ENERGY RELATED INVENTIONS PROGRAM
A JOINT PROGRAM OF THE DEPARTMENT OF ENERGY AND THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
STATUS REPORT FOR RECOMMENDATIONS 1 THROUGH 300
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STATUS REPORT FOR RECOMMENDATIONS 1 THROUGH 300

U.S. DEPARTMENT OF COMMERCE
Technology Administration
National Institute of Standards and Technology
Office of Technology Evaluation and Assessment
Gaithersburg, MD 20899

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U.S. DEPARTMENT OF COMMERCE
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Robert M. White, Under Secretary for Technology

NATIONAL INSTITUTE OF STANDARDS
AND TECHNOLOGY
John W. Lyons, Director
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PREFACE

The Energy-Related Inventions Program was established in 1975. Since its inception, over 29,000 inventions have been evaluated. As of the printing of this report, 563 have been recommended to the Department of Energy. This report supersedes NISTIR 4333 and summarizes the status of recommended inventions 1 through 300. A companion report, NISTIR 4899, summarizes the remainder of the recommended inventions.
Section 1 Introduction

1.0 BACKGROUND

The Federal Nonnuclear Energy Research and Development Act of 1974 (Public Law 93-577) established a comprehensive national program, called the Energy-Related Inventions Program (ERIP), for research and development of all potentially useful energy sources and energy use technologies. The U.S. Department of Energy (DOE) conducts this program.

An important part of ERIP is to encourage innovation in the development of energy technology. To help DOE carry out this responsibility, the Act directs the National Institute of Standards and Technology (NIST) to evaluate all promising nonnuclear energy-related inventions. NIST is to give particular attention to those submitted by independent inventors and small companies. NIST has established the Office of Technology Evaluation and Assessment (OTEA) (formerly the Office of Energy Related Inventions (OERI)) to evaluate proposals.

1.1 OVERVIEW OF PROGRAM OPERATION

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

Inventions forwarded by the OTEA to DOE are recommended as "technically valid and worthy of consideration for Government support" under the ERIP Program. OTEA furnishes a report with the recommendation to explain in detail the advantages of the technology, as well as any qualifications of the recommendations, such as required testing. OTEA 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 OTEA at any stage of their development, whether conceptual, at the laboratory testing stage, or even in production or the process of being marketed. The level of support to be furnished depends largely on the amount 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.

DOE generally accepts the NIST recommendation and provides 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 funding 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 due to 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, as a result of this support, the inventor should 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 Technology Evaluation and Assessment. 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 is a sufficiently well-prepared disclosure to enable evaluation. If accepted, a formal evaluation is initiated.

The second step, First-Stage Evaluation, is a technical screening in which brief opinions are obtained from OTEA 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, has significant energy conservation or supply potential, and is deemed 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 SUPPORT PROCEDURES (DOE)

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 December 1991 DOE has awarded a total of $29.6M to 394 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.

1.4 SUPPLEMENTARY ACTIVITIES

1.4.1 National Innovation Workshops (NIW)

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 OTEA. 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 two-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 providing guidance and financial support. The federal role is catalytic in nature in that Workshop feasibility is demonstrated with an expectation that the regional committee will continue to hold Workshops and similar activities in the future without federal involvement.

Sixty four NIWs have been held to date, including five in calendar year 1991. Six NIWs are scheduled for calendar year 1992. Attendance has averaged about 250 inventors and small businesses.
1.4.2 Commercialization Planning Workshops (CPW)

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 its initial review of the recommendation (Analysis).

1.5 NATURE OF THIS REPORT

This report comprises an introductory section (Section 1) and a report section (Section 2).

Section 2 is the main body of the report and contains a brief description of each invention, 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.
2.0 Introduction

This section contains an index and brief descriptions of those inventions recommended by the Office of Technology Evaluation and Assessment 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 receipt, 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 3 presents four cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, Contact name, invention classification, and inventor state.

2.1 Index to Recommended Inventions

The following is an index to the recommended inventions showing invention DOE No., invention status and title. Status is described in terms of the following steps in the DOE support process.

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis</td>
<td>DOE review of recommendation. Inventor has submitted description of proposed work. Options for support are investigated.</td>
</tr>
<tr>
<td>Decision Phase</td>
<td>Final Statement of Work derived from above options. Inventor requested to submit supporting documents for procurement action. Prepare purchase request.</td>
</tr>
<tr>
<td>Other Assistance</td>
<td>Federal Laboratory testing, or business planning assistance, often leading to a grant award outside of ERIP.</td>
</tr>
<tr>
<td>Procurement</td>
<td>Request for grant or contract in the procurement process.</td>
</tr>
<tr>
<td>Award</td>
<td>Inventor awarded grant or contract. Work commences. Final report due at end of work period.</td>
</tr>
<tr>
<td>No Basis For Support</td>
<td>Sources of support within DOE have been investigated, but recommendation will not be supported, e.g., inventor not interested, no area of DOE support could be identified, conflict with other DOE awardees being supported.</td>
</tr>
<tr>
<td>Complete</td>
<td>Inventor has complied with all the requirements of the Statement of Work or ERIP assistance is terminated.</td>
</tr>
</tbody>
</table>

DATE: 31 DECEMBER 1991
<table>
<thead>
<tr>
<th>DOE No.</th>
<th>STATUS</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>No DOE Support</td>
<td>Demand Metering System for Electric Energy</td>
</tr>
<tr>
<td>0002</td>
<td>Other Assistance</td>
<td>Fuel Miser</td>
</tr>
<tr>
<td>0003</td>
<td>Complete</td>
<td>Hydrogen Generation from Producer Gas by Oxidation-Reduction of Tin</td>
</tr>
<tr>
<td>0004</td>
<td>Complete</td>
<td>Power Conversion of Energy Fluctuations</td>
</tr>
<tr>
<td>0005</td>
<td>Complete</td>
<td>Diesel Engine Conversion System for Gasoline Engines</td>
</tr>
<tr>
<td>0006</td>
<td>Complete</td>
<td>Micro-Carburetor</td>
</tr>
<tr>
<td>0007</td>
<td>Complete</td>
<td>Hydraulically Powered Waste Disposal Device</td>
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<tr>
<td>0008</td>
<td>Complete</td>
<td>Inertial Storage Transmission</td>
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<tr>
<td>0009</td>
<td>Complete</td>
<td>Heat/Electric Power Conversion via Charged Aerosols</td>
</tr>
<tr>
<td>0010</td>
<td>Complete</td>
<td>Scrap Metal Preheating Method and Apparatus</td>
</tr>
<tr>
<td>0011</td>
<td>Complete</td>
<td>Solar Collector</td>
</tr>
<tr>
<td>0012</td>
<td>Complete</td>
<td>High Frequency Energy Saving Device</td>
</tr>
<tr>
<td>0013</td>
<td>Complete</td>
<td>Anti-Pollution System</td>
</tr>
<tr>
<td>0014</td>
<td>Complete</td>
<td>Aerodynamic Lift Translator</td>
</tr>
<tr>
<td>0015</td>
<td>Complete</td>
<td>Estacron</td>
</tr>
<tr>
<td>0016</td>
<td>Complete</td>
<td>Method and Apparatus for Vacuum Drying of Commodities</td>
</tr>
<tr>
<td>0017</td>
<td>Complete</td>
<td>Osmotic-Hydro Power Generation</td>
</tr>
<tr>
<td>0018</td>
<td>Complete</td>
<td>The Control of the Analysis of Low Carbon Aluminum Steels Using Oxygen Sensors and Iron-Aluminum Alloy</td>
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<tr>
<td>0019</td>
<td>Complete</td>
<td>Phenol Methylene Foam Rigid Board Insulation</td>
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<td>0020</td>
<td>Complete</td>
<td>Thermal Shade</td>
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<tr>
<td>0021</td>
<td>Complete</td>
<td>Waste Oil Utilization System</td>
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<tr>
<td>0022</td>
<td>No DOE Support</td>
<td>Fuel Burner Attachment</td>
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<td>0023</td>
<td>No DOE Support</td>
<td>Microgas Dispersions</td>
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<td>0024</td>
<td>Complete</td>
<td>Can and Bottle Crushing Apparatus</td>
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<td>0025</td>
<td>Complete</td>
<td>Sulfur Removal from Producer Gas-High Temperature</td>
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<td>0026</td>
<td>Complete</td>
<td>Compact Energy Reservoir</td>
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<td>0027</td>
<td>Complete</td>
<td>Waste Heat Utilization for Commercial Cooking Equipment</td>
</tr>
<tr>
<td>0028</td>
<td>Other Assistance</td>
<td>Ultraflo</td>
</tr>
<tr>
<td>0029</td>
<td>Complete</td>
<td>Tuned Sphere Stable Ocean Platforms</td>
</tr>
<tr>
<td>0030</td>
<td>Complete</td>
<td>Method of Removing Sulfur Dioxide from Flue Gases</td>
</tr>
<tr>
<td>0031</td>
<td>Complete</td>
<td>Ceramic Rotors and Vanes</td>
</tr>
<tr>
<td>0032</td>
<td>Complete</td>
<td>Wood Gas Reactor</td>
</tr>
<tr>
<td>0033</td>
<td>Complete</td>
<td>Temperature Indicating Device</td>
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<td>0034</td>
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<td>Delphic Thermogenic Paint (Heat Film)</td>
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<td>0035</td>
<td>No DOE Support</td>
<td>Utilization of Solar Energy by Solar Pond System</td>
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<tr>
<td>0036</td>
<td>Complete</td>
<td>Computerstat</td>
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<td>0037</td>
<td>No DOE Support</td>
<td>Hotwater Engine</td>
</tr>
<tr>
<td>0038</td>
<td>Complete</td>
<td>Reduction Volatilizations</td>
</tr>
<tr>
<td>0039</td>
<td>No DOE Support</td>
<td>Lawler Steam Generator and Lawler System of Thermal Oil Recovery</td>
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<tr>
<td>0040</td>
<td>No DOE Support</td>
<td>Improved Equipment and Process for Production of Blue Water Gas</td>
</tr>
<tr>
<td>0041</td>
<td>No DOE Support</td>
<td>Fabrication of Photovoltaic Devices by Solid Phase Growth of Semi-conductors from Metal Layers</td>
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<td>0042</td>
<td>Complete</td>
<td>Flue Baffle Assembly</td>
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<tr>
<td>0043</td>
<td>Complete</td>
<td>Thermal Gradient Utilization Cycle</td>
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New Working Fluids for Increasing the Cycle Efficiencies of Thermal

Bulk Cure Tobacco Barn with Improvements

Thexon Dehydration

Wastewater Aeration Power Control Device

Howald Combustor

Automatic Control System for Water Heaters

Scotsman Fuel Energizer

Thermal Efficiency Construction

Air Wedge

High Efficiency Water Heater

Optimizer

Electrically Heated Sucker-Rod

Flexaflo-The Wet Fuel Dryer

X-5 Smoke Eliminator

A Multiple Spark System Using Inductive Storage

The Volumetric Gas Turbine

Electric Transport Refrigerator

Fuel Preparation Process

Tapered Plate Annular Matrix

Fluorobulb

The Mahalla Process--A Hydrometallurgical Method for Extracting Copper

WattVendor

Heat Extractor

Windmill Using Hydraulic System for Energy Transfer and Speed Control

Other Assistance

Under Compression and Over Compression Free Helical Screw Rotary Compressor

Ionic Fuel Control System for the Internal Combustion Engine

Air Cooled Compressor Heat Recovery and Heat Circulation System plus Ambient Air Filter and Air Cleaner

Knight Guard

Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants

INTECH

A Solid Electrolyte Galvanic Solar Energy Conversion Cell

Coke Quenching Steam Generator

The Ross Furnace

Variable Heat Refrigeration System

System for High Efficiency Power Generation from Low Temperature Sources

Oil Well Bit Insert (Tooth), Cutting Article, Ablative

Improved Unfired Refractory Brick

Flash Polymerization

Cool Air Induction

Vertical Solar Louvers

Kinetic Energy Type Pumping System

Dielectric Windowshade

Coke Desulfurization

Recovering Uranium From Coal in Situ
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<td>0088</td>
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<td>System-100</td>
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<td>0089</td>
<td>Complete</td>
<td>Continuous Casting Process and Apparatus</td>
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<tr>
<td>0090</td>
<td>No DOE Support</td>
<td>Grain Dryer</td>
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<tr>
<td>0091</td>
<td>Complete</td>
<td>Mine Brattice</td>
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<tr>
<td>0092</td>
<td>No DOE Support</td>
<td>Tri-Water, A Combination Air Conditioning and Fire Protection System for a Building.</td>
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<td>0093</td>
<td>Complete</td>
<td>Shelander-Burrows Process for Recovery of Metallic Values from Smelter Emissions</td>
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<td>0094</td>
<td>Complete</td>
<td>Lantz Converter</td>
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<tr>
<td>0095</td>
<td>No DOE Support</td>
<td>Omni-Horizontal Axis-Wind Turbine</td>
</tr>
<tr>
<td>0096</td>
<td>Complete</td>
<td>Leavell, Vibrationless, Low Noise, High Efficiency, Pneumatic Percussion Tools and Air Compressor Systems</td>
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<tr>
<td>0097</td>
<td>Complete</td>
<td>Water Drying System</td>
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<tr>
<td>0098</td>
<td>Complete</td>
<td>Process Development to Conserve Energy and Material---(in the manufacture of)---Bearings</td>
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<td>0099</td>
<td>Complete</td>
<td>Light Weight Composite Trailer Tubes</td>
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<td>0100</td>
<td>Complete</td>
<td>Solaroll</td>
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<tr>
<td>0101</td>
<td>Complete</td>
<td>Controlled Combustion Engine</td>
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<tr>
<td>0102</td>
<td>Complete</td>
<td>Method of Burning Residual Fuel Oil in Distillate Fuel Oil Burners</td>
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<tr>
<td>0103</td>
<td>Complete</td>
<td>Low Voltage Ionic Fluorescent Light Bulb</td>
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<td>0104</td>
<td>Complete</td>
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<td>Complete</td>
<td>High Frequency Furnace</td>
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<td>0106</td>
<td>No DOE Support</td>
<td>Deep Shaft Hydro-Electric Power</td>
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<td>0107</td>
<td>Complete</td>
<td>Waste Products Reclamation Process</td>
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<td>Processing Recovery of Aluminum</td>
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<td>Hydrostatic Meat Tenderizer</td>
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<td>Improved Windpower Generating System</td>
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<td>0111</td>
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<td>Haspert Mining System</td>
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<td>0112</td>
<td>Complete</td>
<td>Pump</td>
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<td>0113</td>
<td>Complete</td>
<td>Wallace Mold Additive System</td>
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<td>0114</td>
<td>No DOE Support</td>
<td>New Energy-Saving Tire for Motor Vehicles</td>
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<td>0115</td>
<td>Complete</td>
<td>Refrigeration System</td>
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<td>No DOE Support</td>
<td>Model 5000 ASEPAK System</td>
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<td>0117</td>
<td>Complete</td>
<td>&quot;Solarspan&quot; Prism Trap</td>
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<td>0118</td>
<td>Complete</td>
<td>Energy Adaptive Control of Precision Grinding</td>
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<td>0119</td>
<td>No DOE Support</td>
<td>Air Ratio Controller (AERTROL)</td>
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<td>0120</td>
<td>Complete</td>
<td>Vapor Heat Transfer Commercial Griddle</td>
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<td>0121</td>
<td>No DOE Support</td>
<td>Solar Space Heating for both Retrofit and New Construction</td>
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<td>0122</td>
<td>Complete</td>
<td>Lean Limit Controller</td>
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<td>0123</td>
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<td>Comminution of Ores by a Low-Energy Process</td>
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<td>Solar Collector</td>
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<td>Complete</td>
<td>The Turbulator Burner System</td>
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<td>0126</td>
<td>Complete</td>
<td>Vaclaim</td>
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<td>0127</td>
<td>Complete</td>
<td>Process and Apparatus to Produce Crude Oil from Tar Sands</td>
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<td>Complete</td>
<td>Continuous Distillation Apparatus and Method</td>
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<tr>
<td>---------</td>
<td>-------------------</td>
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<td>0129</td>
<td>Complete</td>
<td>Super U System - Snap Strap</td>
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<td>0130</td>
<td>No DOE Support</td>
<td>Furnace Input Capacity Trimming Switch</td>
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<td>0131</td>
<td>Complete</td>
<td>Valve Deactuator for Internal Combustion Engines</td>
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<td>0132</td>
<td>No DOE Support</td>
<td>Process for Reclaiming and Upgrading Thin-Walled Malleable Waste Material</td>
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<td>0133</td>
<td>Complete</td>
<td>AUTOTHERM Car Comfort System</td>
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<td>Complete</td>
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<td>Improved Method of Electroplating Aluminum for Corrosion Resistance</td>
</tr>
<tr>
<td>0296</td>
<td>Complete</td>
<td>Shower Bath Economizer</td>
</tr>
<tr>
<td>0297</td>
<td>Complete</td>
<td>Series (Two-Wire) V-Controller</td>
</tr>
<tr>
<td>0298</td>
<td>Complete</td>
<td>Three Tenths Degree Kelvin Closed Cycle Refrigeration System</td>
</tr>
<tr>
<td>0299</td>
<td>Complete</td>
<td>Process for Using Cocurrent Contacting Distillation Column</td>
</tr>
<tr>
<td>0300</td>
<td>Complete</td>
<td>Casing Stabbing Apparatus</td>
</tr>
</tbody>
</table>
2.2 Brief Descriptions of Recommended Inventions

The following presents brief descriptions of each of the inventions recommended by the Office of Technology Evaluation and Assessment 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 3 presents four cross reference lists for locating specific invention descriptions. These lists provide cross reference between DOE No. and Inventor name, DOE No. and Contact name, DOE No. and Inventor state, and Doe No. 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: Willard Graves  
State: MD  
Status: No DOE Support  
Status Date: 07/07/77  
OERI No.: 000019

Patent Status: Patent Number: 3683343
Development Stage: Concept Development
Technical Category: Miscellaneous

Recv. by NIST: 05/23/75  
Recom. by NIST: 02/12/76

Summary: No area of appropriate DOE support 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.

