OIT and industry partners launch more than 130 new RD&D projects in ’99

Through OIT’s customer-driven “Industries of the Future” strategy, industry representatives work together to identify their priority pre-competitive technology investments—technologies that will best help their industries save energy, boost productivity and reduce waste. In 1999, with OIT’s help, over 130 of these technologies came on a faster track to development and commercial deployment. This special “new projects issue” of The OIT Times lists our new start-up projects during 1999.

“Many valuable technologies are too costly for a single organization to develop alone,” explained Denise Swink, DOE’s Deputy Assistant Secretary for Industrial Technologies. “Our role is to get the competing players to identify the technologies that will make their industries more competitive and energy-efficient. We support R&D projects that can best help meet these goals by sharing the funding of those efforts. As valuable as this work is, much of it would probably not move forward without this kind of support.”

The aluminum industry, for example, is excited about its newly revitalized focus on developing inert anodes, a roadmap technology that could revolutionize its energy usage and emissions profiles. And, indeed, OIT’s Aluminum Team “Class of ’99” includes a project investigating an innovative anode technology. “Non-consumable anodes were given very high priority by the industry in our roadmapping efforts,” said Sara Dillich, OIT’s Aluminum Team Leader. “We’re pleased to be co-funding an R&D effort that is taking a promising new approach to the challenge.”

All of OIT’s Industry Teams solicit R&D proposals that address priority needs identified in their industry’s roadmaps. Harvey Wong, OIT’s Metalcasting Team Leader, refers to these consensus documents as a “blueprint.” “Our roadmap, created in tandem by all sectors of the highly diverse metalcasting industry, guided us throughout the process—from the solicitation, to the projects suggested by industry, to the final selection,” Wong said. “We were very pleased with the excellent proposals we received, and with the quality of projects selected. We are cost-sharing 17 of them, and some of the projects have as many as 30 partners. So I think our work is gaining very broad interest and support.”

To maximize the leverage of its efforts, OIT engages as many partners from as many levels as possible. In one new approach, OIT’s “BestPractices” is helping plants benefit from new technologies and well-proven cost saving opportunities in motor, steam and other plant-wide systems. “We believe that if you take a plant-wide systems approach—looking at all the opportunities in total—you can often reduce energy use by up to 30% in 3 to 10 years,” explained OIT BestPractices Lead Paul Scheihing. “Through BestPractices, we can share a wide range of near- and long-term technology solutions for specific processes and plant-wide operations.”

In 1999, BestPractices started its first cost-shared, plant-wide energy efficiency assessments by partnering with seven plants in four industries. BestPractices is now looking for new partners to work with in 2000. A complete schedule of current and planned OIT solicitations appears on page 7.
**Quarterly Highlights**

**Forest Products**

*Title:* Accelerated Stem Growth Rates and Improved Fiber Properties of Loblolly Pine  
*Partners:* Institute for Paper Science and Technology (IPST)

*Title:* Quality Trait Loci and Candidate Genes for Growth Traits in *Pinus Taeda* L.  
*Partners:* Texas A&M Univ., The Timber Co., Union Camp Corp., International Paper Co., Weyerhaeuser Co., Perkin-Elmer AgGen, Western Gulf Forest Tree Improvement Program, Texas Agricultural Experiment Station

*Title:* Use of Residual Solids from Pulp and Paper Mills for Enhancing Strength and Durability of Ready-Mixed Concrete  
*Partners:* Univ. of Wisconsin-Milwaukee, Advance Cast Stone Co., Fox River Fiber, Weyerhaeuser Co.

*Title:* Environmental Assessment of Low Temperature Plasma Technologies for Treating VOC’s from Pulp Mills and Wood Products Plants  
*Partners:* Univ. of Illinois, Pacific Northwest National Lab, Georgia-Pacific, Current Environmental Solutions, Ecos, Ltd., American International Technologies, ANL.

*Title:* Control of Emissions from Wood Waste Burners and Wood Dryers  
*Partner:* Univ. of Washington

*Title:* High Selectivity Oxygen Delignification  
*Partners:* IPST, North Carolina State Univ.

*Title:* Non-process Element Removal Using Functionalized Monolayers on Mesoporous Supports  
*Partners:* Pacific Northwest National Lab, Weyerhaeuser Co.

