recv by NBS :	12/13/84		
Recom. by NBS :	04'/30'/85		
Award Date :		Award Amount: \$ 75,000	Grant No: FG01-86CE15292
Contract Period:	09/29/86	- 09/28/88	

Summary: A grant of \$75,000 was awarded on September 29th, 1986 to build and test a prototype.

DOE No: 0303 DOE Coord: J. AELLEN Title: Battery Heating Device An automotive battery heating device which stores exhaust heat in a phase-change storage material and which includes the necessary Description: heat exchangers and controls to transfer heat to the battery to facilitate cold weather starting. Nicholas Archer Sanders Inventor: Contact: VT Nicholas Archer Sanders State • Eleven Green Ridge Road Route One, Box #175 Norwich VT 05015 802-649-3869 Status Date: 02/28/86 Status: Complete OERI No.: 010170 Patent Status Patent # - 4258677 Development Stage : Prototype Test Technical Category: Transportation Systems, Vehicles & Components Recv by NBS : 05/11/84 Recom. by NBS : 05/31/85 Award Date : 02/28/86 Contract Period: 02/28/86 Award Amount: \$ 71,500 Grant No: FG0186CE15257 - 04/27/88 A grant of \$71,500 was awarded on February 28th, 1986, to build Summary: and test a model. DOE No: 0304 DOE Coord: G. K. ELLIS Title: Exfoliated Graphite Fibers A new material, exfoliated graphite fibers, a novel form of composite fiber, and a method for producing them. Description: Deborah D Chung Inventor: Contact: Deborah D Chung State : PA 3812 Henley Drive Pittsburgh PA 15235 412-578-2710 Status Date: 09/30/86 Status: Complete OERI No.: 010315 Patent Status Patent Applied For : Development Stage : Laboratory Test Technical Category: Miscellaneous Recv by NBS : 07/31/84 Recom. by NBS : 05/31/85 Award Date : 09/30/86 Contract Period: 09/30/86 Award Amount: \$ 80,000 Grant No: FG01-86CE15282 - 05/03/88 A grant of \$80,000 was awarded on September 30, 1986 to fabricate and test the material. The results were encouraging. Summary:

DOE No: 0305 DOE Coord: J. AELLEN

Filter Network Protection, Failure Detection and Title: Automatic Correction System and Method

A flap valve, to be used in fabric bag filter systems such as those used in coal-burning power plants, which automatically shuts off the flow of gas and fly ash through ruptured filter Description: bags.

Status Date: 05/01/86

Harold L Bowman Inventor: AR State

Contact: ETEC 3208 Commander Drive Carolltone TX 75006 214-733-1010

OERI No.: 010257

Status: Complete

Patent Status

Patent # - 4356007

Patent Status : Patent # - 4356007 Development Stage : Production Engineering Technical Category: Industrial Processes

Recv by NBS : 06/29/84 Recom. by NBS : 05/31/85 Award Date : 05/01/86 Award Amount: \$ 72,072 Grant No: FG01-86CE15262 - 10/31/87 Contract Period: 05/01/86

A grant of \$72,072 was awarded on May first, 1986 to build a model and to test efficiency. Summary:

DOE No: 0306 DOE Coord: T. LEVINSON

Title: An Efficiency Computer for Heated or Air Conditioned Buildings

Microprocessor-based device continuously evaluates overall space-conditioning performance. "Feedback" is used to teach a new, useful concept of efficiency to building owners, occupants, Description: and maintenance personnel.

John W Ackley, III Inventor: CT State

Contact: John W Ackley, III Sixteen Church Street Stonington CT 203-535-2906 06378

Status: Award Status Date: 04/20/87 OERI No.: 010045 Patent Status Not Applied For : Development Stage : Prototype Test Technical Category: Buildings, Structures & Components

Recv by NBS : 02/17/84 Recom. by NBS : 06/28/85 Award Date : 04/20/87 Contract Period: 04/20/87 Award Amount: \$ 74,450 Grant No: FG01-85CE15318 - 10/19/88

Summary: A \$74,450 grant was awarded on April 20th, 1987, to build and test a prototype device.

DOE No: 0307 DOE Coord: T. LEVINSON

Title: Vortex Generators for Aft Regions of Aircraft Fuselages

Description: A method for using small vortex generators at the aft end of aircraft fuselages, (particularly those with rear loading doors) to energize the flow in that region, reduce flow separation, and reduce form drag.

Inventor: Andrew Wortman State : CA Contact: Andrew Wortman d.b.a. Istar, Inc 406 Alta Avenue Santa Monica CA 90402 213-394-7332

Status: Award Status Date: 06/27/86 OERI No.: 010454

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : Recom. by NBS :	10/23/84		
Recom. by NBS :	06/28/85		
Award Date : Contract Period:	06/27/86	Award Amount: \$ 69,307 Grant No: FG01-86CE15277	1
Contract Period:	06/27/86	- 09/30/87	

Summary: A \$69,307 grant was awarded on June 27th,1986 to design and wind-tunnel-test fuselage models of transport aircraft, utilizing the inventor's vortex generators. Based on wind-tunnel tests, overall drag reductions are expected to be 1 percent for a 747 and 2 percent for a C-5. This translated into annual operating cost reductions of about \$130,000 for a Boeing 727.

DOE No: 0308 DOE Coord: J. AELLEN

Title: Binary Azeotropic, Hot Gas, Fat Extraction Process

Description: A solvent extraction process for rendering animal wastes. Invention would use n - heptane as to extract the fat and would be recycled. Solids recovered will be produced at lower temperatures than present processes.

Inventor: Jay Read State : IN		Contact: Jay Read Plymouth Fertilizer Co., Inc. 12092 Plymouth-Goshen Trail Plymouth IN 46563 219-936-2144		
Status: Award	Status Date: 04/19	0/86 OERI No.: 010201		
Patent Status :	Patent Applied For			

Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 03/30/84 Recom. by NBS : 06/28/85 Award Date : 04/19/86 Award Amount: \$ 65,000 Grant No: FG01-86CE15255 Contract Period: 04/19/86 - 10/28/88

Summary: A grant of \$65,000 was awarded on April 19th, 1986 to construct a demonstration plant to produce high quality animal protein and fat from carrion.

DOE No: 0309 DOE Coord: P. M. HAYES Title: Process of Smelting with Submerged Burner A submerged burner for melting and refining metals. The design produces submerged combustion process resulting in a uniform oxidizing or reducing atmosphere circulating through the molten Description: zone. Inventor: Robert N Rose Contact: State CT Robert C LeMay : Status Date: 07/01/85 OERI No.: 010351 Status: Analysis Patent # - 4203761 Laboratory Test Industrial Processes ratent Status : Development Stage : Technical Category: Patent Status : 08/10/84 : 06/28/85 Recv by NBS Recom. by NBS Recommendation under consideration by DOE. Summary: DOE No: 0310 DOE Coord: G. K. ELLIS

Title: Portable Wastewater Flow Metering Device

Description: A portable venturi type flowmeter for measuring liquid flow in sewers under either full flow or partial flow conditions.

Inventor: Robert M Hunter State : MT Contact: Robert M Hunter 320 South Wilson Avenue Bozeman MT 59715 406-586-3905

Status: Complete

Status Date: 09/17/86 OERI No.: 010308

Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 07/27/84 Recom. by NBS : 07/31/85 Award Date : 09/19/86 Award Amount: \$ 72,627 Grant No: FG01-86CE15298 Contract Period: 09/19/86 - 03/19/88

Summary: A grant of \$72,627 was awarded on September 19, 1986 to build and demonstrate a workable prototype. The prototype was completed and successfully tested. Final report has been received showing some significant results. DOE No: 0311 DOE Coord: J. AELLEN Title: Auxiliary Truck Heater A diesel fuel-fired heater used to heat truck engines prior to Description: starting and also used to heat truck cabs. Herbert D Easterly Inventor: Contact: State TN Herbert D Easterly : Status: Analysis Status Date: 07/31/85 OERI No.: 006675 Patent Status Patent # - 4192457 Concept Definition Development Stage : Technical Category: Transportation Systems, Vehicles & Components : 03/26/80 : 07/31/85 Recv by NBS Recom. by NBS Summary: Recommendation under consideration by DOE.

DOE No: 0312 DOE Coord: P. M. HAYES

Title: The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells

Description: An automatic well tester for in-line automatic measurement of oil, gas and water produced by an oil well.

Inventor: Ray L Jones State : CA

Contact: Ray L Jones 619 North Bush Street Anaheim CA 92805 714-778-3747

Status: CompleteStatus Date: 08/31/87OERI No.: 010368Patent Status: Patent # - 3911256Development Stage: Engineering DesignTechnical Category:Fossil FuelsRecv by NBS: 08/22/84Recom. by NBS: 08/09/85Award Date: 03/10/86Award Date: 03/10/86- 08/31/87

Summary: A grant of \$72,470 was awarded on March 10, 1986, to field test the oil-well testing system to determine and optimize the system performance. Inventor seeking joint venture relationship to manufacture and market the technology. DOE No: 0313 DOE Coord: P. M. HAYES

Title: Process Controller for Stripper Oil Well Pumping Units

Description: A programmable microprocessor control system that determines the optimum pumping speed of a beam oil well pump by comparing the wave form of current flow during each pumping cycle to a wave form stored in memory. Based on the results of the comparison, the controller either modifies the pumping speed or shuts the pump off for a given period of time. The device is primarily intended for stripper wells.

Inventor: Frank J Madison II State : PA Contact: Frank J Madison II 608 Hill Street Reynoldsville PA 15851 814-653-2155

Status: Complete

Status Date: 01/20/87 OERI No.: 010425

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 10/02/84 Recom. by NBS : 08/13/85 Award Date : 01/21/86 Award Amount: \$ 85,000 Grant No: FG01-86CE15253 Contract Period: 01/21/86 - 01/20/87

Summary: A grant of \$85,000 was awarded on January 21, 1986, to design, test and demonstrate a prototype of a process controller which maximizes production of beam-type pumping oil wells. Inventor is test marketing "OPC Model 100" for approximately \$950 each and contemplates sales of forty units per month by the end of 1988.

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DOE No: 0314 DOE Coord: T. LEVINSON

Title: Rolling Filter Apparatus

Description: An air filtration system wherein a long filter mat is drawn in a zig-zag path across an air flow path to give multiple filtration passages of the air through the filter mat. The mat is continuously drawn from a large roll such that fresh filter surface is continuously fed through the filter chamber. The used mat is discarded.

Inventor: Max Klein State : MA Contact: Max Klein Sixty-Four Euclid Avenue Pittsfield MA 01201 413-499-3351

Status: Award

Status Date: 08/18/86 OERI

OERI No.: 010734

Patent Status : Patent # - 4394146 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 03/15/85 Recom. by NBS : 08/30/85 Award Date : 08/18/86 Award Amount: \$ 67,500 Grant No: FG01-86CE15286 Contract Period: 08/18/86 - 12/30/88

Summary: A \$67,000 grant was issued on August 18th, 1986, for the purpose of designing, manufacturing and operating a prototype filter apparatus to be put into demonstration service in cooperating industrial factories. The grantee will contribute \$7,500 for special engineering and marketing activities associated with the demonstrations. DOE No: 0315 DOE Coord: J. AELLEN

Title: Method of Processing Biodegradable Organic Material

Description: A high rate continuous biodegrading reactor using immobilized microbes for producing natural gas from a high load waste system.

Inventor: Ralph A Messing State : NY Contact: Ralph A Messing 168 Scenic Drive, South Horseheads NY 14845 607-739-7242

Status: Complete Status Date: 04/19/86 OERI No.: 010446

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Other Natural Sources

Recv by NBS : 10/19/84 Recom. by NBS : 08/30/85 Award Date : 04/19/86 Award Amount: \$ 75,000 Grant No: FG01-86CE15265 Contract Period: 04/19/86 - 12/31/87

Summary: A grant of \$75,000 was awarded on April 19th, 1986, to build a portable demonstrator to be installed at Laprino Foods to be operated at their expense.

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- DOE No: 0316 DOE Coord: P. M. HAYES
- Title: Thrust Impact Rock Splitter
- Description: A rock splitting device in which two or more splitting segments are positioned in a hole in the rock, and the segments are moved outward by a wedge driven by an impact force superimposed on a constant force.

Inventor: George B Clark State : MO Contact: Terry Nixon Box #519 Rolla MO 65401 314-364-7747

Status: CompleteStatus Date: 06/16/87OERI No.: 010649

Patent Status : Patent # - 4072353 Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 02/28/85 Recom. by NBS : 08/30/85 Award Date : 06/17/86 Award Amount: \$ 81,891 Grant No: FG01-86CE15268 Contract Period: 06/17/86 - 09/16/87

Summary: A grant of \$81,891 was awarded on June 17th, 1986, to design a commercial prototype of the thrust impact rock splitter. Considering licensing or joint/venture options to get technology into the marketplace.

DOE No: 0317 DOE Coord: J. AELLEN

Title: Edge-Illuminated Multi-Junction (VMJ) Solar Cell

An edge-illuminated vertical multijunction photovoltaic cell to be operated with concentrators from about 200 to 1000 suns. Description:

Bernard L Sater Inventor: State OH

Contact: Bernard L Sater 9007 Westlawn Boulevard Olmstead Falls OH 44138 216-243-2018

Status Date: 08/07/87 Status: Award OERI No.: 004602 Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Direct Solar Recv by NBS Recom. by NBS Award Date Recv by NBS : 10/25/78 Recom. by NBS : 08/30/85 Award Date : 09/30/88 Contract Period: 09/30/88

Award Amount: \$ 80,000 Grant No: FG01-87CE15337 - 01/01/90

A \$80,000 grant was awarded on September 30th, 1988. Summary:

DOE No: 0318 DOE Coord: J. AELLEN

Title: Bi-Polar Electrode for Hall-Heroult Electrolysis

A new design for a bi-polar electrode for Hall- Heroult Description: electrolysis for aluminum production.

Inventor: Louis A Joo State TN :

Contact: Jim Gee Great Lakes Research Corp P O Box #1031 Elizabethtown TN 37643 615-543-3111

OERI No.: 010523

Status: Complete

Status Date: 05/08/86

Patent Status Patent Status : Development Stage : Patent # - 4462889 Concept Development Technical Category: Industrial Processes

Recv by NBS : 12/03/84 Recom. by NBS : 08/30/85 Award Date : 05/08/86 Contract Period: 05/08/86 Award Amount: \$ 76,078 Grant No: FG01-86CE15259 - 11/30/87

A grant of \$76,078 was awarded on May 8, 1986, to build a model Summary: electrode and test its efficiency.

DOE No: 0319 DOE Coord: J. AELLEN

Title: Removal of Hydrogen Sulfide from a Gas Stream

Description: A non-reactive adsorption/regeneration process for removing hydrogen sulfide from a gas stream.

Inventor: Shao-E Tung State MA .

Contact: Shao-E Tung Ninety-One Blake Road Brookline MA 02146 617-589-2823

Status: Award Status Date: 07/30/86 OERI No.: 010530 Patent Applied For Engineering Design Industrial Processes Patent Status : Development Stage : Technical Category: Recv by NBS Recom. by NBS Award Date

Recv by NBS : 12/07/84 Recom. by NBS : 09/23/85 Award Date : 07/30/86 Contract Period: 07/30/86 Award Amount: \$ 85,400 Grant No: FG01-86CE15271 - 01/31/90

Summary: A grant of \$85,400 was awarded on July 30th, 1986. A no-cost time extension was granted.

DOE No: 0320 DOE Coord: J. AELLEN

Title: Coal Gasification with Carbon Dioxide and Lime Recycling

A coal gasification process that uses air instead of oxygen to produce a nitrogen free 400 BTU per cubic foot gas by use of recycled carbon dioxide and lime. Description:

Status Date: 09/23/85

Shang-I Cheng Inventor: State NJ :

Contact:

Shang-I Cheng

OERI No.: 010638

Status: Analysis

Patent Status : Patent # - 4448588 and others Development Stage : Prototype Test Technical Category: Fossil Fuels

Recv by NBS : 02/25/85 Recom. by NBS : 09/23/85

Recommendation under consideration by DOE. Summary:

- DOE No: 0321 DOE Coord: G. K. ELLIS
- Title: Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen

Description: A shale oil recovery process that also gasifies coke in the spent shale to produce hydrogen and carbon dioxide in a water gas shift reaction.

Inventor: Philip H Gifford II State : CO Contact: Philip H Gifford II

Status: Analysis Status Date: 09/30/86 OERI No.: 010279

Patent Status : Patent # - 4001105 and others Development Stage : Laboratory Test Technical Category: Fossil Fuels

Recv by NBS : 07/18/84 Recom. by NBS : 09/23/85

Summary: Recommendation under consideration by DOE. The inventor has been unable to submit a definitive statement of work that DOE can support.

- DOE No: 0322 DOE Coord: A. R. BARNES
- Title: Electrical Resistance Cooking Apparatus with Automatic Circuit Control
- Description: A method of using high frequency energy to cook meat for fast food vendors. The key feature is the lack of need for a vent.

Inventor: Maurice W Lee, Junior State : OK

Status: Award

Contact: Maurice W Lee, Junior Post Box Twenty-Six Boley OK 74829 918-667-3341

Status Date: 02/17/87 0ERI No.: 010139

Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS : 04/30/84 Recom. by NBS : 09/30/85 Award Date : 02/17/87 Award Amount: \$ 75,000 Grant No: FG01-87CE15317 Contract Period: 02/17/87 - 08/16/89

Summary: A \$75,000 grant was awarded on February 17th, 1987, to develop the second generation cooker with 50% reduction in cost/price. Grant extended to August sixteenth, 1989. DOE No: 0323 DOE Coord: G. K. ELLIS

Title: Rolling Mill for Reduction of Moisture Content in Waste Material

Description: A device to remove mechanically some of the water from wood waste fuel. The previously pulverized wood is passed between two rollers and water is pressed from the wood.

Inventor: David M Wilder State : OR Contact: David M Wilder 82061 Lost Valley Lane Dexter OR 97431 503-937-3537

Status: AwardStatus Date: 04/24/86OERI No.: 010613Patent Status: Patent # - 4436028Development Stage :Prototype TestTechnical Category:Industrial ProcessesRecv by NBS: 02/07/85Development NDC: 02/07/85

Recv by NBS : 02/07/85 Recom. by NBS : 09/30/85 Award Date : 04/24/86 Award Amount: \$ 76,396 Grant No: FG01-86CE15280 Contract Period: 04/24/86 - 12/24/88

Summary: A grant was awarded on April 24th, 1986 in the amount of \$76,396 to build and demonstrate a workable prototype. The prototype has been completed and is about to be tested.

- DOE No: 0324 DOE Coord: J. AELLEN
- Title: Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
- Description: A method for increasing plant growth by means of a foliar fertilization process intended to increase the infection of plant roots by mycorrhizal fungi, thus increasing their uptake of water and nutrients from the soil.

Inventor: Gene Garrett State : MO Contact: Gene Garrett University of Missouri. Columb Sch of Forestry, Fish & Wldlf I-30 Agriculture Building Columbia MO 65211 314-882-3647

Status: AwardStatus Date: 08/20/86OERI No.: 010684Patent Status: Not Applied For<br/>Development Stage : Concept Development<br/>Technical Category: Industrial ProcessesRecv by NBS: 02/28/85<br/>Recom. by NBS: 02/28/85<br/>Award Date<br/>: 08/20/86Award Date: 08/20/86<br/>(Ontract Period: 08/20/86- 08/19/89Summary:A \$75,000<br/>laboratory tests and field demonstration.20th, 1986, to perform

- DOE No: 0325 DOE Coord: P. M. HAYES
- Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites Title:

A process for continuous casting of non-ferrous and composite materials into thin strips. Description:

Inventor: Forrest M Palmer State SC

Contact: Forrest M Palmer Thirty-One Towhee Road Hilton Head SC 29928 803-681-8887

Status: Complete Status Date: 08/08/86 OERI No.: 009934 Patent Status : Patent Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 01/12/84 Recom. by NBS : 09/30/85 Award Date : 08/08/86 Contract Period: 08/08/86 Award Amount: \$ 47,357 Grant No: FG01-86CE15285 - 01/31/88

A grant of \$47,357 was awarded on August 8, 1986, to test the feasibility and operating characteristacs of Mr. Palmer's continuous casting method. Additional testing is necessary to demonstrate the technical feasibility of the process. Summary:

DOE No: 0326 DOE Coord: G. K. ELLIS

Title: A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes

A conical wedge used to improve confinement of an explosive charge to a drilled hole, increasing the rock fragmentation performance of the explosive. Description:

Inventor: Paul N Worsey MO State

Contact: F Terry Nixon Route Four, Box #519 Rolla MO 65401 314-364-7747

Status: Complete Status Date: 09/22/86 OERI No.: 010667 Patent Status : Not Applied For Development Stage : Concept Develo Technical Category: Miscellaneous Concept Development : 02/28/85 Recv by NBS

Recom. by NBS : 10/31/85 Award Date : 09/22/86 Contract Period: 09/22/86 Award Amount: \$ 78,251 Grant No: FG01-86CE15297 - 03/21/88

A grant of \$78,251 was awarded on September 22, 1986 to build and Summary: test a workable prototype. Tests were encouraging. Decision to be made whether to venture or license the technology.

DOE No: 0327 DOE Coord: G. K. ELLIS Title: Square Pattern Irrigation Sprinkler Description: A sprinkler head that will uniformly distribute irrigation water over a square pattern. Inventor: B F Rabitsch Contact: B F Rabitsch Post Office Box #598 Millen GA 30442 912-982-5593 State : GA Status: Complete Status Date: 06/09/86 OERI No.: 010367 Patent # - 4277029 Patent Status : Development Stage : Laboratory Test Industrial Processes Technical Category: Recv by NBS Recom. by NBS Award Date Recv by NBS : 08/22/84 Recom. by NBS : 10/31/85 Award Date : 06/09/86 Contract Period: 06/09/86 Award Amount: \$ 87,426 Grant No: FG01-86CE15287 - 04/07/88 A grant for \$81,426 was awarded on June ninth, 1986, to build and Summary: demonstrate a workable prototype. The prototype was completed and tests were successful. DOE No: 0328 DOE Coord: J. AELLEN Title: Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting A local heating apparatus working in conjunction with gascutting to prevent hardening of carbon plate steels. In some grades Description: toughness is also improved. Inventor: Robert F Roussey, Junior Contact: Robert F Roussey, Junior Three School Lane State : PA Downingtown PA 19335 215-269-5535

Status: Complete Status Date: 03/23/87 OERI No.: 010339

Patent Status : Not Applied For Development Stage : Prototype Development Technical Category: Miscellaneous

Recv by NBS : 08/09/84 Recom. by NBS : 10/31/85 Award Date : 03/23/87 Award Amount: \$ 42,902 Grant No: FG01-87CE15323 Contract Period: 03/23/87 - 09/22/88

Summary: A grant of \$42,902 was awarded on March 23rd, 1987, to prepare samples and have them tested at Lehigh University.

DOE Coord: P. M. HAYES DOE No: 0329 Title: Modularized Pneumatic Tractor with Debris Liquifier A tractor mounted device to operate inside storage tanks to remove asphaltic and paraffinic deposits during cleaning Description: operations. Contact: N F Bibby Inventor: Albert Lindqvist VĪ State : Status: No DOE Support Status Date: 08/07/87 OERI No.: 010570 Patent # - 4407035 Limited Production/Marketing Patent Status Development Stage : Technical Category: Industrial Processes Recv by NBS : 01/11/85 Recom. by NBS : 11/29/85

No support was requested by inventor or contact.

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DOE No: 0330 DOE Coord: J. AELLEN

Title: Vacuum Heat Treating Furnace and Quench System with Drop Transfer

Description: A small vacuum heat treat furnace.

Inventor: N State : P		Stainbrook	Contact: Norbert E Stainbrook 423 Sunnyside Avenue Meadville PA 16335 814-336-3857
Status: Awar	cd	Status Date: 07/1	.1/87 OERI No.: 010691
Patent Statu Development Technical Ca	is : Stage : ategory:	Patent Applied For Working Model Industrial Processes	
Recv by NBS Recom. by NB Award Date Contract Per	: 03/0 3S : 11/2 : 07/1 ciod: 07/1	06/85 29/85 11/86 Award Amount: \$ 69, 11/86 - 01/10/88	987 Grant No: FG01-86CE15290
Summary:			on July 11, 1987, to build a

Summary:

DOE No: 0331 DOE Coord: A. R. BARNES Title: Cyclic Char Combustion for Engines, Boilers and Gasifiers An internal combustion engine capable of burning char fuel. Description: Inventor: Joseph C Firey Contact: Joseph C Firey Post Office Box #15208 Seattle WA 98115 206-524-2671 State : WA Status: Award Status Date: 02/10/87 OERI No.: 010444 Patent Status Patent # - 4412511 and others : Development Stage : Concept Development Technical Category: Combustion Engines & Components Recv by NBS Recom. by NBS Award Date 10/16/84 11/29/85 02/10/87 Award Amount: \$ 83,611 Grant No: FG01-87CE15310 Contract Period: 02/10/87 - 02/09/91 An \$86,611 grant was awarded on February tenth, 1987, to perform bench testing and determine the optimum parameters of performance. Grantee (University of Washington) will cost share in the amount of \$6,962. Engine started first time in November, Summary: 1988. DOE No: 0332 DOE Coord: J. AELLEN Title: Volk Pistachio Huller A machine to hull pistachio nuts by means of dry abrasion process based on the action of a studded cylinder, which pushes unhulled nuts through a slotted, curved plate. Description: Inventor: Benjamin Volk Contact: State CA Benjamin Volk : Status: Decision Phase Status Date: 06/30/86 OERI No.: 010738 Patent # - 4448115 and others Patent Status Laboratory Test Industrial Processes Development Stage : Technical Category: Recv by NBS : 03/19/85 : 12/31/85 Recom. by NBS Summary: Recommendation under consideration by DOE.

DOE No: 0333 DOE Coord: J. AELLEN

Title: Laser Based Machine for Die and Prototype Manufacturing

Description: A method for manufacturing dies and molds using automated laser cutting of thin metal sheets and bonding of the sheets into the required three- dimensional forms.

Inventor: Michael Feygin State : IL Contact: Michael Feygin Hydronetics 3832 North Ashland Avenue Chicago IL 60626 312-764-8691

Status: Complete Status Date: 02/10/87 OERI No.: 010745

Patent Status : Disclosure Document Program Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS :	03/27/85		
Recom. by NBS :	12/31/85		
Award Date :	02/10/87	Award Amount: \$ 70,000	Grant No: FG01-87CE15316
Contract Period:	02/10/87	- 08/09/88	

Summary: A \$70,000 grant was awarded on February 10, 1987, to build and test the technology.

DOE No: 0334 DOE Coord: G. K. ELLIS

Title: So-Luminaire Natural Daylighting Unit

Description: An active, sun-tracking mirror/skylight system, to reflect natural light into the occupied space for illumination in lieu of electric lights. The reflecting mirror closes upon the skylight opening at night and during periods of high winds.

Inventor: Richard Lee Dominquez Contact: State : AZ William Lindner

Status: Decision Phase Status Date: 09/23/88 OERI No.: 010728

Patent Status : Patent # - 4429952 Development Stage : Limited Production/Marketing Technical Category: Direct Solar

Recv by NBS : 03/12/85 Recom. by NBS : 12/31/85

Summary: Awaiting statement of work. Delays have been experienced as a result of So-Luminaire selling the invention, and only recently having repossessed it.

DOE No: 0335 DOE Coord: J. AELLEN Title: Robotic Bridge Observation and Information System A remotely controlled system utilizing observation and signal processing to inspect and record the condition of bridges and Description: other structures. Inventor: Robert A Maciejczak Contact: State Robert A Maciejczak TL Status Date: 09/30/88 Status: No DOE Support OERI No.: 010541 Patent Applied For Limited Production/Marketing Patent Status Development Stage : Technical Category: Industrial Processes : 12/18/84 : 01/23/86 Recv by NBS Recom. by NBS

Summary: Inventor's request for grant support disapproved due to limited energy relationship.