Inventor: Rita Paleschuck  
State: NY  
Status: Other Assistance  
Status Date: 07/15/76  
OERI No.: 000100

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

Recv. by NIST: 07/16/75  
Recom. by NIST: 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

Summary: A grant 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

Summary: A grant 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
Description: The system is proposed for converting a standard gasoline auto engine into a diesel engine
Inventor: George C Austin  Contact: George C Austin
State : CA  Austin Tool Company
          2239 North Loma Ave.
          South El Monte CA 91605
          213-442-7338
Status: Complete  Status Date: 11/20/78  OERI No.: 000088
Patent Status : Not Applied For
Development Stage : Engineering Design
Technical Category: Combustion Engines & Components
Recv. by NIST: 06/30/75
Recom. by NIST: 08/12/76
Award Date: 11/20/77  Award Amount: $18,000  Grant No: EM78-G-01-4263
Contract Period: 11/20/77 - 11/20/78
Summary: A grant was awarded 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 rebuilt.

*****************************************************************************

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: Albert B Csonka  Contact: Albert B Csonka
State : NY  FERRO Technical Co.
          109 Larchmont Road
          Buffalo NY 14214
          716-833-3122
Status: Complete  Status Date: 02/13/80  OERI No.: 000225
Development Stage : Engineering Design
Technical Category: Combustion Engines & Components
Recv. by NIST: 09/15/75
Recom. by NIST: 08/17/76
Award Date: 09/15/77  Award Amount: $193,500  Grant No:
Contract Period: 09/15/77 - 12/17/80
Summary: A grant 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

Description: The device is to replace conventional food waste disposal units which are
powered by electric motors.

Inventor:  David Virley            Contact: Len Spelber
State :  CA                            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 Number: 3700178
Development Stage : Production & Marketing
Technical Category: Miscellaneous

Recv. by NIST : 11/10/75
Recom. by NIST : 08/26/76
Award Date : 08/20/78    Award Amount: $28,000 Grant No: EM78-G-01-5034
Contract Period: 08/20/78 - 08/20/79

Summary: A grant 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 grantee.

******************************************************************************

DOE No: 0008    DOE Coord: D.G. Mello

Title:        Inertial Storage Transmission

Description: 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 for use in accelerating the
vehicle.

Inventor: Vincent E Carman            Contact: Fred Tunmore
State :  OR                            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 Number: 3903696
Development Stage : Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST : 11/12/75
Recom. by NIST : 09/03/76
Award Date : 07/21/81    Award Amount: $49,541 Grant No: FG01-81GS15069
Contract Period: 07/21/81 - 08/31/82

Summary: A grant 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 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

Development Stage :  Laboratory Test
Technical Category:  Miscellaneous

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

Summary:  A grant 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 NIST :  11/11/75
Recom. by NIST :  09/29/76
Award Date :  12/23/77  Award Amount:  $170,000  Grant No: EM78-G-01-1797
Contract Period:  12/23/77 - 12/23/77

Summary:  A grant was awarded to design and fabricate hardware; and to operate a system, utilizing preheat 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 plant 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  Contact: Ronald H Smith
State : CA  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 NIST : 09/09/75
Recom. by NIST : 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 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: Frank R Summa  Contact: Thomas J Russo
State : NY  100 Forest Avenue
          Staten Island NY 10310
          212-273-0248

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

Development Stage : Engineering Design
Technical Category: Buildings, Structures & Components

Recv. by NIST : 10/28/75
Recom. by NIST : 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 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  
Patent Status : Patent Number: 3861142  
Development Stage : Limited Production/Marketing  
Technical Category: Transportation Systems, Vehicles & Components  
Recv. by NIST : 06/03/75  
Recom. by NIST : 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 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.  
Inventor: Daniel J Schneider  
State : TX  
Contact: Daniel J Schneider  
Route #1, Box #81  
Justin TX 76247  
817-430-0174  
Status: Complete  
Status Date: 01/11/79  
Patent Status : Not Applied For  
Development Stage : Production Engineering  
Technical Category: Other Natural Sources  
Recv. by NIST : 08/15/75  
Recom. by NIST : 09/30/76  
Award Date : 01/11/78  
Award Amount: $ 50,000  
Grant No: EG-77-G01-7114  
Contract Period: 01/11/78 - 01/11/79  
Summary: A grant 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.Mello  

**Title:** Estacron  

**Description:** Estacron consists of an aggregate of Portland cement, fly ash, stack dust, and polyethylene. It has significant potential as a light-weight and energy-conservative construction material.

**Inventor:** Dante A Raponi  
**Contact:** James L Bullock  
Suite #403, Minges Building  
P. O. Box #7151  
Greenville NC 27834  
919-752-1138

**Status:** Complete  
**Status Date:** 09/28/79  
**OERI No.:** 000393

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

**Recv. by NIST:** 10/28/75  
**Recom. by NIST:** 09/30/76  
**Award Date:** 09/28/79  
**Award Amount:** $101,388  
**Grant No:** FG01-79IR10221  
**Contract Period:** 09/28/79 - 01/31/82

**Summary:** A grant was awarded to conduct an application engineering and economic analysis of the material, Estacron, in order to assess its material characteristics and to recommend product applications. Results appear indeterminate. Inventor seeks funding for pilot plant design.

### 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 to a vacuum.

**Inventor:** John W Bruce  
**Contact:** John W Bruce  
West Highway, #16  
Mitchell SD 57301  
605-996-8335

**Status:** Complete  
**Status Date:** 03/30/81  
**OERI No.:** 000486

**Patent Status:** Patent Number: 3914874  
**Development Stage:** Engineering Design  
**Technical Category:** Industrial Processes

**Recv. by NIST:** 10/10/75  
**Recom. by NIST:** 11/30/75  
**Award Date:** 03/30/80  
**Award Amount:** $52,917  
**Grant No:** FG01-78IR04211  
**Contract Period:** 03/30/80 - 03/30/81

**Summary:** A grant was awarded to design, fabricate, and demonstrate a device for efficiently drying agriculture commodities. The Montana Energy and MHD Development Institute is managing the technical aspects of the program. In addition, the inventor received $32,000 to dry whey from a private sector source. Results from all tests appear indeterminate. Inventor is interested in selling or licensing patent rights and has ceased work on the technology.
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.
Interotechnology Corp.
100 Main Street
Warrenton VA 22186
Status: Complete
Status Date: 05/01/78
OERI No.: 000619
Development Stage: Laboratory Test
Technical Category: Other Natural Sources
Recv. by NIST: 01/21/76
Recom. by NIST: 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 was awarded 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 Al "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
OERI No.: 000177
Patent Status: Patent Number: 3773641 and others
Development Stage: Production & Marketing
Technical Category: Industrial Processes
Recv. by NIST: 08/01/75
Recom. by NIST: 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 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  
Title: Phenol Methylene Foam Rigid Board Insulation  
Description: 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 toxicity of its combustion products.  
Inventor: Walter J Hasselman, Jr  
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

Development Stage: Limited Production/Marketing  
Technical Category: Buildings, Structures & Components

Recv. by NIST: 08/18/75  
Recom. by NIST: 02/04/77  
Award Date: 09/13/78  
Award Amount: $29,900  
Grant No: EU78-G-01-6603  
Contract Period: 09/13/78 - 09/12/79

Summary: A grant 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.

DOE No: 0020  
Title: Thermal Shade  
Description: 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 layers to reduce heat transfer.  
Inventor: Thomas P Hopper  
Contact: Thomas P Hopper  
103 Old Loudon Road  
Concord NH 03301  
603-225-7554

Status: Complete  
Status Date: 01/06/79  
OERI No.: 000839

Development Stage: Production Engineering  
Technical Category: Buildings, Structures & Components

Recv. by NIST: 03/26/76  
Recom. by NIST: 02/28/77  
Award Date: 05/17/78  
Award Amount: $50,707  
Grant No: EM78-G014268  
Contract Period: 05/17/78 - 01/06/79

Summary: A grant 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.
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  Status Date: 03/30/81  OERI No.: 000613

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

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

Summary: A grant 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.

*****************************************************************************

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 NIST : 12/29/75  Recom. by NIST : 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

Description: 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 mixture.

Inventor: International MGD Companies        Contact: James E Luber
State : MI

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

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

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

Summary: 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 inquiries.

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

Title: Can and Bottle Crushing Apparatus

Description: 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.

Inventor: Drew W Morris        Contact: Drew W Morris
Country :

Status: Complete    Status Date: 05/07/81    OERI No.: 000819

Development Stage : Production Engineering
Technical Category: Industrial Processes

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

Summary: A grant 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
Contact: Donald C Erickson
- Energy Concepts Co.
  1704 South Harbor Lane
  Annapolis MD 21401
  301-266-6521
Status: Complete       Status Date: 07/09/83         OERI No.: 000002
Patent Status: Not Applied For
Development Stage: Laboratory Test
Technical Category: Industrial Processes
Recv. by NIST: 05/07/75
Recom. by NIST: 06/06/77
Award Date: 07/09/81    Award Amount: $ 91,032 Grant No: FG01-81CS15059
Contract Period: 07/09/81 - 07/09/83
Summary: An award was granted 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 #3.
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
Contact: Seymour Jarmul
96 Windsor Gate
North Hills NY 11040
516-365-9886
Status: Complete       Status Date: 10/26/79         OERI No.: 000782
Patent Status: Not Applied For
Development Stage: Prototype Test
Technical Category: Miscellaneous
Recv. by NIST: 03/17/76
Recom. by NIST: 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 was awarded for a 9 month project to design, construct and
functionally test 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
Status: Complete  Status Date: 03/25/80  OERI No.: 001205
Patent Status: Patent Number: 4084745
Development Stage: Limited Production/Marketing
Technical Category: Buildings, Structures & Components
Recv. by NIST: 08/13/76  Recom. by NIST: 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 was awarded to fabricate 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  State: OH
Status: Other Assistance  Status Date: 10/24/78  OERI No.: 000161
Patent Status: Patent Number: 3668884
Development Stage: Limited Production/Marketing
Technical Category: Buildings, Structures & Components
Recv. by NIST: 06/30/75  Recom. by NIST: 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  Contact: Kenneth E Mayo
State : NH  Tuned Sphere Intl., Inc
          -  11 Lock Street
          -  Nashua NH  03060

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

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

Recv. by NIST : 12/18/75
Recom. by NIST : 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 was granted 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.

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

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

Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv. by NIST : 12/08/75
Recom. by NIST : 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 Stage : Engineering Design
Technical Category: Combustion Engines & Components
Recv. by NIST: 09/19/75
Recom. by NIST: 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 partnerships. DOE inventions program is assisting by identifying financial resources. An additional $6,250 was awarded on April 15, 1985.

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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: Robert A Caughey
State : NH
Contact: John C Calhoun, President
Forest Fuels, Inc.
P. O. Box #207
Antrim NH 03440
603-876-3353
Status: Complete                   Status Date: 03/16/81                  OERI No.: 001174
Development Stage : Prototype Development
Technical Category: Fossil Fuels
Recv. by NIST: 08/09/76
Recom. by NIST: 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
Title:            Temperature Indicating Device
Description:      Device to identify malfunction of steam trap.
Inventor:         Joseph B Vogt
State:            MI
Contact:          Joseph B Vogt
                   5391 Ostrum Road
                   Attica MI 48412
                   313-724-0106
Status: Complete  Status Date: 08/23/80   OERI No.: 000905
Development Stage: Engineering Design
Technical Category: Buildings, Structures & Components
Recv. by NIST:    04/19/76
Recom. by NIST:   05/31/77
Award Date:       08/24/79   Award Amount: $ 10,135 Grant No: FG01-79IR10272
Contract Period:  08/24/79 - 08/23/80
Summary:          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.

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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.
Inventor:         Hal Ellis
State:            FL
Contact:          Alex DeFonso
                   Jerry Woolman
                   4261 Howard Avenue
                   Kensington MD 20795
                   301-595-5252
Status: Complete  Status Date: 03/31/83   OERI No.: 001588
Patent Status:    Patent Number: 3923697 and others
Development Stage: Production & Marketing
Technical Category: Buildings, Structures & Components
Recv. by NIST:    11/11/76
Recom. by NIST:   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 building 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.
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: Gulab Chand Jain
Country: India
Status: No DOE Support  Status Date: 12/12/77  OERI No.: 000336
Patent Status: Not Applied For
Development Stage: Concept Development
Technical Category: Direct Solar
Recv. by NIST: 10/23/75
Recom. by NIST: 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
Description: Computerstat is a computerized thermostat set-back device that appears to be more energy-conserving than a conventional clock-thermostat.
Inventor: Richard P Gingras  Contact: Richard P Gingras
State: CT  41 Kenoria Avenue  Danbury CT 06810  203-792-8877
Status: Complete  Status Date: 09/01/79  OERI No.: 001283
Development Stage: Engineering Design
Technical Category: Buildings, Structures & Components
Recv. by NIST: 08/04/76
Recom. by NIST: 06/24/77
Award Date: 02/24/78  Award Amount: $ 65,000  Grant No: EM78-G014208
Contract Period: 02/24/78 - 09/01/79
Summary: 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 companies.
DOE No: 0037  DOE Coord: G.K.Ellis
Title: Hotwater Engine
Description: The proposal is for the production of mechanical power from low grade heat.

Inventor: Lawrence E Bissell  Contact: Lawrence E Bissell
State : CA
Status: No DOE Support  Status Date: 10/31/77  OERI No.: 000565

Development Stage : Concept Development
Technical Category: Miscellaneous
Recv. by NIST : 01/02/76
Recom. by NIST : 08/05/77
Summary: 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: John McCallum  Contact: John McCallum
State : OH
5926 Beechview Drive
Worthington OH 43085
614-885-8416
Status: Complete  Status Date: 07/01/79  OERI No.: 000558

Patent Status : Not Applied For
Development Stage : Prototype Development
Technical Category: Industrial Processes
Recv. by NIST : 01/02/76
Recom. by NIST : 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.
ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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: James H Lawler

State: CA  
Status: No DOE Support  
Status Date: 02/01/79  
OERI No.: 000219

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

Recv. by NIST: 08/29/75
Recom. by NIST: 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.

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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  
Contact: Roland P Soule

State: NY  
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 NIST: 03/08/76
Recom. by NIST: 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
Description: The purpose of the invention is to provide a more efficient and economical process for fabricating solar cells.
State : MA
Status: No DOE Support  Status Date: 11/07/78  OERI No.: 000580
Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Direct Solar
Recv. by NIST : 01/12/76
Recom. by NIST : 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  Contact: Everett Millard
State : IL
4030 Irving Park Road
Chicago IL 60641
312-777-4030
Status: Complete  Status Date: 09/08/80  OERI No.: 000347
Patent Status : Not Applied For
Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & Components
Recv. by NIST : 09/03/75
Recom. by NIST : 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: Complete
Status Date: 08/04/80
OERI No.: 001263

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

Recv. by NIST : 07/23/76
Recom. by NIST : 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 NIST : 08/24/76
Recom. by NIST : 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

Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes

Recv. by NIST : 01/19/77
Recom. by NIST : 09/20/77
Award Date : 05/31/78  Award Amount: $ 54,980 Grant No: EM78-G014254
Contract Period: 05/31/78 - 06/01/79

Summary: A grant of $54,980 was awarded to manufacture, install on-site, and demonstrate a new type tobacco curing barn. Test data confirm this type barn yields significant energy savings compared to earlier designs and present industry standards. Final report has been received and accepted as meeting all the requirements of the grant. The business was not successful because, the inventor claims, of institutional barriers.

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.: 000679

Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv. by NIST : 02/04/76
Recom. by NIST : 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 Number: 3740320 and others
Development Stage: Engineering Design
Technical Category: Industrial Processes

Recv. by NIST: 02/07/77
Recom. by NIST: 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 NIST: 07/10/75
Recom. by NIST: 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 combustor design.
ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0049  DOE Coord: D. G. Mello
Title: Automatic Control System for Water Heaters
Description: Invention is a valve to shut off water heater energy source, and to shut off cold water input in the event of a burst tank. It may also be applicable to solar systems.
Inventor: Wayne S Boals  Contact: Wayne S Boals
State : CA
Status: No DOE Support  Status Date: 09/01/78  OERI No.: 001192
Patent Status : Not Applied For
Development Stage : Production Engineering
Technical Category: Buildings, Structures & Components
Recv. by NIST : 07/22/76
Recom. by NIST : 10/31/77
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: John T Benton  Contact: Robert Cameron
State : IL  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 Number: 3934569
Development Stage : Production & Marketing
Technical Category: Combustion Engines & Components
Recv. by NIST : 07/02/75
Recom. by NIST : 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: Richard B Bentley
State:    NY
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 NIST : 03/19/76
Recom. by NIST : 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
Description: The device is an aerodynamic drag device for use with trucks, mounted on the front face of the trailer or the cargo box.
Inventor: Robert G Landry          Contact: Sherman R Jenney
State:    ME
Status:    No DOE Support          Status Date: 11/28/79          OERI No.: 000172
Patent Status : Patent Number: 3740320
Development Stage: Concept Development
Technical Category: Transportation Systems, Vehicles & Components
Recv. by NIST : 08/13/75
Recom. by NIST : 12/21/77
Summary:    On November 28, 1979, the inventor was advised that there is no basis for DOE support because there are devices already installed 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
Development Stage: Prototype Development
Technical Category: Buildings, Structures & Components
Recv. by NIST: 06/15/77
Recom. by NIST: 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.

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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 Number: 3974412 and others
Development Stage: Working Model
Technical Category: Combustion Engines & Components
Recv. by NIST: 08/25/76
Recom. by NIST: 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.

31 DECEMBER 1991
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
State: AR
Status: No DOE Support
Status Date: 12/29/80
OERI No.: 002523
Patent Status: Patent Number: 3859503
Development Stage: Concept Development
Technical Category: Fossil Fuels
Recv. by NIST: 07/22/77
Recom. by NIST: 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.