*Title:* Bubble Size Control to Improve Oxygen-Based Bleaching  
*Partners:* IPST, Air Products and Chemicals Inc., Consolidated Papers Inc., Wisconsin Tissue

*Title:* Increasing Yield and Quality of Low Temperature, Low Alkali Kraft Cooks with Microwave Pretreatment  

*Partners:* IPST, Industrial Microwave Systems

*Title:* Application of a Device for Uniform Web Drying and Preheating Using Microwave Energy  
*Partners:* IPST, Industrial Microwave Systems

*Title:* Intermediate-Sized, Entrained Particles: Characterization, Foundation, and Control  
*Partners:* Sandia National Lab, IPST, McDermott Technology Inc., University of Toronto

*Title:* Selection and Development of Metallic and Refractory Structural Materials for Black Liquor and Biomass Gasification  

*Title:* 3D Characterization of the Structure of Paper and Paper Board  
*Partners:* Univ. of Minnesota, State Univ. of New York, Hercules Inc.

*Title:* Stability and Regenerability of Catalysts for the Destruction of Tars from Biomass and Black Liquor Gasification  
*Partners:* Georgia Tech Univ., IPST

*Title:* Acoustic Separation Technology  

*Title:* Development of Screenable Pressure Sensitive Adhesives  
*Partners:* Univ. of Minnesota, IPST, H.B. Fuller Co.

*Title:* Surfactant Spray: A Novel Technology to Improve Flotation De-inking Performance  
*Partners:* IPST, Voith Sulzer
Title: Preventing Strength Loss of Unbleached Kraft Fiber
*Partners:* North Carolina State Univ., Hercules Inc., International Paper Co.

Title: Mechatronic Design and Control of a Waste Paper Sorting System for Efficient Recycling
*Partners:* North Carolina State Univ., SCA Packaging Research, Lions Adhesives

Title: Linear Corrugating
*Partner:* Mr. Lloyd Chapman (*Inventions and Innovation*)

Title: Guided Acoustic Wave Monitoring of Corrosion and Erosion in Recovery Boiler Tubing
*Partners:* Lawrence Livermore National Lab, Weyerhaeuser Co.

Title: Laser Sensors for On-Line Monitoring of Carryover in Recovery Boilers
*Partners:* Sandia National Lab, Weyerhaeuser Co., Georgia-Pacific Corp., McDermott Technology Inc.

Title: Development of a Field Mobile Near Infrared Sensor for Measurement of Chemical Composition and Mechanical Properties of Standing Wood

Title: Evaluation and Development of a Prototype Electrokinetic Sonic Amplitude System
*Partners:* Pacific Northwest National Lab, Miami Univ., Colloidal Dynamics, Weyerhaeuser Co., IPST

Title: Model-based Approach to Soft Sensing and Diagnosis for Control of a Continuous Digester
*Partners:* Univ. of Delaware, Weyerhaeuser Co., Westvaco, IETek

Title: **BestPractices** Plant-wide Energy Efficiency Assessments
*Partner:* Boise Cascade, Caraustar Industries, Inc., Georgia Pacific Corp., Inland Paperboard and Packaging Inc.

Title: Energy and Environmental Innovations for Chemically-Preserved Wood Wastes
*Partner:* Georgia Tech Applied Research Corp. (*Inventions and Innovation*)

Contact: Valri Robinson, 202-586-0937

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**Agriculture**

Title: Thermostable Enzymatic Transformations
*Partners:* Altus Biologics Inc., Genencor, Oak Ridge National Lab, Cargill

Title: Utilization of Corn-based Polymers
*Partners:* Cargill Dow Polymers Inc., National Renewable Energy Lab, Colorado School of Mines

Title: Catalytic Upgrading of Glucose
*Partners:* National Corn Growers Assoc., Pacific Northwest National Lab, Michigan State Univ.

Title: Products from Wheat Milling
*Partners:* Pendleton Flour Mill Inc., Mennel Milling Co., Pacific Northwest National Lab

Title: Soy-based 2-cycle Engine Oils
*Partners:* Terresolve Technologies Ltd., United Soybean Board, Smith Bucklin & Associates, Omni Tech International

Title: Chemicals from Lignocellulose
*Partners:* Univ. of California-Davis, Argonne National Lab, BC International, NTEC-Versol

Title: Energy Efficient Irrigation
*Partner:* Northwest Precision Ag Inc. (*I&I*)

Contact: Doug Faulkner, 202-586-2119

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**Coming Soon! Petroleum to become 9th “Industry of the Future”**

The petroleum refining industry will soon join eight other energy-intensive industries when it establishes a formal “Industry of the Future” partnership with DOE. A compact signing ceremony featuring senior executives from the petroleum industry, the American Petroleum Institute, the National Petrochemical and Refiners Assoc. and DOE is planned. OIT’s Petroleum Team also recently opened its first solicitation (see page 7). (Contact: Gideon Varga, 202-586-0082)
**Metalcasting**