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DOE No: 0336 DOE Coord: J. AELLEN

Title: A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation

Description: A carbonaceous selective absorber for solar thermal energy collection and process for making same.

Inventor: John D Garrison State : CA

Contact: John D Garrison San Diego State University Department of Physics San Diego CA 92182 619-265-6156

Status: Award Status Date: 07/31/86 OERI No.: 010716

Patent Status : Not Applied For Development Stage : Prototype Development Technical Category: Direct Solar

Recv by NBS : 03/05/85 Recom. by NBS : 01/31/86 Award Date : 07/31/86 Award Amount: \$ 70,000 Grant No: FG01-87CE15289 Contract Period: 07/31/86 - 12/31/88

Summary: A \$70,000 grant was awarded for the design and fabrication of apparatus used in the construction of selectively coated solar panels and for the testing and evaluation of these unique coatings under severe environmental conditions.

DOE No: 0337 DOE Coord: A. R. BARNES

Title: An Air Operated Hydraulic Power Unit

Description: A pneumatic-hydraulic power unit for actuating automatic electric welding guns in high-production manufacturing.

Inventor: J Donald Snitgen State : MI Contact: J Donald Snitgen 18828 Hillcrest Birmingham MI 48009 313-624-4066

OERI No.: 010964

Status: Award Status Date: 08/22/86

Patent Status : Patent # - 4455828 and others Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 07/01/85 Recom. by NBS : 01/31/86 Award Date : 08/22/86 Award Amount: \$ 59,916 Grant No: FG01-86CE15290 Contract Period: 08/22/86 - 05/21/88

Summary: A \$59,916 grant was awarded on August 22nd, 1986, to construct four engineering prototypes - two constant-run type and two positive displacement type, and perform independent testing of units. Grant completed successfully. Units are being manufactured. Ford has purchased 200 units at a total cost of \$1.9 million. GM is testing for line delivery robotics applications.

DOE No: 0338 DOE Coord: G. K. ELLIS

Title: Downhole Pneumatic Turbine Motor for Geothermal Energy

Description: A downhole pneumatic turbine motor for geothermal well drilling.

Inventor: William C Lyons State : NM

Contact: William C Lyons P O Box #2457 Santa Fe NM 87504 505-982-2467

Status: Complete

Status Date: 08/06/87 OERI No.: 010889

Patent Status : Patent # - 4434862 Development Stage : Engineering Design Technical Category: Other Natural Sources

Recv by NBS : 06/04/85 Recom. by NBS : 02/03/86 Award Date : 06/20/86 Award Amount: \$ 79,750 Grant No: FG01-86CE15285 Contract Period: 06/20/86 - 08/06/87

Summary: An award of \$79,750 was made on June 20th, 1986 to build and demonstrate a workable prototype. The prototype was completed, successfully tested, and has been installed in comercial operation to provide drilling services for geothermal drilling companies. Subsequently, a six inch motor will be developed for oil and gas wells.

DOE No: 0339 DOE Coord: P. M. HAYES Title: Recycoil II A heat exchanger system for using some of the heat (energy) from a laundromat dryer to heat water for washers. Description: John L Wendel Inventor: Contact: William R Schick State FL • Status Date: 02/10/86 OERI No.: 004869 Status: Analysis Patent # - 4187701 and others Patent Status • Limited Production/Marketing Development Stage : Technical Category: Buildings, Structures & Components Recv by NBS Recom. by NBS : 02/22/79 : 02/07/86

Recommendation under consideration by DOE.

DOE No: 0340 DOE Coord: G. K. ELLIS Title: Separation of Adsorbed Components by Variable Temperature Desorption An Adsorption Based Method for Separating Multicomponent Liquid Description: or Multicomponent Gas Systems Marshall Findley Inventor: Contact: Marshall Findley MO State : Department of Chemical Eng 143 Schrenk Hall Rolla MO 65401 314-341-4416 Status: Award OERI No.: 010856 Status Date: 02/11/87 Not Applied For Engineering Design Industrial Processes Patent Status Development Stage : Technical Category: Recv by NBS Recom. by NBS Award Date 05/23/85 Recom. by NBS : 02/18/86 Award Date : 02/11/87 Contract Period: 02/11/87 Award Amount: \$ 77,791 Grant No: FG01-87CE15304 02/10/89 -Grant awarded for \$77,791 on February eleventh, development and testing of pilot-scale prototype. Summary: 1987, for

Summary:

DOE No: 0341 DOE Coord: G. K. ELLIS Title: High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials A process for using high pressure water jets for comminution of Description: organic and inorganic materials. Marian Mazurkiewicz Contact: F Terry Nixon Inventor: MO State Route Four, Box #519 Rolla MO 65401 314-364-7747 Status: Complete Status Date: 09/14/86 OERI No.: 010661 Patent Status : Development Stage : Technical Category: Patent Status Patent Applied For Concept Development Industrial Processes Recv by NBS : 02/28/85 Recom. by NBS : 02/21/86 Award Date : 09/14/86 Contract Period: 09/14/86 Award Amount: \$ 69,248 Grant No: FG01-86CE15299 - 09/14/87 A grant of \$69,248 was awarded on September 14, 1986, to build and demonstrate a prototype. The prototype was completed and Summary: successfully tested. DOE No: 0342 DOE Coord: J. AELLEN Title: Raw Fines Medium Coal Washing System Description: A process to recover raw fines from refuse piles at coal mines. Inventor: Gary L Drake Contact: Gary L Drake 3500 Fern Valley Road 120 North Ocean Boulevard State : KY Louisville KY 40213 502-964-0653 Status Date: 03/02/87 Status: Complete OERI No.: 010783 Not Applied For Patent Status : Development Stage : Prototype Test Technical Category: Industrial Processes Recv by NBS : 04/23/85 Recom. by NBS : 02/24/86 Award Date : 03/02/87 Contract Period: 03/02/87 Award Amount: \$ 76,456 Grant No: FG01-87CE15293 - 09/01/88

Summary: A \$76,456 grant was awarded on March 2, 1987 to test the technology.

DOE No: 0343 DOE Coord: A. R. BARNES

Title: Electronic Octane

A system in which knock intensity in individual cylinders of an automobile engine is sensed and used as a feed-back parameter to control spark timing in individual cylinders. Description:

Inventor: John A McDougal State MI

Contact: John A McDougal

Status: Analysis Status Date: 03/04/86 OERI No.: 010899

Patent # - 4116173 and others Patent Status Development Stage : Technical Category: Limited Production/Marketing Combustion Engines & Components

Recv by NBS : 06/07/85 Recom. by NBS : 03/04/86

Recommendation under consideration by DOE. Inventor considering Summary: possible demonstration plans. License agreements were signed with Ford and Chrysler; others are in negotiation.

DOE No: 0344 DOE Coord: G. K. ELLIS

Title: Machine for Separating Concrete from Steel

A machine for removing damaged portland cement concrete roadway by inserting a wedge-shaped anvil under the pavement, hammering the pavement to break it into small pieces, removing it from the reinforcing rod, and conveying the resulting aggregate to trucks. The reinforcing rod is returned to the roadway to be utilized in Description: the repaving operation.

Inventor: State :	Pfaff	Contact: Deems M Pfaff 430 First Aven Suite #720 Minneapolis M 612-450-1152	•

Status: Complete

Status Date: 01/20/87

OERI No.: 010394

Patent # - 4309126 Patent Status Development Stage : Engineering Design Industrial Processes Technical Category:

Recv by NBS : 09/11/84 Recom. by NBS : 03/07/86 Award Date : 01/20/87 Contract Period: 01/20/87

Award Amount: \$ 69,956 Grant No: FG01=87CE15315 - 01/19/88

A grant of \$69,996 was awarded on January 20th, 1987 as part of a \$2.5 million project Summary:

DOE No: 0345 DOE Coord: P. M. HAYES

Title: Tulleners Wave Piercer

Description: Design of a seacraft based on sound hydrodynamic and dynamic principles; posseses superior floating qualities with a significant reduction in required power for propulsion.

Inventor: Harry Werner Tulleners State : OH

Contact: Harry Werner Tulleners 1554 Grimes Avenue Urbana OH 43078 513-653-6756

Status: CompleteStatus Date: 08/07/87OERI No.: 001370Patent Status: Patent # - 3430595

Patent Status : Patent # - 3430595 Development Stage : Concept Development Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 10/08/76 Recom. by NBS : 03/10/86 Award Date : 08/07/87 Award Amount: \$ 68,101 Grant No: FG01-87CE15342 Contract Period: 08/07/87 - 08/31/88

Summary: The Department of the Navy, David Taylor Ship Research and Development Center, is to conduct seakeeping tests on Mr. Tulleners catamaran-type boat as part of a \$68,101 inter-agency agreement with the Department of Energy.

DOE No: 0346 DOE Coord: G. K. ELLIS

Title: Ultra-Pure Water System for Hospitals

Description: An ozone generator based system for producing medical quality sterile water for intravenous and other applications.

Inventor: Eskil L Karlson State : PA Contact: Eskil L Karlson 2626 State Street Erie PA 16508 814-455-7849

Status: Complete Status Date: 08/20/86 OERI No.: 011050

Patent Status : Disclosure Document Program Development Stage : Prototype Development Technical Category: Industrial Processes

Recv by NBS :	08/02/85		
Recom. by NBS :	03/14/86		
Award Date :	08/20/86	Award Amount: \$ 78,589	Grant No: FG01-86CE15294
Contract Period:	08/20/86	- 02/20/88	

Summary: A grant for \$78,589 was awarded on August 20, 1986 to build and demonstrate a workable prototype. The protptype was completed, successfully tested and the inventor is in active negotiation for licensing.

DOE No: 0347 DOE Coord: J. AELLEN Title: Oxide Dispersion Strengthened Aluminum Alloys A process for manufacturing a series of 2XXX aluminum alloys Description: having improved strength at temperatures above 350 degrees F. Inventor: Ray Alexander Contact: Ray Alexander 410 Chipeta Way Suite #222 State UT Salt Lake City UT 84108 801-582-8080 Status: Complete Status Date: 02/19/87 OERI No.: 011108 Patent Applied For Concept Development Patent Status Development Stage : Technical Category: Industrial Processes : 08/26/85 : 03/17/86 : 02/19/87 Recv by NBS Recom. by NBS Award Amount: \$ 70,000 Grant No: FG01-87CE15300 Award Date Contract Period: 02/19/87 - 08/18/88 A grant of \$70,000 was awarded on February 19, 1987, to prepare Summary: and test samples. DOE Coord: G. K. ELLIS DOE No: 0348 Title: Hydrogen Sulfide Removal for Natural Gas A process for removing heavy concentration (30% - 50%) of hydrogen sulfide from gas streams. Description: Christiaan P van Dijk Inventor: Contact: Christiaan P van Dijk 10722 Glenway Houston TX 77070 TX State : 713-469-1122 Status: Complete Status Date: 02/02/87 OERI No.: 011171 Not Applied For Patent Status : Engineering Design Industrial Processes Development Stage : Technical Category: Recv by NBS : 10/03/85 Recom. by NBS : 04/04/86 Award Date : 02/02/87 Contract Period: 02/02/87 Award Amount: \$ 73,426 Grant No: FG01-87CE15314 - 05/01/88 A grant of \$73,426 was awarded on February 2, 1987, to develop information adequate to build a pilot plant which was completed Summary: and successfully tested.

DOE No: 0349 DOE Coord: P. M. HAYES Title: Three Roll Tension Stand A high shear rolling process for the rapid reduction of steel slabs to strip in a single pass. Description: Howard S Orr Inventor: Contact: State PA E K Jacob Status: Analysis Status Date: 04/11/86 OERI No.: 010526 Patent Status : Patent # - 42/100 Development Stage : Engineering Design Tabbical Category: Industrial Processes Recv by NBS : 12/04/84 : 04/09/86 Recom. by NBS

Summary: Recommendation under consideration by DOE.

DOE No: 0350 DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Testing Soil

Description: A testing device for determining the various properties of soil, in situ, for use in analysis of soil-structure interaction under seismic loadings.

Inventor: Wanda Henke State : MD Contact: Wanda Henke 2003 Vista Lane Lutherville MD 21293 301-252-4474

Status: Complete Status Date: 12/23/86 OERI No.: 010462

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 11/01/84 Recom. by NBS : 04/09/86 Award Date : 12/23/86 Award Amount: \$ 79,860 Grant No: FG01-87CE15305 Contract Period: 12/23/86 - 05/22/88

Summary: A grant of \$79,860 was awarded on December 23, 1986, for developing final design of prototype system, as part of an NSF SBIR phase II project. The prototype was completed and successfully tested.

- DOE No: 0351 DOE Coord: P. M. HAYES
- Title: Flash Gate Board

Description: An automatically actuated water control gate to be mounted on top of a reservoir overflow structure to increase head and storage volume.

Inventor: William Martin Johnson State : VA

Contact: William Martin Johnson Route Four, Box #265 Lynchburg VA 24503 804-384-2496

Status: CompleteStatus Date: 02/02/87OERI No.: 010826

Patent Status : Patent # - 4455106 Development Stage : Engineering Design Technical Category: Other Natural Sources

Recv by NBS : 05/18/85 Recom. by NBS : 04/09/86 Award Date : 02/02/87 Award Amount: \$ 47,661 Grant No: FG01-87CE15309 Contract Period: 02/02/87 - 05/01/88

Summary: A grant of \$47,661 was awarded to the Virginia Polytechnic Institute on February second, 1987, to develop mathematical models to examine flash gate behavior. Grant objectives were successfully met. Inventor is seeking financing to build and test full scale working model.

- DOE No: 0352 DOE Coord: J. AELLEN
- Title: A Waterjet Mining Machine

Description: A waterjet mining machine which includes the roof support function. High pressure jets delineate blocks of coal which are subsequently broken loose by hydraulically driven wedges.

Inventor: David A Summers State : MO

Contact: Ray E Snyder Tower Center 200 East Evergreen Mount Prospect IL 60056 312-398-1525

Status: Award Status Date: 04/27/87 OERI No.: 011173

Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 10/04/85 Recom. by NBS : 04/22/86 Award Date : 04/27/87 Award Amount: \$ 76,040 Grant No: FG01-87CE15307 Contract Period: 04/27/87 - 01/08/89

Summary: A \$76,040 grant was awarded on July 27th, 1987, to build and test an advanced prototype.

DOE No: 0353 DOE Coord: J. AELLEN Compu-Turbo-Aligner Title: Description: A computerized system for aligning the shafts of turbines and generators in power plants. Inventor: Kenneth V Field Contact: State : FL Kenneth V Field Status: Analysis Status Date: 05/12/86 OERI No.: 010795 Patent Status : Development Stage : Technical Category: Not Applied For Engineering Design Miscellaneous Recv by NBS Recom. by NBS : 12/30/83 : 05/12/86

Summary: Recommendation under consideration by DOE.

DOE No: 0354 DOE Coord: J. AELLEN

Title: Preparation of Biliquid Foam Compositions

Description: Use of a biliquid foam for separating bitumen from tar sands.

Inventor: Felix Sebba State : VA

Contact: Felix Sebba Department of Chemical Engrg Virginia Tech Blacksburg VA 24061 703-961-6753

Status: Award

Status Date: 04/20/87 OERI No.: 011326

Patent Status : Patent # - 4486333 Development Stage : Working Model Technical Category: Industrial Processes

Recv by NBS : 12/17/85 Recom. by NBS : 05/27/86 Award Date : 04/20/87 Award Amount: \$ 63,276 Grant No: FG01-87CE15308 Contract Period: 04/20/87 - 10/19/88

Summary: A grant of \$63,276 was awarded on April 20th, 1987, to compare twenty special compounds (aphrons) and test them in a diesel engine under varying conditions. DOE No: 0355 DOE Coord: J. AELLEN Title: Energy-Efficient Ice Cube Making Machine A machine which makes ice cubes by freezing together thin layers of ice. This takes advantage of the fact that thin layers of ice can be frozen more quickly than can a solid cube of ice. Description: Inventor: John A Broadbent Contact: John A Broadbent State MN OERI No.: 011122 Status: Analysis Status Date: 06/24/86 Patent Status Not Applied For Development Stage : Laboratory Test Technical Category: Miscellaneous : 08/30/85 : 06/24/86 Recv by NBS Recom. by NBS Summary: Recommendation under consideration by DOE.

DOE No: 0356 DOE Coord: G. K. ELLIS Portable Automatic Firewood Processor Title: A portable, compact machine for processing small logs into firewood by feeding, shearing and splitting the wood. Description: Inventor: Warren A Aikins Contact: State Warren A Aikins WA : 3489 Indian Creek Drive Longview WA 206-425-5470 98632 OERI No.: 011320 Status: Complete Status Date: 06/05/87 Patent Status : Patent # - 4483379 Development Stage : Limited Production/Marketing Technical Category: Industrial Processes : 12/16/85 : 07/09/86 : 06/05/87 Recv by NBS Recom. by NBS Award Date Award Amount: \$ 75,411 Grant No: FG01-87CE15330 - 06/04/88 Contract Period: 06/05/87 A grant of \$75,411 was awarded on June fifth, 1987, to develop an advanced prototype. The prototype was completed showing substantial improvement over conventional processing, both as to Summary: rate of production and improvement in drying.

DOE No: 0357 DOE Coord: P. M. HAYES **TUBEXPRESS** Pneumatic Capsule Pipeline Transport System Title: A pneumatic materials handling system using capsules to carry Description: bulk materials through a tubular line. Inventor: William Vandersteel Contact: NJ William Vandersteel State Tubexpress Systems, Inc. One Marine Plaza North Bergen 201-868-2000 NJ 07047 Status: Complete Status Date: 02/02/87 OERI No.: 011285 Patent Status Patent # - 4458602 and others Development Stage : Prototype Test Technical Category: Transportation Systems, Vehicles & Components : 12/06/85 : 07/09/86 : 02/02/87 Recv by NBS Recom. by NBS Award Amount: \$ 70,000 Grant No: FG01-87CE15311 - 05/01/88 Award Date Contract Period: 02/02/87 A grant of \$70,000 was awarded on February second, 1987, to determine the capsule wheel/alignment configuration necessary to achieve spiraling stability in a thirty-six inch diameter system. Project objectives were successfully met. TubeExpress Systems, Inc., is negotiating with several private sector companies for commercial application of the technology. Summary: DOE No: 0358 DOE Coord: J. AELLEN Title: Device for Well Site Monitoring and Control of Rod- Pumped Wells A device for monitoring and controlling the pumping rate of rod-pumped wells for maintaining maximum well production rate. Description: John C Purcupile Inventor: Contact: State OK Glenn Albert : Status: Decision Phase Status Date: 08/14/87 OERI No.: 011010 Patent Status Patent Applied For Prototype Test Fossil Fuels Development Stage : Technical Category: : 07/29/85 : 07/15/86 Recv by NBS Recom. by NBS Summary: Recommendation under consideration by DOE.

DOE No: 0359 DOE Coord: P. M. HAYES Title: Solid Fuel Hot Air Furnace A wood fueled furnace is used to heat a poultry/brooder house. A heat exchanger allows fresh, dry air to be supplied to the Description: brooder. James W Platte Contact: James W Platte Inventor: AR State : 2610 South Ell Street Fort Smith AR 72901 501-782-6840 Status: Award Status Date: 01/20/86 OERI No.: 011061 Patent # - 4343290 Patent Status : Development Stage : Limited Production/Marketing Technical Category: Buildings, Structures & Components Recv by NBS Recom. by NBS Award Date 08/05/85 07/23/86 01/20/87 Award Amount: \$ 54,529 Grant No: FG01-87CE15320 - 12/31/88 Contract Period: 01/20/87 A grant of \$54,529 was awarded on January 20th, 1987, to build, Summary: test and demonstrate the wood furnace heating system. DOE No: 0360 DOE Coord: G. K. ELLIS Title: Temperature Controllable Heat Valve A temperature-controllable heat valve uses a control grid that can vary the thermal flow through a heat pipe. It uses no Description: internal moving parts and needs no external energy sources. Inventor: Lawrence A Schmid Contact: Lawrence A Schmid State MD . Status: Analysis Status Date: 09/30/86 OERI No.: 010981 : Patent # - 4494595 Patent Status Development Stage : Concept Development Technical Category: Buildings, Structures & Components Recv by NBS : 07/08/85 Recom. by NBS : 07/25/86 Awaiting statement of work from the inventor. Summary:

DOE No: 0361 DOE Coord: J. AELLEN Title: Measurement of Liquid Volumes with Compensation for Temperature Induced Variations A device for metering flowing liquids in which the volumetric measurement is corrected for variations in liquid density. Description: Vladimir Horak Contact: Inventor: State : NJ Vladimir Horak Status Date: 08/08/86 OERI No.: 011053 Status: Analysis Patent Status Patent # - 4445627 and others Development Stage : Technical Category: Concept Development Miscellaneous : 08/03/85 : 08/07/86 Recv by NBS Recom. by NBS Recommendation under consideration by DOE.

DOE No: 0362 DOE Coord: J. AELLEN Title: Improved Solvents for the Puraq Seawater Desalination Process Description: A polymer based solvent-extraction process for the desalinization of seawater. Inventor: Leon Lazare Contact: State : CT Leon Lazare The Puraq Company 111 Hannah's Road Stamford CT 069 06903

203-322-3925 Status: Award Status Date: 06/07/88 OERI No.: 011121 Patent Status Patent # - 3832301 and others : Engineering Design Industrial Processes Development Stage : Technical Category: Recv by NBS Recom. by NBS : 09/04/85 08/14/86 : Award Date : 06/07/88 Contract Period: 06/07/88 Award Amount: \$ 70,000 Grant No: FG01-88CE15362 - 12/06/89

Summary: A grant for \$70,000 was awarded on June 7, 1988.

Summary:

DOE No: 0363 DOE Coord: P. M. HAYES

Title: Impactor Separator

A device for removing particulates from diesel engine exhaust, which consists of an impingement system for capturing particles and a system for collecting and burning these captured particles. Description:

Inventor: Leonard R Lefkowitz NY State :

Contact: Leonard R Lefkowitz Fourteen Alpine Drive Latham NY 12110 518-785-8232

Status: Award Status Date: 04/04/87 OERI No.: 010426 Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes Recv by NBS Recom. by NBS Award Date : 10/02/84 : 08/14/86 : 04/04/87

Award Amount: \$ 70,000 Grant No: FG01-87CE15327 - 10/15/88 Contract Period: 04/04/87

A grant of \$70,000 was awarded on April 4, 1987, to design, build and test a workable prototype of the regenerative diesel filter Summary: invention.

DOE No: 0364 DOE Coord: J. AELLEN

Title: Intermittant Solar Ammonia Absorption Cycle (ISAAC)

Description: An intermittant solar-powered ammonia/water absorption cycle to make ice.

Inventor: Donald C Erickson State MD \*

Contact: Donald C Erickson 627 Ridgely Avenue Annapolis MD 21401 301-266-6521

Status: Award

Status Date: 04/23/87 OERI No.: 011112

Patent Applied For Working Model Industrial Processes Patent Status Development Stage : Technical Category:

Recv by NBS : 08/26/85 Recom. by NBS : 08/20/86 Award Date : 04/23/87 Contract Period: 04/23/87 Award Amount: \$ 69,400 Grant No: FG01-87CE15325 - 10/22/88

A \$69,400 grant was awarded on April 23d, 1987, to build and test Summary: a model in Micronesia.

DOE No: 0365 DOE Coord: P. M. HAYES Title: Safety Stovepipe Damper Assembly Description: A damper to be used on wood stoves to prevent flue overheating. Inventor: Kenneth H Raihala Contact: WI Kenneth H Raihala State : Status: Analysis Status Date: 08/21/86 OERI No.: 011315 Patent Status : Patent # - 4479483 Development Stage : Prototype Development Technical Category: Buildings, Structures & Components Recv by NBS : 12/13/85 Recom. by NBS : 08/21/86

Summary: Recommendation under consideration by DOE.

DOE No: 0366 DOE Coord: J. AELLEN

Title: High Energy Semiconductor Switch

Description: The invention is an improved gate turn-off thyrister, with capabilities of shorter turn-off time and smaller gate control current.

Inventor: R L Risberg State : WI Contact: R L Risberg 16915 West Judith Lane Brookfield WI 53005 414-784-2025

Status: AwardStatus Date: 02/24/87OERI No.: 011279Patent Status:Patent Applied ForDevelopment Stage :Working ModelTechnical Category:Miscellaneous

Recv by NBS : 12/05/85 Recom. by NBS : 08/21/86 Award Date : 02/24/87 Award Amount: \$ 75,000 Grant No: FG01-87CE15319 Contract Period: 02/24/87 - 02/23/89

Summary: A \$75,000 grant was awarded on February 24th, 1987 to fabricate and test prototypes with and without MOS control.

DOE No: 0367 DOE Coord: G. K. ELLIS Title: Disintegration of Wood A high pressure water jet for producing wood pulp. Description: Marian Mazurkiewicz Inventor: Contact: Terry Nixon State : MO Incubator Technology Route Four, Box #519 Rolla MO 65401 314-364-8570 Status: Award Status Date: 05/19/88 OERI No.: 010668 Patent Status Patent Applied For Development Stage : Concept Development Technical Category: Industrial Processes Recv by NBS Recom. by NBS Award Date : 02/28/85 : 08/27/86 : 05/19/88 Award Amount: \$ 67,795 Grant No: FG01-88CE15367 Contract Period: 05/19/88 - 11/18/89 Summary: A grant for \$67,795 was awarded on May 19, 1988. DOE No: 0368 DOE Coord: T. LEVINSON Title: Aircraft Minimum Drag Speed System Description: A system for determinimng the minimum drag speed of an aircraft in loitering flight. Inventor: Paul Michelotti Contact: State CT Paul Michelotti Status: Analysis Status Date: 09/22/86 OERI No.: 010888 Patent # - 4445179 Patent Status

Development Stage : Prototype Development Technical Category: Transportation Systems, Vehicles & Components

Recv by NBS : 06/04/85 Recom. by NBS : 09/19/86

Summary: Recommendation under consideration by DOE which awaiting action by the inventor.

DOE No: 0369 DOE Coord: J. AELLEN Title: "Fire Jet" Automatic Anthracite Burner Anthracite burning furnace including automatic feed and ash Description: disposal. Contact: Erwin O Beck Inventor: PA Erwin O Beck State : Status: Decision Phase Status Date: 07/28/87 OERI No.: 010743 Patent Status : Not Applied For Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components Recv by NBS : 03/25/85 Recom. by NBS : 09/22/86

Summary: Recommendation under consideration by DOE.

DOE No: 0370 DOE Coord: P. M. HAYES

Title: Dehumidification System for Indoor Pools and Other High Humidity Areas

Provides an efficient climate control system for indoor swimming Description: pools and other high humidity areas.

Walter A Stark Inventor: Contact: Walter A Stark State NY Status: Analysis Status Date: 09/26/86 OERI No.: 010775 Patent Applied For Concept Development Patent Status Development Stage : Technical Category: Buildings, Structures & Components Recv by NBS : 04/19/85 Recom. by NBS : 09/24/86

Summary: Recommendation under consideration by DOE

DOE No: 0371 DOE Coord: P. M. HAYES Title: Wallace Energy Systems Solar Assisted Heat Pump Water Heater solar assisted, heat-pump Description: Α water heater for commercial application. Inventor: Joe C Pendergrass Contact: State : GA Joe C Pendergrass Status: Analysis Status Date: 09/29/86 OERI No.: 010980 Patent Status : Patent # - 4438881 Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components Recv by NBS : 07/08/85 Recom. by NBS : 09/26/86

Summary: Recommendation under consideration by DOE.

Title: FS 630 Heat Pump Thermostat Control

Description: An add-on control for most heat pump thermostats that allows the heat pump to change its temperature setting automatically and systematically minimizing the use of resistance heating with the heat pump as a backup to accomplish the temperature change.