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
Status: Complete
Status Date: 12/29/80
OERI No.: 002238
Patent Status: Patent Number: 3976018
Development Stage: Prototype Test
Technical Category: Industrial Processes
Recv. by NIST: 05/24/77
Recom. by NIST: 03/31/78
Award Date: 12/29/79 Award Amount: $111,220 Grant No: EU78-G-01-6593
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 bagassil 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
Description:    A two-stage combustion chamber suitable for adapting existing incinerators to
                meet current EPA pollution requirement.
Inventor:       Robert H Wieken
State :         MN

Contact:        Robert H Wieken
                411 Betty Lane, West
                - Saint Paul MN 55118
                612-457-8227

Status: Complete    Status Date: 04/01/81     OERI No.: 000274
Patent Status : Patent Number: 3812297
Development Stage: Prototype Development
Technical Category: Buildings, Structures & Components

Recv. by NIST : 07/23/75
Recom. by NIST : 03/31/78
Award Date : 04/01/79    Award Amount: $ 55,000 Grant No: FG01-79IR10097
Contract Period: 04/01/79 - 04/01/81

Summary: 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 burning of all grades of fuel oil.

*****************************

DOE No: 0058     DOE Coord: D. G. Mello
Title:           A Multiple Spark System Using Inductive Storage
Description:    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
missfire rate.
Inventor:       Charles M Kirk
State :         FL

Contact:        Charles M Kirk
                1965 Arrowhead Lane, NE
                Saint Petersburg FL 33703
                813-529-7878

Status: Complete    Status Date: 02/26/79     OERI No.: 001922
Development Stage: Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST : 03/10/77
Recom. by NIST : 03/31/78
Award Date : 02/26/78    Award Amount: $ 59,079 Grant No: FG01-78IR10025
Contract Period: 02/26/78 - 02/26/79

Summary: A grant of $59,079 was awarded to manufacture ten (10) prototype "MSS" units.
Three units were installed on selected vehicles and dynamometer tested at
University of Florida. ERIP assistance completed.

31 DECEMBER 1991
DOE No: 0059  DOE Coord: G.K. Ellis
Title: The Volumetric Gas Turbine
Description: A positive displacement, modified Brayton cycle engine, for use primarily in automobiles.
Inventor: Bernard Zimmern  Contact: Bernard Zimmern
Country: France
Status: No DOE Support  Status Date: 09/24/82  OERI No.: 001680
Patent Status: Not Applied For
Development Stage: Concept Development
Technical Category: Combustion Engines & Components
Recv. by NIST: 11/15/76
Recom. by NIST: 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  Contact: William H Cone
State: IA
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 Number: 3778651 and others
Development Stage: Prototype Test
Technical Category: Miscellaneous
Recv. by NIST: 12/13/76
Recom. by NIST: 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 Number: 3932145
Development Stage: Concept Development
Technical Category: Industrial Processes
Recv. by NIST: 06/14/76
Recom. by NIST: 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  Status Date: 10/01/81  OERI No.: 001029
Patent Status: Not Applied For
Development Stage: Production Engineering
Technical Category: Miscellaneous
Recv. by NIST: 06/28/76
Recom. by NIST: 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

Description: Fluorescent bulb designed to directly replace an incandescent bulb. 20 watt bulb and ballast can be easily separated. Built on Edison screwbase.

Inventor: Thomas LoGiudice
State : NY

Contact:
Thomas LoGiudice
520 East 72d Street
New York NY 10021
212-737-6703

Status: Complete  Status Date: 08/18/81  OERI No.: 001330

Patent Status : Patent Number: 3953761
Development Stage : Prototype Development
Technical Category: Buildings, Structures & Components

Recv. by NIST : 08/13/76
Recom. by NIST : 05/03/78
Award Date : 04/11/79  Award Amount: $ 49,500  Grant No: FG01-79IR10093
Contract Period: 04/11/79 - 08/01/81

Summary: 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 price.

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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
State : AZ

Contact:
Lester Hendrickson
Arizona State U.
School of Engineering
Tempe AZ 85281
602-965-3764

Status: Complete  Status Date: 09/01/79  OERI No.: 002543

Development Stage : Laboratory Test
Technical Category: Industrial Processes

Recv. by NIST : 08/01/77
Recom. by NIST : 05/08/78
Award Date : 09/01/78  Award Amount: $ 88,933  Grant No:
Contract Period: 09/01/78 - 09/01/79

Summary: 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.
DOE No: 0065  DOE Coord: J.Aellen

Title: WattVendor
Description: A coin operated device for dispensing electricity.
Inventor: Lee A Henningsen  Contact: Lee A Henningsen
State : PA  Firetrol, Inc.

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

Patent Status : Not Applied For
Development Stage : Prototype Test
Technical Category: Miscellaneous
Recv. by NIST : 02/18/76
Recom. by NIST : 05/12/78
Award Date : 09/14/79  Award Amount: $ 55,800 Grant No: FG01-79IR10266
Contract Period: 09/14/79 - 12/31/80

Summary: 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.

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

Title: Heat Extractor
Description: A system for recovering "Waste Heat" from industrial combustion processes by using water in direct contact with combustion products and an auxiliary heat exchanger.
Inventor: Philip Zacuto  Contact: Daniel Ben-Shmuel
State : NY  Heat Extractor Corporation

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 NIST : 06/20/77
Recom. by NIST : 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 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 Pittsburgh 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 No: 0067  DOE Coord: G. K. Ellis
Title: Windmill Using Hydraulic System for Energy Transfer and Speed Control
Description: A windmill design based on a hydraulic system for wind energy, particularly suited for low to medium speed winds.
Inventor: James A Browning
State: NH
Contact:
Browning Engineering Corp.
P.O. Box #863
Hanover NH 03755
603-298-8400
Status: Complete Status Date: 12/01/84 OERI No.: 000799
Development Stage: Prototype Development
Technical Category: Other Natural Sources
Recv. by NIST: 02/05/76
Recom. by NIST: 06/20/78
Award Date: 12/07/79 Award Amount: $ 39,000 Grant No: FG01-80IR10320
Contract Period: 12/07/79 - 12/01/84
Summary: 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 project.

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DOE No: 0068 DOE Coord: D.G.Mello
Title: Under Compression and Over Compression Free Helical Screw Rotary Compressor
Description: A compressor for use in medium-to-large sized heat pump-air conditioning systems.
Inventor: Leroy M Bissett
State: VA
Contact: Charlie Baziel
Status: Other Assistance Status Date: 10/01/79 OERI No.: 000631
Patent Status: Patent Number: 3936239
Development Stage: Prototype Development
Technical Category: Buildings, Structures & Components
Recv. by NIST: 01/22/76
Recom. by NIST: 06/28/78
Summary: 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.
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

Status: Complete  Status Date: 07/01/80  OERI No.: 000844

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

Recv. by NIST: 03/25/76  Recom. by NIST: 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 technology. 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.

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: Kenneth A Stofen
State: WI

Status: Complete  Status Date: 08/08/80  OERI No.: 002847

Development Stage: Limited Production/Marketing
Technical Category: Miscellaneous

Recv. by NIST: 10/21/77  Recom. by NIST: 06/28/78
Award Date: 08/08/78 - 08/08/80  Award Amount: $53,000 Grant No: FG01-79IR10026
Contract Period: 08/08/80 - 08/08/80

Summary: 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.
<table>
<thead>
<tr>
<th>DOE No: 0071</th>
<th>DOE Coord: D. G. Mello</th>
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<tbody>
<tr>
<td>Title: Knight Guard</td>
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<tr>
<td>Description: A system for remote controlling the lighting in a building by means of low frequency radio signals.</td>
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<tr>
<td>Inventor: Arleigh Wangler</td>
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<td>State: CA</td>
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<td>Status: No DOE Support</td>
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<td>Status Date: 09/01/78</td>
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<td>OERI No.: 002538</td>
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<td>Development Stage: Limited Production/Marketing</td>
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<tr>
<td>Technical Category: Buildings, Structures &amp; Components</td>
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<tr>
<td>Recv. by NIST: 08/10/77</td>
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<tr>
<td>Recom. by NIST: 06/29/78</td>
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<tr>
<td>Summary: Inventor is investigating law enforcement agencies’ interest.</td>
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<thead>
<tr>
<th>DOE No: 0072</th>
<th>DOE Coord: G. K. Ellis</th>
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</thead>
<tbody>
<tr>
<td>Title: Utilization of Waste Gas for Boilers and Furnaces in Refineries and Petrochemical Plants</td>
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<tr>
<td>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.</td>
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<tr>
<td>Inventor: Joe Agar</td>
<td></td>
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<td>State: TX</td>
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<tr>
<td>Status: No DOE Support</td>
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<td>Status Date: 08/08/80</td>
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<td>OERI No.: 000733</td>
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<td>Patent Status: Not Applied For</td>
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<tr>
<td>Development Stage: Laboratory Test</td>
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<tr>
<td>Technical Category: Industrial Processes</td>
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<tr>
<td>Recv. by NIST: 03/08/76</td>
<td></td>
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<tr>
<td>Recom. by NIST: 06/28/78</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
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: Melvin H Sachs
State: MI

Contact: Melvin H Sachs
ISTECH, INC
29200 Vassar Ave., Suite #700
Livonia MI 48152
313-478-0606

Status: Complete  Status Date: 06/22/79  OERI No.: 001323

Patent Status: Patent Number: 3800015 and others
Development Stage: Production & Marketing
Technical Category: Buildings, Structures & Components

Recv. by NIST: 08/09/76
Recom. by NIST: 08/10/78
Award Date: 06/22/78  Award Amount: $ 87,230  Grant No:
Contract Period: 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.

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 R Fitterer
State: PA

Contact: G. R. Fitterer, President
Scientific Applications, Inc.
825 Twelfth Street
Oakmont PA 15139
412-828-0233

Status: Complete  Status Date: 10/30/80  OERI No.: 002560

Development Stage: Limited Production/Marketing
Technical Category: Direct Solar

Recv. by NIST: 09/19/77
Recom. by NIST: 09/29/78
Award Date: 08/24/79  Award Amount: $ 50,000  Grant No: FG01-79IR10264
Contract Period: 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 No: 0075  
DOE Coord: G.K. Ellis

Title: Coke Quenching Steam Generator

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

Inventor: Richard Jablin  
State: NC

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

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

Development Stage: Laboratory Test
Technical Category: Industrial Processes

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

Summary: 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 million/year business.

*****************************************************************************

DOE No: 0076  
DOE Coord: G.K. Ellis

Title: The Ross Furnace

Description: A new gas burner design for use in high temperature industrial 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

Development Stage: Prototype Test
Technical Category: Industrial Processes

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

Summary: 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 satisfactorily.
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  
Status: Complete  
Status Date: 09/23/80  
OERI No.: 001173  
Development Stage: Working Model  
Technical Category: Miscellaneous  
Recvd. by NIST: 08/09/76  
Recom. by NIST: 09/25/78  
Award Date: 09/23/80  
Award Amount: $ 97,400  
Grant No: FG01-80CS15026  
Award Date: 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.

*****************************************************************************

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  
Recvd. by NIST: 06/30/76  
Recom. by NIST: 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: Oil 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  Contact: Marvin L Wahrman
State: CA  47 Red Rock
       Irvine CA 92714
       714-979-1280

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

Technical Category: Fossil Fuels

Recv. by NIST: 01/21/77  Recom. by NIST: 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 controllability 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 Curac.

Inventor: Patsie C Campana  Contact: Patsie C Campana
State: OH
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 NIST: 03/18/77  Recom. by NIST: 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: Complete  
Status Date: 02/03/81  
OERI No.: 002526  

Patent Status: Patent Number: 3782889  
Development Stage: Prototype Test  
Technical Category: Industrial Processes  

Recv. by NIST: 07/26/77  
Recom. by NIST: 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 DOE-supported 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 NIST: 11/23/77  
Recom. by NIST: 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
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
State: VA
Contact: 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 NIST: 10/17/77
Recom. by NIST: 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
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
State: TX
Contact: Kenneth W Odil

Status: No DOE Support
Status Date: 09/24/82
OERI No.: 002032

Patent Status: Patent Number: 3123009
Development Stage: Prototype Test
Technical Category: Industrial Processes

Recv. by NIST: 04/11/77
Recom. by NIST: 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 Number: 3989357
Development Stage: Concept Development
Technical Category: Buildings, Structures & Components

Recv. by NIST: 04/12/78
Recom. by NIST: 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.

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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 Number: 4011303
Development Stage: Laboratory Test
Technical Category: Fossil Fuels

Recv. by NIST: 09/21/77
Recom. by NIST: 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 deposits that have been mined by in situ gasification.  

Inventor: Ruel Carlton Terry  
State: OK  

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

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

Recv. by NIST: 05/17/77  
Recom. by NIST: 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.

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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  

Status: Complete  
Status Date: 08/12/80  
OERI No.: 001818  

Development Stage: Concept Development  
Technical Category: Fossil Fuels  

Recv. by NIST: 02/10/77  
Recom. by NIST: 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: 0089  
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 Number: 3517725  
Development Stage: Prototype Development  
Technical Category: Industrial Processes

Recv. by NIST: 08/22/77  
Recom. by NIST: 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 Number: 4003139  
Development Stage: Prototype Development  
Technical Category: Industrial Processes

Recv. by NIST: 03/16/78  
Recom. by NIST: 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 Number: 3972272
Development Stage: Prototype Development
Technical Category: Fossil Fuels

Recv. by NIST: 12/20/77
Recom. by NIST: 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 Number: 3939914
Development Stage: Limited Production/Marketing
Technical Category: Buildings, Structures & Components

Recv. by NIST: 03/22/76
Recom. by NIST: 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
Contact: Edward H Shelander
State : GA
P.O. Box #603
Brunswick GA 31520
912-265-8464
Status: Complete    Status Date: 06/01/81    OERI No.: 001300
Patent Status : Patent Number: 3849121
Development Stage : Prototype Test
Technical Category: Industrial Processes
Recv. by NIST : 08/09/76
Recom. by NIST : 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 capital.

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
Contact: William M FioRito
State : CA
12650 Mantilla Road
San Diego CA 92128
914-591-5080
Status: Complete    Status Date: 07/10/85    OERI No.: 003675
Patent Status : Patent Number: 2886122
Development Stage : Concept Development
Technical Category: Industrial Processes
Recv. by NIST : 03/02/78
Recom. by NIST : 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 Contact: Val O Bertoia
State: PA
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 NIST: 04/10/78
Recom. by NIST: 01/30/79
Summary: Inventor requested project be terminated for his convenience. Preliminary DOE review suggested that project would not be economically justifiable.

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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 Contact: Floyd R Anderson
State: AR Vast Research Company
Status: Complete Status Date: 07/28/80 OERI No.: 001869
Patent Status: Patent Number: 3266581 and others
Development Stage: Prototype Test
Technical Category: Combustion Engines & Components
Recv. by NIST: 02/28/77
Recom. by NIST: 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  Contact: James W McCord
State: KY  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

Technical Category: Industrial Processes

Recv. by NIST: 08/09/76  Recom. by NIST: 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.

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

Status: Complete  Status Date: 06/30/83  OERI No.: 003547

Technical Category: Industrial Processes

Recv. by NIST: 02/17/78  Recom. by NIST: 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
Contact: Ed Morris, President
State : CA
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 NIST : 06/05/78
Recom. by NIST : 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 trailer 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
Contact: Michael F Zinn
State : NY
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 NIST : 12/05/77
Recom. by NIST : 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.
ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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: Sharad M Dave
State: MI
Contact: Sharad M Dave
27689 Doreen
Farmington Hills MI 48024
313-478-5976

Status: Complete    Status Date: 11/30/82    OERI No.: 002114

Patent Status: Patent Number: 3762381
Development Stage: Concept Development
Technical Category: Combustion Engines & Components

Recv. by NIST: 02/28/77
Recom. by NIST: 04/20/79
Award Date: 05/05/81    Award Amount: $ 85,000 Grant No: FG01-81CS15040
Contract Period: 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: Frank C Bernhard
State: MO
Contact: Frank C Bernhard
11936 Claychester Drive
St. Louis MO 63131
314-822-3484

Status: Complete    Status Date: 02/21/80    OERI No.: 003205

Patent Status: Patent Number: 3977823
Development Stage: Concept Development
Technical Category: Buildings, Structures & Components

Recv. by NIST: 12/19/77
Recom. by NIST: 04/24/79
Award Date: 02/21/80    Award Amount: $ 43,550 Grant No: FG01-80CS15003
Contract Period: 02/21/80 - 09/30/82

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 Number: 3447098 and others  
Development Stage :  Engineering Design  
Technical Category :  Buildings, Structures & Components  
Recv. by NIST :  09/17/76  
Recom. by NIST :  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.  
Inventor:  Eskil L Karlson  
State :  PA  
Contact:  Eskil L Karlson  
4634 State Street  
Erie PA 16509  
814-871-7000  
Status:  Complete  
Status Date:  04/26/81  
OERI No.:  002186  
Development Stage :  Laboratory Test  
Technical Category :  Miscellaneous  
_RECV. by NIST :  05/11/77  
Recom. by NIST :  04/30/79  
Award Date :  02/26/80  
Award Amount:  $ 83,015  
Grant No:  FG01-80CS15008  
Contract Period:  02/26/80 - 04/26/81  
Summary:  A grant 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. Inventor needs funding for R & D, to build a production prototype, and alternate versions. Inventor seeking 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  
Description: 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 to form its own crucible.  
Inventor: Allen D Zumbrunnen  
State: UT  
Contact: Allen D Zumbrunnen  
419 Sherman Avenue  
Salt Lake City UT 84115  
801-466-2663  
Status: Complete  
Status Date: 07/10/85  
OERI No.: 002467  
Patent Status: Patent Number: 4133969  
Development Stage: Concept Development  
Technical Category: Industrial Processes  
Recv. by NIST: 06/24/77  
Recom. by NIST: 04/30/79  
Award Date: 09/30/81  
Award Amount: $121,554  
Grant No: FG01-81CS15077  
Contract Period: 09/30/81 - 12/31/83  
Summary: 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.