**Title:** Ergonomic Improvements for Foundries  
**Partners:** Iowa State Univ., ABC-NACO, McConway and Torlay, American Magotteaux, Buckeye, Southern Cast Products, Sivyer Steel, Southwest Steel, Electric Steel, American Steel Foundries

**Title:** Investment Shell Cracking  
**Partners:** Tri-State Univ., Spokane Steel, ABC-NACO, Stainless Foundry, Wisconsin Centrifugal, Wisconsin Invest Cast, PED Manufacturing, Nova Precision

**Title:** Effects of Die Design and Dimensional Features on Thermal Fatigue Cracking of Die Casting Dies  

**Title:** Development of Fatigue Properties Database for Use with Modern Design Methods  
**Partners:** Climax Research Services, Applied Process Technologies, Internet, Caterpillar, Hayes Lemmerz International, Lucas Varity, Wheland Foundry

**Title:** Optimization of Composition and Heat Treating of Die Steels for Extended Lifetime  
**Partners:** Case Western Reserve Univ., Latrobe Steel Company, FPM Heat Treatment, Alloy Tool Steel, Hayes/CMITech, DCD Technology, Chem-Trend, Badger Metal Technology

**Title:** Understanding the Relationship Between Filling Pattern and Part Quality in Die Casting  
**Partners:** Ohio State Univ., General Die Casters, Walkington Engineering, GM Bedford, Lester Precision Die Casting

**Title:** Clean Cast Steel Technology  

**Title:** Energy Consumption of Die Casting Operations  
**Partners:** Ohio State Univ., Premier Tool & Die Cast Corporation, GM Powertrain

**Title:** The Effects of Externally Solidified Product on Wave Celerity and Quality of Die Cast Products  
**Partners:** Ohio State Univ., Briggs & Stratton Corp., Heick Die Casting Corp., Walkington Engineering

**Title:** Computer Modeling of Shot Sleeves  
**Partners:** Ohio State Univ., Walkington Engineering, Briggs & Stratton, GM Bedford, Visi-Trak Corp

**Title:** Highly Efficient Rapid Tooling Using Optimized Cooling Passages  
**Partner:** Edison Materials Technology Center (EMTEC) (Inventions and Innovation)

**Title:** Heat Treatment Procedure Qualification for Steel Castings  
**Partners:** Pennsylvania State Univ., American Steel Foundries, Frogswitch, The Harrison Steel Castings, Milwaukee Steel, Missouri Steel Castings, Pacific Steel Castings Company, Sawbrook Steel Castings, Stainless Foundry & Engineering, Varicast, West Michigan Steel Foundry

**Title:** Clean, Machinable, Thin-walled, Gray and Ductile Iron Casting Production III  

**Title:** Advanced Lost Foam Casting Technology, Phase V  
**Title:** Selective Flocculation of Fine Mineral Particles  
**Partners:** Albany Research Center, JR Simplot, Peabody Group, Florida Institute of Phosphate Research, Univ. of Kentucky, Pennsylvania State Univ., Univ. of Idaho

**Title:** Robotics Technology for Improving Mining Productivity  
**Partners:** Idaho National Engineering and Environmental Lab, Carnegie Mellon Univ., Joy Mining Machines, CONSOL Inc.

**Title:** Development of a Mine Compatible LIBS Instrument for Ore Grading  
**Partners:** Idaho National Engineering and Environmental Lab, Advanced Power Technology Inc., JR Simplot, Baker Hughes Process, Univ. of Idaho

**Title:** Development of a 3-Dimensional Version of the Millsoft Simulation Software  
**Partners:** Idaho National Engineering and Environmental Lab, Univ. of Utah, Process Engineering Resources Inc., Barrick Goldstrike Mines, Kennecott Utah Copper

**Title:** Drilling and Blasting Optimization Using Seismic Analysis and X-Ray Fluorescence Spectroscopy  
**Partners:** Lawrence Berkeley National Lab, Univ. of Arizona, Phelps Dodge Mining Inc., Thunderbird Pacific Corp.