Inventor: Linus C Fuchek State : WA Status: Analysis Patent Status : Patent # - 4334576 Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components Recv by NBS : 05/29/85 Recom. by NBS : 09/30/86 Contact: Linus C Fuchek OERI No.: 010851 Marketing Contact: Linus C Fuchek OERI No.: 010851 Contact: Linus C Fuchek OERI No.: 010851 Contact: Linus C Fuchek OERI No.: 010851 Contact: Linus C Fuchek Status Date: 09/30/86 Contact: Linus C Fuchek

Summary: Recommendation under consideration by DOE.

DOE No: 0373 DOE Coord: J. AELLEN

Title: Tobacco Harvesting Machine

Description: A tobacco harvesting machine having a pair of horizontal rotating augers which propel tobacco plants onto a horizontal fixed tobacco stick. The machine also cuts the stalk.

Inventor: Harold W Taylor, Junior State : KY Status: Decision Phase Status Date: 08/07/87 OERI No.: 011424 Patent Status : Patent # - 4353200 Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 02/04/86 Recom. by NBS : 09/30/86

Summary: Recommendation under consideration by DOE.

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DOE No: 0374 DOE Coord: P. M. HAYES

Title: Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines

Description: A two-mode engine air supply system based on a helical screw compressor/expander. The device provides compressed air (supercharging) in the engine high-output mode and provides power recovery through expansion of inducted air in the engine lowoutput mode. The device eliminates the need for a conventional engine throttle.

Inventor: David N Shaw Contact: State : CT David N Shaw

Status: AnalysisStatus Date: 10/24/86OERI No.: 011544

Patent Status : Patent Applied For Development Stage : Concept Development Technical Category: Combustion Engines & Components

Recv by NBS : 04/30/86 Recom. by NBS : 10/22/86

Summary: Recommendation under consideration by DOE.

DOE No: 0375 DOE Coord: J. AELLEN Title: MDT Twister A device which produces dynamic twisting of iced power cables for the purpose of minimizing galloping. Description: Inventor: Albert S Richardson, Junior Contact: State MA Albert S Richardson, Junior : Status: Analysis Status Date: 10/28/86 OERI No.: 010847 Patent Status : Development Stage : Technical Category: Patent Status Disclosure Document Program Working Model Industrial Processes Recv by NBS : 05/29/85 Recom. by NBS : 10/24/86 Summary: Recommendation under consideration by DOE.

DOE No: 0376 DOE Coord: T. LEVINSON

Title: Machine and Method for Producing Energy-Saving Transformers Incorporating Amorphous Metal Cores

Description: Machine and method to make high-efficiency, multi- layer, gap free, magnetic core electrical transformers. They use amorphous steel for core material.

Inventor: Emil B Rechsteiner State : MA Contact: Emil B Rechsteiner Skyfields Farm Boston Road Groton MA 01450 617-486-9483

Status: Award Status Date: 10/28/86 OERI No.: 011133

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Miscellaneous

Recv by NBS : 09/11/85 Recom. by NBS : 10/24/86 Award Date : 07/06/88 Award Amount: \$ 64,222 Grant No: FG01-88CE15376 Contract Period: 07/06/88 - 07/06/89

Summary: A \$64,222 grant was issued on July 7th, 1988 for the purpose of developing a machine that will serve as a testbed for the refinement of the basic concept of using a new technique for winding electric transformer cores. After the feasibility of this new technique is shown, then the grantee will design an engineering model. The grantee is contributing \$9,600 to the cost of the project. DOE Coord: G. K. ELLIS

A Novel Method of Producing Ice-Water Slurries Title: The direct production of an ice-water slurry by evaporative crystallization within a suitably-modified Puraq absorption refrigeration chiller utilizing water and ethylene glycol as working fluids with either single or double effect regeneration. Description: Leon Lazare Inventor: Contact: Leon Lazare The Puraq Company 111 Hannah's Road Stamford CT 0690 State CT 06903 203-322-3925 Status: Award Status Date: 06/05/87 OERI No.: 011519

Patent Status : Not Applied For Development Stage : Engineering Design Technical Category: Buildings, Structures & Components

: 04/09/86 : 10/30/86 : 06/05/87 Recv by NBS Recom. by NBS Award Date Award Amount: \$ 70,000 Grant No: FG01-87CE15339 - 12/04/88 Contract Period: 06/05/87

A grant of \$70,000 was awarded on June 5th, 1987, to provide partial support for building a 200 ton Puraq absorption chiller for use in a testing program by Brookhaven National Laboratory Summary: personnel.

DOE No: 0378 DOE Coord: P. M. HAYES

Title: An Improved Cutter for Plaster Board and the Like

A table and cutting machine designed for cutting large sheets of materials, such as plaster board and foam insulation used in the building construction industry. A pair of coplanar contra-rotating circular blades rotating at different speeds advance the material while essentially shearing it without production of dust. Description:

Inventor: James E Altman State : GA

Contact:

Status: Analysis

DOE No: 0377

James E Altman

OERI No.: 010916 Status Date: 11/14/86

Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS : 06/13/85 Recom. by NBS : 11/10/86

Summary: Recommendation under consideration by DOE.

DOE No: 0379 DOE Coord: J. AELLEN Title: Inner Roof Solar System The invention is an unglazed solar collector used to replace a residential roof. Description: Inventor: Joseph Allegro Contact: FL State : Joseph Allegro Status: Decision Phase Status Date: 07/27/88 OERI No.: 010019 Patent Status : Patent # - 4158357 and others Development Stage : Working Model Technical Category: Direct Solar Recv by NBS : 03/07/84 Recom. by NBS : 11/21/86 A procurement request for \$65,275 was initiated on June 27th, 1988. Summary:

DOE No: 0380 DOE Coord: G. K. ELLIS

Title: Blow-In Blanket System

Description: A process for spraying or blowing conventional insulation materials into wall and ceiling cavities. This process utilizes an adhesive to form an insulation blanket that fills voids completely and eliminates settling and drifting. In addition, higher R-values per inch are claimed relative to batt, loose-fill, and spray applied systems.

Status Date: 11/28/86

Inventor: Henry Sperber State : CO Contact:

Status: Analysis

Henry Sperber

Patent Status : Patent # - 4530468 and others Development Stage : Production & Marketing Technical Category: Buildings, Structures & Components

Recv by NBS : 02/20/86 Recom. by NBS : 11/26/86

Summary: Recommendation under consideration by DOE. Some agreement has finally been reached with inventor as to the general kinds of development ERIP would support. Awaiting a more detailed statement of work.

OERI No.: 011454

DOE No: 0381 DOE Coord: P. M. HAYES Title: Multiple Heat-Range Spark Plug A spark plug that includes a heat pipe to maintain a set temperature of plug tip. Description: Inventor: William P Strumbos Contact: : NY William P Strumbos State Status: Analysis Status Date: 04/12/88 OERI No.: 011684 : Patent # - 4491101 Patent Status Development Stage : Concept Development Technical Category: Combustion Engines Combustion Engines & Components Recv by NBS : 06/09/86 Recom. by NBS : 12/12/86

Summary: No request for assistance has been received.

DOE No: 0382 DOE Coord: P. M. HAYES

Title: System for Recovery of Waste Hot Water Heat Energy

Description: A counter-flow heat exchanger intended for recovering heat from the waste water to preheat the incoming cold water in a home.

Carmile F Vasile Inventor: Contact: NY State Carmile F Vasile Status: Analysis Status Date: 04/12/88 OERI No.: 009925 : Patent Applied For Patent Status Development Stage : Prototype Test Technical Category: Buildings, Structures & Components : 01/09/84 Recv by NBS Recom. by NBS : 12/16/86 Summary: Statement of work in preparation.

DOE No: 0383 DOE Coord: G. K. ELLIS Title: Electro-Optic Inspection of Heat Exchangers A laser based system to inspect heat exchanger tubing for internal corrosion, erosion, scale buildup and deformation. An articulated probe is capable of negotiating and rapidly inspecting straight and bent tubing. The results are acquired, stored and displayed on a portable computer system with graphics Description: capability. Inventor: James L Doyle, Jr. Contact: James L Doyle, Jr. Flow Industries State WA 21414 68th Avenue, South Kent WA 98032 206-872-8500 Status: Award Status Date: 04/09/87 OERI No.: 011086 Patent Status : Not Applied For Patent Status : Not Applied Fo Development Stage : Laboratory Te Technical Category: Miscellaneous Laboratory Test Recv by NBS : 08/19/85 Recom. by NBS : 12/17/86 Award Date : 04/09/87 Contract Period: 04/09/87 Award Amount: \$ 63,502 Grant No: FG01-87CE15328 - 10/08/88 A grant of \$63,502 was awarded on April 9th, 1987, to build and Summary: test an advanced prototype. DOE No: 0384 DOE Coord: J. AELLEN Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity Title: Description: A process and Hardware for continuously casting thin strip steel Inventor: Thomas Gasper Contact: Lloyd E Hackman Ribbon Technology Corporation Box #30758 State OH : Gahanna OH 43230 800-848-0477 Status: Award Status Date: 06/14/88 OERI No.: 011829 Patent Status : Development Stage : Patent Applied For Laboratory Test Industrial Processes Technical Category: Recv by NBS : 08/15/86 Recom. by NBS : 01/21/87 Award Date : 06/14/88 Contract Period: 06/14/88 Award Amount: \$ 76,444 Grant No: FG01-88CE15384 - 12/13/89 A grant of \$49,444 was awarded by ERIP on June 14th, 1988. This was supplimemted by a \$27,000 grant from the Office of Industrial Summary: Programs.

DOE No: 0385 DOE Coord: P. M. HAYES Title: Process for Treating Humus Materials A process for de-watering peat by using acidification to adjust the pH to near the isoelectric point. Description: Inventor: Harold A Hartung Contact: NJ State Harold A Hartung Status Date: 04/12/88 OERI No.: 011349 Status: Analysis Patent # - 4459149 Patent Status Development Stage : Limited Production/Marketing Technical Category: Fossil Fuels Recv by NBS : 12/31/85 : 01/28/87 Recom. by NBS

Summary: No request for assistance has been received.

DOE No: 0386 DOE Coord: G. K. ELLIS

Title: Device and Method to Enable Detection and Measurement of Deformities in Well Components

Description: A tool to check the condition of the well casing during drilling as a means for minimizing blowouts.

Status Date: 09/01/87

Inventor: State :	John H Mayo LA	Contact: John H Mayo Girk, Inc. 404 Alondo Drive Lafayette LA 70503 318-237-3881

Patent Status : Patent # - 4578987 and others Development Stage : Prototype Development Technical Category: Fossil Fuels

Recv by NBS : 05/21/86 Recom. by NBS : 02/02/87 Award Date : 09/01/87 Award Amount: \$ 88,000 Grant No: FG01-87CE15345 Contract Period: 09/01/87 - 02/28/89

Summary: A grant of \$88,000 was awarded on September 1, 1987 for developing an advanced prototype. The funding includes \$13,000 from DOE/Fossil Energy. The prototype has been completed and the inventor is seeking opportunity to test it.

Status: Award

OERI No.: 011599

DOE No: 0387	DOE Coord: J. AELLEN		
Title:	Quiet Operating Internal Combusti Efficient Expansion Cycle	on Engine with Complete Highly	
Description:	A small internal combustion engi achieves essentially maximum expar they are exhausted to the atmosphe respect to the fuel and ignit constructed in several different applications. It is quiet, eff suitable for powering devices such the like.	ision of combustion gases before ere. The engine is flexible with tion means used, and can be embodiments to meet different	
Inventor: Fr State : IN	ederick L Erickson	Contact: George S Lewis 3926 Windswept Drive Fort Wayne IN 46815 219-483-2093	
Status: Award	Status Date: 06/14	4/88 OERI No.: 005848	
Patent Status Development S Technical Cat	: Patent # - 4437437 and othe tage : Prototype Test egory: Combustion Engines & Compor	ers ments	
Recv by NBS : 09/25/79 Recom. by NBS : 02/02/87 Award Date : 06/14/88 Award Amount: \$ 63,485 Grant No: FG01-88CE15387 Contract Period: 06/14/88 - 12/13/89			
Summary:	A grant of \$63,485 was awarded on ***********************************	June 14th, 1988.	
DOE No: 0388	DOE Coord: J. AELLEN		
Title:	Preparation of Extremely Fine, Fabrication into Dense, Sintered,	Superalloy Powders and Their Net Shape Superalloy Parts	
Description:	A chemical coprecipitation met powders of less than one micron si mixed, and without contaminants.	hod for preparing superalloy ze, of uniform size, intimately	
Inventor: Ra State : UT		Contact: Gordon F Jensen	
Status: Analy	sis Status Date: 02/17	7/87 OERI No.: 010480	
Patent Status Development S Technical Cat	: Not Applied For tage : Laboratory Test egory: Industrial Processes		
Recv by NBS Recom. by NBS	: 11/14/84 : 02/12/87		
Summary:	Recommendation under consideration	h by DOE.	

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DOE Coord: P. M. HAYES DOE No: 0389 Title: Reduced Size Heating Assembly for an Electric Stove Description: A small diameter heating unit and drip pan for use on conventional electric ranges Inventor: Donald W Scott Contact: Donald W Scott State GA : Status: Analysis Status Date: 04/12/88 OERI No.: 011004 Patent Status : Patent # - 4506141 Development Stage : Production & Marketing Technical Category: Miscellaneous : 07/15/85 : 02/13/87 Recv by NBS Recom. by NBS

Summary: Request for financial support under consideration.

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DOE No: 0390 DOE Coord: G. K. ELLIS

Title: Wicks Efficient Fuel Utilization System

Description: A cogeneration module which generates electricity and utilizes waste heat for space heating. It is intended for residential and light commercial applications.

	Inventor: State :	Frank Wicks NY	Contact: Frank Wicks One Nicholas Avenue Schenectady NY 12309 518-372-2783
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Status: Analysis Status Date: 02/05/88 OERI No.: 009948

Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Buildings, Structures & Components

Recv by NBS : 01/24/84 Recom. by NBS : 03/06/87 Award Date : 02/05/88 Award Amount: \$ 70,000 Grant No: FG01-88CE15390 Contract Period: 02/05/88 - 08/04/89

Summary: A grant of \$70,000 was awarded to build and test a prototype.

DOE No: 0391 DOE Coord: A. R. BARNES

Title: Compressed Gas Energy Storage

The invention is an energy storage system in a leak- proof salt or granite cavern. In the energy storage mode, a reversible pump-turbine (RPT) unit pumps fluid into the cavern base to compress a mass of gas above it. In the power generation mode, the fluid expands through the RPT unit driving an electric generator to generate electricity during peak power demand. Description:

Inventor: Gerald J Grott Contact: State Gerald J Grott : AZ OERI No.: 011778

Status Date: 03/23/87 Status: Analysis

Not Applied For Concept Development Patent Status Development Stage : Technical Category: Miscellaneous

Recv by NBS : 05/28/86 Recom. by NBS : 03/20/87

Summary: No proposal submitted.

DOE No: 0392 DOE Coord: T. LEVINSON

Method and Apparatus for Drilling Horizontal Holes in Geological Title: Structures from a Vertical Bore

A method and apparatus for linking underground wells up to several hundred feet apart, for in situ coal gasification. Description:

David A Summers Inventor: State MO

Contact: Terry Nixon

OERI No.: 010708 Status: Analysis Status Date: 03/30/87

Patent Status Patent # - 4317492 Development Stage : Concept Deve Technical Category: Fossil Fuels Concept Development

Recv by NBS : 03/05/85 Recom. by NBS : 03/26/87

Recommendation under consideration by DOE. Awaiting statement of Summary: work from inventor.

DOE No: 0393 DOE Coord: G. K. ELLIS

Method and Apparatus for Ultrasonic Testing of Tubular Goods Title: Description: A method to inspect tubing or pipes for flaws.

Inventor: Waylon A Livingston State : OK.

Contact: Waylon A Livingston Tubesonics International, Inc 770 West Rock Creek Road Norman OK 73069 Norman OK 405-364-9710

Status Date: 08/27/87 Status: Procurement OERI No.: 011286 Patent Status Patent # - 4541064 and others Limited Production/Marketing Development Stage : Technical Category: Miscellaneous Recv by NBS Recom. by NBS : 12/09/85 : 04/10/87 : 08/27/87 Award Date Award Amount: \$ 94,721 Grant No: FG01-87CE15345 Contract Period: 08/27/87 - 02/26/89

An grant of \$94,721 was awarded on August 27th, 1987, including \$19,721 from DOE/Fossil Energy, to build and test a prototype. Summary:

DOE No: 0394 DOE Coord: J. AELLEN

Title: Variable Wall Mining Machine

A longwall coal mining machine having a series of side cutting auger sections connected by universal joints. Nitrogen or other inexpensive inert gas is introduced into the shrouded cutting chamber, to control release of methane from the coal seam, and production of dust by the cutting machine. Description:

Jay Hilary Kelley Inventor: Contact: State PA Jay Hilary Kelley OERI No.: 011464 Status Date: 04/20/87

Status: Analysis

Patent # - 4118072 Prototype Test Industrial Processes Patent Status : Development Stage : Patent Status Technical Category:

Recv by NBS : 02/27/86 Recom. by NBS : 04/16/87

Summary: Recommendation under consideration by DOE. DOE No: 0395 DOE Coord: G. K. ELLIS

Title: Holland Oil Well Pumping System

Description: A down-hole hydraulically operated oil-well pump for low and medium-productivity wells (up to 140 bbl/day) and for highly deviated wells. The pump incorporates a steplessly adjustable stroke rate and a very high stroke displacement ratio.

Inventor: John H Holland State : OK Contact: John H Holland R & D Products, Inc Hi Point Building 2500 South McGee, Suite #148 Norman OK 73072 405-364-0376

Status: Analysis

Status Date: 06/09/88 OER

OERI No.: 011542

Patent Status : Patent Applied For Development Stage : Engineering Design Technical Category: Fossil Fuels

Recv by NBS : 04/29/86 Recom. by NBS : 04/16/87 Award Date : 06/09/88 Award Amount: \$ 77,300 Grant No: FG01-88CE15395 Contract Period: 06/09/88 - 11/08/89

Summary: A grant of \$77,300 was awarded on June ninth, 1988, to build and test a prototype.

DOE No: 0396 DOE Coord: G. K. ELLIS

Title: Dyna Flow

Description: The Dyna Flow is a retrofit process to an air conditioning system. By adding a second compressor of smaller capacity to an existing central air conditioning system, with two stage control depending on the cooling load requirement, an improvement in the overall efficiency of the cooling system results.

Inventor: Ruben Espinosa Contact: State : FL Status: Analysis Status Date: 05/14/87 OERI No.: 011737 Patent Status : Patent # - 4535602

Development Stage : Prototype Test Technical Category: Buildings, Structures & Components

Recv by NBS : 06/23/86 Recom. by NBS : 05/12/87

Summary: A procurement request of \$32,843 has been initiated to build and test a workable prototype.

DOE No: 0397 DOE Coord: P. M. HAYES In Service Tank Bottom Leak Detection and Repair System Title: A method for detecting and repairing leaks in large storage tanks, particularly those used for storage of petroleum products. Description: Inventor: Donald E Lewis Contact: Donald E Lewis State OK Status: Analysis Status Date: 04/12/88 OERI No.: 011780 Patent Status Not Applied For : Development Stage : Engineering Design Technical Category: Industrial Processes Recv by NBS : 07/18/86 Recom. by NBS : 05/29/87

Summary: Request for financial support is under consideration.

DOE No: 0398 DOE Coord: A. R. BARNES

Title: Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs

Description: A portable air operated test system, including special tube plugs for high pressure testing of tubes in shell and tube heat exchangers and the like, in power plants or any other process industry.

Inventor: Renato R Noe Contact: State : NJ Status: Analysis Status Date: 06/01/87 OERI No.: 011782 Patent Status : Patent # - 4474216

Patent Status : Patent # - 4474216 Development Stage : Production & Marketing Technical Category: Miscellaneous

Recv by NBS : 07/21/86 Recom. by NBS : 05/29/87

Summary: Recommendation under consideration by DOE. Product is in limited production.

DOE No: 0399 DOE Coord: T. LEVINSON Title: Hydrodynamic/Multi Deflection Pad Bearing A multi-pad bearing configuration applicable to either radial or Description: thrust bearings. Russell D Ide Inventor: Contact: : RI Russell D Ide State Post Office Box #744 Coventry RI 02816 401-828-1799 Status: Award Status Date: 01/12/88 OERI No.: 011653 Patent # - 4496251 Patent Status Development Stage : Prototype Test Technical Category: Miscellaneous Recv by NBS : 06/02/86 Recom. by NBS : 06/09/87 Award Date : 01/12/88 Contract Period: 01/12/88 Award Amount: \$ 75,000 Grant No: FG01-88CE15399 - 07/11/89 A grant for \$75,000 was awarded on January twelfth, 1988 for the purpose of designing, manufacturing, and testing prototype deflection pad bearings in four key market segments: (1) high-speed turbo/turbine equipment, (2) high-load electric motors or gear boxes, (3) air or gas compressors, and (4) air-conditioning or refrigeration equipment. Final testing of each prototype will be done in cooperation with an equipment manufacturer. To assist with prototype design, a computer model that couples the fluid dynamics to the bearing structure will be Summary: developed. \*\*\*\*\*\*\*\*\*\* DOE No: 0400 DOE Coord: J. AELLEN Title: Continuous Casting and Inside Rolling of Hollow Rounds Description: A continuous casting system for steel pipe. Inventor: Gerhard E Schwarz Contact: Gerhard E Schwarz State OH Status: Analysis Status Date: 06/26/87 OERI No.: 011789 Patent Status Patent # - 4546816 Engineering Design Industrial Processes Development Stage : Technical Category: Recv by NBS : 07/24/86 Recom. by NBS : 06/24/87 Summary: Recommendation under consideration by DOE.

DOE No: 0401 DOE Coord: J. AELLEN Title: A Miniature, Inexpensive Oxygen-Sensing Element A miniature, low cost oxygen sensing element for high temperature Description: applications. W N Lawless Inventor: Contact: OH W N Lawless State : CeramPhysics, Inc 921 Eastwind Drive Suite #110 Westerville 614-882-2231 OH 43081 Status: Award Status Date: 08/02/88 OERI No.: 011836 Patent Status Not Applied For : Development Stage : Concept Development Technical Category: Miscellaneous Recv by NBS Recom.\_by NBS : 08/25/86 06/30/87 08/02/88 Award Date Award Amount: \$ 75,000 Grant No: FG01-88CE15401 Contract Period: 08/02/88 - 02/01/90 Summary: A grant for \$75,000 was awarded on August 2, 1988. DOE No: 0402 DOE Coord: G. K. ELLIS Title: KTM Logger A mobile biomass processing unit, including a shredder and an extruder, used to manufacture burnable logs. Description: Stanley D Balzer Inventor: Contact: State CA Stanley D Balzer : Status: No DOE Support Status Date: 09/23/88 OERI No.: 011442 Patent Status : Not Applied For Development Stage : Prototype Deve Technical Category: Miscellaneous Patent Status Not Applied For Prototype Development : 02/12/86 : 06/30/87 Recv by NBS Recom. by NBS Inventor's request for grant support disapproved due to limited Summary: energy relationship.

DOE No: 0403 DOE Coord: G. K. ELLIS Title: Enterprise Lubricator A device for lubricating the polished rod and packing of walking Description: beam pumps Raymond A Elam Contact: Inventor: State CA Raymond A Elam : Status: Analysis Status Date: 07/08/87 OERI No.: 011134 Patent Status : Patent Applied For Development Stage : Production & Marketing Technical Category: Fossil Fuels : 09/11/85 : 07/07/87 Recv by NBS Recom. by NBS A procurement request for \$61,687 to build and test several Summary: prototypes.

DOE No: 0404 DOE Coord: J. AELLEN

Title: Steam-Methane Reforming in Molten Carbonate Salt

Description: A process for steam-methane reforming using a melt of alkali carbonate salts as both a catalyst and a heat source for the endothermic reaction.

Donald C Erickson Inventor: Contact: MD Donald C Erickson State • Status: Analysis Status Date: 07/29/87 OERI No.: 011255 Patent Status Patent Applied For : Development Stage : Technical Category: Laboratory Test Industrial Processes Recv by NBS : 11/22/85 : 07/29/87 Recom. by NBS Summary: Recommendation under consideration by DOE.

DOE No: 0405	DOE Coord: J. AELLEN			
Title:	Prehydrolysis and Digestion of Pl	ant Material		
Description:	A process whereby bagasse and sim corn stalks, wheat and rice stal high content of hemicellulose (o can be prehydrolized to convert useful paper products, while drastically. Sugars yielded can turning out waste.	ks etc.) that have a relatively ther than cellulose and lignin) the remainder of the pulp into		
Inventor: Ha State : NJ		Contact: Harald F Funk		
Status: Analy	ysis Status Date: 07/2	9/87 OERI No.: 011625		
Patent Status : Patent # - 4070232 Development Stage : Engineering Design Technical Category: Fossil Fuels				
Recv by NBS Recom. by NBS	: 05/27/86			
	5 : 07/29/8/			

Summary: Recommendation under consideration by DOE.

DOE No: 0406 DOE Coord: G. K. ELLIS

Title: Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator

Description: This process and proprietary equipment design incinerates Spent Potlining from aluminum reduction cells and generates a granular, non-hazardous ash through control of ash chemistry. Commercial quantities of energy are recovered conventionally, further enhancing the economics.

Status Date: 06/01/88

Inventor: State :	Tabery

Contact:	
Ronald S Tabery	
Turnpoint Engineering	Corp
Turnpoint Engineering 1301 Capital of Texas	Highway
Austin TX 78746	
512-327-8600	

OERI No.: 012022

Status: Award

Patent Status : Patent Applied For Development Stage : Prototype Test Technical Category: Industrial Processes

Recv by NBS : 01/30/87 Recom. by NBS : 08/28/87 Award Date : 06/01/88 Award Amount: \$ 77,600 Grant No: FG01-88CE15406 Contract Period: 06/01/88 - 11/30/89

Summary: A grant of \$77,600 was awarded on June 1, 1988, to provide partial support for building and testing a pilot plant prototype.

DOE	No:	0407	DOE	Coord:	Α.	R.	BARNES	

Title: An Extended Range Tankless Water Heater

Description: An extended range tankless water heater with a peak capacity of roughly 185,000 BTU/hr, designed to operate with uniform efficiency from very low water flowrates to the peak design flowrate. The burner does not activate until a minimum flowrate (about 0.5 gal/min) is reached. The design also has the potential for low manufacturing cost, which can make it competitive with tank-type heaters.

James R Harris Inventor: Contact: KS James R Harris State Status: Analysis Status Date: 04/12/88 OERI No.: 011882 Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Buildings, Structures & Components : 10/03/86 : 09/25/87 Recv by NBS Recom. by NBS Summary: Grant request under consideration for building and testing of a prototype.

DOE No: 0408 DOE Coord: P. M. HAYES

Title: Floodshield System

Description: A flood protection device for commercial and residential structures. It consists of a durable and storable PVC shield which is pulled up and snapped into place when flood waters threaten. A filtered, perforated drain pipe is buried around the base of the structure and is connected to an industrial grade pump which collects and discharges underground seepage.

Inventor: William W Thompson State : WI Status: Procurement Status Date: 04/07/88 Contact: William W Thompson Status Date: 04/07/88 OERI No.: 011757

Patent Status : Patent # - 4488386 Development Stage : Production & Marketing Technical Category: Miscellaneous

Recv by NBS : 07/07/86 Recom. by NBS : 09/29/87

Summary: Request for financial support under consideration.

DOE No: 0409 DOE Coord: J. AELLEN

Title: Self-Dressing Resistance Welding Electrode

Description: A resistance welding electrode designed to maintain a constant weld area contact throughout its entire usable life. This unique design completely eliminates the need for electrode dressing and significantly reduces the operating power requirements by concentrating the application of energy within the work piece.