DOE No: 0106  
DOE Coord: D. G. Mello  
Title: Deep Shaft Hydro-Electric Power  
Description: A proposal to investigate the use of underground salt domes/caves as pumped storage of water for production of peak demand electricity.  
Inventor: James L Ramer  
State: MO  
Contact: 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 NIST: 09/30/77  
Recom. by NIST: 05/10/79  
Summary: 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.
DOE No: 0107  DOE Coord: J. Aellen

Title: Waste Products Reclamation Process

Description: This is a process for desulfurizing combustion gases, with a by-product "Lintans" 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 processes.

Inventor: Ping-Wha Lin  Contact: Ping-Wha Lin
State: IN  506 South Darling Street
         Angola IN 46703
         219-665-5425

Status: Complete  Status Date: 09/30/82  OERI No.: 001416

Patent Status: Patent Number: 3861930 and others
Development Stage: Laboratory Test
Technical Category: Industrial Processes

Recv. by NIST: 09/09/76
Recom. by NIST: 05/31/79
Award Date: 09/30/82  Award Amount: $129,888 Grant No: FG01-81CS15143
Contract Period: 09/30/82 - 12/31/83

Summary: 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 customers and suppliers, etc.

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DOE No: 0108  DOE Coord: G. K. Ellis

Title: Processing Recovery of Aluminum

Description: The invention is a mechanical process, operated at room temperature, (except for the reduction step) for separating aluminum metal from the dross.

Inventor: Paul J Cromwell  Contact: Robert J Cromwell
State: NY  120 Huntington Street
         Chardon OH 44024
         216-285-9306

Status: Complete  Status Date: 06/12/81  OERI No.: 004688

Patent Status: Patent Number: 4126673
Development Stage: Prototype Test
Technical Category: Industrial Processes

Recv. by NIST: 12/27/78
Recom. by NIST: 05/31/79
Award Date: 06/11/80  Award Amount: $158,029 Grant No: FG01-80CS15009
Contract Period: 06/11/80 - 06/12/81

Summary: 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.
<table>
<thead>
<tr>
<th>DOE No: 0109</th>
<th>DOE Coord: D.G. Mello</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Hydrostatic Meat Tenderizer</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Inventor:</strong></td>
<td>H. W. Kennick</td>
</tr>
<tr>
<td><strong>State:</strong></td>
<td>OR</td>
</tr>
</tbody>
</table>
| **Contact:** | H. W. Kennick  
Clark Meat Science Lab  
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 NIST:** | 01/11/78 |
| **Recom. by NIST:** | 06/19/79 |
| **Award Date:** | 06/24/80 |
| **Award Amount:** | $86,000 |
| **Grant No:** | FG01-80CS15013 |
| **Contract Period:** | 06/24/80 - 03/01/83 |
| **Summary:** | A grant of $86,000 was awarded to investigate and develop a feasible commercial process. The project's 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 University. |

<table>
<thead>
<tr>
<th>DOE No: 0110</th>
<th>DOE Coord: D.G. Mello</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Improved Windpower Generating System</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Self-regulating, two-part windmill rotor with inner part for low-speed wind and outer part for high-speed wind.</td>
</tr>
<tr>
<td><strong>Inventor:</strong></td>
<td>Karl H. Bergey</td>
</tr>
<tr>
<td><strong>State:</strong></td>
<td>OK</td>
</tr>
</tbody>
</table>
| **Contact:** | Karl H. Bergey  
Route #1, Box #151B  
Norman OK 73069  
405-364-3675 |
| **Status:** | Complete |
| **Status Date:** | 08/27/80 |
| **OERI No.:** | 003425 |
| **Patent Status:** | Patent Applied For |
| **Development Stage:** | Prototype Development |
| **Technical Category:** | Other Natural Sources |
| **Recv. by NIST:** | 01/19/78 |
| **Recom. by NIST:** | 06/29/79 |
| **Award Date:** | 08/26/80 |
| **Award Amount:** | $74,875 |
| **Grant No:** | FG01-08CS15011 |
| **Contract Period:** | 08/26/80 - 09/30/82 |
| **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. |
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

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

Summary: A grant of $125,000 was awarded to provide a complete set of preliminary 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.

Summary: A grant of $99,870 was awarded to design, build, and install system for field tests at Worcester 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  Contact: Henry J Wallace
State : PA  570 Squaw Run Road
Status: Complete  Pittsburgh PA 15238
State Date: 09/21/83  412-963-0969
OERI No.: 003865
Patent Status: Patent Number: 3871058 and others
Development Stage: Prototype Development
Technical Category: Industrial Processes
Recv. by NIST: 04/20/78
Recom. by NIST: 07/31/79
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: Mario Bruno
Country: Milan, Italy
Status: No DOE Support  Status Date: 06/19/80
OERI No.: 003863
Patent Status: Patent Number:
Development Stage: Prototype Development
Technical Category: Transportation Systems, Vehicles & Components
Recv. by NIST: 04/20/78
Recom. by NIST: 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
Contact: Clyde G Phillips
        Rural Route #2
        Box #148-G, Angola Beach
        Lewes  DE 19971
        302-945-9093
Status: Complete       Status Date: 02/22/80       OERI No.: 001188
Patent Status : Patent Number: 3783629
Development Stage : Laboratory Test
Technical Category: Miscellaneous
Recv. by NIST : 07/02/76
Recom. by NIST : 07/31/79
Award Date : 12/07/79      Award Amount: $ 6,910
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
State : OH
Contact: Roy J Weikert
Status: No DOE Support       Status Date: 10/04/80       OERI No.: 002946
Patent Status : Patent Number: 3813845 and others
Development Stage : Prototype Development
Technical Category: Industrial Processes
Recv. by NIST : 11/04/77
Recom. by NIST : 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

Development Stage: Prototype Test
Technical Category: Direct Solar

Recv. by NIST: 03/28/77
Recom. by NIST: 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 Number: 3653855
Development Stage: Prototype Test
Technical Category: Industrial Processes

Recv. by NIST: 04/24/78
Recom. by NIST: 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 Caterpillar 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: Otis W Smith
State : FL
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 NIST : 06/05/78
Recom. by NIST : 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 Contact: Robert Zartarian
State : NJ Systech Industries
                   Six Hialeah Court
                   West Long Beach NJ 07764
                   201-449-3700
Status: Complete Status Date: 10/30/86 OERI No.: 004562
Development Stage : Limited Production/Marketing
Technical Category: Miscellaneous
Recv. by NIST : 11/02/78
Recom. by NIST : 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
Description: Passive solar collector using air as the transfer fluid. Designed for vertical south wall of a structure.
Inventor: James B Whitmore  Contact: James B Whitmore
State: MI
Status: No DOE Support  Status Date:  /  /  OERI No.: 004843
Patent Status: Not Applied For
Development Stage: Limited Production/Marketing
Technical Category: Direct Solar
Recv. by NIST: 02/08/79
Recom. by NIST: 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  Contact: Fuel Injection Development Cor
State: NJ  256 South Van Pelt
Contact: Fuel Injection Development Cor
  Philadelphia PA 19103
  215-735-8704
Status: Complete  Status Date: 09/24/80  OERI No.: 004035
Patent Status: Patent Number: 4015572
Development Stage: Prototype Test
Technical Category: Combustion Engines & Components
Recv. by NIST: 01/12/78
Recom. by NIST: 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

Description: Heating with microwaves to differentially expand and fracture the sulphur containing elements of ore and porphyry rock, intended as a preliminary stage in the processing of ore before the grinding stage.

Inventor: J Paul Pemsler
Contact: J. Paul Pemsler, President
         Castle Technology Corp.
         P. O. Box #403
         Lexington MA 02133
         617-861-1274

Status: Complete  Status Date: 11/25/81  OERI No.: 004573

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

Summary: 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.

*******************************************************************************

DOE No: 0124        DOE Coord: J.Aellen

Title: Solar Collector

Description: This solar collector is a two foot square module constructed entirely of a non-porous ceramic which has been fired at high temperatures so that it is vitrified.

Inventor: Charlton Sadler
Contact: Charlton Sadler

Status: No DOE Support  Status Date: 06/02/82  OERI No.: 004352

Patent Status : Patent Number: 4170983 and others
Development Stage: Working Model
Technical Category: Direct Solar

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.: 000707

Development Stage:  Prototype Test
Technical Category: Buildings, Structures & Components

Recv. by NIST:      02/11/76
Recom. by NIST:     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.


******************************************************************************

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 NIST:      03/19/79
Recom. by NIST:     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

Description: Two-vessel, fluidized bed system connected by heat pipes to transfer heat between the upper pyrolyzer 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 oil out the overhead.

Inventor: J D Seader  
Contact: J D Seader
Merrill Engineering Building
University of Utah
Salt Lake City UT 84112
801-581-6348

Status: Complete  
Status Date: 09/16/84  
OERI No.: 005003

Patent Status: Patent  
Development Stage: Laboratory Test  
Technical Category: Fossil Fuels

Recv. by NIST: 03/26/79  
Recom. by NIST: 12/31/79  
Award Date: 09/16/82  
Award Amount: $49,949  
Grant No: FG01-82CE15136  
Contract Period: 09/16/82 - 09/30/83

Summary: 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 the concept have been achieved.

**************************************************************************

DOE No: 0128  
DOE Coord: D.G.Mello

Title: Continuous Distillation Apparatus and Method

Description: New design for distilling column where the rectifying and stripping sections are side by side, and heat pipes transfer heat from the rectifying to the stripping section.

Inventor: J D Seader  
Contact: J D Seader
Merrill Engineering Building
University of Utah
Salt Lake City UT 84112
801-581-6348

Status: Complete  
Status Date: 04/02/85  
OERI No.: 005004

Development Stage: Concept Development  
Technical Category: Fossil Fuels

Recv. by NIST: 03/26/79  
Recom. by NIST: 12/31/79  
Award Date: 09/16/82  
Award Amount: $49,652  
Grant No: FG01-82CE15138  
Contract Period: 09/16/82 - 09/30/83

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

Status: Complete  Status Date: 11/28/80  OERI No.: 004007

Patent Status: Patent Number: 4069636
Development Stage: Prototype Development
Technical Category: Buildings, Structures & Components

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

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.

*******************************************************************************

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: Arnold R Post
State: MD

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 NIST: 09/11/78
Recom. by NIST: 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 Number: 4114588
Development Stage: Prototype Development
Technical Category: Combustion Engines & Components

Recv. by NIST: 05/01/79
Recom. by NIST: 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: 03/25/80  OERI No.: 003045

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

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

Summary: Other financial commitments prevent inventor from proceeding.
**ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT**

<table>
<thead>
<tr>
<th>DOE No: 0133</th>
<th>DOE Coord: D.G.Mello</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>AUTOTHERM Car Comfort System</td>
</tr>
<tr>
<td>Description:</td>
<td>An auxiliary coolant circulator for an automobile which will provide heat to the vehicle operator for a period of time without requiring the engine to idle.</td>
</tr>
<tr>
<td>Inventor:</td>
<td>F J Perhats</td>
</tr>
<tr>
<td>State:</td>
<td>IL</td>
</tr>
<tr>
<td>Address:</td>
<td>James V Enright, Autotherm, Inc. 314 East Main Street, P.O. Box #333, Barrington IL 60010, 312-381-6366</td>
</tr>
<tr>
<td>Status:</td>
<td>Complete</td>
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<td>Status Date:</td>
<td>06/19/83</td>
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<tr>
<td>OERI No.:</td>
<td>004641</td>
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<td>Technical Category:</td>
<td>Transportation Systems, Vehicles &amp; Components</td>
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<tr>
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<td>06/19/81</td>
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<td>Award Amount:</td>
<td>$71,034</td>
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<tr>
<td>Contract Period:</td>
<td>06/19/81 - 06/19/83</td>
</tr>
<tr>
<td>Summary:</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOE No: 0134</th>
<th>DOE Coord: D.G.Mello</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Expanded Polystyrene Bead Insulation System</td>
</tr>
<tr>
<td>Description:</td>
<td>A means for retro-insulating housing walls, utilizing expanded polystyrene bead insulation coated with a flame-retardant adhesive and applied with a unique blower-mixer nozzle.</td>
</tr>
<tr>
<td>Inventor:</td>
<td>John C Rupert</td>
</tr>
<tr>
<td>State:</td>
<td>MN</td>
</tr>
<tr>
<td>Address:</td>
<td>John C Rupert, 1511 Grantham Street, Saint Paul MN 55108, 612-645-0414</td>
</tr>
<tr>
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<td>Status Date:</td>
<td>01/02/84</td>
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<td>OERI No.:</td>
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<tr>
<td>Recv. by NIST:</td>
<td>05/30/79</td>
</tr>
<tr>
<td>Recom. by NIST:</td>
<td>03/31/80</td>
</tr>
<tr>
<td>Award Date:</td>
<td>09/26/80</td>
</tr>
<tr>
<td>Award Amount:</td>
<td>$80,844</td>
</tr>
<tr>
<td>Contract Period:</td>
<td>09/26/80 - 12/31/82</td>
</tr>
<tr>
<td>Summary:</td>
<td>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.</td>
</tr>
</tbody>
</table>
DOE No: 0135       DOE Coord: D.G.Mello
Title:  Point Focus Parabolic Solar Collector
Description:  It is a lightweight parabolic solar collector design which uses prestressed structural members and cables to achieve high rigidity at a low cost.
Inventor:  M Hossein Khorsand
State:  CA
Contact:  M Hossein Khorsand
33042 Commodore Court
San Juan Capistrano CA 92675

Status:  Complete    Status Date: 06/22/84    OERI No.: 005216
Patent Status:  Not Applied For
Development Stage:  Working Model
Technical Category:  Direct Solar
Recv. by NIST:  05/29/79
Recom. by NIST:  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 was awarded to design, build and analyze a prototype point focus collector.

******************************************************************************

DOE No: 0136       DOE Coord: J. Aellen
Title:  Windamper
Description:  Wind damper for high voltage electric transmission line to prevent galloping in wind and ice storms
Inventor:  Albert S Richardson, Jr.
State:  MA
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 Number: 3440328
Development Stage:  Limited Production/Marketing
Technical Category:  Miscellaneous
Recv. by NIST:  04/25/78
Recom. by NIST:  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.
<table>
<thead>
<tr>
<th>DOE No: 0137</th>
<th>DOE Coord: J. Aellen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: A Portable Pollution Free Automobile Incinerator</td>
<td></td>
</tr>
<tr>
<td>Description: Portable automobile incinerator</td>
<td></td>
</tr>
<tr>
<td>Inventor: H Roy Weber</td>
<td>Contact: H Roy Weber</td>
</tr>
<tr>
<td>State: HI</td>
<td>Box #336</td>
</tr>
<tr>
<td></td>
<td>Kailua HI 96734</td>
</tr>
<tr>
<td></td>
<td>808-262-6548</td>
</tr>
<tr>
<td>Status: Complete</td>
<td>Status Date: 06/30/86</td>
</tr>
<tr>
<td>Development Stage: Prototype Development</td>
<td></td>
</tr>
<tr>
<td>Technical Category: Industrial Processes</td>
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<td>Recv. by NIST: 05/17/79</td>
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<tr>
<td>Recom. by NIST: 05/08/80</td>
<td></td>
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<tr>
<td>Award Date: 06/20/81</td>
<td></td>
</tr>
<tr>
<td>Award Amount: $ 99,408</td>
<td></td>
</tr>
<tr>
<td>Grant No: FG01-81CS15044</td>
<td></td>
</tr>
<tr>
<td>Contract Period: 06/20/81 - 09/30/82</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOE No: 0138</th>
<th>DOE Coord: J. Aellen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Phantom Tube</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Inventor: Gerald R Seeman</td>
<td>Contact: Bernard Joseph Margowsky</td>
</tr>
<tr>
<td>State: CA</td>
<td></td>
</tr>
<tr>
<td>Status: No DOE Support</td>
<td>Status Date: 12/31/81</td>
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<tr>
<td>Patent Number: 3956665</td>
<td></td>
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<tr>
<td>Development Stage: Limited Production/Marketing</td>
<td></td>
</tr>
<tr>
<td>Technical Category: Buildings, Structures &amp; Components</td>
<td></td>
</tr>
<tr>
<td>Recv. by NIST: 03/28/77</td>
<td></td>
</tr>
<tr>
<td>Recom. by NIST: 05/28/80</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

31 DECEMBER 1991
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    Contact: Louis L Marton
State : CA    Status: No DOE Support    Status Date: / /    OERI No.: 003487

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

Recv. by NIST : 01/16/78
Recom. by NIST : 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    Contact: Tony Wilhelm
State : MN    Wilhelm Engineering Company
            707 Second Street, West
            Ashland WI 54806
            715-682-8175

Status: Complete    Status Date: 07/31/84    OERI No.: 003830

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

Recv. by NIST : 04/06/78
Recom. by NIST : 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 heat 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  Contact: Samuel Shiber
State : IL  P. O. Box #371
            - Mundelein IL 60060

Status: Complete  Status Date: 07/09/81  OERI No.: 003673

Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST : 03/06/78
Recom. by NIST : 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  Contact: Anatol Michelson
State : FL  3235 Pine Valley Drive
          Sarasota FL 33579
                      815-388-1252

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

Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv. by NIST : 09/24/79
Recom. by NIST : 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: Oil 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: Complete    Status Date: 03/06/85    OERI No.: 005888

Development Stage : Prototype Test
Technical Category: Fossil Fuels

Recv. by NIST : 10/19/79
Recom. by NIST : 06/27/80
Award Date : 09/16/84   Award Amount: $ 52,500 Grant No: FG01-84CE15188
Contract Period: 09/16/84 - 03/06/85

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
State : MD

Contact: 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 NIST : 10/09/79
Recom. by NIST : 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. Salomon
Chemistry Department
Temple University
Philadelphia PA 19122
215-787-7125

Status: Complete Status Date: 07/01/81 OERI No.: 006213

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

Recv. by NIST: 12/26/79
Recom. by NIST: 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 occurring 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 Status Date: 08/15/83 OERI No.: 004794

Patent Status: Patent Number: 3943436
Development Stage: Limited Production/Marketing
Technical Category: Fossil Fuels

Recv. by NIST: 01/25/79
Recom. by NIST: 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  Contact: A. D. Barrett, VP
State : CT
Status: No DOE Support  Status Date: / /  OERI No.: 005692

Development Stage : Limited Production/Marketing
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST : 09/04/79
Recom. by NIST : 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: Reclamation 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  Contact: Leonard A Duval
State : OH  Colerapa Industries, Inc
Box #172
- Aurora OH 44202
- 216-562-9822

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

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

Recv. by NIST : 08/22/79
Recom. by NIST : 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

Contact: Ogden H Hammond
Monument Beach MA 02553
617-757-8400

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 NIST : 08/06/79
Recom. by NIST : 08/18/80
Award Date : 01/26/81  Award Amount: $ 91,962 Grant No: FG01-81CS15038
Contract Period: 01/26/81 - 07/28/82

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 NIST : 06/16/80
Recom. by NIST : 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  
Title: Film Type Storm Window

Description: A plastic film type of storm window that is tensioned at the corners and sealed on the perimeter to produce a wrinkle free and air tight membrane for window insulation.

