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Special Insert

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## New "integrated delivery" strategy aims to make energy efficiency portfolios more accessible

In order to better satisfy customer needs, OIT is developing a new way of marketing its extensive portfolio. The objective is to help thousands of American industrial plants make more effective use of a wide range of productivity-enhancing products, services and emerging technologies. According to DOE Assistant Secretary for Energy Efficiency and Renewable Energy (EERE), Dan Reicher, "integrated delivery" will provide industrial customers with a single point of contact that will enable them to take unprecedented advantage of the many energy efficient products and services available in the EERE and OIT portfolios.

"Thousands of our partners and customers around the country have had great success with individual elements of our programs," said Reicher. "But we believe that these successes are merely the tip of the iceberg in terms of what, together, we can accomplish in saving energy, reducing waste and bolstering the productivity of American industry. We believe that it is vital to the Department's mission to ensure that industry knows about the full menu of opportunities available," he added.

### Informative "toolkit" on fast track

"Development of the integrated delivery 'toolkit' is on the fast track," said Denise Swink, DOE's Deputy Assistant Secretary for Industrial Technologies. "The toolkit will help us get timely information into the hands of people who make decisions, whether they be corporate executives, chief financial officers, technology developers, energy managers or plant managers. We want to ensure that the right people are aware of all applicable opportunities," she explained.

Reicher and Swink point to the recent Bethlehem Steel Burns Harbor showcase as

a good example of what integrated delivery could ultimately accomplish in plants across the country (see the feature story in the previous issue of *The OIT Times*).

"All applicable technologies, tools and expertise from different areas of the organization were brought to this plant in an integrated fashion. The results were extraordinary, making this a state-of-the-art model for efficient operation," explained Reicher. "We want to help many more American facilities reach the Burns Harbor level of excellence."

"We see it all the time. For example, a firm that has just saved thousands of dollars because of an Industrial Assessment Center audit might also want to know about other valuable services that are available such as through the Motor Challenge program, or that they can help mold the future direction of their industry by getting involved in its technology roadmapping efforts," said Swink. "Integrated delivery will help ensure that our potential customers are even better informed, and that all applicable opportunities are made available."

### Improved customer access

Ultimately, Reicher would like to see integrated delivery applied throughout all EERE programs. He would like customers to have access to an even broader array of opportunities such as cleaner alternative fuels, efficient lighting technologies and other innovative technologies developed by EERE.

"Our ultimate goal is to ensure that our customers can more easily and rapidly take advantage of any emerging technology or service in our wide ranging portfolio. We want to help them use energy more efficiently, improve productivity, and reduce waste and emissions," said Reicher.



## AWARDS

A paper based on work sponsored by OIT received the **Best Paper Award** at the 9th International Symposium on Corrosion in the Pulp and Paper Industry in Ottawa, Canada. The paper, titled "Causes and Solutions for Cracking of Coextruded and Weld Overlay Floor Tubes in Black Liquor Recovery Boilers," was written by researchers from ORNL, Georgia Tech, Pulp and Paper Institute of Canada, and Weyerhaeuser Co.

Vinod K. Sikka of ORNL has been selected by Renew America and the National Awards Council for Environmental Sustainability to receive a **Certificate of Environmental Achievement** for his work on the exo-melt process for melting nickel aluminides. Development of the exo-melt process was sponsored by OIT.

Three OIT-sponsored projects with Battelle received **1998 R&D 100 Awards** from *R&D Magazine*. These include "Waste Wood Gasification Process," "Self-Assembled Monolayers on Mesoporous Supports," and "Life Cycle Advantage."

An OIT-sponsored project for a process to produce chemical solvents from corn has received both the **1998 Presidential Green Chemistry Award** and the **1998 Discover Magazine Award** for technological innovation.

*CFCC News*, the program newsletter prepared by Gloria Caton and Tim Elledge at ORNL, won its third **Merit Award** from the **Society for Technical Communication**.