Inventor: Bryan Prucher State : AL

Contact: Bryan Prucher

Status: AnalysisStatus Date: 09/29/87OERI No.: 011967

Patent Status : Patent # - 4476372 Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS : 12/11/86 Recom. by NBS : 09/29/87

Summary: Recommendation under consideration by DOE.

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DOE No: 0410 DOE Coord: G. K. ELLIS

Title: The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity

Description: A furnace incorporating a steam turbine and thermopile electric power source to eliminate the requirements for electric power to operate the fan and open the gas valve. The Annual Fuel Utilization Efficiency (AFUE) for the furnace is claimed to be eighty-three percent.

Inventor: Peter Kneaskern Contact: State : OH Peter Kneaskern

Status: Decision Phase Status Date: 10/05/87 OERI No.: 011477

Patent Status : Patent # - 4418538 and others Development Stage : Prototype Test Technical Category: Buildings, Structures & Components

Recv by NBS : 03/03/86 Recom. by NBS : 10/05/87

Summary: Recommendation under consideration by DOE.

DOE No: 0411 DOE Coord: T. LEVINSON Title: The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency An engine control approach originally conceived for use with continuously variable transmissions, but now applied to Description: continuously variable transmissions, but now applied to discrete-ratio transmissions (therby to eliminate a technological risk). This approach mainly comprises a special Otto engine calibration and a drive-by-wire system for regulating engine throttle position independently of accelerator pedal position and for selecting the active transmission ratio. David Ganoung Inventor: Contact: State : NM David Ganoung Status: Analysis Status Date: 04/11/88 OERI No.: 011390 Patent Applied For Concept Development Patent Status Development Stage : Technical Category: Combustion Engines & Components Recv by NBS : 01/15/86 : 10/29/87 Recom. by NBS Summary: Grant paperwork for \$77,778 was initiated.

DOE No: 0412 DOE Coord: J. AELLEN

Title: Meta-Lax Stress Relief for Almost any Size Metal Structure

Description: A method for using sub-resonant cyclic vibration excitement to relieve processing stresses in metal structures, including welding during sub-resonant vibration.

Inventor: August G Hebel, Junior Contact: State : MI August G Hebel, Junior

Status: Analysis Status Date: 10/30/87 OERI No.: 011898

Patent Status : Patent # - 3741820 and others Development Stage : Limited Production/Marketing Technical Category: Industrial Processes

Recv by NBS : 10/16/86 Recom. by NBS : 10/30/87

Summary: Recommendation under consideration by DOE.

DATE: 30 SEPTEMBER 1988

DOE No: 0413 DOE Coord: A. R. BARNES

Title: Non Metallic Railroad Switch Covers

Description: Reinforced plastic or composite covers used in conjunction with conventional heating elements to prevent freezing of railroad switches.

Inventor: Stanley Wayne Widmer State : MN Status: Analysis Patent Status : Patent Applied For Development Stage : Limited Production/Marketing Technical Category: Transportation Systems, Vehicles & Components Recv by NBS : 02/25/87 Recom. by NBS : 11/16/87 Summary: Grant proposal under consideration.

DOE No: 0414 DOE Coord: G. K. ELLIS

Title: Low Profile Fluid Catalytic Cracker

Description: A new catalytic cracker design for petroleum refining.

Inventor: Milton B Thacker State : UT Contact: Milton B Thacker

OERI No.: 011831

Status: Analysis

Patent Status : Disclosure Document Program Development Stage : Engineering Design Technical Category: Fossil Fuels

Recv by NBS : 08/18/86 Recom. by NBS : 11/23/87

Summary: A procurement was initiated to provide \$90,000 for partial support in a cooperation project with Utah's Center of Excellence program, to build and test a \$13,000,000 hot plant prototype.

Status Date: 11/23/87

DOE Coord: G. K. ELLIS

Title:	Oil Recovery by Modified Stear Non-Condensible Gas	n Drive Employing High Velocity		
Description:	A modified steam drive, employing gases, for improved recovery of	ng high velocity non- condensible heavy oils.		
Inventor: To State : CA		Contact: Todd M Doscher		
Status: Analy	vsis Status Date: 11/	30/87 OERI No.: 012041		
Patent Status : Patent # - 4610304 and others Development Stage : Engineering Design Technical Category: Fossil Fuels				
Recv by NBS Recom. by NBS	: 02/13/87 : 11/30/87			

Summary: Awaiting statement of work from inventor's heirs. We were informed on September 1, 1988, that the inventor died.

DOE No: 0416 DOE Coord: A. R. BARNES

Title: Self-Contained Pipe Freezing Unit

Description: A refrigeration device for use by plumbers for freezing water inside a small section of pipe to create an "ice Block" which prevents water from flowing downstream. With the "ice block" in place, the plumber can relieve the water pressure and drain the pipe for any service work.

Arthur Radichio Inventor: Contact: Arthur Radichio State NY : OERI No.: 011535 Status Date: 12/29/87 Status: Analysis Patent Status Patent # - 4309875 Development Stage : Working Model Technical Category: Buildings, Structures & Components : 04/22/86 : 12/29/87 Recv by NBS Recom. by NBS Summary: Recommendation under consideration be DOE.

DOE No: 0415

DOE No: 0417 DOE Coord: G. K. ELLIS Title: Rotary Drill Bit Description: An improved drill bit design for rotary well drills. Roy W Wood Inventor: Contact: State Roy W Wood AL Status Date: 12/31/87 Status: Analysis OERI No.: 011786 Patent Status Disclosure Document Program : Development Stage : Concept Development Technical Category: Fossil Fuels Recv by NBS : 07/23/86 Recom. by NBS : 12/31/87

Summary: Recommendation under consideration by DOE. Assissting inventor in locating a contractor who can build a prototype.

DOE No: 0418 DOE Coord: J. AELLEN

Title: Use of Chemical Vapor Deposition to Coat Metal Surfaces with High Temperature Superconducting Materials

Description: A chemical vapor deposition process for coating metal surfaces with new (relatively) high temperature superconduting materials.

Inventor: Wayne S Brown State : UT Contact: Wayne S Brown Status: Analysis Status Date: 12/31/87 OERI No.: 012281 Patent Status : Not Applied For

Development Stage : Not Applied For Development Stage : Concept Development Technical Category: Industrial Processes

Recv by NBS : 07/06/87 Recom. by NBS : 12/31/87

Summary: Recommendation under consideration by DOE.

DOE No: 0419 DOE Coord: J. AELLEN

Title: A Planing Machine to Produce Ultra-Fine Coal

Description: A water jet based coal mining system to separate out impurities as the coal is being mined. The system also permits cutting square holes, increasing recoverable reserves. The system would be primarily for mining presently unusable high ash and similar coal fields that are uneconomical to mine.

Inventor: Marion Mazurkiewicz Contact: Bob Johnson State MO OERI No.: 010687 Status Date: 01/29/88 Status: Analysis Patent Status Not Applied For : Development Stage : Technical Category: Concept Development Industrial Processes : 02/28/85 : 01/29/88 Recv by NBS Recom. by NBS Summary: Recommendation under consideration by DOE.

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DOE No: 0420 DOE Coord: A. R. BARNES

Title: The Utah Transmission/Continuously Variable Speed Wind Generator

Description: A continuously variable transmission utilizing a variable cam drive with power transmitted through one of a series oof overrunning clutches.

Laird B Gogins Contact: Inventor: State UT Laird B Gogins Status: Analysis Status Date: 01/29/88 OERI No.: 011820 Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Transportation Systems, Vehicles & Components Recv by NBS : 08/11/86

Recom. by NBS : 01/29/88

Summary: Grant proposal under consideration.

DOE Coord: G. K. ELLIS DOE No: 0421 Flexible Drill Pipe Title: A flexible drill pipe to allow drilling horizontal drain holes for enhanced oil recovery. Description: Inventor: W B Driver Contact: State TX W B Driver : Status: Decision Phase Status Date: 01/29/88 OERI No.: 012312 Patent Status : Patent # - 4149391 Development Stage : Prototype Test Technical Category: Fossil Fuels Recv by NBS Recom. by NBS : 08/03/87 : 01/29/88

Summary: Procurement request initiated to provide \$51,895 to conduct field tests of the flexible drill pipe in an oil formation.

DOE No: 0422 DOE Coord: G. K. ELLIS

Title: High Efficiency Ozone Generating System

Description: A high efficiency, high pressure ozone generating system.

Inventor: Eskil L Karlson Contact: Eskil L Karlson State : PA 2626 State Street Erie PA 16508 814-455-7849 OERI No.: 012191 Status: Award Status Date: 07/29/88 Not Applied For Concept Development Patent Status Development Stage : Technical C Technical Category: Industrial Processes Recv by NBS Recom. by NBS 05/05/87 Recom. by NBS : 02/29/88 Award Date : 07/29/88 Contract Period: 07/29/88 Award Amount: \$ 78,359 Grant No: FG01-88CE15422 - 01/28/90 A grant for \$78,359 was awarded on July 29th, 1988, to build and Summary:

test a prototype.

DOE No: 0423 DOE Coord: G. K. ELLIS

Title: Superverter - A Digitally Synthesized DC to AC Sinewave Inverter

Description: A microprocessor controlled solid state DC to AC inverter which synthesizes a nearly sinusoidal output waveform with low harmonic contect over a wide range of loads. This device conditions locally produced DC power (photovoltaics, wind devices etc) for operating conventional AC appliances.

Inventor: Harlan K Loveness Contact: AZ Harlan K Loveness State Status: Decision Phase Status Date: 09/23/88 OERI No.: 011957 Patent Status Not Applied For Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Miscellaneous Recv by NBS Recom. by NBS : 12/01/86 : 02/29/88 Recommendation under consideration by DOE. Statement of work Summary: received.

DOE No: 0424 DOE Coord: A. R. BARNES

Title: An Automated Process for Garment Manufacturers

Description: A computer integrated manufacturing process for making garments.

Inventor: Brett Stern State : NY Status: Analysis Patent Status : Patent # - 4645629 Development Stage : Prototype Development Technical Category: Industrial Processes Contact: Brett Stern OERI No.: 012302

Recv by NBS : 07/20/87 Recom. by NBS : 02/29/88

Summary: Grant proposal under consideration.

DATE: 30 SEPTEMBER 1988

DOE Coord: G. K. ELLIS

High Temperature Condensing Biomass Combustion System Title: A biomass-fueled furnace to burn green logs, chips, sawdust, corncobs pellets, peat and otherr biomass waste as cleanly as oil Description: and gas Inventor: Lawrence A Dobson Contact: State WA Lawrence A Dobson Status Date: 09/23/88 Status: Decision Phase OERI No.: 012030 Patent Status Patent # - 4559882 Development Stage : Prototype Development Technical Category: Fossil Fuels Recv by NBS : 02/06/87

Recom. by NBS : 03/31/88

DOE No: 0425

Summary: Recommendation under consideration by DOE. Statement of work received.

\*

DOE No: 0426 DOE Coord: G. K. ELLIS

Title: Eddy Current Transducing System

Description: Equipment for measuring blade clearance and speed in a rotating machine. An eddy current transducer supplies signals to a microprocessor which are processed to provide clearance and speed information.

Inventor: Lawrence W Langley Contact: State : VA Lawrence W Langley

Status: Decision Phase Status Date: 09/23/88 OERI No.: 011921

Patent Status : Disclosure Document Program Development Stage : Laboratory Test Technical Category: Miscellaneous

Recv by NBS : 11/03/86 Recom. by NBS : 03/31/88

Summary: Recommendation under consideration by DOE.

DOE No: 0427 DOE Coord: J. AELLEN Title: Non-Catalytic Steam Hydrolysis of Fats A non-catalytic process for steam hydrolyzing fats and recovering the separated products thus formed. Description: Inventor: Kenneth E Lunde Contact: : MT Kenneth E Lunde State Status: Analysis Status Date: 03/31/88 OERI No.: 011098 ratent Status : Development Stage : Technical Category: Patent Status Patent Applied For Laboratory Test Industrial Processes Recv by NBS : 08/22/85 Recom. by NBS : 03/31/88

Summary: Recommendation under consideration by DOE.

DOE No: 0428 DOE Coord: G. K. ELLIS

Title: Uni-Frac Column and T-By Tray

Description: The invention is a new column and tray design for distillation columns.

Inventor: Trent J Parker State : UT Contact: Trent J Parker

Status: Analysis

Status Date: 04/22/88 OE

0 OERI No.: 012275

Patent Status : Patent Applied For Development Stage : Working Model Technical Category: Industrial Processes

Recv by NBS : 06/30/87 Recom. by NBS : 04/22/88

Summary: Statement of work received. A procurement for \$79,110 was initiated to perform a detailed circuit design, build a prototype, and test an operating turbo machine. DOE No: 0429 DOE Coord: J. AELLEN Title: A Low Cost Galloping Indicator A mechanical device for detecting galloping of aerial conductors Description: of electric power transmission lines. Inventor: Albert S Richardson, Junior Contact: Albert S Richardson, Junior State MA Status: Analysis Status Date: 04/29/88 OERI No.: 010626 Patent Status : Not Applied For Development Stage : Prototype Test Technical Category: Industrial Processes : 02/19/85 : 04/29/88 Recv by NBS Recom. by NBS

Summary: Recommendation under consideration by DOE.

DOE No: 0430 DOE Coord: G. K. ELLIS

Title: Whitten Dugas Mud Pump Ehnancer

Description: A design for injecting a fluid at the base of a piston of a mud pump to reduce wear from the abrasive mud slurry being pumped. The Whitten/Dugas Pump Enhancer can also inject chemicals into the drilling fluid or mud in measured amounts.

Inventor: Harold P Dugas Contact: State : TX Giles M Whitten

Status: Decision Phase Status Date: 09/23/88 OERI No.: 011855

Patent Status : Disclosure Document Program Development Stage : Concept Development Technical Category: Fossil Fuels

Recv by NBS : 09/09/86 Recom. by NBS : 05/16/88

Summary: A procurement request for \$79,350 was initiated to build and test a prototype on an operating oil well pump. DOE No: 0431 DOE Coord: G. K. ELLIS

Title: Method and Apparatus for Removing Excess Water from Subterranean Wells.

Description: A method by which separation of water from hydrocarbons produced in wells is effected within the wellbore through the action of gravity. As the mixture of hydrocarbons and water enters the well, the water settles to the bottom. Either a pump or just the action of gravity head injects the water in a rock formation. The Hydrocarbons are brought to the surface with or without the help of artificial lift, as in conventional wells.

Inventor: Jack Wade McIntyre Contact: State : TX Jack Wade McIntyre Status: Analysis Status Date: 05/31/88 OERI No.: 012367

Patent Status : Patent Applied For Development Stage : Concept Definition Technical Category: Fossil Fuels

Recv by NBS : 09/01/87 Recom. by NBS : 05/31/88

Summary: Recommendation under consideration by DOE. Awaiting statement of work.

DOE No: 0432 DOE Coord: L. A. LEE

Title: Water Hammer Pile Driver

Description: A pile driver, intended for offshore use, in which a water hammer tube is evacuated and the ambient pressure provided by the surrounding sea water is used to generate the driving impulse which increases with depth.

Inventor: Serge Wisotsky State : OK Status: Analysis Patent Status : Patent # - 3922869 and others Contact: Serge Wisotsky OERI No.: 010416

Patent Status : Patent # - 3922869 and o Development Stage : Engineering Design Technical Category: Industrial Processes

Recv by NBS : 09/25/84 Recom. by NBS : 05/31/88

Summary: Recommendation under consideration by DOE.

DOE Coord: L. A. LEE DOE No: 0433 Title: Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction Description: A new composite anode for aluminum reduction that will reduce power requirements for aluminum production. J C Withers Contact: Inventor: WA Theodore R Beck State : OERI No.: 012346 Status: Analysis Status Date: 05/31/88 Patent Status : Development Stage : Patent Status Disclosure Document Program Engineering Design Industrial Processes Technical Category: Recv by NBS : 08/24/87 Recom. by NBS : 05/31/88

Summary: Recommendation under consideration by DOE.

DOE No: 0434 DOE Coord: L. A. LEE

Title: Modular Apparatus for Laundry Dryer Heat Recovery

Description: A rotary air-to-air heat exchanger module for primary use with institutional/commercial laundry dryers. The device recovers dryer exhaust heat and preheats intake air, thereby reducing dryer fuel consumption.

Inventor: Ben B Herschel Contact: State : NJ Ben B Herschel

Status: Analysis Status Date: 06/28/88 OERI No.: 011801

Patent Status : Patent # - 4488364 Development Stage : Limited Production/Marketing Technical Category: Miscellaneous

Recv by NBS : 07/30/86 Recom. by NBS : 06/28/88

DOE No: 0435	DOE Coord: L. A. LEE
Title:	A New Thermodynamic Process of Actual Approach to the Carnot Cycle
Description:	A heat engine cycle using two or more working fluids with different boiling points. Generally, mixtures of the fluids are vaporized and expanded through a turbine. The liquid turbine exhaust is used to pre- heat and vaporize some of the condensed phases. The remaining vapor is expanded through an additional stage to maximize efficiency.
Inventor: Se Country : Sp	rafin L Mendoza Contact: ain Serafin L Mendoza
Status: Analy	sis Status Date: 06/30/88 OERI No.: 009915
Patent Status Development S Technical Cat	: Not Applied For tage : Engineering Design egory: Combustion Engines & Components
Recv by NBS Recom. by NBS	: 01/03/84 : 06/30/88
Summary: y	Recommendation under consideration by DOE.

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DOE No: 0436 DOE Coord: G. K. ELLIS

Title: The Russell Self-Piloted Check Valve

Description: A check valve which embodies a conventional flapper valve and an eccentric ball valve. In the open position, the flow is unimpeded in a certain direction. When the flow reverses, the springloaded flapper valve within the ball closes. It then causes the ball valve to close against a restraining spring pressure. When the fluid pressure is released, the restraining spring opens the ball valves while the opposing flow opens the flapper.

Inventor: Joe Sanford State : LA	Contact: Joe Sanford
Status: Analysis	Status Date: 07/07/88 OERI No.: 012103
Patent Status : Pater Development Stage : Proto Technical Category: Build	nt # - 4254836 and others otype Test dings, Structures & Components
Recv by NBS : 03/06/87 Recom. by NBS : 07/07/88	
Summary: Recommendat: work.	ion under consideration be DOE. Awaiting statement of

DOE No: 0437	DOE Coord: L. A. LEE
Title:	Steam Generator With Integral Down-Draft Dryer
Description:	The invention is a method for improving the operation of a steam generating furnace fired with high moisture content wood fuels. It consists of a drying shaft installed inside the furnace. The fuel is dried by bringing it in turbulent contact with hot combustion gases. Dryer fuel requires less excess air for stable combustion; also, the need for fuel to stabilize combustion is obviated.
Inventor: Fr State : ME	ank W Hochmuth Contact: Frank W Hochmuth
Status: Analy	sis Status Date: 07/20/88 OERI No.: 011408
Patent Status Development S Technical Cat	: Patent # - 4502397 and others tage : Engineering Design egory: Buildings, Structures & Components
Recv by NBS Recom. by NBS	: 01/28/86 : 07/20/88
Summary:	Recommendation under consideration by DOE.

DOE No: 0438 DOE Coord: J. AELLEN

Title: Microwave Reflection by Synthetic Metals

Description: A series of symthetic materials that reflect microwaves.

Inventor: M Thomas Jones Contact: State Robert Killoren : MO Status Date: 07/29/88 OERI No.: 012353 Status: Analysis Not Applied For Concept Development Industrial Processes Patent Status : Development Stage : Technical Category: Recv by NBS : 08/27/87 Recom. by NBS : 07/29/88

DOE No: 0439 DOE Coord: L. A. LEE

Title: Project Twenty-One Rapid Transit System

Description: A rapid transit system optimized for placement above existing urban streets. Its outstanding features are two-way traffic along a super-slender beam, compact stations, and convenient switching for two- way traffic.

Inventor: Lawrence K Edwards Contact: : VA State Lawrence K Edwards Status Date: 08/02/88 Status: Analysis **OERI No.:** 012388 Patent # - 4485967 and others Patent Status Development Stage : Engineering Design Technical Category: Transportation Systems, Vehicles & Components Recv by NBS : 12/17/85 Recom. by NBS : 08/02/88

Summary: Recommendation under consideration by DOE.

DOE No: 0440

0440 DOE Coord: L. A. LEE

Title: Microtube Strip Heat Exchanger

Description: A high efficiency heat exchanger is described which is suitable for improving the efficiency of closed Brayton cycles as well as a number of other applications. The heat exchanger relies on laminar flow for the convective heat transfer. Manufacturing of the heat exchanger is also discussed.

Inventor: F David Doty State : SC Contact: F David Doty Status: Analysis Status Date: 08/05/88 OERI No.: 012615 Patent Status : Patent # - 4676305 Development Stage : Prototype Development Technical Category: Combustion Engines & Components

Recv by NBS : 04/07/88 Recom. by NBS : 08/05/88

DOE No: 0441 DOE Coord: L. A. LEE

Title: Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Therby

Description: A formulation and application method to prevent biofouling of ships hulls, offshore drilling platforms, and similar types of under-ocean structures.

Inventor: Alexander Bosna State : PA

Contact: Alexander Bosna

Status: AnalysisStatus Date: 09/26/88OERI No.: 124646

Patent Status : Patent # - 4618504 and others Development Stage : Production Engineering Technical Category: Industrial Processes

Recv by NBS : 11/12/87 Recom. by NBS : 09/26/88

Summary: Recommendation under consideration by DOE.

DOE No: 0442 DOE Coord: G. K. ELLIS

Title: Long Life "PC" Drill Bit

Description: A modified drag bit to drill for gas and oil.

Inventor: Richard C Raney State : TX Contact: Richard C Raney Status: Analysis Status Date: 09/28/88 OERI No.: 010791 Patent Status : Disclosure Document Program Development Stage : Prototype Development Technical Category: Fossil Fuels Recv by NBS : 04/26/85

Recv by NBS : 04/26/85 Recom. by NBS : 09/28/88

DOE No: 0443

DOE Coord: J. AELLEN

Title: A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization

Description: The invention concerns the use of cerium oxide as a hot gas desulfurization sorbent. The creation of oxygen ion vacancies in the cerium oxide crystal matrix makes it feasible to absorb sulfur from hot product gases coming from a coal gasifier.

Inventor: William G Wilson State : PA

Contact: William G Wilson

Status: Analysis Status Date: 09/29/88 OERI No.: 012336

Patent Status : Not Applied For Development Stage : Laboratory Test Technical Category: Industrial Processes

Recv by NBS : 08/17/87 Recom. by NBS : 09/29/88

Summary: Recommendation under consideration by DOE.

DOE No: 0444

DOE Coord: L. A. LEE

Title: Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid

Description: A technique is proposed for measuring the water content of oil in transmission and in transportation. The scheme uses microwaves and the spectral differences between Water and Crude Oil to determine the volume fraction if water in the oil.

Inventor: Claude V Swanson State : VA Status: Analysis Patent Status : Not Applied For Development Stage : Concept Development Technical Category: Miscellaneous Recv by NBS : 12/02/87 Contact: Claude V Swanson OERI No.: 012478 OERI No.: 012478

Recv by NBS : 12/02/87 Recom. by NBS : 09/30/88

SECTION 4 RECOMMENDED INVENTIONS CROSS REFERENCE LISTS

#### 4.0 <u>Introduction</u>

This section provides three tables for use in locating specific recommended inventions. Table 4-1 is ordered by inventor name and contains the inventor name, DOE number, and invention title. Table 4-2 is ordered by contact name and contains the contact name, DOE number and invention title. Table 4-3 is ordered by invention classification and lists the DOE number, inventor name, and titles associated with each invention classification. A list of the invention classifications is provided in Appendix A.

### Table 4-1

### RECOMMENDED INVENTIONS BY INVENTOR NAME

Inventor Name	DOE No.	Invention Title
Indiad		
John W Ackley, III	0306	An Efficiency Computer for Heated or Air Conditioned Buildings
Den M Acres	0175	A Low-Energy Carpet Backing System
Joe Agar	0072	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
Warren A Aikins	0356	Portable Automatic Firewood Processor
Jerry Aleksandrow	0290	Low Energy Ice Making Apparatus
Ray Alexander	0347	Oxide Dispersion Strengthened Aluminum Alloys
Joseph Allegro	0379	Inner Roof Solar System
Henry E Allen	0089	Continuous Casting Process and Apparatus
James E Altman	0378	An Improved Cutter for Plaster Board and the Like
Floyd R Anderson	0096	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
Frank L Anderson	0207	Glass Sheet Manufacturing Method and Apparatus
William F Armitage, Jr.	0041	Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers
Robert M Arthur	0047	Waste water Aeration Power Control Device
Eldon L Asher	0119	Air Ratio Controller (AERTROL)
Tom Atterbury	0283	Aluminum Roofing Chips
George C Austin	0005	Diesel Engine Conversion System for Gasoline Engines
Don E Avery	0275	Low Head - High Volume Pump
Don E Avery	0301	Pump Control System for Windmills
Richard J Avery, Junior	0269	Refrigerant Accumulator and Charging Apparatus
Richard H Baasch	0257	Method and Apparatus for Melting Snow
James Allen Bagby	0091	Mine Brattice
Frank W Bailey	0125	The Turbulator Burner System
Randell D Ball	0293	"Therm-A-Valve" - Insulated Valve Coverings
Stanley D Balzer	0402	KTM Logger
Edward L Barrett	0195	Proportional Current Battery
Erwin O Beck	0369	"Fire Jet" Automatic Anthracite Burner
Karakian Bedrosian	0171	A Method of Preserving Fruits and Vegetables without Refrigeration
Richard B Bentley	0051	Thermal Efficiency Construction
Karl H. Bergey	0110	Improved Wind power Generating System
Frank C Bernhard	0102	Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners

DATE: 30 SEPTEMBER 1988

Inventor	DOE	Invention
Name	<u>No.</u>	Title
Val O Bertoia	0095	Omni-Horizontal Axis-Wind Turbine
Charles James Bier	0083	Vertical Solar Louvers
Lawrence E Bissell	0037	Hot water Engine
Leroy M Bissett	0068	Under Compression and Over Compression Fre
	0000	Helical Screw Rotary Compressor
Wayne S Boals	0049	Automatic Control System for Water Heaters
Ranendra K Bose	0013	Anti-Pollution System
Alexander Bosna	0441	Method and Apparatus for Applying Meta
		Cladding of Surfaces and Products Forme Thereby
William P Boulet	0056	Flexaflo-The Wet Fuel Dryer
Harold L Bowman	0305	Automatic Filter Network Protection, Failur
		Detection and Correction System and Method
Paul E Bracegirdle	0261	A New Apparatus for Making Asphalt Concrete
Ronald E Brandon	0236	Steam Turbine Packing Ring
John A Broadbent	0355	Energy-Efficient Ice Cube Making Machine
Wayne S Brown	0418	Use of Chemical Vapor Deposition to Coa
-		Metal Surfaces with High Temperatur
		Superconducting Materials
James A Browning	0067	Windmill Using Hydraulic System for Energ
		Transfer and Speed Control
John W Bruce	0016	Method and Apparatus for Vacuum Drying o
John H Burk	0302	Commodities Carri-Cel Impact Breaker and Counterflo
John II Bark	0302	Impact Rock Breakers
Bill Burley	0173	Thermal Ice Cap
Robert Cameron	0050	Scotsman Fuel Energizer
Patsie C Campana	0080	Improved Unfired Refractory Brick
Vincent E Carman	0008	Inertial Storage Transmission
John L Carroll	0092	Tri-Water, A Combination Air Conditionin
		and Fire Protection System for a Building.
Marc S Caspe	0289	An Earthquake Barrier
Robert A Caughey	0032	Wood Gas Reactor
Forrest E Chancellor	0154	Rotating Horsehead for Pumping Units
Shih-Chih Chang	0270	Method of Energy Recovery for Waste wate
		Treatment
Wu-Chi Chen	0165	Process for Recovering Hydrogen an
		Elemental Sulfur from Hydrogen Sulfid
		and/or Mercaptans-Containing Hydrogen
Kai-Chih Cheng	0262	Energy Saving Pump and Pumping System
Shang-I Cheng	0267	Integrated Gasification of Coal, Municipa
		Solid Wastes and Sludge
Shang-I Cheng	0320	Coal Gasification with Carbon Dioxide an
		Lime Recycling
James L Chill	0098	Process Development to Conserve Energy an
		Material (in the manufactur
		of)Bearings
Deborah D Chung	0304	Exfoliated Graphite Fibers
George B Clark	0316	Thrust Impact Rock Splitter