**Title:** The Application of High Temperature Superconductors to Underground Communications  
**Partners:** Los Alamos National Lab, Hecla Co., CONSOL Inc., Cyprus, Asarco, Phelps Dodge Mining Inc., Raton Technology Research, WIPP, Harris Communications, Colorado School of Mines

**Title:** Mineral Byproduct Recovery  
**Partners:** Oak Ridge National Lab, SepraDyne Corp., Colorado School of Mines, Univ. of Arizona

**Title:** Development and Deployment of On-Board Lubrication Oil and Hydraulic Fluid Analysis Systems  
**Partners:** Caterpillar Inc., Additional mining partners to be named later

**Title:** Crosswell System for Imaging Ahead of Mining  
**Partners:** Sandia National Lab, West Virginia Univ., Stolar Horizon Inc., CONSOL Inc., Kennecott Utah Copper

**Title:** Safe and Low Cost Hydrogen Storage for Fuel Cell Mining Vehicles  
**Partners:** Savannah River Technology Center, Fuelcell Propulsion Institute, Hydro Quebec, Univ. of South Carolina

Note: Additional mining projects to be announced soon, and will be posted on OIT Times-on-the-web.

Contact: Toni Grobstein Marechaux, 202-586-8501
Inventions & Innovation

Title: Industrial Fuel Cell Micro-Generator  
Partner: Fuel Cell Technologies Inc.

Title: Membrane Technology to Remove Entrapped Air from Ammonia Refrigeration Systems  
Partner: Enerflex Inc.

Title: A DSP-Based Power Electronics Interface for Alternate/Renewable Energy Systems  
Partner: University of Houston

Title: Multielement Selective Emitter: A New High Efficiency Incandescent Light Source  
Partner: Sonsight Projects Inc.

Title: Novel 4-Way Refrigerant Reversing Valve for Heat Pumps  
Partner: University of Arkansas

Title: Innovative Energy-Efficient Dryer  
Partner: Research Triangle Institute

Title: High Temperature Refractory Ceramic  
Partner: Trilliam Thermo Technologies Inc.

Title: Electrocaloric Materials for Room Temperature Refrigeration  
Partner: CeramPhysics, Inc.

Title: High Efficiency, High Capacity Cooling and Refrigeration  
Partner: Environmental Technology and Education Center

Title: Increasing Efficiency in Permanent Magnet DC Motors through Magnetic Pseudo Liquid-Filled Air Gaps  
Partner: Bodine Electric Company

Title: Development of a Composite Reinforced Aluminum Conductor  
Partner: W. Brandt Goldsworthy & Associates Inc.

Title: In-Situ, Real Time Measurement of Melt Constituents in the Aluminum, Glass, and Steel Industries  
Partner: Energy Research Company

Title: High Speed, Permanent Magnet Motor Testing for the AC Market  
Partner: SatCon Technology Corporation

Title: Rotary Burner  
Partner: Calcpos Engineering

Title: Fault Warning Device Using Fiber-Optic Partial Discharge Sensor for Prevention of Destructive Arc Faults in Metal-Clad Electrical Switchgear and Bus  
Partner: Forsyth Electro-Optics Inc.

Title: Miniature, Inexpensive, Amperometric Oxygen Sensor  
Partner: CeramPhysics, Inc.

Note: Additional I&I projects are listed with the relevant Industries of the Future.

Contact: Sandy Glatt, 202-586-3897

The OIT Times-on-the-web expanded on a trial basis

Unfortunately, listing all our new projects in the current issue of The OIT Times precluded us from providing our readers with other continuing news about our many Industry of the Future teams and program areas. So, on a trial basis, we’ve expanded the HTML version of The OIT Times-on-the-web to include the regular news features that our readers are accustomed to. You can view, download or print the Winter issue of The OIT Times-on-the-web at www.oit.doe.gov/oittimes.

OIT’s NICE³, Inventions programs accepting pre-proposals for 2000 solicitations

The NICE³ and Inventions and Innovation (I&I) programs are now accepting two-page pre-proposals for their FY2000 solicitations through March 17, 2000. Although pre-proposals are optional, potential applicants are highly encouraged to submit a description of their project in the format designated by each program.

The NICE³ program funds up to $525,000 (50% cost sharing required) for the first commercial demonstration of industrial technologies that reduce energy consumption, waste production and operating costs. I&I provides financial assistance at two levels: up to $40,000 or up to $200,000 depending on the stage of development for establishing technical performance and conducting early development of inventions that have a significant energy savings impact and commercial market potential. In addition to financial assistance, I&I offers technical guidance and commercialization support to successful applicants.

In December, Inventions and Innovation and NICE³ are expected to concurrently announce additional new projects that will be listed in the Winter, 2000 issue of The OIT Times-on-the-web soon after they are selected.

For more information on pre-proposal requirements, visit www.oit.doe.gov/nice3 and www.oit.doe.gov/inventions.