Inventor: Yao Tzu Li  
State : MA  
Contact: SETRA Systems, Inc.

Status: No DOE Support  
Status Date: / /  
OERI No.: 005494

Patent Status : Patent Number: 4210191
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components

Recv. by NIST : 07/30/79  
Recom. by NIST : 09/30/80

Summary: Inventor sold Product.

DOE No: 0152  
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 Majkrzak  
State : ND  
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 Applied For
Development Stage : Prototype Development
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST : 02/12/80  
Recom. by NIST : 09/30/80

Award Date : 08/06/81  
Award Amount: $ 77,500  
Grant No: FG01-81CS15063

Contract Period: 08/06/81 - 08/06/83

Summary: 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

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 NIST: 08/10/79  
Recom. by NIST: 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  
State: CA  
Contact: Forrest E Chancellor

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

Patent Status: Patent Number: 4121471

Development Stage: Limited Production/Marketing
Technical Category: Fossil Fuels

Recv. by NIST: 09/07/79  
Recom. by NIST: 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: James M Cleary
State: MA

Contact: James M Cleary
92 McCallum Drive
Box #541
Falmouth MA 02541
617-548-6686

Status: Complete    Status Date: 12/10/86    OERI No.: 007292

Patent Status: Patent Number: 4059309 and others
Development Stage: Concept Development
Technical Category: Fossil Fuels

Recv. by NIST: 07/23/80
Recom. by NIST: 10/31/80
Award Date: 12/10/84    Award Amount: $109,385    Grant No: FG01-85CE15195
Contract Period: 12/10/84 - 12/10/86

Summary: A grant of $109,385 was awarded in three phases to build and field test a prototype slurry trenching machine.

******************************************************************************

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: James J Dolan
State: FL

Contact: James J Dolan
Twenty-Two Laurel Oak
Amelia Island FL 32034
904-261-7571

Status: Complete    Status Date: 07/23/81    OERI No.: 005375

Patent Status: Patent Number: 4154432 and others
Development Stage: Limited Production/Marketing
Technical Category: Industrial Processes

Recv. by NIST: 07/03/79
Recom. by NIST: 10/31/80
Award Date: 07/23/81    Award Amount: $99,485    Grant No: FG01-81CS15058
Contract Period: 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
Title: Magnaseal Method and Means for Sealing Steel Ingot Casting Molds to Stools
Description: A means of sealing steel ingot casting molds to stools by use of fine metallic particles and an electromagnetic field to emplace the particles.
Inventor: Albert L McQuillen, Jr
State: PA
Contact: Albert L McQuillen, Jr
         1701 Partridge Run Road
         Pittsburgh, PA 15241
         412-745-7200
Status: Complete  Status Date: 06/18/81  OERI No.: 005968
Patent Status: Patent Number: 3837393
Development Stage: Prototype Test
Technical Category: Industrial Processes
Receiv. by NIST: 11/01/79
Recom. by NIST: 10/31/80
Award Date: 06/18/81  Award Amount: $91,202  Grant No: FG01-81CS15051
Contract Period: 06/18/81 - 12/31/82
Summary: 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.

**********************************************************

DOE No: 0158          DOE Coord: G.K.Ellis
Title: Energy Conservative Electric Cable System
Description: A low-loss shielded power cable using a naturally cooled sodium conductor and a pressurized gas insulator.
Inventor: Paul F Pugh
State: CA
Contact: Paul F Pugh
         4082 Sequoyah Road
         Oakland, CA 94605
         415-638-5015
Status: Complete  Status Date: 12/15/85  OERI No.: 002049
Development Stage: Limited Production/Marketing
Technical Category: Miscellaneous
Receiv. by NIST: 06/13/77
Recom. by NIST: 10/31/80
Award Date: 09/16/81  Award Amount: $140,000  Grant No: FG01-81CS15074
Contract Period: 09/16/81 - 12/15/85
Summary: 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 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
                      301-886-4125
Status: Complete      Status Date: 07/24/81        OERI No.: 005380
Patent Status :       Patent Number: 4113010 and others
Development Stage :   Prototype Development
Technical Category:   Fossil Fuels
Recv. by NIST :       05/07/79
Recom. by NIST :       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
111 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 NIST :       05/22/80
Recom. by NIST :       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: Complete  
Status Date: 06/30/86  
OERI No.: 000854

Development Stage : Working Model
Technical Category: Fossil Fuels

Recv. by NIST : 03/31/76
Recom. by NIST : 11/28/80
Award Date : 08/05/81  
Award Amount: $ 98,074  
Grant No: FG01-81CS15068
Contract Period: 08/05/81 - 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 Number: 4116491
Development Stage : Concept Development
Technical Category: Industrial Processes

Recv. by NIST : 05/23/80
Recom. by NIST : 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          Contact:     Dennis D Howard
State : PA                               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 NIST : 05/15/80
Recom. by NIST : 12/04/80
Award Date : 07/09/81          Award Amount: $99,093    Grant No: FG01-81CS15045
Contract Period: 07/09/81 - 07/13/82
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: John D Gill          Contact:     John D Gill
State : MD                                Elastomer Energy Recovery Inc
                                             419 Fourth Street
                                             Annapolis MD 21403
                                             301-263-5735
Status: Complete            Status Date: 04/15/82       OERI No.: 006433
Patent Status : Disclosure Document Program
Development Stage : Concept Development
Technical Category: Transportation Systems, Vehicles & Components
Recv. by NIST : 12/12/79
Recom. by NIST : 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

Status: Complete  Status Date: 10/29/84  OERI No.: 006985

Patent Status : Patent Number: 4066739
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv. by NIST : 05/16/80  Recom. by NIST : 12/29/80
Award Date : 08/04/81  Award Amount: $ 70,000 Grant No: FG01-81CS15065
Contract Period: 08/04/81 - 01/15/83

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:  Robert F Evans  
State :  TX

Status: Complete  Status Date: 11/26/85  OERI No.: 004656

Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Fossil Fuels

Recv. by NIST : 11/27/78  Recom. by NIST : 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 NIST : 02/25/80
Recom. by NIST : 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.

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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: Complete  Status Date: 10/09/84  OERI No.: 006783

Development Stage : Limited Production/Marketing
Technical Category: Buildings, Structures & Components

Recv. by NIST : 04/07/80
Recom. by NIST : 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. Metlund Enterprises had sold about 400 units as of April, 1986.
DOE No: 0169   DOE Coord: P.M. Hayes
Title: MIRAPOUNT
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  Contact: Carter Thompson
State: MO
Status: No DOE Support     Status Date: 03/15/85     OERI No.: 006239
Patent Status: Patent Number: 3745977
Development Stage: Limited Production/Marketing
Technical Category: Industrial Processes
Recv. by NIST: 12/27/79
Recom. by NIST: 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 Mee  Contact: Thomas R Mee
State: CA
Status: No DOE Support     Status Date: 07/09/86     OERI No.: 005622
Patent Status: Patent Number: 4039144 and others
Development Stage: Limited Production/Marketing
Technical Category: Industrial Processes
Recv. by NIST: 08/22/79
Recom. by NIST: 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
Status: Complete Status Date: 10/31/82 OERI No.: 006950
Patent Status : Patent Number: 4079152
Development Stage : Limited Production/Marketing
Technical Category: Industrial Processes
Recv. by NIST : 04/28/80
Recom. by NIST : 02/23/81
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 "TomaToes", 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.
Inventor: Edward A Griswold
State : CA
Status: Complete Status Date: 09/29/82 OERI No.: 004255
Patent Status : Patent Number: 3891528 and others
Development Stage : Prototype Test
Technical Category: Industrial Processes
Recv. by NIST : 08/03/78
Recom. by NIST : 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**

**Title:** Thermal Ice Cap

**Description:** 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 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

**Patent Status:** Not Applied For  
**Development Stage:** Working Model  
**Technical Category:** Buildings, Structures & Components

**Recv. by NIST:** 01/07/80  
**Recom. by NIST:** 02/26/81  
**Award Date:** 08/19/81  
**Award Amount:** $79,726  
**Grant No.:** FG01-81CS15066

**Contract Period:** 08/19/81 - 05/15/82

**Summary:** 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.

******************************************************************************

DOE No: 0174  
**DOE Coord: J.Aellen**

**Title:** Skate on Plastic Ice Skating System

**Description:** A non-refrigerated plastic skating surface to replace energy intensive ice skating surfaces.

**Inventor:** E.O Nathaniel  
**State:** MO

**Contact:** Gene Plattner

**Status:** No DOE Support  
**Status Date:** 09/28/81  
**OERI No.:** 006241

**Patent Status:** Patent Number: 4030729

**Development Stage:** Limited Production/Marketing  
**Technical Category:** Buildings, Structures & Components

**Recv. by NIST:** 12/31/79  
**Recom. by NIST:** 03/05/81

**Summary:** 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".
DOE No: 0175

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
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

Development Stage: Prototype Development
Technical Category: Industrial Processes

Recv. by NIST: 05/05/80
Recom. by NIST: 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

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: 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 NIST: 08/18/80
Recom. by NIST: 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 NIST : 12/03/79
Recom. by NIST : 05/07/81
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: John W North  
State : GA  
Contact: John W North  
J W North Company  
c/o Silica-North, Ltd.  
P O Box #838  
Tuscaloosa AL 35674  
205-381-3582  
Status: Complete  
Status Date: 07/23/84  
OERI No.: 007726
Patent Status : Patent Number: 4212635 and others
Development Stage : Engineering Design
Technical Category: Industrial Processes
Recv. by NIST : 10/30/80
Recom. by NIST : 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  
**OERI No.:** 007158

**Patent Status:** Patent Applied For  
**Development Stage:** Prototype Development  
**Technical Category:** Direct Solar  
**Recv. by NIST:** 06/19/80  
**Recom. by NIST:** 04/17/81  
**Award Date:** 08/26/81  
**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 Jordan 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:** Complete  
**Status Date:** 08/15/84  
**OERI No.:** 002116

**Patent Status:** Patent Applied For  
**Development Stage:** Working Model  
**Technical Category:** Direct Solar  
**Recv. by NIST:** 04/27/77  
**Recom. by NIST:** 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
Description: 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.
Inventor: Eskil L Karlson
State: PA
Contact:
Eskil L Karlson
4634 State Street
Erie PA 16509
814-868-1121
Status: Complete
Status Date: 04/27/82  OERI No.: 008061
Patent Status: Patent Number: 3719017 and others
Development Stage: Prototype Development
Technical Category: Miscellaneous
Recv. by NIST: 02/09/81
Recom. by NIST: 05/29/81
Award Date: 05/01/82  Award Amount: $133,304 Grant No: FG01-82CE15082
Contract Period: 05/01/82 - 05/01/84
Summary: 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.

**************************

DOE No: 0182  DOE Coord: J.Aellen
Title: Improved Seal for Geothermal Drill Bit
Description: 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.
Inventor: Robert F Evans
State: CA
Contact:
Robert F Evans
Box #62
La Mirada CA 90637
213-697-8486
Status: Complete
Status Date: 07/09/86  OERI No.: 007089
Development Stage: Concept Development
Technical Category: Other Natural Sources
Recv. by NIST: 06/03/80
Recom. by NIST: 05/29/81
Award Date: 09/01/82  Award Amount: $94,898 Grant No: FG01-82CE15104
Contract Period: 09/01/82 - 08/31/83
Summary: A 12-month grant of $94,898 was awarded to select by research the 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 Number: 3826093 and others
Development Stage: Engineering Design
Technical Category: Industrial Processes

Recv. by NIST: 10/16/79
Recom. by NIST: 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 California 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 NIST: 04/27/77
Recom. by NIST: 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.
<table>
<thead>
<tr>
<th>DOE No:</th>
<th>0185</th>
<th>DOE Coord: P.M.Hayes</th>
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<tbody>
<tr>
<td>Title:</td>
<td>Insulated Garage Door</td>
<td></td>
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<tr>
<td>Description:</td>
<td>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.</td>
<td></td>
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<tr>
<td>Inventor:</td>
<td>Cecil H Wolf</td>
<td></td>
</tr>
<tr>
<td>State:</td>
<td>IL</td>
<td></td>
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<tr>
<td>Status:</td>
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<td>Status Date:</td>
<td>03/15/85</td>
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<td>OERI No.:</td>
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<td>Recom. by NIST:</td>
<td>07/27/81</td>
<td></td>
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<tr>
<td>Summary:</td>
<td>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.</td>
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<table>
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<tr>
<th>DOE No:</th>
<th>0186</th>
<th>DOE Coord: J.Aellen</th>
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</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Oil Recovery by In-Situ Exfoliation Drive</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Inventor:</td>
<td>Sylvain J Pirson</td>
<td></td>
</tr>
<tr>
<td>State:</td>
<td>TX</td>
<td></td>
</tr>
<tr>
<td>Status:</td>
<td>No DOE Support</td>
<td></td>
</tr>
<tr>
<td>Status Date:</td>
<td>03/15/85</td>
<td></td>
</tr>
<tr>
<td>OERI No.:</td>
<td>007361</td>
<td></td>
</tr>
<tr>
<td>Patent Status:</td>
<td>Disclosure Document Program</td>
<td></td>
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<tr>
<td>Development Stage:</td>
<td>Concept Development</td>
<td></td>
</tr>
<tr>
<td>Technical Category:</td>
<td>Fossil Fuels</td>
<td></td>
</tr>
<tr>
<td>Recv. by NIST:</td>
<td>07/31/80</td>
<td></td>
</tr>
<tr>
<td>Recom. by NIST:</td>
<td>07/28/81</td>
<td></td>
</tr>
<tr>
<td>Summary:</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
DOE No: 0187  DOE Coord: G.K. Ellis
Title: Variable Field Induction Motor
Description: A means of controlling the field current in an AC induction motor to improve the efficiency under partial load conditions.
Inventor: Louis W Parker  Contact: Rhey Hedges
State : FL
Status: No DOE Support  Status Date: 03/17/85  OERI No.: 003145
Development Stage : Prototype Test
Technical Category: Miscellaneous
Recv. by NIST : 12/07/77
Recom. by NIST : 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.
Inventor: John C Haspert  Contact: John C Haspert
State : CA  Underground Systems
P. O. Box #1252
735 West Duarte Road
Arcadia CA 91006
Status: Complete  Status Date: 11/16/83  OERI No.: 007486
Development Stage : Working Model
Technical Category: Fossil Fuels
Recv. by NIST : 09/08/80
Recom. by NIST : 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 is 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 NIST: 10/10/80
Recom. by NIST: 08/31/81
Award Date: 06/15/82  Award Amount: $83,604  Grant No: FG01-82CE15087
Contract Period: 06/15/82 - 12/15/83

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.

Inventor: W N Lawless
State: OH

Contact: W N Lawless
Lake Shore Ceramics, Inc
64 East Walnut Street
Westerville, OH 43081
614-891-2243

Status: Complete  Status Date: 05/17/83  OERI No.: 007963

Patent Status: Disclosure Document Program
Development Stage: Engineering Design
Technical Category: Miscellaneous

Recv. by NIST: 01/07/81
Recom. by NIST: 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.
DOE No: 0191  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: Gabriel S Joseph, III
Conserve Resources, Inc
8416 Stonewall Drive
Vienna VA 22180

Status: Complete  Status Date: 04/07/88  OERI No.: 004890
Patent Status : Patent Number: 3740966
Development Stage : Prototype Test
Technical Category: Buildings, Structures & Components
Recv. by NIST : 02/13/79
Recom. by NIST : 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 was awarded to modify the heat exchanger part of the heat pump and test it. The results were encouraging. A phase II grant was awarded to have Pacific Northwest Laboratories (PML) build prototype. A detailed concept evaluation and a sensitivity assessment of the inventor's earlier design analysis was initiated before building the prototype. Phase II is still in process. Manco Corp sold the invention to CRI.

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 No.: 007943
Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Miscellaneous
Recv. by NIST : 12/30/80
Recom. by NIST : 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  
Title: Engine Heating Device  
Description: 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.

Inventor: Nicholas Archer Sanders  
State: VT  
Contact: Nicholas Archer Sanders  
Weatheready, Incorporated  
Eleven Green Ridge Road  
Route One, Box #175  
Norwich VT 05055  
603-643-4351  

Status: Complete  
Status Date: 09/30/83  
OERI No.: 006928

Development Stage: Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST: 05/07/80  
Recom. by NIST: 10/30/81  
Award Date: 09/30/82  
Award Amount: $ 91,150  
Grant No: FG01-82CE15141  
Contract Period: 09/30/82 - 09/30/83  
Award Date: 09/30/82  
Award Amount: $ 55,000  
Grant No: FG01-82CE15144  
Contract Period: 09/30/82 - 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  
Title: Radiant Energy Power Source for Jet Aircraft  
Description: Installation of photovoltaic cells in proximity to the liner of a jet engine combustion chamber to generate electrical power for replacing aircraft primary - and/or auxiliary-power units.