Inventor Name	DOE <u>No.</u>	Invention Title
Itume		
Robert A Clay	0143	Oil Well Pump Jack
James M Cleary	0155	Slip Mining
Nathan Cohn	0247	Energy Conservation by Improved Control of
		Bulk Power Transfers on Interconnected
		Systems
William H Cone	0060	Electric Transport Refrigerator
Edward B Connors	0167	Vaned Pipe for Pipeline Transport of Solids
Paul J Cromwell	0108	Processing Recovery of Aluminum
Albert <b>B Csonka</b>	0006	Micro-Carburetor
Julius Czaja	0273	Open Cycle Latent Heat Engine
Richard E Dame	0180	Adjustable Solar Concentrator (ASC)
Sharad M Dave	0101	Controlled Combustion Engine
Guy C Dempsey	0277	
Norman L Dickinson	0288	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
Gilbert W Didion	0028	Ultraflo
Lawrence A Dobson	0425	High Temperature Condensing Biomass Combustion System
Oscar Leonard Doellner	0194	Radiant Energy Power Source for Jet Aircraft
James J Dolan	0156	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.
Richard Lee Dominquez	0334	So-Luminaire Natural Daylighting Unit
Todd M Doscher	0415	Oil Recovery by Modified Steam Drive Employing High Velocity Non-Condensible Gas
F David Doty	0440	Microtube Strip Heat Exchanger
Daniel Douenias	0254	"Turbo-Glo" Immersion Furnace
David W Doyle	0017	Osmotic-Hydro Power Generation
James L Doyle, Jr.	0383	Electro-Optic Inspection of Heat Exchangers
Gary L Drake	0342	Raw Fines Medium Coal Washing System
W B Driver	0421	Flexible Drill Pipe
Harold P Dugas	0430	Whitten Dugas Mud Pump Enhancer
Anthony A duPont	0161	duPont Connell Energy Coal Gasification Process
Enoch J Durbin	0069	Combustion Engine
Leonard A Duval	0148	Reclamation of Oil and High-Grade Iron Concentrates from Steel Mill Wastes
Herbert D Easterly	0311	
John A Eastin	0196	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm
Gerald Eastman	0189	Pump Jack
Edwin E Eckberg	0103	Low Voltage Ionic Fluorescent Light Bulb
Charles E Edwards	0179	Development and Commercialization of Low Cost, Non- Metallic, Solar Systems
Lawrence K Edwards	0439	Project Twenty-One Rapid Transit System
Thomas C Edwards	0225	ROVAC High Efficiency Low Pressure Air Conditioning System
Dan Egosi	0266	Energy Conversion Method

Inventor	DOE	Invention
Name	<u>No.</u>	Title
Paymond A Flow	0403	Enternyige Lubyigeter
Raymond A Elam	0403	Enterprise Lubricator
Guy R B Elliott		Natural Gas from Deep-Brine Solutions
Hal Ellis	0034	Delphic Thermogenic Paint (Heat Film)
Donald C Erickson	0003	Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
Donald C Erickson	0025	Sulfur Removal from Producer Gas-High Temperature
Donald C Erickson	0230	Absorption Heat Pump Augmented Separation Process
Donald C Erickson	0364	Intermittent Solar Ammonia Absorption Cycle (ISAAC)
Donald C Erickson	0404	Steam-Methane Reforming in Molten Carbonate
Frederick L Erickson	0387	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
Hermann Ernst	0285	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
Ruben Espinosa	0396	Dyna Flow
Robert F Evans	0166	Borehole Angle Control
Robert F Evans	0182	Improved Seal for Geothermal Drill Bit
Robert F Evans	0211	Shock Mounted Stratapax Bit
Norman C Fawley	0208	CNG Automotive Fuel Cylinders/Gas Transport Modules
Norman C Fawley	0227	CRM Pipe
Michael Feygin	0333	Laser Based Machine for Die and Prototype Manufacturing
Kenneth V Field	0353	Compu-Turbo-Aligner
Marshall Findley	0340	Separation of Adsorbed Components by Variable Temperature Desorption
John D. Finnegan	0176	Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
William M FioRito	0094	Lantz Converter
Joseph C Firey	0331	Cyclic Char Combustion for Engines, Boilers and Gasifiers
<b>G</b> R Fitterer	0018	The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
G R Fitterer	0074	A Solid Electrolyte Galvanic Solar Energy Conversion Cell
Lloyd Flatland	0210	Ultra High Speed Drilling Device for Use in Hard Rock Formations
Willing B Foulke	0061	Fuel Preparation Process
Joe W Fowler	0045	Bulk Cure Tobacco Barn with Improvements
Thomas F Francovitch	0292	Roof Construction Having Membrane and Photo
		Cells
Anthony N Fresco	0284	Atomized Oil-Injected Rotary Screw Compressors

Inventor Name	DOE <u>No.</u>	Invention Title
Linus C Fuchek	0372	FS 630 Heat Pump Thermostat Control
Harald F Funk	0405	Prehydrolysis and Digestion of Plant Material
Jonathan Gabel	0206	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
David Ganoung	0411	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency
Juan M Garcia, Junior	0246	Maximum Cruise Performance
Gene Garrett	0324	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
John D Garrison	0336	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
Thomas Gasper	0384	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity
Richard J Gay	0241	Polysulfide Oil Field Corrosion Control System
Philip H Gifford II	0321	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
John D Gill	0164	Elastomer Energy Recovery Elements and Vehicle Component Applications
Richard P Gingras	0036	Computerstat
Laird B Gogins	0420	The Utah Transmission/Continuously Variable Speed Wind Generator
Nathan Gold	0184	Coasting Fuel Shutoff
Meredith C Gourdine	0228	EGD Fog Dispersal System
Louis E Govear	0212	Water Warden
William D Gramling	0159	Non-Tubing Type Lift Device, Described as the NTT Rabbit
Thorvald G Granryd	0248	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
Willard Graves	0001	Demand Metering System for Electric Energy
Evert S Green	0256	Method and Apparatus for Irrigating Container Grown Plants
Gerald J Grott	0391	Compressed Gas Energy Storage
Jack D Haile	0224	Haile Alternate Fuel Grain Dryer
Ogden H Hammond	0149	SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
James R Harris	0407	An Extended Range Tankless Water Heater
Harold A Hartung	0385	Process for Treating Humus Materials
John C Haspert	0111	Haspert Mining System
John C Haspert	0188	Remote Controlled Underground Mining System for Horizontal or Pitching Seams
Walter J Hasselman, Jr	0019	Phenol Methylene Foam Rigid Board Insulation
Louis A Hausknecht	0201	Hydraulic, Variable, Engine Valve Actuation System

Inventor	DOE	Invention
Name	<u>No.</u>	Title
Sponger Vim Haus	0168	The Hot Water Saver
Spencer Kim Haws August G Hebel, Junior	0108	Meta-Lax Stress Relief for Almost any Size
August 6 nebel, Julioi	0412	Metal Structure
Wanda Henke	0350	Method and Apparatus for Testing Soil
Lee A Henningsen	0065	WattVendor
Ben B Herschel	0434	Modular Apparatus for Laundry Dryer Heat
ben b nerscher	0494	Recovery
David E Hicks	0237	Hicks Alter-Brake System/Electric Charging
Frank W Hochmuth	0437	Apparatus for Ground Vehicles Steam Generator With Integral Down-Draft
Flank w noemiden	0437	Dryer
John H Holland	0395	Holland Oil Well Pumping System
Raymond P Holland Jr	0204	The Induction Propeller
Thomas P Hopper	0020	Thermal Shade
Vladimir Horak	0361	Measurement of Liquid Volumes with
		Compensation for Temperature Induced
		Variations
Werner E Howald	0048	Howald Combustor
Dennis D Howard	0163	Thermotropic Plastic Films
John Hunter	0199	Rotary Coal Combustor and Heat Exchangers
Raymond Hunter	0296	Shower Bath Economizer
Robert M Hunter	0310	Portable Wastewater Flow Metering Device
Russell D Ide	0399	Hydrodynamic/Multi Deflection Pad Bearing
Int'l MGD Companies	0023	Microgas Dispersions
Rudolf O Iverson	0221	Strainer cycle
Richard Jablin	0075	Coke Quenching Steam Generator
Richard Jablin	0215	Slag Waste Heat Boiler
Gulab Chand Jain	0035	Utilization of Solar Energy by Solar Pond System
Charles B James	0205	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
Seymour Jarmul	0026	Compact Energy Reservoir
Morris R Jeppson	0203	Microwave Methods and Apparatus for Paving
		and Paving Maintenance
William Martin Johnson	0351	Flash Gate Board
M Thomas Jones	0438	Microwave Reflection by Synthetic Metals
R J Jones	0027	Waste Heat Utilization for Commercial Cooking Equipment
Ray L Jones	0312	The "Jones AWT", a Micro-Computer-Based Automatic Well Tester for Use of Producing Oil Wells
William A Jones	0259	Hydrostatic Support Sleeve and Rod - Gas Release Probe
Louis A Joo	0318	Bi-Polar Electrode for Hall-Heroult Electrolysis
Edgar R Jordon	0131	Valve Deactuator for Internal Combustion Engines
Charles G Kalt	0085	Dielectric Windowshade

Inventor	DOE	Invention
Name	<u>No.</u>	Title
Robert F Karlicek	0197	Frequency Regulator and Protective Device: for Synchronous Generators
Eskil L Karlson	0104	Low Continuous Energy Mass Separation System
Eskil L Karlson	0181	The Karlson Ozone Sterilizer
Eskil L Karlson	0346	Ultra-Pure Water System for Hospitals
Eskil L Karlson	0422	High Efficiency Ozone Generating System
Clyde F Kaunitz	0213	The Kaunitz Process for Welding Pipe
Henry Keep, Junior	0147	Railroad Switch Heater
Jay Hilary Kelley	0394	Variable Wall Mining Machine
H. W. Kennick	0109	Hydrostatic Meat Tenderizer
James E Kessler	0129	
M Hossein Khorsand	0135	Point Focus Parabolic Solar Collector
Richard F Kiley	0216	Method and Assembly for Mounting Semiconductor Element
Charles M Kirk	0058	A Multiple Spark System Using Inductiv Storage
Max Klein	0314	Rolling Filter Apparatus
Peter Kneaskern	0410	The World's First Gas Fired, Forced Air
	0.120	High Efficiency, Furnace That Requires N Electricity
Michael Knezevich	0132	Process for Reclaiming and Upgradin Thin-Walled Malleable Waste Material
Edward S Kress	0260	Method and Apparatus for Handling and Dr Quenching Coke
Kenneth R Kurple	0232	Method of Separating Lignin and Makin Epoxide- Lignin
Robert G Landry	0052	Air Wedge
Lawrence W Langley	0426	Eddy Current Transducing System
James H Lawler	0039	Lawler Steam Generator and Lawler System o Thermal Oil Recovery
W N Lawless	0190	Oxygen-Conducting Material an Oxygen-Sensing Method
W N Lawless	0401	A Miniature, Inexpensive Oxygen-Sensin Element
Leon Lazare	0044	New Working Fluids for Increasing the Cycl Efficiencies of Thermal
Leon Lazare	0160	High Efficiency Absorption Refrigeratio Cycle
Leon Lazare	0362	Improved Solvents for the Puraq Seawate Desalination Process
Leon Lazare	0377	A Novel Method of Producing Ice-Wate Slurries
Maurice W Lee, Junior	0322	Electrical Resistance Cooking Apparatus wit Automatic Circuit Control
Leonard R Lefkowitz	0363	Impactor Separator
Herbert G Lehmann	0022	Fuel Burner Attachment
Ervin Leshner	0122	Lean Limit Controller
Donald C Lewis	0192	Closed Cycle Dehumidification Clothes Dryer

Inventor	DOE	Invention
Name	<u>No.</u>	Title
Donald E Lewis	0397	In Service Tank Bottom Leak Detection and Repair System
Yao Tzu Li	0151	Film Type Storm Window
Yao Tzu Li	0202	Wobbling Type Distillation Apparatus
Ping-Wha Lin	0107	Waste Products Reclamation Process
Albert Lindqvist	0329	Modularized Pneumatic Tractor with Debri
-		Liquifier
Waylon A Livingston	0393	Method and Apparatus for Ultrasonic Testin of Tubular Goods
Daniel A Lockie	0233	Mounted Steerable Ripper for Deep Soi Ripping and Subsoil Operations
Thomas LoGiudice	0063	Fluorobulb
Harlan K Loveness	0423	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter
Kenneth E Lunde	0427	Non-Catalytic Steam Hydrolysis of Fats
William C Lyons	0338	Downhole Pneumatic Turbine Motor fo Geothermal Energy
Douglas MacGregor	<b>0</b> 086	Coke Desulfurization
Robert A Maciejczak	0335	Robotic Bridge Observation and Informatio System
Frank J Madison II	0313	Process Controller for Stripper Oil Wel Pumping Units
Shalom Mahalla	0064	The Mahalla ProcessA Hydrometallurgica Method for Extracting Copper
David S Majkrzak	0152	Vehicle Exhaust Gas Warm-up System
Momtaz N Mansour	0286	Use of Pulse-Jet for Atomization o Coal/Water Mixture
Alvin M Marks	0 <b>0</b> 09	Heat/Electric Power Conversion via Charge Aerosols
Andrew W Marr, Junior	<b>0</b> 280	Down Hole and Above Ground Resistanc Heating for Paraffin Elimination
Don J Marshall	0287	Automatic Variable Pitch Marine Propeller
Mervin W Martin	0169	MIRAFOUNT
Louis L Marton	0139	Transformer With Heat Dissipator
John Mattson	0117	"Solarspan" Prism Trap
W E Mattson	0140	Counter Flow Dual Tube Heat Exchanger
John H Mayo	0386	Device and Method to Enable Detection an
	0300	Measurement of Deformities in Wel Components
Kenneth E Mayo	0029	Tuned Sphere Stable Ocean Platforms
Marian Mazurkiewicz	0341	High Pressure Liquid Jets as a Tool fo Disintegrating Organic and Non-Organi Materials
Marian Mazurkiewicz	0367	Disintegration of Wood
Marion Mazurkiewicz	0419	A Planing Machine to Produce Ultra-Fine Coa
James McArthur	0300	Casing Stabbing Apparatus
John McCallum	0038	Reduction Volatilizations
James W McCord	0077	Variable Heat Refrigeration System
James W McCord	0097	Water Drying System

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Lubricating Oil and/or Vegetable Oil Refining Operation.E. Stephen MiliarasO183Increased Vapor Generator Reheat Vapor GeneratorEverett MillardO042Flue Baffle Assembly Renato MonziniO114New Energy-Saving Tire for Motor Vehicles Drew W MorrisO024Can and Bottle Crushing Apparatus Ram NateshO388Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy PartsE O NathanielO174Robert H NealyO198Edward A GriswoldO172GEM Electrostatic Filtration SystemRobert S NorrisO021Waste Oil Utilization SystemJohn W NorthO178Process and Apparatus for Producing Cellulated Vitreous Refractory MaterialKenneth W OdilO084Kinetic Energy Type Pumping SystemHoward S OrrO245Jay E OrtO255Donald F OthmerO264Pesulfurization of CoalRita PaleschuckO002Forrest M PalmerO355Electrically Heated Sucker-RodC Richard D & Chester PaloneO055C Richard PanicoO081Flash PolymerizationThadeus PapisO062Tapered Plate Annular MatrixLowis W ParkerO187Variable Field Induction Motor			Items
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Forrest M Palmer0325Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and CompositesRichard D & Chester Palone0055Electrically Heated Sucker-RodC Richard Panico0081Flash PolymerizationThaddeus Papis0062Tapered Plate Annular MatrixLowis W Parker0187Variable Field Induction Motor	Donald F Othmer	0264	Desulfurization of Coal
Continuous Casting Non-Ferrous Strip and CompositesRichard D & Chester Palone0055Electrically Heated Sucker-RodC Richard Panico0081Flash PolymerizationThaddeus Papis0062Tapered Plate Annular MatrixLowis W Parker0187Variable Field Induction Motor			
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Thaddeus Papis0062Tapered Plate Annular MatrixLowis W Parker0187Variable Field Induction Motor			
Lowis W Parker 0187 Variable Field Induction Motor			
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Sidney A Parker 0043 Thermal Gradient Utilization Cycle			
	Signey A Parker	0043	inermal Gradient Utilization Gycle

Inventor Name	DOE <u>No.</u>	Invention Title
Thomas Neil Parker, Junior	0245	Improved Oil Well Pumping Unit
Trent J Parker	0428	Uni-Frac Column and T-By Tray
Nathan E Passman	0274	Flexible Lighting - Fluorescent Lighting
		Operating at Radio Frequency
Carl E Pearl	0153	A New Equipment Design Concept for Storage of Hot Foods
J Paul Pemsler	0123	Comminution of Ores by a Low-Energy Process
J Paul Pemsler	0295	Improved Method of Electroplating Aluminum for Corrosion Resistance
Joe C Pendergrass	0371	Wallace Energy Systems Solar Assisted Heat Pump Water Heater
F J Perhats	0133	AUTOTHERM Car Comfort System
Leopold Pessel	0030	Method of Removing Sulfur Dioxide from Flue Gases
Anthony Peters	0253	High Performance Heat Pump
Deems M Pfaff	0344	Machine for Separating Concrete from Steel
Clyde G Phillips	0115	Refrigeration System
Sylvain J Pirson	0146	Line Integral Method of Magneto-Electric Exploration
Sylvain J Pirson	0186	Oil Recovery by In-Situ Exfoliation Drive
James W Platte	0359	Solid Fuel Hot Air Furnace
Lemuel Leslie Ply	0162	Tubular Pneumatic Conveyor Pipeline
Arnold R Post	0130	Furnace Input Capacity Trimming Switch
Milton Pravda	0191	Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.
Bryan Prucher	0409	Self-Dressing Resistance Welding Electrode
Paul F Pugh	0158	Energy Conservative Electric Cable System
John C Purcupile	0358	Device for Well Site Monitoring and Control of Rod- Pumped Wells
B F Rabitsch	0327	Square Pattern Irrigation Sprinkler
Arthur Radichio	0416	Self-Contained Pipe Freezing Unit
Kenneth H Raihala	0365	Safety Stovepipe Damper Assembly
Anthony T Rallis	0258	Corrosion Protection Process for Bore Hole Tool
James L Ramer	0106	Deep Shaft Hydro-Electric Power
Richard C Raney	0442	Long Life "PC" Drill Bit
Dante A Raponi	0015	Estacron
Jay Read	0308	Binary Azeotropic, Hot Gas, Fat Extraction Process
Emil B Rechsteiner	0376	Machine and Method for Producing Energy-Saving Transformers Incorporating Amorphous Metal Cores
Douglas R Reich	0279	Method and Means for Preventing Frost Damage to Crops
William B Retallick	0271	Hydrogen Storage System
Albert S Richardson, Jr.	0136	Windamper
Albert S Richardson, Junior		MDT Twister
Albert S Richardson, Junior	0429	A Low Cost Galloping Indicator

Inventor	DOE	Invention
Name	<u>No.</u>	Title
John W Richardson	0265	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
R L Risberg	0366	High Energy Semiconductor Switch
Charles E Robinson	0244	CHARLIE - Trademark - Federally Registered 1123957
Robert M Roeglin	0272	V-Plus System
Robert N Rose	0309	Process of Smelting with Submerged Burner
Donald R Ross	<b>0</b> 076	The Ross Furnace
Robert F Roussey, Junior	0328	Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting
Jay R Royston	0240	All Steam Heated Sadiron for Commercial Use
John C Rupert	0134	Expanded Polystyrene Bead Insulation System
Alex Rutshein, et al	0088	System-100
Stewart Ryan	0226	An Electronic Anemometer System for Locating
-		Air- Infiltration Heat Leaks in Buildings
Melvin H Sachs	0073	INTECH
Charlton Sadler	0124	Solar Collector
Robert E Salomon	0145	Solar Conversion by Concentration Cells with Hydrides
Robert E Salomon	0276	Gas Concentration Cells as Converters of Heat into Electrical Energy
Arthur D Sams	0281	Sun Synchronous Solar Powered Refrigerator
Nicholas Archer Sanders	0193	Engine Heating Device
Nicholas Archer Sanders	0303	Battery Heating Device
Joe Sanford	0436	The Russell Self-Piloted Check Valve
Bernard L Sater	0317	Edge-Illuminated Multi-Junction (VMJ) Solar Cell
Robert C Saunders, Junior	0144	SpaCirc Space Circulation Fan
Harold T Sawyer	0268	Apparatus for Enhancing Chemical Reactions
Karl D Scheffer	0126	Vaclaim
Lawrence A Schmid	0360	Temperature Controllable Heat Valve
Daniel J Schneider	0014	Aerodynamic Lift Translator
Charles A Schwartz	0220	Deep Throat Resistance Welder
Gerhard E Schwarz	0400	Continuous Casting and Inside Rolling of Hollow Rounds
Paul H Schweitzer	0054	Optimizer
Donald W Scott	0389	Reduced Size Heating Assembly for an Electric Stove
J D Seader	0127	Process and Apparatus to Produce Crude Oil from Tar Sands
J D Seader	0128	Continuous Distillation Apparatus and Method
Felix Sebba	0354	Preparation of Biliquid Foam Compositions
David J Secunda	0046	Thexon Dehydration
Gerald R Seeman	0138	Phantom Tube
David N Shaw	0374	Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines
Edward H Shelander	0093	Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions

Inventor	DOE	Invention
Name	No.	Title
Samuel Shiber	0141	New Hydrostatic Transmission
Donald Shuler	0242	New Petersburg Beam Trawl
Roderick L Smith	0118	Energy Adaptive Control of Precision
Roderrer 2 baren	0110	Grinding
Ronald H Smith	0011	Solar Collector
Joseph D Snitgen	0337	An Air Operated Hydraulic Power Unit
Edward J Sommer, Junior	0243	An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste
Roland P Soule	0040	Improved Equipment and Process for Production of Blue Water Gas
Henry Sperber	0380	Blow-In Blanket System
Norbert E Stainbrook	0330	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
Walter A Stark	0370	Dehumidification System for Indoor Pools and Other High Humidity Areas
Robert John Starr	0177	The Solar I Option
Brett Stern	0424	An Automated Process for Garment Manufacturers
Carl L Sterner	0294	Highway Power Patcher
James M Stewart	0278	Complete System for Large Solar Water Heating and Storage
Kenneth A Stofen	0070	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner
Arthur F Stone	0255	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
William P Strumbos	0381	Multiple Heat-Range Spark Plug
Frank R Summa	0012	High Frequency Energy Saving Device
David A Summers	0352	A Waterjet Mining Machine
David A Summers	0392	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
Claude V Swanson	0444	Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid
David L Swartz	0298	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
Patrick S Swihart, Senior	0249	Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells
Ronald S Tabery	0406	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
E M Talbott	0297	Series (Two-Wire) V-Controller
Wilford Dean Tannehill	0218	Behemoth
Curtis J Tanner	0217	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
Jerry Tartaglino	0291	Selective Zone Isolation for HVAC System
Harold W Taylor, Junior	0373	Tobacco Harvesting Machine
Ruel Carlton Terry	0087	Recovering Uranium From Coal in Situ

Inventor Name	DOE No.	Invention Title
	<u></u>	
Ruel Carlton Terry	0223	Minimizing Subsidence Effects during Production of Coal In Situ
Milton B Thacker	0414	Low Profile Fluid Catalytic Cracker
Victor R Thayer	0251	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
Donald R Thomas	0222	Louver Trombe Solar Storage Unit
William W Thompson	0408	Floodshield System
Eugene Tippmann	0282	Insulated Siding
Edward M Tourtelot	0229	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
William R Trutna	0299	Process for Using Cocurrent Contacting Distillation Column
Harry Werner Tulleners	0345	Tulleners Wave Piercer
William Tunderman	0263	Method for Reconditioning Rivetless Chain Links
Shao-E Tung	0200	Removal of Sulfur Dioxide from the Stack Gas of Combusters Burning High Sulfur Fuel
Shao-E Tung	0319	Removal of Hydrogen Sulfide from a Gas Stream
Robert L Ullrich	0082	Cool Air Induction
William Vandersteel	<b>03</b> 57	TUBEXPRESS Pneumatic Capsule Pipeline Transport System
Christiaan P van Dijk	0348	Hydrogen Sulfide Removal for Natural Gas
Clinton Van Winkle	0090	Grain Dryer
Carmile F Vasile	0382	System for Recovery of Waste Hot Water Heat Energy
David Virley	0007	Hydraulically Powered Waste Disposal Device
Joseph B Vogt	0033	Temperature Indicating Device
Benjamin Volk	0332	Volk Pistachio Huller
Marvin L Wahrman	0079	Oil Well Bit Insert (Tooth), Cutting Article, Ablative
Henry J Wallace	0113	Wallace Mold Additive System
Arleigh Wangler	0071	Knight Guard
H Roy Weber	0137	A Portable Pollution Free Automobile Incinerator
Roy J Weikert	0116	Model 5000 ASEPAK System
Oscar Weingart	0099	Light Weight Composite Trailer Tubes
John L Wendel	0339	Recycoil II
William C Whitman	0252	Thermal Bank
James B Whitmore	0121	Solar Space Heating for both Retrofit and New Construction
Hugh Edwin Whitted III	0250	A System to Adapt Diesel Engines to the Use of Crude Oils
Frank Wicks	0390	Wicks Efficient Fuel Utilization System
Stanley Wayne Widmer	0413	Non Metallic Railroad Switch Covers
Robert H Wieken	0057	X-5 Smoke Eliminator

Inventor	DOE	Invention
Name	<u>No</u> .	Title
David M Wilder	0323	Rolling Mill for Reduction of Moisture Content in Waste Material
William G Wilson	0443	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization
Jack Winnick	0239	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
Donald E Wise	0214	Convertible Flat/Drop Trailer
Serge Wisotsky	0432	Water Hammer Pile Driver
J C Withers	0433	Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction
James C Withers	0031	Ceramic Rotors and Vanes
Cecil H Wolf	0185	Insulated Garage Door
Douglas E Wood	0234	Geodesic Solar Paraboloid
Harry E Wood	0053	High Efficiency Water Heater
Harry E Wood	0238	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
Roy W Wood	0417	Rotary Drill Bit
Harrison Robert Woolworth	0010	Scrap Metal Preheating Method and Apparatus
Paul N Worsey	0326	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
Andrew Wortman	0307	Vortex Generators for Aft Regions of Aircraft Fuselages
Joseph C Yater	0004	Power Conversion of Energy Fluctuations
John W Yount	0209	Reclaiming Process for Resin Treated Fiberglass
Philip Zacuto	0066	Heat Extractor
Paul Zanoni	0112	Pump
Robert Zartarian	0120	Vapor Heat Transfer Commercial Griddle
Bernard Zimmern	0059	The Volumetric Gas Turbine
Michael F Zinn	0100	Solaroll
Allen D Zumbrunnen	0105	High Frequency Furnace