OIT’s 3rd Customer Day to help keep us “customer-focused”

OIT’s 3rd biennial “Customer Day” is planned for February 16 in Washington, DC. About 200 of our customers will hear about current OIT initiatives and provide their valuable feedback in what promises to be a very interesting program. At a Customer Day awards ceremony OIT plans to recognize its first annual “Technology of the Year” and “Partner of the Year.” A reception the evening before Customer Day is also planned. This is a key event on our calendar and helps insure OIT remains a strongly customer-focused organization. Look for the Spring issue of The OIT Times for all the news about “Customer Day.”
## Current OIT Solicitation Schedule*

<table>
<thead>
<tr>
<th>Industry/Program</th>
<th>RFP</th>
<th>Proposals Due</th>
<th>Selections</th>
<th>Funding (approx)</th>
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<td>9/00</td>
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<td>Past</td>
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<td>$500K-700k</td>
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* As of 12/15/99. FY01 funds, unless indicated. Information in this table is periodically updated. For latest data, visit: www.oit.doe.gov/new/solicitations.shtml
**Chemicals**

*Title:* Prediction of Corrosion of Alloys in Mixed Solvent Environments  
*Partners:* OL Systems, Inc., Dow Chemical Co., DuPont Chemical Co., Westvaco: Membrane Technology Institute, Oak Ridge National Lab

*Title:* Enhancement and Commercialization of the Alloy Selection System for Elevated Temperatures  

*Title:* Development of New PSA Technology to Recover Products for Waste Streams  
*Partners:* Air Products and Chemicals, Inc., Phillips Petroleum Co., Univ. of Kentucky

*Title:* Development of Integrated Workbench for Gas-phase Thermodynamics, Kinetics, and Reaction Modeling  

*Title:* Advanced Catalytic Hydrogenation Retrofit Reactor  
*Partners:* Air Products and Chemicals, Inc., Johnson Matthey

*Title:* Corrosion Monitoring System  
*Partners:* Honeywell, Eastman Chemical Co., Oak Ridge National Lab, Materials Technology Institute

*Title:* Advanced Intermetallic and Alloy for Ethylene Reactors  

*Title:* Study of Metal Dusting Phenomenon and Development of Materials Resistant to Metal Dusting  

*Title:* Separation of Aromatic Isomers  
*Partner:* Gallatin Research (Inventions and Innovation)

*Title:* Plastic Manufactured from Recovered Post-Consumer Durable Goods  
*Partners:* MBA Polymers Inc., California Energy Commission (NICE 3)

*Title:* Low-Frequency Sonic Mixing Technology  
*Partner:* Montec Associates, Inc. (Inventions and Innovation)

Contact: Hank Kenchington, 202-586-1878

**Sensors & Controls**

*Title:* Tunable Diode Lasers Sensors for Monitoring and Control of Harsh Combustion Environments  
*Partners:* American Air Liquide, Inc., Physical Sciences, Inc.

*Title:* Solid-State Chemical Sensors for Monitoring Hydrogen in IOF Process Streams  
*Partners:* Pennsylvania State University, Air Products and Chemicals, Sandia National Laboratory, DCH Technologies

*Title:* Diagnostics and Control of Natural Gas Fired Furnaces via Flame Image Analysis Using Machine Vision and Artificial Intelligence Techniques  
*Partner:* University of Missouri-Rolla

*Title:* Remote Automatic Material On-line Sensor  
*Partner:* Quantum Magnetics, Inc.

*Title:* New Optical Coupling of Infrared Analyzers to Industrial Processes*  
*Partner:* Advanced Fuel Research, Inc.

*Title:* Fiber Optic Sensor for Industrial Process Measurement and Control*  
*Partner:* Metrolaser, Inc.

*Title:* Real-Time Gas Composition Analyzers for On-Line Process Control*  
*Partner:* Nanomaterials Research Corporation

*Title:* High-Temperature Micromachined Sensor for Industrial Gas Streams*  
*Partner:* Nanomaterials Research Corporation

* = S&C Small Business Technology Transfer Award

Contact: Eric Lightner, 202-586-8130
Industries of the Future--States

**Title:** Northeast Regional Industries of the Future  
**Partners:** New York State Energy Research and Development Authority, New Hampshire Governor's Office of Energy and Community Services, Connecticut Office of Policy Management, University of Massachusetts, Rhode Island State Energy Office, Vermont Department of Public Service, Alfred University, Hofstra University, State University of New York, Maine Department of Economic Development, University of Maine, Massachusetts Division of Energy

**Title:** Vision 2020 for the Alabama Chemical Industry: Development of a Research/Implementation Agenda for Alternative Reaction Media  
**Partners:** University of Alabama Huntsville, Industrial Energy Advisory Service, Alabama Power, Alabama Center for Green Manufacturing