## Renewable Bioproducts Two roadmap workshops held



The OIT **Agriculture Team** recently assisted the Agriculture Executive Steering Committee—a group of high level industry executives—in sponsoring workshops to create a technology roadmap. In August, the first workshop focused on prioritizing technologies to enable the most efficient use of crops in current processing systems. The second—held in early September—looked at technologies that involve modified or new crops in new processing systems. The Team also worked in conjunction with the **Chemical and Forest Products Teams** to enhance communication among these interrelated industries. A draft roadmap soon will be circulated for industry comments.... The Team is discussing with USDA and the agriculture community the development of a second strategic vision for the agriculture industry. This vision would look at power, water, information management and other inputs used in the production of agricultural commodities. (Contact: Doug Faulkner, 202-586-2119)



The **Inventions & Innovation** program has recently undergone pronounced changes. See the editorial on page 15 for more details.... The program received over 500 proposals in response to its recent solicitation, and is currently reviewing them. Awards are scheduled for early 1999. (Contact: Sandy Glatt, 202-586-3897)



**Steam Challenge** will sponsor three steam efficiency training seminars this fall. The one-day seminars will examine all areas of the steam system including boilers, water treatment, condensate, traps and insulation, as well as efficient heating, processing and other steam applications. Anyone involved with producing or using steam, or operating or maintaining steam systems should benefit from this

## Chemicals Two computational fluid dynamics projects underway



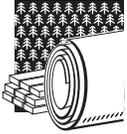
Representatives of the **Chemical Team** attended an event marking the start of two major computational fluid dynamics projects at the SGI Cray Research Park near Minneapolis in late July. Industry had identified the need for effective models of multi-phase flows. These efforts, which take different approaches to gas/solids flow modeling, will go a long way toward developing this valuable information. Project partners include Los Alamos National Lab and the Federal Energy Technology Center. Also participating are Sandia, Pacific Northwest, Oak Ridge and Lawrence Berkeley National Labs, as well as Exxon Research and Engineering, DuPont Central R&D, Dow Chemical, Dow Corning, Chevron Research and Technology, Cray SGI and Fluent Technologies.... The Chemical Team also recently co-sponsored a workshop with OIT's **Forest Products Team** and **Cogeneration** program. Titled "Energy Performance for the Chemical and Pulp and Paper Industries 2000-2020," the workshop included representatives from both industries as well as the electric power industry. It focused on more efficient power production technologies, including gasification and gasification-combined cycle alternatives utilizing fuels such as biomass. (Contact: Hank Kenchington, 202-586-1878)

energy- and cost-saving opportunity. For more details, go to [www.oit.doe.gov/access/steam](http://www.oit.doe.gov/access/steam). (Contact: Fred Hart, 202-586-1496)



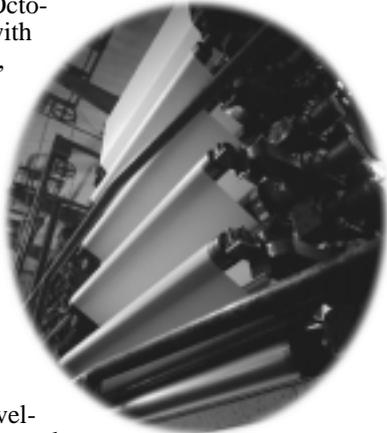
As part of its work in helping Ghana begin its own **Industrial Assessment Center** program, an IAC team from Texas A&M Univ. made its second trip to the country this July. The team conducted three seminars, and observed a team of Ghanaian students, faculty and officials conduct a successful audit at a local plant. Energy efficiency is of great concern in Ghana because of its heavy dependence on hydropower in an environment of great fluctuation in rainfall.... On the domestic front, one recommendation by an IAC audit team has led to savings of \$870,000 for a North Carolina paper packaging plant. (Contact: Chuck Glaser, 202-586-1298)

## Forest Products FY99 R&D projects to be announced



The Forest Products Team is finalizing negotiations on about 20 new R&D projects in six technology areas. These projects, to be funded in FY99, are among those recommended by the Chief Technology Officers Working

Group of the American Forest & Paper Association. Hundreds of proposals were evaluated based on scientific and technical quality, reasonableness of costs relative to objectives, and overall benefits to the industry. The project titles will be announced in October... In conjunction with OIT's NICE<sup>3</sup> program, representatives of the Team attended an event held by Erving Paper Mills. Several dozen pulp and paper mills sent representatives to review a process Erving has developed to increase the use of recovered office paper in the manufacture of tissue paper. The process, developed with NICE<sup>3</sup> funding, also reduces VOC emissions and the use of bleach.... Continuing its strong ongoing relationship with TAPPI, the pulp and paper industry's technical association, the Team co-sponsored with OIT's **Motor Challenge** program an all-day workshop at the organization's annual Engineering Conference. Among other highlights, the training presented the benefits of OIT-developed software tools which could help pulp and paper mills maximize the efficiency of their motor systems. (Contact: Valri Robinson, 202-586-0937)



## Mining becomes eighth “Industry of the Future”

Former Secretary of Energy, Federico Peña, and National Mining Association (NMA) Chairman Douglas C. Yearly signed a compact launching an important new government/industry technology partnership in mining. This event—held June 4 at DOE headquarters—makes mining the eighth energy-intensive industry to sign on to the Industries of the Future (IOF) process. Invited guests included U.S. Congressman Jim Gibbons (R-Nevada) who made remarks on behalf of the Congressional Mining Caucus.