# Table 4-2

### RECOMMENDED INVENTIONS BY CONTACT NAME

Contact Name	DOE No.	Invention Title
Ivane		
John W Ackley, III	0306	An Efficiency Computer for Heated or Air Conditioned Buildings
Warren A Aikins	0356	Portable Automatic Firewood Processor
Glenn Albert	0358	Device for Well Site Monitoring and Control of Rod- Pumped Wells
Ray Alexander	0347	Oxide Dispersion Strengthened Aluminum Alloys
Joseph Allegro	0379	Inner Roof Solar System
Henry E Allen	0089	Continuous Casting Process and Apparatus
James E Altman	0378	An Improved Cutter for Plaster Board and the Like
Amar Amancharla	0143	Oil Well Pump Jack
Floyd R Anderson	0096	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems
Frank L Anderson	0207	Glass Sheet Manufacturing Method and Apparatus
William F Armitage Jr	0041	Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers
Robert M Arthur	0047	Wastewater Aeration Power Control Device
George C Austin	0005	Diesel Engine Conversion System for Gasoline Engines
Don E Avery	0275	Low Head – High Volume Pump
Don E Avery	0301	Pump Control System for Windmills
Richard J Avery, Junior	0269	Refrigerant Accumulator and Charging Apparatus
Richard H Baasch	0257	Method and Apparatus for Melting Snow
Charles Bach	0185	Insulated Garage Door
Frank W Bailey	0125	The Turbulator Burner System
Basil W Balls	0072	Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants
Stanley D Balzer	0402	KTM Logger
A. D. Barrett, VP	0147	Railroad Switch Heater
Charlie Baziel	0068	Under Compression and Over Compression Free Helical Screw Rotary Compressor
Erwin O Beck	0369	"Fire Jet" Automatic Anthracite Burner
N. John Beck	0131	Valve Deactuator for Internal Combustion Engines
Theodore R Beck	0433	Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction

Contact	DOE	Invention
<u>Name</u>	<u>No.</u>	Title
Karakian Bedrosian	0171	A Method of Preserving Fruits an Vegetables without Refrigeration
Daniel Ben-Shmuel	0066	Heat Extractor
Richard B Bentley	0051	Thermal Efficiency Construction
Karl H. Bergey	0110	Improved Windpower Generating System
Frank C Bernhard	0102	Method of Burning Residual Fuel Oil i Distillate Fuel Oil Burners
Val O Bertoia	0095	Omni-Horizontal Axis-Wind Turbine
N F Bibby	0329	Modularized Pneumatic Tractor with Debri Liquifier
Charles James Bier	0083	Vertical Solar Louvers
Lawrence E Bissell	0037	Hotwater Engine
Wayne S Boals	0049	Automatic Control System for Water Heaters
Ranendra K Bose	0013	Anti-Pollution System
Alexander Bosna	0441	Method and Apparatus for Applying Meta Cladding of Surfaces and Products Forme Thereby
Howard Bovars	0086	Coke Desulfurization
Paul E Bracegirdle	0261	A New Apparatus for Making Asphalt Concrete
Ronald E Brandon	0236	Steam Turbine Packing Ring
John A Broadbent	0355	Energy-Efficient Ice Cube Making Machine
Wayne S Brown	0418	Use of Chemical Vapor Deposition to Coa Metal Surfaces with High Temperatury Superconducting Materials
James A Browning	0067	Windmill Using Hydraulic System for Energy Transfer and Speed Control
John W Bruce	0016	Method and Apparatus for Vacuum Drying o Commodities
Mario Bruno	0114	New Energy-Saving Tire for Motor Vehicles
James L Bullock	0015	Estacron
Bill Burley	0173	Thermal Ice Cap
Uwe H Butenhoff	0240	All Steam Heated Sadiron for Commercial Use
John C Calhoun, President	0032	Wood Gas Reactor
Robert Cameron	0050	Scotsman Fuel Energizer
Patsie C Campana	0080	Improved Unfired Refractory Brick
Marc S Caspe	0289	An Earthquake Barrier
Forrest E Chancellor	0154	Rotating Horsehead for Pumping Units
Shih-Chih Chang	0270	Method of Energy Recovery for Wastewate Treatment
Wu-Chi Chen	0165	Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfid and/or Mercaptans-Containing Hydrogen
Kai-Chih Cheng	0262	Energy Saving Pump and Pumping System
Shang-I Cheng	0267	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge

Contact	DOE	Invention
Name	No.	Title
Shang-I Cheng	0320	Coal Gasification with Carbon Dioxide and
James L. Chill, President	0098	Lime Recycling Process Development to Conserve Energy and Material(in the manufacture of)Bearings
Agit Chowdhury	0264	Desulfurization of Coal
Deborah D Chung	0304	Exfoliated Graphite Fibers
James M Cleary	0155	Slip Mining
Nathan Cohn	0247	Energy Conservation by Improved Control of
	0247	Bulk Power Transfers on Interconnected Systems
William H Cone	0060	Electric Transport Refrigerator
Edward B Connors	0167	Vaned Pipe for Pipeline Transport of Solids
Robert J Cromwell	0108	Processing Recovery of Aluminum
Albert B Csonka	0006	Micro-Carburetor
Donald Cullen	0283	Aluminum Roofing Chips
Harry Curtin	0235	Single Stage Anaerobic Digestion Process
Julius Czaja	0273	Open Cycle Latent Heat Engine
Richard E Dame	0180	Adjustable Solar Concentrator (ASC)
Sharad M Dave	0101	Controlled Combustion Engine
Alex DeFonso	0034	Delphic Thermogenic Paint (Heat Film)
Norman L Dickinson	0288	Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
Gilbert W Didion	0028	Ultraflo
Lawrence A Dobson	0425	High Temperature Condensing Biomass Combustion System
Oscar Leonard Doellner	0194	Radiant Energy Power Source for Jet Aircraft
James J Dolan	0156	Direct-Current Electrical Heat-Treatment of Continuous Metal Sheets in a Protective Atmosphere.
Jay Dornier	0056	Flexaflo-The Wet Fuel Dryer
Todd M Doscher	0415	Oil Recovery by Modified Steam Drive Employing High Velocity Non-Condensible Gas
F David Doty	0440	Microtube Strip Heat Exchanger
Daniel Douenias	0254	"Turbo-Glo" Immersion Furnace
David W. Doyle, V.P.	0017	Osmotic-Hydro Power Generation
James L Doyle, Jr.	0383	Electro-Optic Inspection of Heat Exchangers
Gary L Drake	0342	Raw Fines Medium Coal Washing System
W B Driver	0421	Flexible Drill Pipe
Anthony A duPont	0161	duPont Connell Energy Coal Gasificatior Process
Enoch J Durbin	0069	Ionic Fuel Control System for the Internal Combustion Engine
Leonard A Duval	0148	Reclamation of Oil and High-Grade Iror Concentrates from Steel Mill Wastes

Contact Name	DOE <u>No.</u>	Invention Title
Name	_10.	
Herbert D Easterly	0311	Auxiliary Truck Heater
John A Eastin	0196	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm
Gerald Eastman	0189	Pump Jack
Edwin E Eckberg	0103	Low Voltage Ionic Fluorescent Light Bulb
Charles E Edwards	0179	Development and Commercialization of Low Cost, Non- Metallic, Solar Systems
Lawrence K Edwards	0439	Project Twenty-One Rapid Transit System
Thomas C Edwards	0225	ROVAC High Efficiency Low Pressure Air Conditioning System
Dan Egosi	0266	Energy Conversion Method
Raymond A Elam	0403	Enterprise Lubricator
Guy R B Elliott	0231	Natural Gas from Deep-Brine Solutions
Richard E Engdahl	0031	Ceramic Rotors and Vanes
James V Enright	0133	AUTOTHERM Car Comfort System
Donald C Erickson	0003	Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
Donald C Erickson	0025	Sulfur Removal from Producer Gas-High Temperature
Donald C Erickson	0230	Absorption Heat Pump Augmented Separation Process
Donald C Erickson	0364	Intermittent Solar Ammonia Absorption Cycle (ISAAC)
Donald C Erickson	0404	Steam-Methane Reforming in Molten Carbonate Salt
Hermann Ernst	0285	Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing Systems
ETEC	0305	Automatic Filter Network Protection, Failure Detection and Correction System and Method
Robert F Evans	0166	Borehole Angle Control
Robert F Evans	0182	Improved Seal for Geothermal Drill Bit
Robert F Evans	0211	Shock Mounted Stratapax Bit
Norman C Fawley	0208	CNG Automotive Fuel Cylinders/Gas Transport Modules
Norman C Fawley	0227	CRM Pipe
Michael Feygin	0333	Laser Based Machine for Die and Prototype Manufacturing
Kenneth V Field	0353	Compu-Turbo-Aligner
Marshall Findley	0340	Separation of Adsorbed Components by Variable Temperature Desorption
William M FioRito	0094	Lantz Converter
Joseph C Firey	0331	Cyclic Char Combustion for Engines, Boilers and Gasifiers
G R Fitterer	0018	The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy
G. R. Fitterer, President	0074	A Solid Electrolyte Galvanic Solar Energy Conversion Cell

Contact Name	DOE <u>No.</u>	Invention Title
Lloyd Flatland	0210	Ultra High Speed Drilling Device for Use in Hard Rock Formations
Dale Flickinger	0176	Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
Joe W Fowler	0045	Bulk Cure Tobacco Barn with Improvements
Thomas F Francovitch	0292	Roof Construction Having Membrane and Photo Cells
Linus C Fuchek	0372	FS 630 Heat Pump Thermostat Control
Fuel Injection Dvlpmnt Corp	0122	Lean Limit Controller
Harald F Funk	0405	Prehydrolysis and Digestion of Plant Material
Jonathan Gabel	0206	Method and Apparatus for High Efficiency Operation of Electromechanical Energy Conversion
David Ganoung	0411	The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency
Juan M Garcia, Junior	0246	Maximum Cruise Performance
Gene Garrett	0324	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization
John D Garrison	0336	A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
Richard J Gay	0241	Polysulfide Oil Field Corrosion Control System
Jim Gee	0318	Bi-Polar Electrode for Hall-Heroult Electrolysis
Philip H Gifford II	0321	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
John D Gill	0164	Elastomer Energy Recovery Elements and Vehicle Component Applications
Richard P Gingras	0036	Computerstat
Paul Ginouves	0221	Strainercycle
Laird B Gogins	0420	The Utah Transmission/Continuously Variable Speed Wind Generator
Nathan Gold	0184	Coasting Fuel Shutoff
Meredith C Gourdine	0228	EGD Fog Dispersal System
William D Gramling	0159	Non-Tubing Type Lift Device, Described as the NTT Rabbit
Thorvald G Granryd	0248	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like
Evert S Green	0256	Method and Apparatus for Irrigating Container Grown Plants
Gwyer Grimminger, President	0224	Haile Alternate Fuel Grain Dryer
Gerald J Grott	0391	Compressed Gas Energy Storage

Contact	DOE	Invention
Name	<u>No.</u>	Title
Lloyd E Hackman	0384	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet
John Hair, III	0191	Exhibiting Improved Uniformity Rotary Heat Pump Air Conditioner, Heater and Ventilator for Automotive, Mobile and Stationary Use.
Ogden H Hammond	0149	SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
James R Harris	0407	An Extended Range Tankless Water Heater
Harold A Hartung	0385	Process for Treating Humus Materials
John C. Haspert	0111	Haspert Mining System
John C Haspert	0188	Remote Controlled Underground Mining System for Horizontal or Pitching Seams
Louis A Hausknecht	0201	Hydraulic, Variable, Engine Valve Actuation System
Spencer Kim Haws	0168	The Hot Water Saver
August G Hebel, Junior	0412	Meta-Lax Stress Relief for Almost any Size Metal Structure
Rhey Hedges	0187	Variable Field Induction Motor
Lester Hendrickson	0064	The Mahalla ProcessA Hydrometallurgical Method for Extracting Copper
Wanda Henke	0350	Method and Apparatus for Testing Soil
Lee A Henningsen	0065	WattVendor
H N Hensley	0217	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
Ben B Herschel	0434	Modular Apparatus for Laundry Dryer Heat Recovery
Ronald Hertzfeld	0186	Oil Recovery by In-Situ Exfoliation Drive
Ronald M Hertzfeld	0146	Line Integral Method of Magneto-Electric Exploration
David E Hicks	0237	Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles
Frank W Hochmuth	0437	Steam Generator With Integral Down-Draft Dryer
John H Holland	0395	Holland Oil Well Pumping System
Raymond P Holland Jr	0204	The Induction Propeller
Thomas P Hopper	0020	Thermal Shade
Vladimir Horak	0361	Measurement of Liquid Volumes with Compensation for Temperature Induced Variations
Werner E Howald	0048	Howald Combustor
Dennis D Howard	0163	Thermotropic Plastic Films
Hugh Huislander	0212	Water Warden
Raymond Hunter	0296	Shower Bath Economizer
Robert M Hunter	0310	Portable Wastewater Flow Metering Device

Contact	DOE	Invention
Name	<u>No.</u>	Title
Russell D Ide	0399	Hydrodynamic/Multi Deflection Pad Bearing
Richard Jablin	0075	Coke Quenching Steam Generator
Richard Jablin	0215	Slag Waste Heat Boiler
E K Jacob	0349	Three Roll Tension Stand
Gulab Chand Jain	0035	Utilization of Solar Energy by Solar Pond System
Seymour Jarmul	0026	Compact Energy Reservoir
Sherman R Jenney	0052	Air Wedge
Gordon F Jensen	0388	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts
Morris R Jeppson	0203	Microwave Methods and Apparatus for Paving and Paving Maintenance
Bob Johnson	0419	A Planing Machine to Produce Ultra-Fine Coal
William Martin Johnson	0351	Flash Gate Board
R J Jones	0027	Waste Heat Utilization for Commercial
	0027	Cooking Equipment
Ray L Jones	0312	The "Jones AWT", a Micro-Computer-Based
kay L Jones	0312	Automatic Well Tester for Use of Producing Oil Wells
William A Jones	0259	Hydrostatic Support Sleeve and Rod - Gas Release Probe
Charles G Kalt	0085	Dielectric Windowshade
Robert F Karlicek	0197	Frequency Regulator and Protective Devices for Synchronous Generators
Eskil L Karlson	0104	Low Continuous Energy Mass Separation System
Eskil L Karlson	0181	The Karlson Ozone Sterilizer
Eskil L Karlson	0346	Ultra-Pure Water System for Hospitals
Eskil L Karlson	0422	High Efficiency Ozone Generating System
Clyde F Kaunitz	0213	The Kaunitz Process for Welding Pipe
Jay Hilary Kelley	0394	Variable Wall Mining Machine
H. W. Kennick	0109	Hydrostatic Meat Tenderizer
Garry R Kenny	0243	An Electronic/Pneumatic Ejector System for
ourly K Kenny	0243	Producing an Aluminum Rich Concentrate from Municipal Waste
James E Kessler	0129	Super U System - Snap Strap
M Hossein Khorsand	0135	Point Focus Parabolic Solar Collector
E A Kiessling	0251	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
Richard F Kiley	0216	Method and Assembly for Mounting a Semiconductor Element
Robert Killoren	0438	Microwave Reflection by Synthetic Metals
Rees Kinney, Atty.	0091	Mine Brattice
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Contact Name	DOE <u>No.</u>	Invention Title
Name		
Charles M Kirk	0058	A Multiple Spark System Using Inductive Storage
Max Klein	0314	Rolling Filter Apparatus
Peter Kneaskern	0410	The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
Michael Knezevich	0132	Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material
Robert J Koester	0282	Insulated Siding
Edward S Kress	0260	Method and Apparatus for Handling and Dry Quenching Coke
Kenneth R Kurple	0232	Method of Separating Lignin and Making Epoxide- Lignin
Lawrence Ladin	0088	System-100
Lawrence W Langley	0426	Eddy Current Transducing System
Murry S. Laskey	0061	Fuel Preparation Process
James H Lawler	0039	Lawler Steam Generator and Lawler System of Thermal Oil Recovery
W N Lawless	0190	Oxygen-Conducting Material and Oxygen-Sensing Method
W N Lawless	0401	A Miniature, Inexpensive Oxygen-Sensing Element
Leon Lazare	0044	New Working Fluids for Increasing the Cycle Efficiencies of Thermal
Leon Lazare	0160	High Efficiency Absorption Refrigeration Cycle
Leon Lazare	0362	Improved Solvents for the Puraq Seawater Desalination Process
Leon Lazare	0377	A Novel Method of Producing Ice-Water Slurries
Maurice W Lee, Junior	0322	Electrical Resistance Cooking Apparatus with Automatic Circuit Control
Leonard R Lefkowitz	0363	Impactor Separator
Herbert G Lehmann	0022	Fuel Burner Attachment
Robert C LeMay	0309	Process of Smelting with Submerged Burner
Edward Levi	0199	Rotary Coal Combustor and Heat Exchangers
Donald C Lewis	0192	Closed Cycle Dehumidification Clothes Dryer
Donald E Lewis	0397	In Service Tank Bottom Leak Detection and Repair System
George S Lewis	0387	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle
Yao Tzu Li	0202	Wobbling Type Distillation Apparatus
Ping-Wha Lin	0107	Waste Products Reclamation Process
William Lindner	0334	So-Luminaire Natural Daylighting Unit

Contact	DOE	Invention
Name	<u>No.</u>	Title
Waylon A Livingston	0393	Method and Apparatus for Ultrasonic Testing of Tubular Goods
Daniel A Lockie	0233	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations
Thomas LoGiudice	0063	Fluorobulb
Harlan K Loveness	0423	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter
Murray G Lowenthal	0001	Demand Metering System for Electric Energy
James E Luber	0023	Microgas Dispersions
Mary Jane Luddy	0398	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs
Kenneth E Lunde	0427	Non-Catalytic Steam Hydrolysis of Fats
William C Lyons	0338	Downhole Pneumatic Turbine Motor for
2		Geothermal Energy
Robert A Maciejczak	0335	Robotic Bridge Observation and Information System
Frank J Madison II	0313	Process Controller for Stripper Oil Well Pumping Units
David S Majkrzak	0152	Vehicle Exhaust Gas Warm-up System
Momtaz N Mansour	0286	Use of Pulse-Jet for Atomization of Coal/Water Mixture
Bernard Joseph Margowsky	0138	Phantom Tube
Alvin M Marks	0009	Heat/Electric Power Conversion via Charged Aerosols
Andrew W Marr, Junior	0280	Down Hole and Above Ground Resistance Heating for Paraffin Elimination
Don J Marshall	0287	Automatic Variable Pitch Marine Propeller
Louis L Marton	0139	Transformer With Heat Dissipator
George E Mattson	0117	"Solarspan" Prism Trap
John H Mayo	0386	Device and Method to Enable Detection and
		Measurement of Deformities in Well Components
Kenneth E Mayo	0029	Tuned Sphere Stable Ocean Platforms
James McArthur	0300	Casing Stabbing Apparatus
John McCallum	0038	Reduction Volatilizations
James W McCord	0077	Variable Heat Refrigeration System
James W McCord	0097	Water Drying System
John A McDougal	0343	Electronic Octane
Jack Wade McIntyre	0431	Method and Apparatus for Removing Excess Water from Subterranean Wells.
Robert McNeill	0078	System for High Efficiency Power Generation from Low Temperature Sources
Albert L McQuillen, Jr	0157	Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools
Thomas R Mee	0170	Fog System - Low Energy Freeze Protection for Agriculture

Contact Name	DOE <u>No.</u>	Invention Title
Serafin L Mendoza	0435	A New Thermodynamic Process of Actual Approach to the Carnot Cycle
Thomas M Meshbesher	0219	Method for Making Acelaldehyde from Ethanol
Ralph A Messing	0315	Method of Processing Biodegradable Organic Material
Paul Michelotti	0368	Aircraft Minimum Drag Speed System
Anatol Michelson	0142	Process for Heatless Production of Hollow Items
Edward W Midlam	0150	The Use of Solid Waste Material from a Lubricating Oil and/or Vegetable Oil Refining Operation.
E. Stephen Miliaras	0183	Increased Vapor Generator Feature for a Reheat Vapor Generator
Everett Millard	0042	Flue Baffle Assembly
Drew W Morris	0024	Can and Bottle Crushing Apparatus
Ed Morris, President	0099	Light Weight Composite Trailer Tubes
Robert H Nealy	0198	The Thermatreat System
Edward A Griswold	0172	GEM Electrostatic Filtration System
F Terry Nixon	0326	A Mechanical Stemming Device for Use in Explosive Loaded Blast Holes
F Terry Nixon	0341	High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials
Terry Nixon	0316	Thrust Impact Rock Splitter
Terry Nixon	0367	Disintegration of Wood
Terry Nixon	0392	Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
Nestor Noriega	0396	Dyna Flow
Robert S Norris	0021	Waste Oil Utilization System ,
John W North	0178	Process and Apparatus for Producing Cellulated Vitreous Refractory Material
Kenneth W Odil	0084	Kinetic Energy Type Pumping System
Rita Paleschuck	0002	Fuel Miser
Forrest M Palmer	0325	Low Cost, Low Energy Machine and Method for Continuous Casting Non-Ferrous Strip and Composites
Richard D Palone	0055	Electrically Heated Sucker-Rod
C Richard Panico	0081	Flash Polymerization
Thaddeus Papis	0062	Tapered Plate Annular Matrix
Sidney A Parker	0043	Thermal Gradient Utilization Cycle
Trent J Parker	0428	Uni-Frac Column and T-By Tray
Thomas Neil Parker, Junior	0245	Improved Oil Well Pumping Unit
Nathan E Passman	0274	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency
Carl E Pearl	0153	A New Equipment Design Concept for Storage of Hot Foods

Contact	DOE	Invention
Name	_No.	Title
J. Paul Pemsler, President	0123	Comminution of Ores by a Low-Energy Process
J Paul Pemsler	0295	Improved Method of Electroplating Aluminum
		for Corrosion Resistance
Joe C Pendergrass	0371	Wallace Energy Systems Solar Assisted Heat
5		Pump Water Heater
Anthony Peters	0253	High Performance Heat Pump
Deems M Pfaff	0344	Machine for Separating Concrete from Steel
Brad L Pfeifley	0244	CHARLIE - Trademark - Federally Registered 1123957
PFI, Inc	0293	"Therm-A-Valve" - Insulated Valve Coverings
Clyde G Phillips	0115	Refrigeration System
James W Platte	0359	Solid Fuel Hot Air Furnace
Gene Plattner	0174	Skate on Plastic Ice Skating System
Lemuel Leslie Ply	0162	Tubular Pneumatic Conveyor Pipeline
Arnold R Post	0130	Furnace Input Capacity Trimming Switch
Mark Pridmore	0195	Proportional Current Battery
Bryan Prucher	0409	Self-Dressing Resistance Welding Electrode
Paul F Pugh	0158	Energy Conservative Electric Cable System
B F Rabitsch	0327	Square Pattern Irrigation Sprinkler
Arthur Radichio	0416	Self-Contained Pipe Freezing Unit
Kenneth H Raihala	0365	Safety Stovepipe Damper Assembly
Anthony T Rallis	0258	Corrosion Protection Process for Bore Hole
5		Tool
James L Ramer	0106	Deep Shaft Hydro-Electric Power
Richard C Raney	0442	Long Life "PC" Drill Bit
Mister Raymo	0205	Energy Efficient Solid State Multiple
-		Operator Metallic Arc Welding System
Jay Read	0308	Binary Azeotropic, Hot Gas, Fat Extraction
-		Process
Emil B Rechsteiner	0376	Machine and Method for Producing
		Energy-Saving Transformers Incorporating
		Amorphous Metal Cores
Douglas R Reich	0279	Method and Means for Preventing Frost
C .		Damage to Crops
Clair H Reinbergen, Pres.	0019	Phenol Methylene Foam Rigid Board
0,		Insulation
William B Retallick	0271	Hydrogen Storage System
Albert S Richardson, Jr.	0136	Windamper
Albert S Richardson, Junior		MDT Twister
Albert S Richardson, Junior		A Low Cost Galloping Indicator
John W Richardson	0265	Method and Apparatus for Direct Application
		of Treatment Liquid to Growing Vegetation
R L Risberg	0366	High Energy Semiconductor Switch
Donald R Ross	0076	The Ross Furnace

Contact	DOE	Invention
Name	<u>No</u> .	Title
Greg Ross	0290	Low Energy Ice Making Apparatus
Robert F Roussey, Junior	0290	Multi-Directional Pre and Post-Heating
Robert I Roussey, Julior	0520	Device for Thermal Flamecutting
John C Rupert	0134	Expanded Polystyrene Bead Insulation System
Thomas J Russo	0012	High Frequency Energy Saving Device
Stewart Ryan	0226	An Electronic Anemometer System for
Stewart Kyan	0220	Locating Air- Infiltration Heat Leaks in Buildings
Melvin H Sachs	0073	INTECH
Charlton Sadler	0124	Solar Collector
Robert E Salomon	0145	Solar Conversion by Concentration Cells with Hydrides
Robert E Salomon	0276	Gas Concentration Cells as Converters of Heat into Electrical Energy
Arthur D Sams	0281	Sun Synchronous Solar Powered Refrigerator
Nicholas Archer Sanders	0193	Engine Heating Device
Nicholas Archer Sanders	0303	Battery Heating Device
Joe Sanford	0436	The Russell Self-Piloted Check Valve
Bernard L Sater	0317	Edge-Illuminated Multi-Junction (VMJ) Solar Cell
Robert C Saunders, Junior	0144	SpaCirc Space Circulation Fan
Harold T Sawyer	0268	Apparatus for Enhancing Chemical Reactions
Karl D Scheffer	0126	Vaclaim
William R Schick	0339	Recycoil II
Lawrence A Schmid	0360	Temperature Controllable Heat Valve
Daniel J Schneider	0014	Aerodynamic Lift Translator
Charles A Schwartz	0220	Deep Throat Resistance Welder
Gerhard E Schwarz	0400	Continuous Casting and Inside Rolling of Hollow Rounds
Donald W Scott	0389	Reduced Size Heating Assembly for an Electric Stove
J D Seader	0127	Process and Apparatus to Produce Crude Oil from Tar Sands
J D Seader	0128	Continuous Distillation Apparatus and Method
Felix Sebba	0354	Preparation of Biliquid Foam Compositions
David J Secunda	0046	Thexon Dehydration
SETRA Systems, Inc.	0151	Film Type Storm Window
W W Seward	0175	A Low-Energy Carpet Backing System
David N Shaw	0374	Expansion Compression System for Efficient Power Output Regulation of Internal
Edward H Shelander	0093	Combustion Engines Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions

Contact	DOE	Invention
Name	<u>No.</u>	Title
Samuel Shiber	0141	New Hydrostatic Transmission
Donald Shuler	0242	New Petersburg Beam Trawl
Edward Perry Sikes, Jr.	0242	Optimizer
Smart Technologies, Inc	0054	•
Otis W Smith	0119	Electronic Conveyor Control Apparatus
Roderick L Smith	0119	Air Ratio Controller (AERTROL) Energy Adaptive Control of Precision
		Grinding
Ronald H Smith	0011	Solar Collector
Joseph D Snitgen	0337	An Air Operated Hydraulic Power Unit
Ray E Snyder	0352	A Waterjet Mining Machine
Roland P Soule	0040	Improved Equipment and Process for
		Production of Blue Water Gas
Len Spelber	0007	Hydraulically Powered Waste Disposal Device
Henry Sperber	0380	Blow-In Blanket System
Norbert E Stainbrook	0330	Vacuum Heat Treating Furnace and Quench System with Drop Transfer
Roger Stamper	0092	Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.
Walter A Stark	0370	Dehumidification System for Indoor Pools and Other High Humidity Areas
Robert John Starr	0177	The Solar I Option
Brett Stern	0424	An Automated Process for Garment
		Manufacturers
Carl L Sterner	0294	Highway Power Patcher
James M Stewart	0278	Complete System for Large Solar Water Heating and Storage
Kenneth A Stofen	0070	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner
Arthur F Stone	0255	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
William P Strumbos	0381	Multiple Heat-Range Spark Plug
Claude V Swanson	0444	Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid
David L Swartz	0298	Three Tenths Degree Kelvin Closed Cycle Refrigeration System
Patrick S Swihart, Senior	0249	Subsurface Flow Control (Gas Wells) and High Gas- Oil-Ratio Oil Wells
Ronald S Tabery	0406	Aluminum Reduction Cell Spent Potlining Fluid Bed Incinerator
Wilford Dean Tannehill	0218	Behemoth
Jerry Tartaglino	0291	Selective Zone Isolation for HVAC System
Harold W Taylor, Junior	0373	Tobacco Harvesting Machine
Ruel Carlton Terry	0087	Recovering Uranium From Coal in Situ
Ruel Carlton Terry	0223	Minimizing Subsidence Effects during Production of Coal In Situ