**Title:** Building Capability for Industry Partnerships  
**Partners:** Arkansas Energy Office, Arkansas Department of Economic Development

**Title:** Municipal Case Studies for Distributed Energy Resources  
**Partners:** California Energy Commission, California Alliance for Distributed Energy Resources (CADER), City of Irvine, Association of Bay Area Governments

**Title:** Development of an Industries of the Future Action Plan and Information Dissemination for the Colorado Forest Products Industry  

**Title:** Illinois Industrial Energy Technical Assessment  
**Partners:** King Technology, Illinois Department of Commerce and Community Affairs, Capital Surini Group International, Inc.

**Title:** Kentucky Aluminum Technology Roadmap  
**Partners:** Kentucky Division of Energy, Southeast Center for Aluminum Technology

**Title:** Action Plans for Maine’s Forest Products Industry  
**Partners:** Maine Department of Economic and Community Development, Maine Manufacturing Extension Partnership, Maine Chamber and Business Alliance, University of Maine, Maine State Planning Office, Central Maine Power Company

**Title:** Montana’s Implementation of the Forest and Wood Products Industry Technology Roadmap  
**Partners:** TechLink, Montana Department of Environmental Quality, Montana State University

**Title:** Ohio’s Industries of the Future Showcase Demonstration Project  
**Partners:** Ohio Department of Development, Ohio Office of Energy Efficiency, American Municipal Power - Ohio

**Title:** Oregon Industries of the Future  
**Partners:** Oregon Office of Energy Efficiency, Oregon State University Industrial Assessment Center

**Title:** Implementation of the Industries of the Future in the State of Pennsylvania  
**Partners:** Concurrent Technology Corporation, Pennsylvania Department of Environmental Protection

**Title:** Industrial Technologies Benefiting Industries of the Future  
**Partners:** South Carolina Manufacturing Extension Partnership, South Carolina Energy Office

**Title:** State of Utah Industries of the Future Initiative  
**Partners:** ETC. Group, Inc., Utah State Office of Energy Services, Utah Technology Finance Corporation, Utah Manufacturing Extension, Utah Engineering Experiment Station

**Title:** The Virginia Mining Industry: Making the Technological Transition to the 21st Century  
**Partners:** Virginia Department of Mines, Minerals, and Energy, Virginia Polytechnic Institute and State University, Virginia Center for Coal and Energy Research, Powell River Project, Virginia Aggregates Association, Virginia Coal Association, Weir International Mining Consultants

**Title:** Guidebook for the Development of CHP at IOF Industrial Sites  
**Partners:** Washington State University Cooperative Extension Energy Program, Washington Department of Community, Trade & Economic Development Energy Division, International District Energy Association

**Title:** Industries of the Future - West Virginia  
**Partners:** West Virginia University, West Virginia Development Office

**Title:** Wisconsin Metal Casting Industries of the Future  
**Partners:** Wisconsin Energy Bureau, Energy Center of Wisconsin, University of Wisconsin - Milwaukee

**Title:** Combined Heat and Power Proposal for the State of Indiana  
**Partners:** Caterpillar Gas Engines, Indiana Department of Commerce - Energy Division

**Title:** Louisiana Industries of the Future  
**Partners:** Louisiana State University, Louisiana Department of Natural Resources

**Title:** Industrial Technologies  
**Partners:** Mississippi Department of Economic and Community Development - Energy Division

Contact: Sandy Glatt, 202-586-3897
Quarterly Highlights

Combustion

Title: Packed Media/Transport Membrane Boiler Development and Demonstration

Partners: Gas Research Institute, Institute of Gas Technology, Donlee Technologies

Title: High-Efficiency, Low Emission Integrated Process Heater System


Contact: Gideon Varga, 202-586-0082

DOE Secretary Richardson helps launch high-efficiency cogeneration system at Massachusetts textile mill

A festive mood prevailed as Secretary of Energy Bill Richardson visited Malden Mills on November 8 to dedicate the plant’s new, advanced cogeneration system. The Secretary was joined by Malden Mills CEO Aaron Feuerstein, Congressman Marty Meehan (D-MA), and Max Kennedy (representing his uncle, Senator Ted Kennedy) in dedicating the system that is saving energy, cutting costs, and sharply reducing emissions at the Lawrence, MA, textile mill. The state-of-the-art system, featuring continuous-fiber ceramic composite (CFCC) components, was developed by Solar Turbines in partnership with OIT’s Industrial Power Generation and CFCC programs.