The mining industry's continued vitality is crucial to the U.S. economy—mining supplies the minerals and coal essential to the competitiveness and supporting infrastructure of many other U.S. industries. To remain competitive, however, the mining industry must continue to reduce its energy use and overall costs while meeting increasingly high environmental expectations. Many of these challenges could be addressed with new technologies and processes, but very few mining companies have the resources to develop the technology needed to compete in the future. According to OIT Deputy Assistant Secretary Denise Swink, “This partnership between DOE and mining will help the industry ensure continued competitiveness in future markets by improving access to R&D support and many other energy efficiency resources.”

NMA has nearly completed an industry vision outlining the industry's technology needs for the next 20 years—the first step in the IOF process. Next, NMA members will prepare a roadmap outlining specific technology needs. The first roadmap workshop is scheduled for October. For more information on the mining industry/DOE compact or the industry's roadmap workshop, contact Toni Marechaux, OIT Mining Team Leader, at (202) 586-8501.



The Hydraulic Institute, a **Motor Challenge** partner, recently formed an ad hoc group to address and promote pump system efficiency. The new Hydraulic Institute Committee, consisting of representatives from pump manufacturers and OIT, will work to better inform pump buyers about the importance of making purchases based on lifecycle costs rather than initial costs.... The new Compressed Air System Performance Sourcebook is now available. The Sourcebook includes an overview of compressed air systems, and features detailed information on how to identify cost-saving, efficiency-boosting opportunities, as well as a directory of resources and more. It's a \$19.95 investment available from the Motor Challenge Information Clearinghouse at 800-862-2086. (Contact: Paul Scheihing 202-586-7234)



The NICE<sup>3</sup> program has redesigned its website at [www.oit.doe.gov/Access/nice3/](http://www.oit.doe.gov/Access/nice3/) to make it easier to find and retrieve information. The site provides details on a number of recent successful technology demonstrations supported by NICE<sup>3</sup> funding, including:

- an innovative, high efficiency plating barrel developed by Whyco Technologies;
- an ultrasonic method—developed jointly by Telsonic, DuPont and Merck—for cleaning pharmaceutical storage tanks that replaces the incumbent method of multiple applications of hazardous solvents; and,
- an automatic closed-loop acid recovery system developed by Beta Control Co....

The NICE<sup>3</sup> solicitation for FY99 funding closes October 20. Copies of the solicitation are available at [www.eren.doe.gov/solicitations.html](http://www.eren.doe.gov/solicitations.html). (Contact: Lisa Barnett, 202-586-2212)

COMING SOON!



## ***Metalcasting technology showcase planned***

The Energy Technology International Showcase will be held October 27-29 in Birmingham, AL. A featured part of the Third American Foundrymen's Society (AFS) Lost Foam Casting Conference, the Showcase will offer plant tours, manned exhibits, and technical presentations on lost foam processes and other technologies that save energy, reduce pollution, raise productivity and improve product quality.

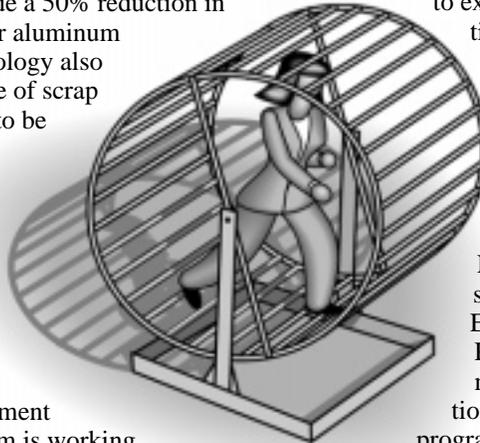
AFS is sponsoring the three-day event in partnership with OIT. Similar to the showcase held at Bethlehem Steel's Burns Harbor Division last April, the upcoming showcase will focus on increasing plant efficiency by integrating a variety of energy-efficient technologies. At the event, Denise Swink will outline OIT's role in developing advanced technologies and helping the industry take advantage of them.