Contact Name	DOE <u>No.</u>	Invention Title
Milton B Thacker	0414	Low Profile Fluid Catalytic Cracker
Donald R Thomas	0222	Louver Trombe Solar Storage Unit
Carter Thompson	0169	MIRAFOUNT
William W Thompson	0408	Floodshield System
Phil Tippet	0302	Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers
Edward M Tourtelot	0229	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines
David R Tree	0272	V-Plus System
David R Tree	0284	Atomized Oil-Injected Rotary Screw
David K litte	0204	Compressors
Harry Werner Tulleners	0345	•
William Tunderman	0263	Method for Reconditioning Rivetless Chain Links
Shao-E Tung	0200	Removal of Sulfur Dioxide from the Stack
		Gas of Combusters Burning High Sulfur Fuel
Shao-E Tung	0319	Removal of Hydrogen Sulfide from a Gas Stream
Fred Tunmore	000 <b>8</b>	Inertial Storage Transmission
Robert L Ullrich	0082	Cool Air Induction
William Vandersteel	0357	TUBEXPRESS Pneumatic Capsule Pipeline Transport System
Christiaan P van Dijk	0348	Hydrogen Sulfide Removal for Natural Gas
Clinton Van Winkle	0090	Grain Dryer
Varigas Research, Inc	0297	Series (Two-Wire) V-Controller
Carmile F Vasile	03 <b>82</b>	System for Recovery of Waste Hot Water Heat Energy
Joseph B Vogt	0033	Temperature Indicating Device
Benjamin Volk	0332	Volk Pistachio Huller
Marvin L Wahrman	0079	Oil Well Bit Insert (Tooth), Cutting
	0077	Article, Ablative
Henry J Wallace	0113	Wallace Mold Additive System
Ken Walmer	0030	Method of Removing Sulfur Dioxide from Flue Gases
Arleigh Wangler	0071	Knight Guard
H Roy Weber	0137	0
Roy J Weikert	0116	
William C Whitman	0252	
James B Whitmore	0121	
Hugh Edwin Whitted III	0250	
Giles M Whitten	0430	
Frank Wicks	0390	
	0370	

Contact	DOE	Invention
Name	<u>No.</u>	Title
Stanley Wayne Widmer	0413	Non Metallic Railroad Switch Covers
Robert H Wieken	0057	X-5 Smoke Eliminator
David M Wilder	0323	Rolling Mill for Reduction of Moisture Content in Waste Material
Tony Wilhelm	0140	Counter Flow Dual Tube Heat Exchanger
William G Wilson	0443	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization
Jack Winnick	0239	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
Donald E Wise	0214	Convertible Flat/Drop Trailer
Serge Wisotsky	0432	Water Hammer Pile Driver
Douglas E Wood	0234	Geodesic Solar Paraboloid
Harry E Wood	0053	High Efficiency Water Heater
Harry E Wood	0238	Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness
Roy W Wood	0417	Rotary Drill Bit
Harrison Robert Woolworth	0010	Scrap Metal Preheating Method and Apparatus
Andrew Wortman	0307	Vortex Generators for Aft Regions of Aircraft Fuselages
Joseph C Yater	0004	Power Conversion of Energy Fluctuations
John W Yount	0209	Reclaiming Process for Resin Treated Fiberglass
Paul Zanoni	0112	Pump
Robert Zartarian	0120	Vapor Heat Transfer Commercial Griddle
Bernard Zimmern	0059	The Volumetric Gas Turbine
Michael F Zinn	0100	Solaroll
Allen D Zumbrunnen	0105	High Frequency Furnace

# Table 4-3

## RECOMMENDED INVENTIONS BY INVENTION CLASSIFICATION

	DOE	
<u>Classif.</u>	<u>No</u>	Title
1.00000	Fuels	and Lubricants Acquisition, Production, Distribution
	0161	Wood Gas Reactor duPont Connell Energy Coal Gasification Process Low Profile Fluid Catalytic Cracker
1.01000	Geophy	ysical Prospecting
	0210	Ultra High Speed Drilling Device for Use in Hard Rock Formations
1.11000	Coal B	Mining and Mining Equipment
	0091 0111 0112	Coke Desulfurization Mine Brattice Haspert Mining System Pump Slip Mining
	0188 0223 0352	Remote Controlled Underground Mining System for Horizontal or Pitching Seams Minimizing Subsidence Effects during Production of Coal In Situ A Waterjet Mining Machine
1.11200	Coal (	Gasification
	0320	Coal Gasification with Carbon Dioxide and Lime Recycling
1.11300	Coal (	Greater Resource Recovery Methods
	0268	Apparatus for Enhancing Chemical Reactions
1.12000	Oil We	ells
	0029 0039 0055 0079 0127 0128 0143 0146 0154 0159 0166 0186 0211	Tuned Sphere Stable Ocean Platforms Lawler Steam Generator and Lawler System of Thermal Oil Recovery Electrically Heated Sucker-Rod Oil Well Bit Insert (Tooth), Cutting Article, Ablative Process and Apparatus to Produce Crude Oil from Tar Sands Continuous Distillation Apparatus and Method Oil Well Pump Jack Line Integral Method of Magneto-Electric Exploration Rotating Horsehead for Pumping Units Non-Tubing Type Lift Device, Described as the NTT Rabbit Borehole Angle Control Oil Recovery by In-Situ Exfoliation Drive Shock Mounted Stratapax Bit

	DOE	
<u>Classif.</u>	No	Title
1.12000	Oil W	ells (cont.)
	0217	Jointless Advanced Composite Material Tape for Operating Lift Pumps in Oil Wells
	0241	-
	0245	
	0249	Wells
	0280	Elimination
	0293	0
	0300 0312	Casing Stabbing Apparatus The "Jones AWT", a Micro-Computer-Based Automatic Well Tester
	0312	for Use of Producing Oil Wells
	0313	
	0338	
	0358	
	0386	
	0392	Deformities in Well Components Method and Apparatus for Drilling Horizontal Holes in Geological Structures from a Vertical Bore
	0395	
	0403	
	0415	
	0417	
		Whitten Dugas Mud Pump Ehnancer
	0442	Long Life "PC" Drill Bit
1.12200	Oil G	reater Resource Recovery Equipment
	0421	Flexible Drill Pipe
	0431	Wells.
1.13000	Oil S	hale
	0321	Process for Recovery of Oil from Oil Shale Simultaneously Producing Hydrogen
1.14000	Natur	al Gas
	0088	System-100
	0208 0231	CNG Automotive Fuel Cylinders/Gas Transport Modules Natural Gas from Deep-Brine Solutions
1.20000	Alter	nate Fuels
	0023 0040	Microgas Dispersions Improved Equipment and Process for Production of Blue Water Gas

	DOE	
<u>Classif.</u>		Title
1.23000	Hydro	gen
	0003	Hydrogen Generation from Producer Gas by Oxidation- Reduction of Tin
	0165	Process for Recovering Hydrogen and Elemental Sulfur from Hydrogen Sulfide and/or Mercaptans-Containing Hydrogen
1.26000	Fuel	Cells
	0276	Gas Concentration Cells as Converters of Heat into Electrical Energy
1.28000	Bioen	gineering and Medical Processes
	0385 0405	Single Stage Anaerobic Digestion Process Method of Processing Biodegradable Organic Material Process for Treating Humus Materials Prehydrolysis and Digestion of Plant Material High Temperature Condensing Biomass Combustion System
2.00000	Energ	y Conversion From Natural Sources
	0017 0078	Osmotic-Hydro Power Generation System for High Efficiency Power Generation from Low Temperature Sources
2.10000	Solar	Collectors
	0011 0035 0041 0074 0100 0117 0121 0124 0135 0145 0177 0179 0180	Semi-conductors from Metal Layers A Solid Electrolyte Galvanic Solar Energy Conversion Cell Solaroll "Solarspan" Prism Trap Solar Space Heating for both Retrofit and New Construction Solar Collector Point Focus Parabolic Solar Collector Solar Conversion by Concentration Cells with Hydrides The Solar I Option Development and Commercialization of Low Cost, Non- Metallic, Solar Systems Adjustable Solar Concentrator (ASC)
	0222 0234 0278 0292	
	0317	Edge-Illuminated Multi-Junction (VMJ) Solar Cell

<u>Classif.</u>	DOE No	Title
2.10000	Solar	Collectors (cont.)
		So-Luminaire Natural Daylighting Unit A Carbonaceous Selective Absorber for Solar Thermal Energy Collection and Process for Its Formation
	0379	Inner Roof Solar System
2.20000	Geothe	ermal
	0182	Improved Seal for Geothermal Drill Bit
2.40000	Wind	
	0014 0067	Aerodynamic Lift Translator Windmill Using Hydraulic System for Energy Transfer and Speed Control
	00 <b>9</b> 5 0110	Omni-Horizontal Axis-Wind Turbine
2.50000	Water	Power Processes (inland)
	0 <b>19</b> 7	Frequency Regulator and Protective Devices for Synchronous Generators
	0351	Flash Gate Board
????2.800	000	
	0043	Thermal Gradient Utilization Cycle
3.00000	Energy	y Conversion From Secondary Sources
		Heat/Electric Power Conversion via Charged Aerosols Hotwater Engine
		Tapered Plate Annular Matrix
		Variable Heat Refrigeration System
	0273	Open Cycle Latent Heat Engine
3.10000	Combus	stion Engines and Components Thereof
	0048	Howald Combustor
3.11000	Recip	rocal Engines, Mechanical
	0005 0054	Diesel Engine Conversion System for Gasoline Engines Optimizer
		Controlled Combustion Engine
	0122	Lean Limit Controller
	0131	Valve Deactuator for Internal Combustion Engines

<u>Classif.</u>	DOE <u>No</u>	Title			
3.11000	3.11000 Reciprocal Engines, Mechanical (cont.)				
	0229	Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines			
		Cyclic Char Combustion for Engines, Boilers and Gasifiers Electronic Octane			
		Expansion Compression System for Efficient Power Output Regulation of Internal Combustion Engines			
3.12000	Rotary	Engines, Mechanical			
	0387	Quiet Operating Internal Combustion Engine with Complete Highly Efficient Expansion Cycle			
3.13000	Turbi	ne Engines, Mechanical			
		Ceramic Rotors and Vanes The Volumetric Gas Turbine			
3.14000	Fuel	systems, Mechanical			
	0069	Micro-Carburetor Ionic Fuel Control System for the Internal Combustion Engine A System to Adapt Diesel Engines to the Use of Crude Oils The Wide-Open-Throttle Approach to Greater Automotive Fuel Efficiency			
3.14100	Carbu	retors and Modifications Thereof			
	0050 0184				
3.15000	Ignit	ion Systems			
	0381	Multiple Heat-Range Spark Plug			
3.20000	Steam	Engines and Turbines, Mechanical			
	0096	Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic			
	0236	Percussion Tools and Air Compressor Systems Steam Turbine Packing Ring			
3.30000	Air C	ompressors and Motors			
	0070	Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner			

DOE Classif. No Title 3.40000 Hydraulic Pumps and Motors 0189 Pump Jack 0262 Energy Saving Pump and Pumping System 0275 Low Head - High Volume Pump 0301 Pump Control System for Windmills 3.50000 Electric Motors and Generators 0060 Electric Transport Refrigerator 0106 Deep Shaft Hydro-Electric Power 0187 Variable Field Induction Motor 0206 Method and Apparatus for High Operation of Efficiency Electromechanical Energy Conversion 0216 Method and Assembly for Mounting a Semiconductor Element 0366 High Energy Semiconductor Switch 3.60000 Chemical Thermodynamics 0219 Method for Making Acelaldehyde from Ethanol 3.70000 Mechanical Thermodynamics 0435 A New Thermodynamic Process of Actual Approach to the Carnot Cycle 0440 Microtube Strip Heat Exchanger 3.80000 Heat Pumps and Refrigeration New Working Fluids for Increasing the Cycle Efficiencies of 0044 Thermal 4.00000 Energy Storage and Distribution 0227 CRM Pipe 0271 Hydrogen Storage System 0391 Compressed Gas Energy Storage 4.11000 Electrical Transmission 0195 Proportional Current Battery 4.12000 Electrical Distribution (Transformers, Switchgears, Controls) 0136 Windamper 0139 Transformer With Heat Dissipator 0158 Energy Conservative Electric Cable System 0247 Energy Conservation by Improved Control of Bulk Power Transfers on Interconnected Systems

<u>Classif.</u>	DOE No	Title	
	Electrical Distribution (cont.)		
	0376	Machine and Method for Producing Energy-Saving Transformers	
	0370	Incorporating Amorphous Metal Cores	
4.30000	Therm	al Energy Storage	
	0026 0252	Compact Energy Reservoir Thermal Bank	
5.00000	Trans	portation	
	0357	TUBEXPRESS Pneumatic Capsule Pipeline Transport System	
5.10000	Air T	ransportation	
		Radiant Energy Power Source for Jet Aircraft EGD Fog Dispersal System	
	0246	Maximum Cruise Performance	
		Vortex Generators for Aft Regions of Aircraft Fuselages Aircraft Minimum Drag Speed System	
5.20000	Water	Transportation	
	0204	L	
		Automatic Variable Pitch Marine Propeller Tulleners Wave Piercer	
5.30000	Rail	Transportation	
		Railroad Switch Heater Novel Fluid Ring (F/R) Seal Systems for Railroad Axle Bearing	
		Systems	
	0413 0439	Non Metallic Railroad Switch Covers Project Twenty-One Rapid Transit System	
5.40000	Highw	ay Vehicles and systems	
	0099 0214	Light Weight Composite Trailer Tubes Convertible Flat/Drop Trailer	
5.42000	Vehic	ular Power Systems	
	0058	A Multiple Spark System Using Inductive Storage	
5.42100	Combu	stion Engine Vehicles	
	0013	Anti-Pollution System	
		•	

<u>Classif.</u>	DOE <u>No</u>	Title
5.43000	Vehicu	ular Components
	0133	AUTOTHERM Car Comfort System
		Vehicle Exhaust Gas Warm-up System
		Engine Heating Device
	0237	Hydraulic, Variable, Engine Valve Actuation System Hicks Alter-Brake System/Electric Charging Apparatus for Ground
		Vehicles
		Battery Heating Device Auxiliary Truck Heater
5.43100	Vehic	le Transmissions
		Inertial Storage Transmission
		New Hydrostatic Transmission The Utah Transmission/Continuously Variable Speed Wind Generator
5.43200	Vehic]	le Braking Systems
	0164	Elastomer Energy Recovery Elements and Vehicle Component Applications
	0244	CHARLIE - Trademark - Federally Registered #1123957
5.43300	Vehicl	le Wheels and Tires
	0114	New Energy-Saving Tire for Motor Vehicles
5.43500	Vehic]	le body and Chassis Design
	0052	Air Wedge
5.43800	Vehic]	le Air Conditioning
	0225	ROVAC High Efficiency Low Pressure Air Conditioning System
6.10000	Buildi	ing Design, Construction and Construction Practices
	0051	Thermal Efficiency Construction
	0073 0083	INTECH
		Vertical Solar Louvers Aluminum Roofing Chips
		An Earthquake Barrier
6.20000	Buildi	ing Heating, Cooling, and Ventilating
	0036	Computerstat

0068 Under Compression and Over Compression Free Helical Screw Rotary Compressor

<u>Classif.</u>	DOE <u>No</u>	Title
6.20000	Build	ing Heating, Cooling, and Ventilating (cont.)
	0092	Tri-Water, A Combination Air Conditioning and Fire Protection
	0174	System for a Building. Thermotropic Plastic Films Skate on Plastic Ice Skating System Rotary Heat Pump Air Conditioner, Heater and Ventilator for
		Automotive, Mobile and Stationary Use. Strainercycle Wicks Efficient Fuel Utilization System
6.20100	Build	ing Heating, cooling, Ventilating Instruments and Controls
		Fuel Miser Temperature Indicating Device SCOTCH - (Simple, Cost-Effective, Optimum Temperature Control for Housing)
	0226	
	0360	Selective Zone Isolation for HVAC System Temperature Controllable Heat Valve FS 630 Heat Pump Thermostat Control
6.23000	Boile	rs and Furnaces
	0057	High Efficiency Water Heater X-5 Smoke Eliminator Furnace Input Capacity Trimming Switch Self-Contained, Water Proof, Stoker Fired, Fully Automatic, Portable Solid Fuel Furnaces
		Rotary Coal Combustor and Heat Exchangers Energy Conversion Method
	0359 0365 0369	Solid Fuel Hot Air Furnace Safety Stovepipe Damper Assembly "Fire Jet" Automatic Anthracite Burner
	0383 0410	Electro-Optic Inspection of Heat Exchangers The World's First Gas Fired, Forced Air, High Efficiency, Furnace That Requires No Electricity
	0437	
6.23100	Boile	r and Furnace Flue Heat Recovery
		Waste Heat Utilization for Commercial Cooking Equipment Flue Baffle Assembly
6.23200	Boile	r and Furnace Air and Oxygen Inductors and Injectors
	0022	Fuel Burner Attachment

	DOE
<u>Classif.</u>	NoTitle
6.23400	Boiler and Furnace Oil Burners
	0102 Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners
	0125 The Turbulator Burner System
6.23600	Boiler and Furnace Combustion Controls and Equipments
	0288 Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)
6.23700	Boiler and Furnace Coal-Oil-Water Mixtures
	0286 Use of Pulse-Jet for Atomization of Coal/Water Mixture
6.24000	Electric Heat
	0034 Delphic Thermogenic Paint (Heat Film)
6.25000	Heat Pumps
	<ul> <li>O230 Absorption Heat Pump Augmented Separation Process</li> <li>O253 High Performance Heat Pump</li> <li>O371 Wallace Energy Systems Solar Assisted Heat Pump Water Heater</li> </ul>
6.26000	Air conditioning & Refrigeration
	0160 High Efficiency Absorption Refrigeration Cycle 0269 Refrigerant Accumulator and Charging Apparatus
	0272 V-Plus System
	0281 Sun Synchronous Solar Powered Refrigerator 0284 Atomized Oil-Injected Rotary Screw Compressors
	0290 Low Energy Ice Making Apparatus
	0298 Three Tenths Degree Kelvin Closed Cycle Refrigeration System
	0370 Dehumidification System for Indoor Pools and Other High Humidity Areas
	0377 A Novel Method of Producing Ice-Water Slurries 0396 Dyna Flow
6.27000	Ventilating systems
	0144 SpaCirc Space Circulation Fan
6.30000	Hot Water Supply
	0168 The Hot Water Saver

-1	DOE	
<u>Classif</u> .	<u>_No</u>	Title
6.31000	Heati	ng Systems (Hot Water)
	0339	Recycoil II
	0407	•
6.32000	Hot W	ater conservation Devices and Practices
	0028	Ultraflo
		Automatic Control System for Water Heaters
		Shower Bath Economizer
		System for Recovery of Waste Hot Water Heat Energy
6.40000	Insul	ation and Insulating Practices
	0015	Estacron
		Phenol Methylene Foam Rigid Board Insulation
	0020	
		Dielectric Windowshade
		Super U System - Snap Strap Expanded Polystyrene Bead Insulation System
	0151	Film Type Storm Window
		Thermal Ice Cap
		Insulated Garage Door
		Reclaiming Process for Resin Treated Fiberglass
	0282	
	0380	Blow-In Blanket System
6.50000	Elect	rical Wiring Fixtures
	0012	High Frequency Energy Saving Device
		Fluorobulb
	0071	Knight Guard
	0103	Low Voltage Ionic Fluorescent Light Bulb
		Phantom Tube
	0297	Series (Two-Wire) V-Controller
6,60000	Plumb	ing and Fixtures
	0212	Water Warden
	0416	
	0436	
7.00000	Chemi	cal, Chemical Process Industries Unit Operations
	0010	Sover Metal Dychesting Wethod and American
		Scrap Metal Preheating Method and Apparatus Method and Apparatus for Vacuum Drying of Commodities
	0018	The Control of the Analysis of Low Carbon Aluminum Steels Using
	0010	Oxygen Sensors and Iron-Aluminum Alloy
	0021	

	DOE	
<u>Classif.</u>	No	Title
7.00000	Chemi	cal, Chemical Process Industries Unit Operations (cont.)
	0024	Can and Bottle Crushing Apparatus
	0025	
	0030	U i
	0038	
		Bulk Cure Tobacco Barn with Improvements
	0046	• •
	0047	5
		Flexaflo-The Wet Fuel Dryer
	0061	
	0064	The Mahalla ProcessA Hydrometallurgical Method for Extracting
		Copper
	0066	Heat Extractor
	0072	Utilization of Waste Gas for Boilers and Furnaces in Refineries
		and Petrochemical Plants
	0075	Coke Quenching Steam Generator
	0076	-
	0080	
	0081	
	0084	5
	0087	
	0089	0
	0093	
		Smelter Emissions
	0094	Lantz Converter
		Water Drying System
	0098	Process Development to Conserve Energy and Material (in the
		manufacture of)Bearings
	0105	
	0107	• • •
	0108	Processing Recovery of Aluminum
	0113	Wallace Mold Additive System
	0116	Model 5000 ASEPAK System
	0118	Energy Adaptive Control of Precision Grinding
	0119	Air Ratio Controller (AERTROL)
	0123	Comminution of Ores by a Low-Energy Process
	0126	
	0132	Process for Reclaiming and Upgrading Thin-Walled Malleable Waste
		Material
	0137	A Portable Pollution Free Automobile Incinerator
	0142	Process for Heatless Production of Hollow Items
	0148	Reclamation of Oil and High-Grade Iron Concentrates from Steel
		Mill Wastes
	0150	The Use of Solid Waste Material from a Lubricating Oil and/or
		Vegetable Oil Refining Operation.
	0156	Direct-Current Electrical Heat-Treatment of Continuous Metal
		Sheets in a Protective Atmosphere.

	DOE	
<u>Classif.</u>	<u>No</u>	Title
7.00000	Chemi	cal, Chemical Processes Industrial Unit Operations (cont.)
	0157	Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools
	0162	Tubular Pneumatic Conveyor Pipeline
	0167	Vaned Pipe for Pipeline Transport of Solids
	0172	GEM Electrostatic Filtration System
	0175	A Low-Energy Carpet Backing System
	0178	Process and Apparatus for Producing Cellulated Vitreous Refractory Material
	0183	Increased Vapor Generator Feature for a Reheat Vapor Generator
	0198	The Thermatreat System
	0200	Removal of Sulfur Dioxide from the Stack Gas of Combusters Burning High Sulfur Fuel
	0205	Energy Efficient Solid State Multiple Operator Metallic Arc Welding System
	0207	Glass Sheet Manufacturing Method and Apparatus
	0213	The Kaunitz Process for Welding Pipe
	0215	Slag Waste Heat Boiler
	0218	Behemoth
		Deep Throat Resistance Welder
	0232	Method of Separating Lignin and Making Epoxide- Lignin
	0239	Electrochemical Separation and Concentration of Sulfur-Containing Gases from Gas Mixtures
	0242	New Petersburg Beam Trawl
	0243	An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste
	0251	Process and Apparatus for Reducing the Energy Required to Separate Liquids by Distillation
	0254	"Turbo-Glo" Immersion Furnace
	0255	Method and Apparatus for Scrubbing Gas - Scrubbing Apparatus
	0258	Corrosion Protection Process for Bore Hole Tool
	0259	Hydrostatic Support Sleeve and Rod - Gas Release Probe
	0260	Method and Apparatus for Handling and Dry Quenching Coke
	0261	A New Apparatus for Making Asphalt Concrete
	0264	Desulfurization of Coal
	0267	Integrated Gasification of Coal, Municipal Solid Wastes and Sludge
	0270	Method of Energy Recovery for Wastewater Treatment
	0295	Improved Method of Electroplating Aluminum for Corrosion Resistance
	0299	Process for Using Cocurrent Contacting Distillation Column
	0308	Binary Azeotropic, Hot Gas, Fat Extraction Process
	0309	Process of Smelting with Submerged Burner
	0310	Portable Wastewater Flow Metering Device
	0314	Rolling Filter Apparatus
	0316	Thrust Impact Rock Splitter
	0318	Bi-Polar Electrode for Hall-Heroult Electrolysis
	0319	Removal of Hydrogen Sulfide from a Gas Stream

	DOE					
<u>Classif.</u>	No	Title				
7.00000 Chemical, Chemical Processes Industrial Unit Operations (cont.)						
	0323	Rolling Mill for Reduction of Moisture Content in Waste Material				
	0325 Low Cost, Low Energy Machine and Method for Continuous Cas Non-Ferrous Strip and Composites					
	0326 A Mechanical Stemming Device for Use in Explosive Load Holes					
	0329					
	0330	1				
	0337					
	0340	Separation of Adsorbed Components by Variable Temperature Desorption				
	0341	High Pressure Liquid Jets as a Tool for Disintegrating Organic and Non-Organic Materials				
	0342	Raw Fines Medium Coal Washing System				
	0344	Machine for Separating Concrete from Steel				
	0346					
0347 Oxide Dispersion Strengthened Aluminum Alloys 0348 Hydrogen Sulfide Removal for Natural Gas 0349 Three Roll Tension Stand						
					0349 Infee Koll Tension Stand 0354 Preparation of Biliquid Foam Compositions 0362 Improved Solvents for the Puraq Seawater Desalination Proces	
	0363	Impactor Separator				
	0364					
	0367 Disintegration of Wood					
	0384	Textured Substrate and Method for the Direct, Continuous Casting of Metal Sheet Exhibiting Improved Uniformity				
	0388	Preparation of Extremely Fine, Superalloy Powders and Their Fabrication into Dense, Sintered, Net Shape Superalloy Parts				
	0397					
	0400					
	0404	Steam-Methane Reforming in Molten Carbonate Salt				
	0406					
	0412	Meta-Lax Stress Relief for Almost any Size Metal Structure				
	0419	A Planing Machine to Produce Ultra-Fine Coal				
-	0422	High Efficiency Ozone Generating System				
	0427	Non-Catalytic Steam Hydrolysis of Fats				
	0432	Water Hammer Pile Driver				
	0438	Microwave Reflection by Synthetic Metals				
7.01200	Prima	ry Non-Ferrous Metals				
	0418	Use of Chemical Vapor Deposition to Coat Metal Surfaces with				
	0/22	High Temperature Superconducting Materials				
	0433	Improved Methods to Manufacture and Use Carbon- Alumina Composite Anodes for Aluminum Reduction				

<u>Classif.</u>	DOE <u>No</u>	Title			
7.01700	Miscellaneous - Desalinization - Electrolysis				
	0305	Automatic Filter Network Protection, Failure Detection and Correction System and Method			
7.02400	Stack	Gas Scrubbers			
	0443 0444	A Method for the Use of Oxygen Ion Vacancies in Lanthanide Oxides to Increase their Utilization Apparatus and Method for Using Microwave Radiation to Measure Water Content of a Fluid			
7.06000	Petro	leum, OII and Natural Gas Industries			
	0428	Uni-Frac Column and T-By Tray			
7.09000	Prima	ry Metals			
	0441	Method and Apparatus for Applying Metal Cladding of Surfaces and Products Formed Thereby			
7.10000	Civil	Engineering			
		Microwave Methods and Apparatus for Paving and Paving Maintenance			
	0335	Highway Power Patcher Robotic Bridge Observation and Information System Method and Apparatus for Testing Soil			
7.20000	Agriculture Equipment and Farm Equipment				
	0082	Cool Air Induction			
		Grain Dryer			
	0140	Counter Flow Dual Tube Heat Exchanger			
		MIRAFOUNT Fog System - Low Energy Freeze Protection for Agriculture			
	0171	A Method of Preserving Fruits and Vegetables without Refrigeration			
	0196	Manufacturing and Using Nitrogen Fertilizer Solutions on a Farm			
	0224	Haile Alternate Fuel Grain Dryer			
	0233	Mounted Steerable Ripper for Deep Soil Ripping and Subsoil Operations			
	0248	Dyna-Bite Traction Intensifier, Model Agri, for Agricultural Tractors or the Like			
	0265	Method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation			
	0279	Method and Means for Preventing Frost Damage to Crops			
	0324	Method and Composition for Enhancement of Mycorrhizal Development by Foliar Fertilization			