Calling the event “a wonderful celebration of what is good in this country,” Secretary Richardson praised the cooperative efforts by national, state, and local officials to make the technology demonstration project a reality. The cogeneration system saves energy by simultaneously generating electricity and thermal energy for the mill, achieving an overall efficiency of 73%—more than twice the efficiency of the average U.S. power plant. The highly efficient and clean burning system uses two innovative Solar Centaur 50 gas turbine engines with CFCC liners to cut carbon emissions by 41%, reduce NOx by 58%, and virtually eliminate SO2 emissions. At full production, the project will save Malden Mills $1 million annually.

The advanced cogeneration system is symbolic of the company’s rebirth after a devastating fire in 1995. At that time, the mill’s charismatic, 70-year-old CEO made national news by pledging to keep all employees on the payroll while rebuilding the mill—which is a mainstay of the local economy. The rebuilding process, completed earlier this year, preserved the company’s old clock tower and skilled work force, while introducing more modern design and technology to enhance environmental performance and promote sustained success. Since the fire, company sales have increased 40%.

The Secretary presented Feuerstein with a Certificate of Partnership to recognize his outstanding leadership and commitment to excellence. William Demmons, director of engineering at Malden, was awarded a similar certificate to acknowledge the instrumental role he played in the project.

After a brief tour of the new system, Demmons was asked about the risk involved in committing his company to a cutting-edge technology. He replied that the in-house engineering staff had worked closely with DOE and Solar Turbines in examining system capabilities, and felt totally confident in the technology’s ability to deliver—a confidence borne out by the system’s performance to date. The permitting process presented by far the biggest hurdle to the project. The removal of such hurdles is a key objective of OIT’s new Combined Heat and Power Initiative.
Aluminum

Title: Development of a Novel Non-Consumable Anode for Electrowinning Primary Aluminum
Partners: Ohio State Univ. Research Foundation, Kaiser Aluminum Co., Siemens-Westinghouse, Gas Research Institute

Title: Integrated Numerical Methods and Design Provisions for Aluminum Structures
Partners: Cornell Univ., The Aluminum Assoc.

Title: Intelligent Potroom Operation
Partners: Applied Industrial Solutions LLC, West Virginia Univ., Century Aluminum, Gensym Corp.

Title: Spray Rolling Aluminum Strip
Partners: Univ. of California, Colorado School of Mines, Idaho National Energy Engineering Lab, Aluminum companies pending

Title: BestPractices Plant-wide Energy Efficiency Assessment
Partner: Alcoa

Title: Brazing and Spot Welding Innovations for Joining Aluminum Alloys in Vehicle Manufacturing
Partner: Innovative Technology Inc. (Inventions and Innovation)

Title: Demonstration of a High Temperature, Corrosive Resistant Recuperator for the Metals Industry
Partners: Alcoa, Indiana Department of Commerce, Energy Policy Division (NICE³)

Contact: Sara Dillich, 202-586-7925

Steel

Title: Controlled Thermo-Mechanical Processing of Tubes and Pipes for Enhanced Manufacturing and Performance

Title: Research Related to the Development of the Automated Steel Cleanliness Tool

Title: Development and Demonstration of Novel Low-NO Burners for Boilers in the Steel Industry
Partners: Institute of Gas Technology, Covol Technologies, Detroit Stoker Co., Univ. of Utah

Title: BestPractices Plant-wide Energy Efficiency Assessment
Partner: Crucible Specialty Metals

Title: Clean Production of Coke from Waste Carbonaceous Fines
Partner: Combustion Resources (Inventions and Innovation)

Title: Hot Mill Transfer Bar Rapidfire Edge Heat Project
Partners: Weirton Steel Corporation, West Virginia Energy Efficiency Program (NICE³)

Title: Method of Making Steel Strapping & Strip
Partner: Robert Reilly & Associates (Inventions and Innovation)

Title: Portable Parallel Beam X-Ray Diffraction System for In-Line Process Control in the Steel Industry
Partner: X-Ray Optical Systems, Inc. (Sensors & Controls)

Note: Additional steel projects to be announced soon, and will be posted on OIT Times-on-the-web.

Contact: Scott Richlen, 202-586-7925

NICE³

Title: A Device for Efficiently and Uniformly Drying Nonwoven Materials Using Microwave Technology
Partners: Industrial Microwave Systems Inc., North Carolina Department of Environment and Natural Resource

Note: Additional NICE3 projects are listed with the relevant Industries of the Future.