Inventor: Oscar Leonard Doellner  
State: AZ  
Contact: Oscar Leonard Doellner  
1943 South Plumer Avenue  
Tucson AZ 85713  
602-623-7303

Status: Complete  
Status Date: 09/28/87  
OERI No.: 005673

Patent Status: Patent Number: 4090359  
Development Stage: Concept Development  
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST: 08/30/79  
Recom. by NIST: 11/12/81  
Award Date: 09/20/82  
Award Amount: $ 65,000  
Grant No: FG01-82CE15144  
Contract Period: 09/20/82 - 09/28/87

Summary: 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.
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 Number: 3846174
Development Stage: Concept Development
Technical Category: Miscellaneous

Recv. by NIST: 07/14/80  
Recom. by NIST: 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.

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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

Development Stage: Prototype Test
Technical Category: Industrial Processes

Recv. by NIST: 12/05/75  
Recom. by NIST: 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
Development Stage : Prototype Test
Technical Category: Other Natural Sources
Recv. by NIST : 06/03/80
Recom. by NIST : 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.

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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 Number:
Development Stage : Engineering Design
Technical Category: Industrial Processes
Recv. by NIST : 06/06/79
Recom. by NIST : 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-combustor 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: Complete    Status Date: 06/30/87    OERI No.: 007718

Patent Status : Patent Number: 1521088 and others
Development Stage : Engineering Design
Technical Category: Buildings, Structures & Components

Recv. by NIST : 10/24/80
Recom. by NIST : 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 Combustors 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: Complete    Status Date: 02/10/84    OERI No.: 007385

Patent Status : Patent Number: 4324775 and others
Development Stage : Engineering Design
Technical Category: Industrial Processes

Recv. by NIST : 08/08/80
Recom. by NIST : 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 Contact:
State: OH Louis A Hausknecht
        4504 State Road
        Cleveland, OH 44109
        216-749-1686

Status: Complete Status Date: 12/31/84 OERI No.: 006680

Patent Status: Patent Number: 4153016 and others
Development Stage: Working Model
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST: 03/31/80
Recom. by NIST: 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.

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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 Contact:
State: MA Yao Tzu Li
        Huckleberry Hill
        Lincoln, MA 01773
        617-259-9592

Status: Complete Status Date: 09/16/83 OERI No.: 005495

Development Stage: Working Model
Technical Category: Miscellaneous

Recv. by NIST: 07/30/79
Recom. by NIST: 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 #21489
Carmel CA 93922
408-624-3152
Status: Complete  Status Date: 12/21/84  OERI No.: 005898
Patent Status: Patent Number: 4319856 and others
Development Stage: Working Model
Technical Category: Industrial Processes
Recv. by NIST: 10/02/79
Recom. by NIST: 04/28/82
Award Date: 09/22/82  Award Amount: $52,000  Grant No: FG01-84CE15173
Contract Period: 09/22/82 - 12/21/84
Summary: 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.

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DOE No: 0204      DOE Coord: D.G. Mello
Title: The Induction Propeller
Description: An induction propeller for ship propulsion designed to include forward hydrodynamic rake for increased mass flow and higher efficiency.
Inventor: Raymond P Holland Jr
State: NM
Contact: Raymond P Holland Jr
Status: No DOE Support  Status Date: 11/10/82  OERI No.: 003872
Patent Status: Patent Number: 3226031
Development Stage: Prototype Development
Technical Category: Transportation Systems, Vehicles & Components
Recv. by NIST: 04/11/78
Recom. by NIST: 04/29/82
Summary: Inventor has abandoned this project in favor of another more promising invention not being supported by ERIP.
DOE No: 0205  DOE Coord: J.Aellen

Title: Energy Efficient Solid State Multiple Operator Metallic Arc Welding System

Description: A system for distributing and controlling AC electric power for metal arc welding to multiple welding stations.

Inventor: Charles B James  Contact: Mister Raymo
State: MO

Status: No DOE Support  Status Date: 06/09/83  OERI No.: 007178

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

Recv. by NIST: 06/26/80  Recom. by NIST: 05/21/82

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  Contact: Jonathan Gabel
State: CA
5800 Ocean View Drive
Oakland CA 94618
415-653-8879

Status: Complete  Status Date: 10/30/86  OERI No.: 007962

Development Stage: Working Model
Technical Category: Combustion Engines & Components

Recv. by NIST: 01/07/81  Recom. by NIST: 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  
**Contact:** Frank L Anderson

**Status:** No DOE Support  
**Status Date:** 09/30/90  
**OERI No.:** 008441

**Patent Status:** Patent Number: 4162907

**Development Stage:** Concept Development  
**Technical Category:** Industrial Processes

**Recv. by NIST:** 06/15/81  
**Recom. by NIST:** 06/23/82

**Summary:** No DOE support.

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### 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

**Status:** Complete  
**Status Date:** 12/31/85  
**OERI No.:** 008406

**Patent Status:** Patent Applied For

**Development Stage:** Prototype Test  
**Technical Category:** Fossil Fuels

**Recv. by NIST:** 06/01/81  
**Recom. by NIST:** 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
Development Stage: Production Engineering
Technical Category: Buildings, Structures & Components
Recv. by NIST: 12/03/80
Recom. by NIST: 06/28/82
Award Date: 06/04/84    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 sub-contractor.

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 NIST: 10/03/80
Recom. by NIST: 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: Complete
Status Date: 06/30/86
OERI No.: 007918

Development Stage: Concept Definition
Technical Category: Fossil Fuels

Recv. by NIST: 12/18/80
Recom. by NIST: 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

Contact: Hugh Huislander

Status: Other Assistance
Status Date: / /
OERI No.: 008517

Patent Status: Patent Number: 4202525
Development Stage: Production & Marketing
Technical Category: Buildings, Structures & Components

Recv. by NIST: 06/14/81
Recom. by NIST: 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
Contact: Clyde F Kaunitz
2339 Bay Woods Court
Bay City MI 48706
517-684-7354

State: MI

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 NIST: 02/20/81
Recom. by NIST: 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: Donald E Wise
Contact: Donald E Wise
5119 Jasper
Springfield OR 97447
503-747-9255

State: OR

Status: Complete  Status Date: 07/15/86  OERI No.: 008723

Patent Status: Patent Number: 4290642
Development Stage: Production Engineering
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST: 11/02/81
Recom. by NIST: 07/29/82
Award Date: 09/18/84  Award Amount: $63,069  Grant No: FG01-84CE15175
Contract Period: 09/18/84 - 12/15/85

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: Complete  Status Date: 06/11/87  OERI No.: 002333

Development Stage : Concept Applied For
Technical Category: Industrial Processes

Recv. by NIST : 06/07/77
Recom. by NIST : 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 an EPA SBIR Phase II project. The deal the inventor anticipated did not materialize. Currently, he is seeking a steel company who would be interested in building the unit on their site. ERIP has referred him to CE's Improved Energy Productivity Division for possible assistance.

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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: Richard F Kiley
State : MA

Contact: Richard F Kiley
Thermal Associates Inc
197 Main Street, P O Box #248
North Reading MA 01864
617-664-3342

Status: Complete  Status Date: 12/31/85  OERI No.: 008499

Development Stage : Limited Production/Marketing
Technical Category: Combustion Engines & Components

Recv. by NIST : 07/07/81
Recom. by NIST : 07/30/82
Award Date : 09/20/84  Award Amount: $ 53,900 Grant No: FG01-84CE15199
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  
**Contact:** H N Hensley  
2010 Princeton  
Midland TX 79701  
915-683-3534

**Status:** Complete  
**Status Date:** 10/16/88  
**OERI No.:** 008074

**Patent Status:** Disclosure Document Program  
**Development Stage:** Prototype Test  
**Technical Category:** Fossil Fuels

**Recv. by NIST:** 02/12/81  
**Recom. by NIST:** 07/30/82  
**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.

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**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:** Wilford Dean Tannehill  
**State:** TX

**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 NIST:** 03/17/82  
**Recom. by NIST:** 07/30/82

**Summary:** The inventor is looking for a licensee or buyer of his invention.
DE790219

Title: Method for Making Acetaldehyde 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

Contact: Thomas M Meshbesher
4507 Weldin Road
Wilmington, DE 19899
302-658-9141

Status: Complete
Status Date: 06/30/86
OERI No.: 008054

Development Stage: Laboratory Test
Technical Category: Combustion Engines & Components

Recv. by NIST: 02/05/81
Recom. by NIST: 07/30/82
Award Date: 09/18/84
Award Amount: $49,983
Grant No: FG01-84CE15191

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

Contact: Charles A Schwartz
24545 Bryden Road
Beachwood, OH 44122
216-831-3099

Status: Complete
Status Date: 08/31/85
OERI No.: 007767

Development Stage: Prototype Test
Technical Category: Industrial Processes

Recv. by NIST: 11/04/80
Recom. by NIST: 08/30/82
Award Date: 09/19/84
Award Amount: $45,920
Grant No: FG01-84CE15192

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 No: 0221  DOE Coord: J.Aellen
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: Paul Ginouves
State : NY
Status: Other Assistance  Status Date: 09/23/82  OERI No.: 008964
Patent Status : Patent Number: 3995443
Development Stage : Production & Marketing
Technical Category: Buildings, Structures & Components
Recv. by NIST : 03/25/82
Recom. by NIST : 09/13/82
Summary: ERIP identified government market for inventor.

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DOE No: 0222  DOE Coord: D.G.Mello
Title: Louver Trombe Solar Storage Unit
Description: 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.

Inventor: Donald R Thomas  Contact: Donald R Thomas
State : VT
Status: Other Assistance  Status Date: / /  OERI No.: 007979
Patent Status : Not Applied For
Development Stage : Laboratory Test
Technical Category: Direct Solar
Recv. by NIST : 01/15/81
Recom. by NIST : 10/07/82
Summary: ERIP assistance has been completed. Referred to National Appropriate Technology Assistance Service (NATAS) for assistance.
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:       OK

Contact:     Ruel Carlton Terry
             2235 Northwest 55th Street
             Oklahoma City OK 73112
             405-840-9586

Status: Complete    Status Date: 06/30/86    OERI No.: 008456

Development Stage: Concept Development
Technical Category: Fossil Fuels

Recv. by NIST: 06/17/81
Recom. by NIST: 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 was awarded to perform lab work. Follow-up funding of $248,000 was received from the state of Wyoming using funds provided by the Department of Interior. $60,000 for additional R&D has since been awarded by the US Bureau of Mines.

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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, President
            COMET, Inc
            3221 Ramada Road
            Grand Island NE 68801
            308-381-2990

Status: Complete    Status Date: 06/30/86    OERI No.: 006782

Development Stage: Engineering Design
Technical Category: Industrial Processes

Recv. by NIST: 04/09/80
Recom. by NIST: 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: 0225  
DOE Coord: J.Aellen

Title: 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  
Contact: Raymond E. Shea, Jr  
The ROVAC Corporation  
P. O. Box 111  
1030 Stafford St.  
Rochdale MA 01542  
508-892-4841

Status: Complete  
Status Date: 01/20/90  
OERI No.: 008593

Development Stage: Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST: 08/24/81  
Recom. by NIST: 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, to

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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: Stewart Ryan
State: OK

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 NIST: 12/28/81  
Recom. by NIST: 11/29/82

Summary: Action temporarily suspended at inventors request. Inventor sold six month option. Inventor subsequently abandoned project. Competing products now exist.

31 DECEMBER 1991  
PAGE 2-123
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 NIST : 03/01/82
Recom. by NIST : 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. Test 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

Contact: Meredith C Gourdine
Post Office Box #1228
Friendswood TX 77546
713-790-9892

Status: Complete    Status Date: 06/25/87    OERI No.: 008466

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

Recv. by NIST : 06/19/81
Recom. by NIST : 12/15/82
Award Date : 06/26/85    Award Amount: $ 88,840 Grant No: FG01-84CE15184
Contract Period: 06/26/85 - 06/25/87

Summary: An $88,840 cost sharing grant with Federal Express was awarded to install and demonstrate the technology at the Elmira, New York airport.
DOE No: 0229  
Title: Contoured Finger Follower Variable Valve-Timing Mechanism for Internal Combustion Engines  
Description: An inexpensive mechanism for varying the valve-timing of internal combustion engines in response to variations in engine operating conditions.  
Inventor: Edward M Tourtelot  
Contact: Edward M Tourtelot  
State: IL  
Status: No DOE Support  
Status Date: 07/31/86  
OERI No.: 008982  
Development Stage: Concept Development  
Technical Category: Combustion Engines & Components  
Recv. by NIST: 04/14/82  
Recom. by NIST: 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  
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  
Contact: Donald C Erickson  
State: MD  
Status: Complete  
Status Date: 11/26/85  
OERI No.: 007530  
Patent Status: Patent Number: 4402795 and others  
Development Stage: Concept Development  
Technical Category: Buildings, Structures & Components  
Recv. by NIST: 09/24/80  
Recom. by NIST: 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: C.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 Number: 4262747  
Development Stage: Prototype Development  
Technical Category: Fossil Fuels  

Recv. by NIST: 05/05/82  
Recom. by NIST: 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.

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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: Complete  
Status Date: 04/30/87  
OERI No.: 007662  

Patent Status: Patent Number: 4111928  
Development Stage: Limited Production/Marketing  
Technical Category: Industrial Processes  

Recv. by NIST: 10/14/80  
Recom. by NIST: 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.
ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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
Contact: Daniel A Lockie
Status Date: / /  OERI No.: 008984
Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Industrial Processes
Recv. by NIST : 04/15/82
Recom. by NIST : 02/01/83
Summary: Comparable technology is already on the market.

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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
Status: Complete
Status Date: 02/14/86  OERI No.: 002968
Patent Status : Patent Number: 4171876
Development Stage : Prototype Test
Technical Category: Direct Solar
Recv. by NIST : 11/18/77
Recom. by NIST : 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

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.

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

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.
### Hicks Alter-Brake System/Electric Charging Apparatus for Ground Vehicles

**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

**Contact:**
5244 Cracker Barrel Circle
Colorado Springs CO 80917
303-596-4390

**DOE Coord:** D.G. Mello

**DOE No:** 0237

**Status:** Complete

**Status Date:** 09/20/85

**OERI No.:** 009232

**Patent Status:** Patent Number:

**Development Stage:** Prototype Test

**Technical Category:** Transportation Systems, Vehicles & Components

**Rec. by NIST:** 01/19/82

**Recom. by NIST:** 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.

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### Industrial and Residential Clothes Dryer Automatic Shut-Off at Dryness

**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

**Contact:**
6465 Oakland Drive
New Orleans LA 70118
504-488-7853

**State:** LA

**DOE Coord:** G.K. Ellis

**DOE No:** 0238

**Status:** Complete

**Status Date:** 09/17/85

**OERI No.:** 009120

**Patent Status:** Not Applied For

**Development Stage:** Laboratory Test

**Technical Category:** Miscellaneous

**Rec. by NIST:** 08/31/82

**Recom. by NIST:** 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: Complete  
Status Date: 06/30/86  
OERI No.: 008674  

Patent Status: Patent Number: 4246081  
Development Stage: Working Model  
Technical Category: Industrial Processes  

Recv. by NIST: 10/01/81  
Recom. by NIST: 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.  

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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  
State: CA  

Contact:  
Uwe H Butenhoff  

Status: No DOE Support  
Status Date: 09/17/85  
OERI No.: 008823  

Development Stage: Engineering Design  
Technical Category: Miscellaneous  

Recv. by NIST: 12/28/81  
Recom. by NIST: 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

Description: A polysulfide additive to inhibit the corrosion of ferrous based metals in oil field and geothermal applications.

Inventor: Richard J Gay  Contact: Richard J Gay
State : TX  9215 Clarewood - #358
               Houston TX  77036
                         713-498-8553

Status: Complete  Status Date: 09/05/85  OERI No.: 008601

Patent Status : Not Applied For
Development Stage : Prototype Development
Technical Category: Fossil Fuels

Recv. by NIST : 08/24/81
Recom. by NIST : 07/28/83
Award Date : 12/07/84  Award Amount: $ 73,900  Grant No: FG01-85CE15200
Contract Period: 12/07/84 - 09/05/85

Summary: A grant of $73,900 was awarded on December 7th, 1984 to perform lab test, analysis and field test.

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DOE No: 0242  DOE Coord: G.K.Ellis

Title: New Petersburg Beam Trawl

Description: An improved trawl design to reduce drag for either single rigged or double rigged vessels.

Inventor: Donald Shuler  Contact: Donald Shuler
State : AK  General Delivery
               Petersburg AK 99833
                         907-772-3038

Status: Complete  Status Date: 06/30/86  OERI No.: 009310

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

Recv. by NIST : 12/22/82
Recom. by NIST : 09/05/83
Award Date : 09/05/84  Award Amount: $ 63,000  Grant No: FG01-84CE15180
Contract Period: 09/05/84 - 09/05/85

Summary: 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.
DOE No: 0243  
DOE Coord: P.M.Hayes

Title: An Electronic/Pneumatic Ejector System for Producing an Aluminum Rich Concentrate from Municipal Waste

Description: 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 and steel.

Inventor: Edward J Sommer, Junior

Contact: Garry R Kenny
Magnetic Separation Syst Inc
105 28th Avenue, South
Nashville TN 37212
615-329-0695

Status: Complete  
Status Date: 09/13/85  
OERI No.: 008031

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

Recv. by NIST: 01/23/81
Recom. by NIST: 09/29/83
Award Date: 09/15/84  
Award Amount: $ 50,640  
Grant No: FG01-84CE15179
Contract Period: 09/15/84 - 09/13/85

Summary: 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.

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DOE No: 0244  
DOE Coord: J.Aellen

Title: CHARLIE - Trademark - Federally Registered #1123957

Description: An electronic system for controlling engine-compression type brakes used on trucks.

Inventor: Charles E Robinson

Contact: Brad L Pfeifley
CAMACAN, Inc.
7730 Belleview
Suite #204
Englewood CO 80111
303-850-0404

Status: Complete  
Status Date: 04/10/86  
OERI No.: 009459

Patent Status: Patent Number: 4305353 and others
Development Stage: Limited Production/Marketing
Technical Category: Transportation Systems, Vehicles & Components

Recv. by NIST: 02/03/83
Recom. by NIST: 09/29/83
Award Date: 09/11/84  
Award Amount: $ 51,655  
Grant No: FG01-84CE15194
Contract Period: 09/11/84 - 04/10/86

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  Contact:  Thomas Neil Parker, Junior
State :  OK  Thomas Parker Insurance
          P O Box #356  Boswell OK  74727
          405-566-2535
Status: Complete  Status Date: 06/30/86  OERI No.: 009241
Patent Status :  Disclosure Document Program
Development Stage :  Working Model
Technical Category:  Fossil Fuels
Recv. by NIST : 11/23/82  Award Date : 06/25/84  Award Amount: $61,801
Recom. by NIST : 09/29/83  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
type 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.