<u>Classif.</u>	DOE No	Title			
7.20000	Agric	Agriculture Equipment and Farm Equipment (cont.)			
	0327 0373	Square Pattern Irrigation Sprinkler Tobacco Harvesting Machine			
7.40000	Mechan	nical Contrivances (Non-Vehicular)			
	0302 0332 0333 0356 0375 0394 0399 0402 0424	Electronic Conveyor Control Apparatus Carri-Cel Impact Breaker and Counterflow Impact Rock Breakers Volk Pistachio Huller Laser Based Machine for Die and Prototype Manufacturing Portable Automatic Firewood Processor MDT Twister Variable Wall Mining Machine Hydrodynamic/Multi Deflection Pad Bearing KTM Logger			
8.10000		ner Education and Behavior			
	0001 0306	Demand Metering System for Electric Energy An Efficiency Computer for Heated or Air Conditioned Buildings			
8.20000	Appliances				
	0153 0192 0238	Vapor Heat Transfer Commercial Griddle A New Equipment Design Concept for Storage of Hot Foods Closed Cycle Dehumidification Clothes Dryer Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness All Steam Heated Sadiron for Commercial Use Electrical Resistance Cooking Apparatus with Automatic Circuit Control Reduced Size Heating Assembly for an Electric Stove Energy-Efficient Ice Cube Making Machine			
8.30000	Tools				
	0409	Self-Dressing Resistance Welding Electrode			
8.40000	Lamps	and Light Bulbs			
	0274	Flexible Lighting - Fluorescent Lighting Operating at Radio Frequency			

<u>Classif.</u>	DOE No	Title				
9.00000	Miscellaneous					
	0104	0104 Low Continuous Energy Mass Separation System				
	0109	Hydrostatic Meat Tenderizer				
	0115	Refrigeration System				
	0181	The Karlson Ozone Sterilizer				
		Oxygen-Conducting Material and Oxygen-Sensing Method				
	0202 Wobbling Type Distillation Apparatus					
	0256 Method and Apparatus for Irrigating Container Grown Plants 0257 Method and Apparatus for Melting Snow 0304 Exfoliated Graphite Fibers					
	0328	328 Multi-Directional Pre and Post-Heating Device for Thermal Flamecutting				
	0353 Compu-Turbo-Aligner					
	0361	Measurement of Liquid Volumes with Compensation for Temperature Induced Variations				
	0378	An Improved Cutter for Plaster Board and the Like				
	0393	Method and Apparatus for Ultrasonic Testing of Tubular Goods				
	0398	Hydraulic Test Unit - Test Plugs - Mechanical Seal Plugs				
	0408	Floodshield System				
	0423	Superverter - A Digitally Synthesized DC to AC Sinewave Inverter				
	0426	Eddy Current Transducing System				
9.50000	Instr	umentation				

0401 A Miniature, Inexpensive Oxygen-Sensing Element

9.51000 Electrical Demand, Overload or Consumption

0065 WattVendor



# APPENDIX A

# INVENTION CLASSIFICATIONS

_CODE	TITLE	CODE	TITLE
1.00000	FUELS AND LUBRICANTS	2.12000	SOLAR ELECTRIC POWER
	ACQUISITION, PRODUCTION,		GENERATING SYSTEMS
	DISTRIBUTION	2.13000	PHOTOVOLTAIC DEVICES
1.01000	GEOPHYSICAL PROSPECTING FOSSIL FUELS 1.11000 COAL COAL LIQUIFICATION COAL GASIFICATION	2.14000	SOLAR CONCENTRATORS -
1.10000	FOSSIL FUELS 1.11000 COAL		PHOTOVOLTAIC
1,11100	COAL LIQUIFICATION	2 15000	SOLAR CONCENTRATORS - THERMAL
1 11200	COAL GASIFICATION	2 20000	GEOTHERMAL
1 11300	GREATER RESOURCE RECOVERY	2 21000	
1.11500	METHODS		OCEAN THERMAL
1 11400	GREATER RESOURCE RECOVERY		
	FOUTDMENT		WIND DRIVEN MOTORS &
1 12000	OIL GREATER RESOURCE RECOVERY METHODS	2.41000	COMPONENTS THEREOF
1.12000	OIL DECOUDCE	2 42000	WIND PROCESSES USING ENERGY
1.12100	GREATER RESOURCE	2.42000	
1 10000	RECOVERY METHODS	0 50000	FROM WIND
1.12200	GREATER RESOURCE RECOVERY		
1 10000	EQUIPMENT	2.51000	ELECTRICAL POWER GENERATION BY
1.12300	OIL AND GAS WELL PUMPS AND		WATER POWER (INLAND)
	DRILLS		OCEAN WATER POWER
1.12400	OIL AND GAS PIPELINES		WAVE POWER SYSTEMS
1.13000	OIL AND GAS WELL PUMPS AND DRILLS OIL AND GAS PIPELINES OIL SHALE TAR SANDS		TIDAL POWER SYSTEMS
1.13100	TAR SANDS	2.63000	OCEAN CURRENT POWER SYSTEMS
	NATURAL GAS		
1.14100	CHEMICAL CONVERSION OF GAS TO	3.00000	ENERGY CONVERSION FROM
	LIQUIDS		SECONDARY SOURCES (NOT INCLUDED
1.20000	ALTERNATE FUELS		BELOW)
1.21000			) ENERGY CONVERSION FROM
1.22000	METHANE		SECONDARY SOURCES -
1.23000	METHANE HYDROGEN ALCOHOLS HYBRID FUELS FUEL CELLS FUEL ADDITIVES BIOENGINEERING AND MEDICAL BIOMASS MISCELLANEOUS SYNTHETIC		THERMODYNAMICS
1.24000	ALCOHOLS	3.10000	COMBUSTION ENGINES AND
1.25000	HYBRID FUELS		COMPONENTS THEREOF
1.26000	FUEL CELLS	3.10100	STIRLING ENGINES, MECHANICAL
1.27000	FUEL ADDITIVES	3.10110	STIRLING ENGINES. THERMO
1.28000	BIOENGINEERING AND MEDICAL	3.11000	RECIPROCAL ENGINES. MECHANICAL
1.28100	BIOMASS	3,11100	RECIPROCAL ENGINES. THERMO
1.29000	MISCELLANEOUS SYNTHETIC	3 12000	ROTARY ENGINES, MECHANICAL
1.27000	PROCESSES	3 12100	ROTARY ENGINES, THERMO
	GREASES AND LUBRICANTS		TURBINE ENGINES, MECHANICAL
	REFINED PETROLEUM PRODUCTS AND		
1.40000	ADDITIVES		FUEL SYSTEMS, MECHANICAL
	ADDITIVES		CARBURETORS AND MODIFICATIONS
2 00000	ENERCY CONVERCION FROM MATTERAL	5.14100	
2.00000	ENERGY CONVERSION FROM NATURAL	2 1/000	THEREOF
0 10000			FUEL INJECTORS
	SOLAR COLLECTORS		WATER INJECTORS
2.11000			
	ENERGY		AIR AND OXYGEN INJECTION
		3.14600	COMBUSTION ANALYZERS

A-1

CODE	TITLE				
3 15000	IGNITION SYSTEMS				
	STEAM ENGINES AND TURBINES,				
	MECHANICAL				
3.21000	STEAM ENGINES AND TURBINES,				
	THERMO				
	AIR COMPRESSORS AND MOTORS				
	HYDRAULIC PUMPS AND MOTORS				
	ELECTRIC MOTORS AND GENERATORS MISCELLANEOUS ELECTRIC POWER				
3.31000	GENERATING SYSTEM				
3.60000	CHEMICAL THERMODYNAMICS				
	PHOTO CHEMICAL				
	MECHANICAL THERMODYNAMICS				
	HEAT PUMPS AND REFRIGERATION				
3.90000	HIGHWAY POWER GENERATORS				
4.00000	ENERGY STORAGE AND				
	DISTRIBUTION (NOT INCLUDED				
	BELOW)				
	ELECTRICAL TRANSMISSION				
	ELECTRICAL STORAGE (BATTERIES)				
4.12000	ELECTRICAL DISTRIBUTION (TRANSFORMERS, SWITCHGEARS,				
	CONTROLS)				
4.20000	MECHANICAL ELECTRICAL				
	GENERATION, STORAGE,				
	DISTRIBUTION				
	THERMAL ENERGY STORAGE PNEUMATIC ENERGY GENERATION,				
4.40000	STORAGE, DISTRIBUTION				
4.50000	HYDRAULIC (WATER, PUMPED ENERGY				
	STORAGE, ETC.)				
4.60000	MISCELLANEOUS POWER GENERATOR,				
	STORAGE AND TRANSMISSION				
5.00000	TRANSPORTATION (NOT INCLUDED				
	BELOW)				
	AIR TRANSPORTATION				
5.20000	WATER TRANSPORTATION				
	RAIL TRANSPORTATION				
	HIGHWAY VEHICLES AND SYSTEMS HIGHWAYS, STREETS AND TRAFFIC				
<b>J</b> .41000	CONTROL				
5.42000	VEHICULAR POWER SYSTEMS (NOT				
	INCLUDED BELOW)				
	COMBUSTION ENGINE VEHICLES				
	ELECTRIC VEHICLES				
	STEAM VEHICLES HYBRID VEHICLES				
5.42400	HIDKID VERICLES				

5,43000	VEHICULAR COMPONENTS			
	VEHICLE TRANSMISSIONS			
	VEHICLE BRAKING SYSTEMS			
	(INCLUDES REGEN. BRAKING			
	SYSTEMS, ETC.)			
	VEHICLE WHEELS AND TIRES			
	VEHICLE SUSPENSIONS			
	VEHICLE BODY AND CHASSIS			
	DESIGN			
	VEHICLE LUBRICATION SYSTEMS			
	DRIVER AND FUEL ECONOMY			
	CONTROL SYSTEMS			
	VEHICLE AIR CONDITIONING			
5.45000				
6.00000	BUILDINGS, STRUCTURES AND			
	COMPONENTS			
	DESIGN, CONSTRUCTION AND			
	CONSTRUCTION PRACTICES			
	HEATING, COOLING, VENTILATING			
	HEATING, COOLING AND			
5.20100	VENTILATING INSTRUMENTS AND			
	CONTROLS			
6.21000	FIREPLACES			
	SOLAR HEATERS			
	SOLAR HEATERS - HEAT STORAGE			
	BOILERS AND FURNACES			
	(INDUSTRIAL)			
6.23010	SMALL BOILERS, FURNACES AND			
	STOVES			
6.23100	BOILER AND FURNACE FLUE HEAT			
	RECOVERY			
6.23200	BOILER AND FURNACE AIR AND			
	OXYGEN INDUCTORS AND INJECTORS			
6.23300	BOILERS AND FURNACES FLUE VENT			
	CONTROL			
6.23400	BOILER AND FURNACE OIL BURNERS			
	BOILER AND FURNACE STOKERS			
	(INDUSTRIAL)			
6.23600	BOILER AND FURNACE COMBUSTION			
	CONTROLS AND EQUIPMENTS			
6.23700	BOILER AND FURNACE			
	COAL-OIL-WATER MIXTURES			
6.23800	COMBUSTION, CHEMICAL			
	ELECTRIC HEAT			
	HEAT PUMPS			
	AIR CONDITIONING &			
5.20000	REFRIGERATION			
6.27000	VENTILATING SYSTEMS			
6.27000				

6.28000 HUMIDIFICATION SYSTEMS

CODE	TITLE				
6.31000	HEATING SYSTEMS(HOT WATER)				
	SOLAR HEATERS				
	HOT WATER CONSERVATION DEVICES				
	AND PRACTICES				
6.40000	INSULATION AND INSULATING				
	PRACTICES				
6.50000	ELECTRICAL WIRING AND FIXTURES				
	PLUMBING AND FIXTURES				
7.00000	INDUSTRIAL PROCESSES(NOT				
	INCLUDED BELOW)				
7.01000	CHEMICAL, CHEMICAL PROCESS				
	INDUSTRIES UNIT OPERATIONS				
	IRON AND STEEL				
	PRIMARY NON-FERROUS METALS				
	FABRICATED METAL PRODUCTS				
	AIR SEPARATION				
	WATER AND WASTE TREATMENT				
	PACKAGING AND CONTAINERS				
	MISCELLANEOUS - DESALINIZATION				
	- ELECTROLYSIS				
	SOLAR DISTILLATION PROCESSES				
	SOLAR EVAPORATION PROCESSES				
	TEXTILES, FABRICS, RUGS,				
	CLOTHING				
	POWDER METALLURGY				
	CERAMICS				
	COMPOSITE MATERIALS				
	STACK GAS SCRUBBERS				
7.03000	FOOD, FEEDS, LEATHER, FURS,				
7 0/000	FEATHERS, ETC. LUMBER, WOOD, WOOD PRODUCTS				
7.04000	INDUSTRIAL PROCESSES				
7 05000	PAPER AND ALLIED PRODUCTS				
	PETROLEUM, OIL AND NATURAL GAS				
7.06000	INDUSTRIES				
	RUBBER AND PLASTICS				
	STONE, CLAY AND GLASS				
	PRIMARY METALS				
	CIVIL ENGINEERING				
	AGRICULTURE EQUIPMENT AND FARM				
,.20000	EQUIPMENT				
7 30000	OIL SPILL RECOVERY				
	MECHANICAL CONTRIVANCES				
,	(NON-VEHICULAR)				
7.50000	SOLAR INDUSTRIAL				

8.00000 CONSUMER PRODUCTS

CODE \_\_\_\_\_\_TITLE

- 8.10000 CONSUMER EDUCATION AND BEHAVIOR
- 8.20000 APPLIANCES
- 8.30000 TOOLS
- 8.40000 LAMPS AND LIGHT BULBS (6.5 FOR LIGHTING FIXTURES)
- 9.00000 MISCELLANEOUS
- 9.10000 NOT ENERGY-RELATED
- 9.20000 NUCLEAR
- 9.30000 PERPETUAL MOTION
- 9.40000 UNINTERPRETABLE
- 9.50000 INSTRUMENTATION
- 9.50100 CHEMICAL, BIOCHEMICAL SENSORS AND INSTRUMENTATION
- 9.50200 ELECTRONIC, OPTICAL SENSORS AND INSTRUMENTATION
- 9.50300 HEAT TRANSFER, FLUID MECHANICS INSTRUMENTATION
- 9.51000 ELECTRICAL DEMAND, OVERLOAD OR CONSUMPTION INDICATORS
- 9.60000 COMPUTER DATA STORAGE AND RETRIEVAL
- 9.70000 COMMUNICATION SYSTEMS AND EQUIPMENT
- 9.80000 PRINTING SYSTEMS AND EQUIPMENT

.

## APPENDIX B

## TECHNICAL CATEGORIES AND ASSOCIATED INVENTION CLASSIFICATIONS

### TECHNICAL CATEGORY

# ASSOCIATED INVENTION CLASSIFICATIONS

# 1. Fossil Fuel Production

1.00000	FUELS AND LUBRICANTS ACQUISITION, PRODUCTION,
	DISTRIBUTION
1.01000	GEOPHYSICAL PROSPECTING
1.10000	FOSSIL FUELS
1.11000	COAL
1.11100	COAL LIQUIFICATION
1.11200	COAL GASIFICATION
1.11300	GREATER RESOURCE RECOVERY METHODS
1.11400	GREATER RESOURCE RECOVERY EQUIPMENT
1.12000	OIL
1.12100	GREATER RESOURCE RECOVERY METHODS
1.12200	GREATER RESOURCE RECOVERY EQUIPMENT
1.12300	OIL AND GAS WELL PUMPS AND DRILLS
1.12400	OIL AND GAS PIPELINES
1.13000	OIL SHALE
1.13100	TAR SANDS
1.14000	NATURAL GAS
1.14100	CHEMICAL CONVERSION OF GAS TO LIQUIDS

## 2. Direct Solar

2.10000	SOLAR COLLECTORS
2.11000	SOLAR TO DIRECT MECHANICAL ENERGY
2.12000	SOLAR ELECTRIC POWER GENERATING SYSTEMS
2.13000	PHOTOVOLTAIC DEVICES
2.14000	SOLAR CONCENTRATORS - PHOTOVOLTAIC
2.15000	SOLAR CONCENTRATORS - THERMAL
6.22000	SOLAR HEATERS
6.22100	SOLAR HEATERS - HEAT STORAGE

6.31100 SOLAR HEATERS

## 3. Other Natural Sources

1.20000	ALTERNATE FUELS
1.21000	PROPANE
1.22000	METHANE
1.23000	HYDROGEN
1.24000	ALCOHOLS
1.25000	HYBRID FUELS
1.26000	FUEL CELLS
1.27000	FUEL ADDITIVES
1.28000	BIOENGINEERING AND MEDICAL
1.28100	BIOMASS

#### TECHNICAL CATEGORY

#### ASSOCIATED INVENTION CLASSIFICATIONS

### 3. Other Natural Sources (cont.)

- 1.29000 MISCELLANEOUS SYNTHETIC PROCESSES
- 2.00000 ENERGY CONVERSION FROM NATURAL SOURCES(NOT INCLUDED BELOW)
- 2.20000 GEOTHERMAL
- 2.21000 ELECTRICAL POWER GENERATION
- 2.30000 OCEAN THERMAL
- 2.40000 WIND
- 2.41000 WIND DRIVEN MOTORS & COMPONENTS THEREOF
- 2.42000 WIND PROCESSES USING ENERGY FROM WIND
- 2.50000 WATER POWER PROCESSES (INLAND)
- 2.51000 ELECTRICAL POWER GENERATION BY WATER POWER (INLAND)
- 2.60000 OCEAN WATER POWER
- 2.61000 WAVE POWER SYSTEMS
- 2.62000 TIDAL POWER SYSTEMS
- 2.63000 OCEAN CURRENT POWER SYSTEMS
- 3.00000 ENERGY CONVERSION FROM SECONDARY SOURCES(NOT INCLUDED BELOW)
- 3.01000 ENERGY CONVERSION FROM SECONDARY SOURCES -THERMODYNAMICS
- 4. <u>Combustion Engines & Components</u>

3.10000 COMBUSTION ENGINES AND COMPONENTS THEREOF 3.10100 STIRLING ENGINES, MECHANICAL 3.10110 STIRLING ENGINES, THERMO 3.11000 RECIPROCAL ENGINES, MECHANICAL 3.11100 RECIPROCAL ENGINES, THERMO 3.12000 ROTARY ENGINES, MECHANICAL 3.12100 ROTARY ENGINES, THERMO 3.13000 TURBINE ENGINES, MECHANICAL 3.13100 TURBINE ENGINES, THERMO 3.14000 FUEL SYSTEMS, MECHANICAL 3.14100 CARBURETORS AND MODIFICATIONS THEREOF 3.14200 FUEL INJECTORS 3.14300 WATER INJECTORS 3.14400 MULTI-FUEL MIXERS 3.14500 AIR AND OXYGEN INJECTION 3.14600 COMBUSTION ANALYZERS 3.15000 IGNITION SYSTEMS 3.20000 STEAM ENGINES AND TURBINES, MECHANICAL 3.21000 STEAM ENGINES AND TURBINES, THERMO

#### TECHNICAL CATEGORY

#### ASSOCIATED INVENTION CLASSIFICATIONS

- 5. Transportation Systems; Vehicles & Components
  - 5.00000 TRANSPORTATION (NOT INCLUDED BELOW)
  - 5.10000 AIR TRANSPORTATION
  - 5.20000 WATER TRANSPORTATION
  - 5.30000 RAIL TRANSPORTATION
  - 5.40000 HIGHWAY VEHICLES AND SYSTEMS
  - 5.41000 HIGHWAYS, STREETS AND TRAFFIC CONTROL

5.42000 VEHICULAR POWER SYSTEMS(NOT INCLUDED BELOW)

- 5.42100 COMBUSTION ENGINE VEHICLES
- 5.42200 ELECTRIC VEHICLES
- 5.42300 STEAM VEHICLES
- 5.42400 HYBRID VEHICLES
- 5.43000 VEHICULAR COMPONENTS
- 5.43100 VEHICLE TRANSMISSIONS
- 5.43200 VEHICLE BRAKING SYSTEMS (INCLUDES REGEN. BRAKING SYSTEMS, ETC.) 5.43300 VEHICLE WHEELS AND TIRES
- 5.43400 VEHICLE SUSPENSIONS
- 5.43500 VEHICLE BODY AND CHASSIS DESIGN
- 5.43600 VEHICLE LUBRICATION SYSTEMS
- 5.43700 DRIVER AND FUEL ECONOMY CONTROL SYSTEMS
- 5.43800 VEHICLE AIR CONDITIONING
- 6. Building, Structures & Components

6.00000	BUILDINGS,	STRUCTURES	AND	COMPONENTS

- 6.10000 DESIGN, CONSTRUCTION AND CONSTRUCTION PRACTICES
- 6.20000 HEATING, COOLING, VENTILATING
- 6.20100 HEATING, COOLING AND VENTILATING INSTRUMENTS AND CONTROLS
- 6.21000 FIREPLACES
- 6.23000 BOILERS AND FURNACES (INDUSTRIAL)
- 6.23010 SMALL BOILERS, FURNACES AND STOVES
- 6.23100 BOILER AND FURNACE FLUE HEAT RECOVERY
- 6.23200 BOILER AND FURNACE AIR AND OXYGEN INDUCTORS AND INJECTORS
- 6.23300 BOILERS AND FURNACES FLUE VENT CONTROL
- 6.23400 BOILER AND FURNACE OIL BURNERS
- 6.23500 BOILER AND FURNACE STOKERS (INDUSTRIAL)
- 6.23600 BOILER AND FURNACE COMBUSTION CONTROLS AND EQUIPMENTS
- 6.23700 BOILER AND FURNACE COAL-OIL-WATER MIXTURES
- 6.23800 COMBUSTION, CHEMICAL

## TECHNICAL CATEGORY

# ASSOCIATED INVENTION CLASSIFICATIONS

## 6. Building, Structures & Components (cont.)

- 6.24000 ELECTRIC HEAT
  6.25000 HEAT PUMPS
  6.26000 AIR CONDITIONING & REFRIGERATION
  6.27000 VENTILATING SYSTEMS
  6.28000 HUMIDIFICATION SYSTEMS
  6.29000 SOLAR AIR CONDITIONING
  6.30000 HOT WATER SUPPLY
  6.31000 HEATING SYSTEMS(HOT WATER)
  6.32000 HOT WATER CONSERVATION DEVICES AND PRACTICES
- 6.40000 INSULATION AND INSULATING PRACTICES
- 6.50000 ELECTRICAL WIRING AND FIXTURES
- 6.60000 PLUMBING AND FIXTURES

## 7. Industrial Processes

7.01300 7.01400	CHEMICAL, CHEMICAL PROCESS INDUSTRIES UNIT OPERATIONS IRON AND STEEL PRIMARY NON-FERROUS METALS FABRICATED METAL PRODUCTS
7.01600	PACKAGING AND CONTAINERS
7.01700	MISCELLANEOUS - DESALINIZATION - ELECTROLYSIS
7.01800	SOLAR DISTILLATION PROCESSES
7.01900	
7.02000	TEXTILES, FABRICS, RUGS, CLOTHING
7.02100	
	CERAMICS
	COMPOSITE MATERIALS
7.02400	STACK GAS SCRUBBERS
7.03000	
7.04000	LUMBER, WOOD, WOOD PRODUCTS INDUSTRIAL PROCESSES
7.05000	
	PETROLEUM, OIL AND NATURAL GAS INDUSTRIES
7.07000	
7.08000	
7.09000	PRIMARY METALS
	AGRICULTURE EQUIPMENT AND FARM EQUIPMENT

ASSOCIATED INVENTION CLASSIFICATIONS

- 8. <u>Miscellaneous</u>
  - 1.30000 GREASES AND LUBRICANTS
  - 1.40000 REFINED PETROLEUM PRODUCTS AND ADDITIVES
  - 3.30000 AIR COMPRESSORS AND MOTORS
  - 3.40000 HYDRAULIC PUMPS AND MOTORS
  - 3.50000 ELECTRIC MOTORS AND GENERATORS
  - 3.51000 MISCELLANEOUS ELECTRIC POWER GENERATING SYSTEM
  - 3.60000 CHEMICAL THERMODYNAMICS
  - 3.61000 PHOTO CHEMICAL
  - 3.70000 MECHANICAL THERMODYNAMICS
  - 3.80000 HEAT PUMPS AND REFRIGERATION
  - 3.90000 HIGHWAY POWER GENERATORS
  - 4.00000 ENERGY STORAGE AND DISTRIBUTION(NOT INCLUDED BELOW)
  - 4.10000 ELECTRICAL TRANSMISSION
  - 4.11000 ELECTRICAL STORAGE (BATTERIES)
  - 4.12000 ELECTRICAL DISTRIBUTION (TRANSFORMERS, SWITCHGEARS, CONTROLS)
  - 4.20000 MECHANICAL ELECTRICAL GENERATION, STORAGE, DISTRIBUTION
  - 4.30000 THERMAL ENERGY STORAGE
  - 4.40000 PNEUMATIC ENERGY GENERATION, STORAGE, DISTRIBUTION
  - 4.50000 HYDRAULIC (WATER, PUMPED ENERGY STORAGE, ETC.)
  - 4.60000 MISCELLANEOUS POWER GENERATOR, STORAGE AND TRANSMISSION
  - 8.00000 CONSUMER PRODUCTS
  - 8.10000 CONSUMER EDUCATION AND BEHAVIOR
  - 8.20000 APPLIANCES
  - 8.30000 TOOLS
  - 8.40000 LAMPS AND LIGHT BULBS (6.5 FOR LIGHTING FIXTURES)
  - 9.00000 MISCELLANEOUS

## TECHNICAL CATEGORY ASSOCIATED INVENTION CLASSIFICATIONS

# 8. <u>Miscellaneous (cont.)</u>

9.50000	INSTRUMENTATION
9.50100	CHEMICAL, BIOCHEMICAL SENSORS AND INSTRUMENTATION
9.50200	ELECTRONIC, OPTICAL SENSORS AND INSTRUMENTATION
9.50300	HEAT TRANSFER, FLUID MECHANICS INSTRUMENTATION
9.51000	ELECTRICAL DEMAND, OVERLOAD OR CONSUMPTION INDICATORS
9.60000	COMPUTER - DATA STORAGE AND RETRIEVAL
9.70000	COMMUNICATION SYSTEMS AND EQUIPMENT
9.80000	PRINTING SYSTEMS AND EQUIPMENT

- 9. <u>Out of Scope and Unclassifiable</u>
  - 9.10000 NOT ENERGY-RELATED
  - 9.20000 NUCLEAR
  - 9.30000 PERPETUAL MOTION
  - 9.40000 UNINTERPRETABLE

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Mr. A. Jack Vitullo, Director, Office of Inventions & Innovative Prog	rams,
Conservation & Renewable Energy (CE-12), DOE, Forrestal Building, 5E-	
Washington, DC 20585	,
Weshington, Do 2000	
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IV. SOFFEENENTAAT NOTES	
Supersedes NBSIR 87-3673	
Supersedes MBSIK 07-5075	
Document describes a computer program; SF-185, FIPS Software Summary, is attached.	
<ol> <li>ABSTRACT (A 200-word or less factual summary of most significant information. If document include bibliography or literature survey, mention it here)</li> </ol>	s a significant
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