For more information or to register for the conference, contact the American Foundrymen's Society at 847-824-0181 or 800-537-4237.

## ***Aluminum Team helps unveil efficient new recycling technology***



Representatives from the **Aluminum Team** and OIT's **NICE<sup>3</sup>** program recently participated in a demonstration of a new state-of-the-art rotary kiln at Philips/Roth Brothers Smelting Corp. in Syracuse, NY. The high tech kiln de-coats aluminum scrap, stripping away paints and other contaminants before it is melted. Benefits are numerous, and include a 50% reduction in the energy needed for aluminum recycling. The technology also enables a wider range of scrap aluminum materials to be recycled and reduces process emissions, landfill waste and related disposal costs. The **NICE<sup>3</sup>** demonstration grant was awarded through the New York State Energy Research & Development Authority.... The Team is working with DOE's Office of Transportation Technologies to develop an aluminum industry technology roadmap specifically for the automotive sector, where use of the high strength, lightweight metal can reduce vehicle weight and thereby improve fuel efficiency and environmental performance.... The FY00 solicitation will have begun by the time you read this. Contact Wade Hillebrant at 208-526-5548 for a copy. (Contact: Sara Dillich, 202-586-7925)



## ***Steel Radioisotope workshop sponsored***



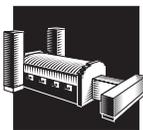
Accidental smelting of radioactive materials "hidden" in steel scrap costs as much as \$20 million per incident. So it's no wonder that the steel industry has made the development of more effective radioisotope detection a high priority. In response, the **Steel Team** helped sponsor a workshop bringing together diverse interests to explore ways to improve detection technologies. In addition to OIT, participants in the June workshop included the Steel Manufacturers Assoc., Institute of Steel Recycle Industries, detection equipment manufacturers, DOE National Lab researchers, the Nuclear Regulatory Commission, EPA, U.S. Office of Environmental Policy and the Pennsylvania Dept. of Environmental Resources.... In conjunction with OIT's **Motor Challenge** program, the Team recently made a presentation to the Association of Iron & Steel Engineers' Energy and Combustion Committee. The presentation focused on the opportunities for this group to help the industry achieve its vision and roadmap goals.... The Team is also working with OIT's **Steam Challenge** program to develop a standards and targets manual for private contractors auditing steel mills. (Contact: Scott Richlen, 202-586-2078)

## ***Metalcasting R&D proposals under review***



In February, the industry's Cast Metal Coalition (CMC) called for proposals to address research needs outlined in the metalcasting industry technology roadmap. The proposals were reviewed for technical merit by the CMC, and ten projects were recommended to DOE's Industrial Oversight Panel (IOP), a group of independent metalcasting industry experts. The IOP provided input to OIT and CMC on the vision, roadmaps and research portfolio at a June meeting. The **Metalcasting Team** is currently reviewing recommended projects for energy savings and programmatic balance for funding in FY99.... The Team is finalizing its plans for the Metalcasting Industry Lost Foam Technology Showcase Demonstration, which the American Foundrymen's Society will host in Birmingham, AL in October (see accompanying sidebar). Other OIT programs are also involved with this effort, including **Industrial Assessment Centers**. More than 150 metalcasting industry representatives, suppliers and customers are expected to attend. (Contact: Harvey Wong, 202-586-9235)

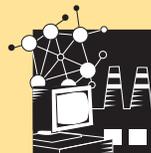
## **Glass** **New R&D projects to be selected**



The **Glass** Team recently participated with West Virginia's Industry of the Future program and OIT's **Advanced Industrial Materials** program in a meeting of hand glass manufacturers as represented by the Society for Glass Science and Practices. The Society has identified top R&D priorities in its industry segment and has submitted two proposals for funding: one for glass melting and combustion modeling; the other, laser cutting of finished glassware (which could reduce glass waste in many cutting and grinding processes).... The "Glass Lab Call 99" R&D solicitation has closed with more than a dozen proposals received from National Lab-led industry teams. Most proposed projects focused on advanced sensor and control systems for the glass industry. Others concentrated on the development of automotive glazing models. The proposals are now being reviewed by glass industry representatives, and awards are scheduled to be announced October 1. (Contact: Theodore Johnson, 202-586-6937)