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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  Contact:  Juan M Garcia, Junior
State :  MO
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 NIST : 11/09/81  Recom. by NIST : 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 Number: 4267571
Development Stage : Prototype Development
Technical Category: Miscellaneous
Recv. by NIST : 01/19/83
Recom. by NIST : 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: Thorvald G Granryd
State : IL
Contact: Thorvald G Granryd
P O Box #258
1260 North Western Avenue
Apartment #109
Lake Forest IL 60045
312-234-8250
Status: Complete  Status Date: 12/31/85  OERI No.: 008617
Patent Status : Patent Number: 4225082 and others
Development Stage : Production Engineering
Technical Category: Industrial Processes
Recv. by NIST : 08/12/81
Recom. by NIST : 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
State: NM
Contact: Patrick S Swihart, Senior
Box #262
Timberon NM 88350
505-987-2449
Status: Complete  Status Date: 08/19/85  OERI No.: 009220
Patent Status: Patent Number: 4036297 and others
Development Stage: Prototype Test
Technical Category: Fossil Fuels
Recv. by NIST: 11/16/82
Recom. by NIST: 12/30/83
Award Date: 08/19/85  Award Amount: $ 16,074 Grant No: FG01-85CE15202
Contract Period: 08/19/85 - 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: Hugh Edwin Whitted III
State: NC
Contact: Hugh Edwin Whitted III
Route #2, Box #444-A
East Bend NC 27018
Status: Complete  Status Date: 05/26/89  OERI No.: 009458
Patent Status: Not Applied For
Development Stage: Prototype Test
Technical Category: Combustion Engines & Components
Recv. by NIST: 03/14/83
Recom. by NIST: 12/30/83
Award Date: 08/27/86  Award Amount: $ 82,057 Grant No: FG01-86CE15284
Contract Period: 08/27/86 - 05/26/89
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. Preliminary results have shown no deterioration in critical engine components, and acceptable emission levels. The engines will find application in multi-fuel trucks and stationary engines.
DOE No: 0251  
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  
302-239-5059  
Status: Complete  
Status Date: 09/12/88  
OERI No.: 009260  
Patent Status: Patent Number: 4265736  
Development Stage: Prototype Test  
Technical Category: Industrial Processes  
Recv by NIST: 12/03/82  
Recom. by NIST: 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 was awarded to investigate the technology further. The technology was determined not to be cost effective under current economic conditions.

DOE No: 0252  
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: Complete  
Status Date: 08/26/86  
OERI No.: 009217  
Patent Status: Patent Number: 4287942  
Development Stage: Production Engineering  
Technical Category: Miscellaneous  
Recv by NIST: 11/02/82  
Recom. by NIST: 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 was awarded 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

Status: Complete  Status Date: 11/26/85  OERI No.: 008635

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

Recv by NIST: 09/10/81
Recom. by NIST: 02/24/84
Award Date: 09/27/84  Award Amount: $ 63,200  Grant No: FG01-84CE15198
Contract Period: 09/27/84 - 11/26/85

Summary: An grant was awarded 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.

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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 NIST: 01/10/83
Recom. by NIST: 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 was awarded 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  
State : NJ  
Contact: Arthur F Stone

Status: No DOE Support  
Status Date: 11/13/91  
OERI No.: 009806

Patent Status : Patent Number: 4289506 and others  
Development Stage : Prototype Test  
Technical Category: Industrial Processes

Recv by NIST : 11/03/83  
Recom. by NIST : 03/27/84

Summary: This decision reached after several unacceptable proposals have been received from the inventor, and many unsuccessful attempts have been made to negotiate with him, being unable each time to reach agreement as to what constituted an acceptable proposal that DOE could support.

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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.

Inventor: Evert S Green  
State : NY  
Contact: Evert S Green

Status: Other Assistance  
Status Date: 09/30/89  
OERI No.: 009696

Patent Status : Patent Number: 4245434 and others  
Development Stage : Production & Marketing  
Technical Category: Miscellaneous

Recv by NIST : 09/14/83  
Recom. by NIST : 04/25/84

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: Complete  
Status Date: 08/25/86  
OERI No.: 009758  
Development Stage: Production Engineering  
Technical Category: Miscellaneous  
Recv by NIST: 10/07/83  
Recom. by NIST: 04/30/84  
Award Date: 08/26/85  
Award Amount: $ 60,492  
Grant No: FG01-85CE15204  
Contract Period: 08/26/85 - 08/25/86  
Summary: A grant was awarded 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: Anthony T Rallis  
State: TX  
Contact: Anthony T Rallis  
4700 Polo Parkway  
Apartment #103  
Midland TX 79705  
915-684-8811  
Status: Complete  
Status Date: 09/30/89  
OERI No.: 009525  
Patent Status: Disclosure Document Program  
Development Stage: Concept Development  
Technical Category: Industrial Processes  
Recv by NIST: 04/29/83  
Recom. by NIST: 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 was awarded to prepare samples suitable for laboratory and field tests. The technology is in limited production.
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: William A Jones
P.O. Box #621
Lotus, CA 95651
916-622-9171

Status: Complete Status Date: 07/15/86 OERI No.: 009812
Patent Status: Disclosure Document Program
Development Stage: Prototype Test
Technical Category: Industrial Processes

Recv by NIST: 11/07/83
Recom. by NIST: 05/17/84
Award Date: 04/15/85 Award Amount: $81,220 Grant No: FG01-85CE15216
Contract Period: 04/15/85 - 04/04/86

Summary: A grant was awarded 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%. Inventor has licensed the technology.

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
Contact: Gene C Carpenter
227 Illinois Street
Brimfield, IL 61517
309-446-3395

Status: Complete Status Date: 08/06/87 OERI No.: 009736
Patent Status: Patent Number: 4285772
Development Stage: Production & Marketing
Technical Category: Industrial Processes

Recv by NIST: 10/03/83
Recom. by NIST: 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 was awarded to build and test a prototype, which has been successfully tested and put in operation. As part of a $92 cleanup of Bethlehem Steel’s Sparrows Point plant in Baltimore, MD, the installation of a $15 million Kress/coke-quenching system will be completed by October, 1991. Major benefits are anticipated in reduced maintenance requirements, increased yield per ton of coal treated, increased energy-saving from the hot coke, improved coke quality, and increased coke oven productivity.
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
State: PA
Status: Other Assistance
Status Date: 09/17/85  OERI No.: 009690

Patent Status: Patent Number: 4378162 and others
Development Stage: Production Engineering
Technical Category: Industrial Processes

Recv by NIST: 09/06/83
Recom. by NIST: 05/24/84

Summary: Inventor licensed his technology to a foreign company. There is no further action required of DOE.

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 recovers 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: Complete
Status Date: 09/16/86  OERI No.: 009691

Patent Status: Patent Number: 4396347
Development Stage: Working Model
Technical Category: Miscellaneous

Recv by NIST: 09/06/83
Recom. by NIST: 06/20/84
Award Date: 04/17/85  Award Amount: $85,837  Grant No: FG01-85CE15207
Contract Period: 04/17/85 - 09/16/86

Summary: A grant was awarded on to build and test the proposed pump.
DOE No: 0263

DOE Coord: J. Aellen

Title: Method for Reconditioning Rivetless Chain Links

Description: An upsetting process used to recondition chain links of the type used on industrial conveyors.

Inventor: William Tunderman

State: IL

Contact: William Tunderman

Status: No DOE Support

Status Date: 09/18/85

OERI No.: 009849

Patent Status: Patent Number: 4229962

Development Stage: Limited Production/Marketing

Technical Category: Industrial Processes

Recv by NIST: 10/03/83

Recom. by NIST: 06/22/84

Summary: Inventor received an award to conduct a market survey from the State of Illinois. Further assistance will be considered by DOE at the completion of the market survey.

DOE No: 0264

DOE Coord: J. Aellen

Title: Desulfurization of Coal

Description: A process for the selective wet oxidation of the sulfur content of high sulfur coal into sulfur trioxide or other use in order to produce a low sulfur coal for the slurry pipeline transport or other use.

Inventor: Donald F Othmer

State: NY

Contact: Agit Chowdhury

Zimpro. Incorporated

Military Road

Rothschild WI 54474

715-359-7211

Status: Complete

Status Date: 06/02/86

OERI No.: 009202

Patent Status: Patent Number: 4251277

Development Stage: Engineering Design

Technical Category: Industrial Processes

Recv by NIST: 11/09/82

Recom. by NIST: 06/22/84

Award Date: 07/03/85

Award Amount: $ 71,244

Grant No: FG01-85CE15206

Contract Period: 07/03/85 - 06/02/86

Summary: A grant was awarded to perform laboratory tests for desulfurization of coal by Zimpro, Inc., located in Wisconsin.
DOE No: 0265          DOE Coord: G.K. Ellis
Title: Flozone method and Apparatus for Direct Application of Treatment Liquid to Growing Vegetation
Description: A new type of tractor-mounted applicator that wipes herbicide onto growing weeds.
Inventor: John W Richardson          Contact: John W Richardson
State : LA                           J Sherman Richardson
                               Route Three, Box #81
                               Golfax LA 71417
                               318-627-9171
Status: Complete  Status Date: 09/30/89    OERI No.: 009918
Development Stage : Prototype Applied For
Technical Category: Industrial Processes
Recv by NIST : 01/06/84
Recom. by NIST : 07/18/84
Award Date   : 07/15/86   Award Amount: $113,417    Grant No: FG01-85CE15217
Contract Period: 07/15/86 - 09/23/88
Summary: A grant was awarded to build and test a prototype. Inventor was given an additional award in view of some unanticipated development problems encountered. A production prototype was completed and is in the market place. Compared to the alternative technologies, Flozone's cost is less than half the cost for the wick method and about one-fifth the cost of overtop spray. Inventor is being helped to find licensing or joint venture opportunity.

DOE No: 0266          DOE Coord: J.Aellen
Title: Energy Conversion Method
Description: A novel "Heat Pump" using engine-driven compressor and steam ejectors to compress low pressure steam to more useful levels.
Inventor: Dan Egosi          Contact: Dan Egosi
Country : Israel
Status: Other Assistance  Status Date: 09/13/85    OERI No.: 009582
Patent Status : Patent Number: 4282070
Development Stage : Concept Development
Technical Category: Buildings, Structures & Components
Recv by NIST : 01/06/83
Recom. by NIST : 08/22/84
Summary: Inventor needs licensing help. DOE sent him names of appropriate companies in the U.S. to be contacted for licensing.
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.

Inventor: Shang-I Cheng  Contact: Shang-I Cheng
State : NJ  Seventeen Woodsend Drive
          Matawan NJ 07747  212-254-6300

Status: Complete  Status Date: 06/09/87  OERI No.: 009565
Patent Status : Patent Number: 4357713
Development Stage : Prototype Development
Technical Category: Industrial Processes

Recv by NIST : 05/23/83  Recom. by NIST : 08/22/84
Award Date : 05/10/85  Award Amount: $ 70,000  Grant No: FG01-85CE15222
Contract Period: 05/10/85 - 06/09/87

Summary: A grant was awarded to perform laboratory tests, computer simulation and preliminary design.

DOE No: 0268  DOE Coord: J.Aellen
Title: Apparatus for Enhancing Chemical Reactions
Description: A process for using ultrasonic energy to enhance chemical reactions and extraction processes.

Inventor: Harold T Sawyer  Contact: Harold T Sawyer
State : CA  845 Via de la Paz
          Pacific Palisades CA 92663  213-459-3020

Status: Complete  Status Date: 05/01/87  OERI No.: 009794
Patent Status : Patent Number: 4369100 and others
Development Stage : Prototype Test
Technical Category: Fossil Fuels

Recv by NIST : 10/31/83  Recom. by NIST : 08/22/84
Award Date : 05/02/86  Award Amount: $ 75,402  Grant No: FG01-86CE15263
Contract Period: 05/02/86 - 05/01/87

Summary: An award was granted to build a model and have it tested at the University of Utah.
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 being drawn into the compressor, and intended to prevent overcharging or undercharging the refrigerant system.

Inventor: Richard J Avery, Junior  Contact: Richard J Avery, Jr.
State: TX
Status: No DOE Support  Status Date: 09/30/91  OERI No.: 009971
Development Stage: Limited Production/Marketing
Technical Category: Buildings, Structures & Components
Recv by NIST: 02/07/84
Recom. by NIST: 08/30/84
Summary: Inventor attended commercialization workshop, Leesburg, VA. The technology is being marketed by other parties.

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  Contact: Shih-Chih Chang
State: WA
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 NIST: 10/13/83
Recom. by NIST: 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 was awarded 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.
ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

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.

Inventor: William B Retallick

State: PA

Contact: William B Retallick
1432 Johnny's Way
West Chester PA 19380
215-399-1371

Status: Complete  Status Date: 07/15/86  OERI No.: 009734

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

Recv by NIST: 10/04/83
Recom. by NIST: 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 was awarded 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. Inventor has recently obtained DOE/SBIR Phase I support as a spinoff of this invention.

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: Robert M Roeglin
2217 South First Street
Milwaukee WI 53207
414-744-0111

Status: Complete  Status Date: 12/31/88  OERI No.: 009730

Patent Status: Patent Number: 4275570
Development Stage: Production & Marketing
Technical Category: Buildings, Structures & Components

Recv by NIST: 09/14/83
Recom. by NIST: 09/27/84
Award Date: 02/24/87  Award Amount: $149,986  Grant No: FG01-87CE15245
Contract Period: 02/24/87 - 12/31/88

Summary: Grants were awarded to: 1) to test the lubricant cooling system at the Herrick Laboratory at Purdue University and 2) to concurrently test DOE #284 Atomized Oil-Injected Rotary Screw Compressors. Test results were inconclusive due to the low oil flow rate used. The V-Plus System is commercially available from Viltes Manufacturing Corporation.
DOE No: 0273  DOE Coord: P.M.Hayes
Title: Open Cycle Latent Heat Engine
Description: A novel engine that uses relatively low temperature water as a heat source.
Inventor: Julius Czaja  Contact: Julius Czaja
State : NY
Status: No DOE Support  Status Date: 09/13/85  OERI No.: 009866
Patent Status : Patent Number: 4106294
Development Stage : Concept Development
Technical Category: Combustion Engines & Components
Recv by NIST : 12/07/83  Recom. by NIST : 09/27/84
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.M.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  Contact: Nathan E Passman
State : CO
- 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 Number: 3157823 and others
Development Stage : Production & Marketing
Technical Category: Miscellaneous
Recv by NIST : 12/31/80  Recom. by NIST : 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 was awarded to design, build, and demonstrate the unique lighting system. Bridge structures and coal mine passageways will be the first two applications. An unsatisfactory report was received on May 28th, 1987.
DOE No: 0275  DOE Coord: J.Aellen
Title: Low Head - High Volume Pump
Description: A low-head, high volume double-acting piston pump for use in wind-driven water pumping stations.
Inventor: Don E Avery
Contact: Don E Avery
State : HI
45-437 Akimala
Kaneohe HI 96744
808-247-1909

Status: Complete  Status Date: 06/03/87  OERI No.: 010115
Patent Status : Disclosure Document Program
Development Stage : Prototype Test
Technical Category: Miscellaneous

Summary: A grant was awarded to design and demonstrate a low-head, high-volume pump. The County of Maui in Hawaii is cost-sharing. See recommendation #301 for related work. First season test proved concept. Winter 1986, tested 2nd generation product. Present throughput rate uneconomical in urban test. Device installed and working successfully on U. S. Fish and Wildlife bait pond in Hawaii. Grant work not completed. No final report available.

DOE No: 0276  DOE Coord: J.Aellen
Title: Gas Concentration Cells as Converters of Heat into Electrical Energy
Description: A system for using gas concentration cells to convert waste heat directly into electricity through heat driven electrochemical reactions.
Inventor: Robert E Salomon
Contact: Robert E Salomon
State : PA
Chemistry Department
Temple University
Philadelphia PA 19122
215-787-7125

Status: Complete  Status Date: 09/30/87  OERI No.: 009713
Patent Status : Not Applied For
Development Stage : Concept Development
Technical Category: Fossil Fuels

Summary: A grant was awarded on to Temple University for building and testing a prototype model.
DOE No: 0277

DOE Coord: J.Aellen

Title: Electronic Conveyor Control Apparatus

Description: Electronic conveyor control, U.S. Patent Number: 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 drive the belts. No proposal submitted.

Inventor: Guy C Dempsey
State: VA

Contact: Smart Technologies, Inc

Status: No DOE Support

Status Date: 09/30/90
OERI No.: 010221

Patent Status: Patent Number: 4372439
Development Stage: Limited Production/Marketing
Technical Category: Industrial Processes

Recv by NIST: 06/08/84
Recom. by NIST: 11/23/84

Summary: No proposal received.

******************************************

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

Status: Complete

Status Date: 08/07/87
OERI No.: 009238

Patent Status: Patent Number: 4340033 and others
Development Stage: Production Engineering
Technical Category: Direct Solar

Recv by NIST: 11/23/82
Recom. by NIST: 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 was awarded to build and test a prototype solar water heating system. Grant objectives were successfully completed. Technology featured in the NASA Spinoff 88 publication.
DOE No: 0279  DOE Coord: P.M. Hayes

Title: Method and Means for Preventing Frost Damage to Crops

Description: 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 at low level.

Inventor: Douglas R Reich
State: FL

Status: Complete  Status Date: 08/07/87  OERI No.: 009638


Recv by NIST: 01/29/83  Recom. by NIST: 11/29/84  Award Date: 08/26/85  Award Amount: $74,280  Grant No: FG01-85CE15231  Contract Period: 08/26/85 - 08/07/87

Summary: A grant was awarded 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 of $3 million.