Contact: Lisa Barnett, 202-586-2212
IPLocator 3.0 scheduled for release

Identifying R&D opportunities within the Federal government can be a daunting task. OIT’s Industrial Projects Locator (IPLocator) addresses that challenge and helps leverage Federal and private R&D resources by providing industry customers with an accessible, centralized source of R&D and contact information. The IPLocator is a user-friendly database of over 10,000 industrial-related R&D projects that are supported by the Federal government.

The IPLocator is both comprehensive and easy to use. Users can search for opportunities by key word, agency, funding amount, industry, or project start date. Search results provide the project title, performing organization and other participants, sponsoring agency, points of contact, a project abstract, funding amounts and vehicles, beginning and ending dates, and other relevant data.

With the continued cooperation of other Federal agencies, OIT periodically updates the IPLocator to include the most current ongoing and recently completed R&D projects. The latest version of the IPLocator, Version 3.0, is scheduled for CD-ROM distribution in February, 2000. Improvements to Version 3 will allow faster searching and sorting.

The IPLocator is available at no charge on CD-ROM; over 2,000 CDs have been distributed to date. Toll-free telephone and email support are also available for user questions and comments. Users can also access the most up-to-date data in the on-line version of the IPLocator at http://www.oit.doe.gov/iplocator.shtml. (Contact: Jim Quinn, 202-586-5725)

New Publications

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<td>Continous Fiber Ceramic Composite Program Plan Update—Accomplishments and Program Completion Roadmaps</td>
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<td>Combined Heat and Power in the State of California</td>
<td>Conservation in Combustion, also available on-line at <a href="http://www.oit.doe.gov/combustion">www.oit.doe.gov/combustion</a></td>
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<td>IPLocator Version 3.0</td>
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To request copies, call 1-800-862-2086.
Now open! “One-stop shop” for questions about OIT products, services

By Lou Sousa
Managing Editor, The OIT Times

- An R&D manager in the forest products industry wanted to know about potential Government cost-sharing opportunities.
- A refinery facility manager needed help justifying a preventative maintenance program for his steam system.
- An aluminum industry supplier heard about the industry’s vision and roadmaps and wanted to know how to get copies.
- A foundry with 8000 hp of air compressors had a moisture carry-over problem.
- A glass firm was looking for funding to help demonstrate an innovative melting technology.
- A chemical manufacturer heard that OIT helps plants assess their energy consumption and opportunities for improved performance.

What do these people have in common? They all called OIT’s new Information Clearinghouse for help!

These questions—and many more—make up a typical day for the engineers and staff at our new Clearinghouse. They are getting hundreds of calls monthly from all over the country with pressing questions about how to make industrial plants more competitive and energy efficient, businesses more profitable, processes more reliable.

You, too, are invited to call them about any of the products and services that OIT offers—including technical assistance for your motor, steam, compressed air and combined heat and power systems. Stay tuned to future issues of The OIT Times and our web site for more details about our new Clearinghouse.

As OIT partners with U.S. industry to develop and deliver technologies and best practices that improve efficiency and profits and reduce waste, our Clearinghouse can be your first stop on the way to solutions. They’re open 9 am to 8 pm EST. Call them at 1-800-862-2086!
Diecaster teams with OIT in hosting technology showcase

On November 4, 1999, OIT, the North American Die Casters Association (NADCA), and Lester Precision Die Casting hosted a technology showcase to demonstrate energy efficiency and productivity advancements in Lester’s Twinsburg, OH, facility. Over 300 guests from the die casting industry, academia, and government attended the event, which featured facility tours, as well as “Tech Talks” by some of the nation’s leading die casting researchers.

The showcase highlighted technologies developed through OIT’s Metalcasting Industry of the Future (IOF) program. IOF program participants, including DOE, NADCA and hundreds of partners from the metalcasting industry and academia, perform cost-shared R&D to address both DOE’s national energy efficiency goals and industry goals outlined in the Metal Casting Industry Technology Roadmap. This research has resulted in numerous technology advances that have been implemented at plants like Lester’s Twinsburg facility.

The facility tour featured technologies like visualization tools and advanced computer modeling programs. Lester also demonstrated how OIT-supported R&D is enhancing the quality of die-cast products. For example, high magnesium-content castings enable lighter weight automotive castings that can meet stringent load and strength requirements. A “crosscutting” technology highlighted on the tour was an innovative membrane system designed to treat Lester’s wastewater that was developed in partnership with DOE’s Idaho National Engineering Lab.

The tour also focused on Lester’s use of OIT BestPractices resources—products and services that help industry become more energy efficient today. For example, Lester highlighted energy-saving technologies and processes implemented as a result of an OIT-sponsored energy audit, one of OIT’s many BestPractice resources.