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DOE No: 0280  DOE Coord: J.Aellen

Title: Down Hole and Above Ground Resistance Heating for Paraffin Elimination

Description: A method for removing paraffin from down-hole oil well tubing by use of resistance heating induced in the tubing to heat and melt the paraffin.

Inventor: Andrew W Marr, Junior
State: OK

Status: Complete  Status Date: 09/22/86  OERI No.: 009509


Recv by NIST: 04/19/83  Recom. by NIST: 11/30/84  Award Date: 08/28/85  Award Amount: $58,286  Grant No: FG01-85CE15220  Contract Period: 08/28/85 - 09/22/86

Summary: A grant was awarded to
DOE No: 0281  DOE Coord: J.Aellen

Title: Sun Synchronous Solar Powered Refrigerator

Description: Photovoltaic powered refrigerator. Key features are durability, good insulation, efficient vapor/compression cycle, thermal storage, low cost, and sun synchronous operation without the use of batteries.

Inventor: Arthur D Sams  Contact: Arthur D Sams
State : CA  Polar Products
                  2908 Oregon Court, I-11
                  Torrance CA 90503
                  213-320-3514

Status: Complete  Status Date: 11/12/86  OERI No.: 010256

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

Recv by NIST : 07/02/84  Recom. by NIST : 12/18/84
Award Date : 08/12/85  Award Amount: $ 69,415  Grant No: FG01-85CE15219
Contract Period: 08/12/85 - 12/11/86

Summary: A grant was awarded to build and test a prototype. Recipient contributed $24,960 in addition to the grant.

DOE No: 0282  DOE Coord: J.Aellen

Title: Insulated Siding

Description: An insulated siding for use on houses. Both vinyl and aluminum siding are fabricated with urethane foam averaging 1/2" thick and lined with aluminum foil backing.

Inventor: Eugene Tippmann  Contact: Robert J Koester
State : IN  Ball State University
                    Ctr for Energ Res & Ed Svcs
                    Muncie IN 47306
                    317-285-1135

Status: Complete  Status Date: 09/30/86  OERI No.: 010002

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

Recv by NIST : 02/28/84  Recom. by NIST : 12/18/84
Award Date : 08/29/85  Award Amount: $ 57,798  Grant No: FG01-85CE15240
Contract Period: 08/29/85 - 09/30/86

Summary: A grant was awarded 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  Contact: Donald Cullen
State: OH  Transmet Corporation

Status: Complete  Status Date: 08/07/87  OERI No.: 010182

Summary: A grant was awarded 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 1990.

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  Contact: Anthony N Fresco
State: NY  Post Office Box #734

Status: Complete  Status Date: 12/31/88  OERI No.: 009662

Summary: A grant was awarded for two purposes: (1) to test the atomized oil injection concept for improved efficiency at Purdue University's Herrick Laboratory and (2) to test concurrently ERIP #272, the V-Plus System. The oil injection system was found to improve the volumetric efficiency. Inventor seeking independent financial backing to prepare for licensing negotiation with manufacturers.
DOE No: 0285  DOE Coord: T.M. 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 between rotating and non-rotating parts and depending on dynamic effects for sealing.
Inventor: Hermann Ernst
Contact: Hermann Ernst
State: CT  Ernst Mechanical Devices
        20 Crowley Drive
        Old Saybrook CT 06475
        203-722-5477
Status: Award  Status Date: 09/30/91  OERI No.: 010167
Patent Status: Patent Number:
Development Stage: Laboratory Test
Technical Category: Transportation Systems, Vehicles & Components
Recv by NIST: 05/10/84
Recom. by NIST: 01/25/85
Award Date: 06/03/87  Award Amount: $ 72,000  Grant No: FG01-87CE15334
Contract Period: 06/03/87 - 06/01/90
Summary: A grant was awarded to design a fluid-ring seal and test it in actual operation on a Burlington Northern railcar. Testing was successful. Discussions regarding licensing are still underway with an American manufacturer of railroad wheel bearings and seals. The inventor applied for a patent for a simplified version of his prototype design that also prevents damage to railroad axles. He has considered applying the design of the seal system to over-the-road trucks and stationary machinery.

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 a coal-water mixture injected into a large steam boiler combustor.
Inventor: Momtaz N Mansour
Contact: Momtaz N Mansour
State: MD
Status: No DOE Support  Status Date: 12/23/91  OERI No.: 010313
Patent Status: Not Applied For
Development Stage: Concept Development
Technical Category: Buildings, Structures & Components
Recv by NIST: 08/02/84
Recom. by NIST: 01/25/85
Summary: In lieu of an ERIP grant, inventor received contract from Pittsburgh energy Technology Center, A DOE Laboratory, to support the subject technology.
ENERGY RELATED INVENTIONS PROGRAM - BRIEF STATUS REPORT

DOE No: 0287  
DOE Coord: J. Aellen

Title: Automatic Variable Pitch Marine Propeller

Description: 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 loadings.

Inventor: Don J Marshall
State: MD
Contact: Don J Marshall
1087 Rodgers Road
P O Box #159
Churchton MD 20733
301-867-2135

Status: Complete  Status Date: 12/15/87  OERI No.: 010259

Patent Status: Patent Number: 4297079 and others
Development Stage: Prototype Test
Technical Category: Transportation Systems, Vehicles & Components

Recv by NIST: 06/26/84
Recom. by NIST: 01/25/85
Award Date: 09/06/85  Award Amount: $41,593  Grant No: FG01-85CE15243
Contract Period: 09/06/85 - 12/15/87

Summary: A grant was awarded to build and test the proposed propeller. The test took place at Mississippi State University in cooperation with Sea Grant Advisory Service.

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DOE No: 0288  
DOE Coord: G.K. Ellis

Title: Dickinson Pure Air Combustion (DIPAC) and Modified DIPAC (MODIPAC)

Description: A method of burning coal or coal/water/mixture at high pressure without resultant air pollution.

Inventor: Norman L Dickinson
State: CA
Contact: Norman L Dickinson

Status: No DOE Support  Status Date: 08/06/87  OERI No.: 010307

Patent Status: Patent Number: 4380960 and others
Development Stage: Engineering Design
Technical Category: Buildings, Structures & Components

Recv by NIST: 07/23/84
Recom. by NIST: 01/30/85

Summary: The inventor attended Commercialization Planning Workshop. Unable to establish definitive marketing need.
DOE No: 0289    DOE Coord: P.M. Hayes
Title:          An Earthquake Barrier
Description:    A concept to absorb the energy of an earthquake with bilinear force-deflection
                devices at the foundation of a building, thereby 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        Contact:        Marc S Caspe
State :         CA                     1640 Oakwood Drive
                San Mateo CA 94403
                415-573-8888
Status:         Complete        Status Date: 01/09/87    OERI No.: 010311
Patent Status  : Patent Number: 3638377
Development Stage : Engineering Design
Technical Category: Buildings, Structures & Components
Recv by NIST : 07/26/84
Recom. by NIST : 02/28/85
Award Date :    01/10/86    Award Amount: $ 68,749 Grant No: FG01-86CE15250
Contract Period: 01/10/86 - 01/09/87
Summary:       A grant was awarded 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 architectural and construction firms have taken the lead in
                developing this type of technology.

DOE No: 0290    DOE Coord: J. Aellen
Title:          Low Energy Ice Making Apparatus
Description:    In this ice-making apparatus, ice is progressively formed on evaporator plates
                and harvested by a secondary condenser grid heated by the warm liquid
                refrigerant discharged by the primary water cooler condenser.
Inventor:       Jerry Aleksandrow       Contact:        Greg Ross
State :         IL                      Universal Ice Machine Mfg
                900 Jorie Boulevard
                Suite Seventy-Two
                Oakbrook IL 60521
                312-990-1111
Status:         Complete        Status Date: 05/20/87    OERI No.: 009807
Patent Status  : Patent Number: 4357807
Development Stage : Limited Production/Marketing
Technical Category: Miscellaneous
Recv by NIST : 11/03/83
Recom. by NIST : 02/28/85
Award Date :    05/21/86    Award Amount: $ 62,500 Grant No: FG01-86CE15258
Contract Period: 05/21/86 - 05/20/87
Summary:       A grant was awarded to compare efficiency and safety with comparable machines.
                The testing program was not started. No final report submitted.
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

Status: Complete  
Status Date: 10/08/88  
OERI No.: 010331

Development Stage: Working Model
Technical Category: Buildings, Structures & Components

Recv by NIST: 08/02/84
Recom. by NIST: 02/28/85
Award Date: 04/15/86  
Award Amount: $90,769  
Grant No: FG01-86CE15261
Contract Period: 04/15/86 - 10/08/88

Summary: 
An award was granted to build and demonstrate a prototype. A Phase II grant was awarded to build an advanced prototype. The prototype was completed and tested satisfactorily. The inventor is 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

Status: Complete  
Status Date: 08/25/86  
OERI No.: 010297

Development Stage: Laboratory Test
Technical Category: Direct Solar

Recv by NIST: 07/19/84
Recom. by NIST: 02/28/85
Award Date: 08/26/85  
Award Amount: $40,130  
Grant No: FG01-85CE15239
Contract Period: 08/26/85 - 08/25/86

Summary: 
A grant was awarded to perform laboratory tests on the roof membrane and photocells.

PAGE 2-156  
31 DECEMBER 1991
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: Complete  Status Date: 03/31/90  OERI No.: 010130

Development Stage : Limited Production/Marketing
Technical Category: Fossil Fuels

Recv by NIST : 04/24/84
Recom. by NIST : 03/29/85
Award Date : 01/15/86  Award Amount: $ 56,193  Grant No: FG01-86CE15254
Contract Period: 01/15/86 - 03/31/90

Summary: A grant was awarded to build and test prototype valve covers, first in the laboratory and then in the field, under actual conditions. No-cost grant extension for 1 year expired January 31, 1990. No final report.

******************************************************************************

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 crushed 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

Development Stage : Prototype Test
Technical Category: Industrial Processes

Recv by NIST : 03/20/84
Recom. by NIST : 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 was awarded 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.
<table>
<thead>
<tr>
<th>DOE No: 0295</th>
<th>DOE Coord: J.Aellen</th>
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<tbody>
<tr>
<td>Title:</td>
<td>Improved Method of Electroplating Aluminum for Corrosion Resistance</td>
</tr>
<tr>
<td>Description:</td>
<td>A method for electroplating ferrous metals with aluminum for improved corrosion resistance.</td>
</tr>
<tr>
<td>Inventor:</td>
<td>J Paul Pemsler</td>
</tr>
<tr>
<td>State:</td>
<td>MA</td>
</tr>
<tr>
<td>Contact:</td>
<td>J Paul Pemsler Castle Technology Corporation Fifty-Two Dragon Court Woburn MA 01801 617-933-5634</td>
</tr>
<tr>
<td>Status:</td>
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<td>Industrial Processes</td>
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<tr>
<td>Summary:</td>
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<table>
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<tr>
<th>DOE No: 0296</th>
<th>DOE Coord: P.M.Hayes</th>
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<tbody>
<tr>
<td>Title:</td>
<td>Shower Bath Economizer</td>
</tr>
<tr>
<td>Description:</td>
<td>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.</td>
</tr>
<tr>
<td>Inventor:</td>
<td>Raymond Hunter</td>
</tr>
<tr>
<td>State:</td>
<td>TN</td>
</tr>
<tr>
<td>Contact:</td>
<td>Raymond Hunter Chattanooga TN 37404</td>
</tr>
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<td>Status:</td>
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<tr>
<td>Status Date:</td>
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<td>Development Stage:</td>
<td>Production Engineering</td>
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<td>Buildings, Structures &amp; Components</td>
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<td>Recom. by NIST:</td>
<td>03/29/85</td>
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<td>Award Date:</td>
<td>02/01/86 Award Amount: $ 58,000 Grant No: FG01-86CE15251</td>
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<td>02/01/86 - 07/31/86</td>
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<tr>
<td>Summary:</td>
<td>A grant was awarded for the final design and development of the shower bath economizer. Test results were not reported to DOE.</td>
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</table>
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
301-252-6230

Status: Complete

Status Date: 10/01/88   OERI No.: 010261

Development Stage: Concept Development
Technical Category: Buildings, Structures & Components

Recv by NIST: 07/05/84
Recom. by NIST: 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 was awarded to design and build a prototype. Tests will be conducted in phase II.

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: Complete

Status Date: 11/05/87   OERI No.: 010254

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

Recv by NIST: 06/28/84
Recom. by NIST: 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 was awarded to build and test a prototype.
**DOE No: 0299**

**DOE Coord:** G.K. Ellis

**Title:** Process for Using Cocurrent Contacting Distillation Column

**Description:** A new fractionator tray design which achieves higher distillation column output through high-velocity cocurrent vapor-liquid flow in the zones between the trays.

**Inventor:** William R Trutna

**State:** TX

**Contact:**

William R Trutna  
2213 Fenwood  
Pasadena TX 77502  
713-472-5098

**Status:** Complete  
**Status Date:** 09/30/88  
**OERI No.:** 009873

**Patent Status:** Patent Number: 4361469

**Development Stage:** Engineering Design

**Technical Category:** Industrial Processes

**Recv by NIST:** 12/07/83  
**Recom. by NIST:** 04/19/85

**Award Date:** 09/17/86  
**Award Amount:** $74,192  
**Grant No:** FG01-86CE15296

**Contract Period:** 09/17/86 - 09/30/88

**Summary:** A grant was awarded to build and demonstrate a workable prototype. Tests were completed satisfactorily at the University of Texas' Separation Center, showing a 30% improvement in separations efficiency. The inventor seeks to license the technology.

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**DOE No: 0300**

**DOE Coord:** G.K. Ellis

**Title:** Casing Stabbing Apparatus

**Description:** A retrofittable hardware design for the rapid alignment of well 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 OK 73460  
405-371-9223

**Status:** Complete  
**Status Date:** 07/31/87  
**OERI No.:** 010194

**Patent Status:** Patent Number: 4440220

**Development Stage:** Limited Production/Marketing

**Technical Category:** Fossil Fuels

**Recv by NIST:** 05/25/84  
**Recom. by NIST:** 04/30/85

**Award Date:** 07/18/86  
**Award Amount:** $64,337  
**Grant No:** FG01-86CE15276

**Contract Period:** 07/18/86 - 07/31/87

**Summary:** A grant was awarded to design, build and test a prototype. The prototype was completed and successfully tested. Inventor has sold the invention to Okie-Yoke, Inc., P. O. Box 105, Lindsay, OK 73052 (405/756-2188), which markets the invention as "Okie-Yoke".
APPENDIX A
### APPENDIX A

#### INVENTION CLASSIFICATIONS

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A-1
### APPENDIX A

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APPENDIX B
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
   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
APPENDIX B

TECHNICAL CATEGORIES AND ASSOCIATED INVENTION CLASSIFICATIONS

TECHNICAL CATEGORY

ASSOCIATED INVENTION CLASSIFICATIONS

3. Other Natural Sources (cont.)

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. Combustion Engines & Components

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

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
## APPENDIX B

### TECHNICAL CATEGORIES AND ASSOCIATED INVENTION CLASSIFICATIONS

**TECHNICAL CATEGORY**

**ASSOCIATED INVENTION CLASSIFICATIONS**

5. **Transportation Systems: Vehicles & Components (cont.)**
   - 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
     - 6.20200 FIREPLACES
   - 6.23000 BOILERS AND FURNACES (INDUSTRIAL)
   - 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
   - 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**
   - 7.00000 INDUSTRIAL PROCESSES (NOT INCLUDED BELOW)
   - 7.01000 CHEMICAL, CHEMICAL PROCESS INDUSTRIES UNIT OPERATIONS
   - 7.01100 IRON AND STEEL
   - 7.01200 PRIMARY NON-FERROUS METALS
   - 7.01300 FABRICATED METAL PRODUCTS
   - 7.01400 AIR SEPARATION
   - 7.01500 WATER AND WASTE TREATMENT
   - 7.01600 PACKAGING AND CONTAINERS
   - 7.01700 MISCELLANEOUS - DESALINIZATION - ELECTROLYSIS
   - 7.01800 SOLAR DISTILLATION PROCESSES
   - 7.01900 SOLAR EVAPORATION PROCESSES
   - 7.02000 TEXTILES, FABRICS, RUGS, CLOTHING
   - 7.02100 POWDER METALLURGY

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## APPENDIX B

### TECHNICAL CATEGORIES AND ASSOCIATED INVENTION CLASSIFICATIONS

<table>
<thead>
<tr>
<th>TECHNICAL CATEGORY</th>
<th>ASSOCIATED INVENTION CLASSIFICATIONS</th>
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</table>
| 7. Industrial Processes (cont.) | 7.02200 CERAMICS  
7.02300 COMPOSITE MATERIALS  
7.02400 STACK GAS SCRUBBERS  
7.03000 FOOD, FEEDS, LEATHER, FURS, FEATHERS, ETC.  
7.04000 LUMBER, WOOD, WOOD PRODUCTS INDUSTRIAL PROCESSES |
|  | 7.05000 PAPER AND ALLIED PRODUCTS  
7.06000 PETROLEUM, OIL AND NATURAL GAS INDUSTRIES  
7.07000 RUBBER AND PLASTICS  
7.08000 STONE, CLAY AND GLASS  
7.09000 PRIMARY METALS  
7.10000 CIVIL ENGINEERING |
|  | 7.20000 AGRICULTURE EQUIPMENT AND FARM EQUIPMENT  
7.30000 OIL SPILL RECOVERY  
7.40000 MECHANICAL CONTRIVANCES (NON-VEHICULAR)  
7.50000 SOLAR INDUSTRIAL |
| 8. Miscellaneous | 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 |
### APPENDIX B

Technical Categories and Associated Invention Classifications

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<tr>
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<td>Lamps and Light Bulbs (6.5 for Lighting Fixtures)</td>
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**Energy Related Inventions Program.** A joint program of the Department of Energy and the National Institute of Standards and Technology Status Report for recommendations 1 through 300.

**status report; energy; inventions; innovations; new technology; NIST; DOE**