The **Cogeneration** program has announced a new in-service record for the advanced ceramic composite combustor liners being tested at an ARCO facility. Developed with OIT co-funding, the liners performed successfully for 2000 hours, a new record for this technology. This is a major step toward "proving out" the new technology.... The Advanced Turbine Systems program annual review will be held November 2-4 in Washington, DC. Over 300 industrial turbine users, utilities, materials suppliers and others are expected to attend. Presentations by program partners will highlight several state-of-the-art efforts underway. (Contact: Patricia Hoffman, 202-586-6074)



The **Advanced Industrial Materials** program held its annual review meeting in June. Representatives of the Centers of Excellence for Materials Synthesis and Processing—a DOE National Labs consortium—described ongoing projects and efforts to expand the dialogue about future program efforts. The Industry Guidance and Evaluation Board was highly complimentary of AIM's performance this past year, but recommended that the program support new application opportunities cutting across multi-industry lines. A summary of their comments is available. (Contact: Charlie Sorrell, 202-586-1514)



Two **Continuous Fiber Ceramic Composite** (CFCC) program participants have received awards recently. Edgar Lara-Curzio (Metals & Ceramics Div., Oak Ridge National Lab) was recognized for his "Outstanding Technical Achievements" at the 1997 Hispanic Engineers National Achievement Awards Conference. He was praised for his work on the effects of stress, temperature and environment on the mechanical behavior of ceramic composites. Hua-Tay Lin (Metals & Ceramics Div., ORNL) won a Science and Technology Agency Fellowship from Japan Science and Technology Corp. He was cited for his leadership and research excellence in investigating the high-temperature mechanical behavior of ceramics. (Contact: Merrill Smith, 202-586-3646)



OIT recently facilitated a **Combustion** community roadmapping workshop. The roadmap sets baselines for current technologies, identifies technological barriers, prioritizes technology needs and ultimately guides the implementation of a research agenda. A draft roadmap will soon be circulated for additional industry input. Publication of the roadmap is planned for early next year. (Contact: Gideon Varga, 202-586-0082)



The **Sensors and Controls** program has developed its initial program plan. The plan describes the program's strategies and lists sensor and control technology needs identified by OIT partner industries. These needs are grouped into three areas: advanced sensor technology, improved information processing and open-architecture intelligent control systems. R&D solutions with broad applicability are being solicited, and 3-4 high priority projects should be funded in FY99. The program plan and solicitation package are available via the S&C link on OIT's home page at [www.oit.doe.gov](http://www.oit.doe.gov). (Contact: Eric Lightner, 202-586-8130)

## ***Special Insert*** ***New OIT R&D Projects for FY1998***



### ***Aluminum***

*Title:* A Wettable, Ceramic-based, Drained Cathode Technology for Aluminum Electrolysis Cells

*Partner:* Reynolds Metals Co.

*Title:* A Technology for Converting SPL to Useful Glass Fiber Products

*Partner:* Vortec Co.

*Title:* High-Efficiency, High-Capacity, Low-NOx Aluminum Melting Using Oxygen-Enhanced Combustion

*Partner:* Air Products and Chemicals, Inc.

*Title:* Detection and Removal of Molten Salts from Molten Aluminum

*Partner:* Selee Corp.

*Title:* Rapid Heat Treatment and Cast Aluminum Components with Automated In-Line Continuous Processing Fluidized Bed Systems (NICE<sup>3</sup>)

*Partners:* Technomics, Inc., Minnesota Office of Environmental Assistance

*Title:* Demonstrating the Microsmooth Process on Aluminum Wheels (NICE<sup>3</sup>)

*Partners:* Metal Arts Co., Inc., New York State Energy Research and Development Authority

*Title:* Chlorine Reduction Utilizing Stack Emissions Data During Aluminum Fluxing (NICE<sup>3</sup>)

*Partners:* Reynolds Metals Co., Virginia Department of Environmental Quality

*Title:* Processing of Aluminum Waste

*Partners:* Michigan Tech Univ., Alcan IMCO Recycling, Marport Smelting L.L.C., TST, Inc., Master Builders, Besser Co., Golder Associates, Inc., Down Stream Systems Engineering

*Title:* Improved Grain Refiner Process for Aluminum

*Partners:* JDC Inc., GKS Engineering Services, GRAS, Inc., Touchstone Lab, Alcoa Technology Center, Littlestown Hardware & Foundry

*Title:* R&D for Energy Efficient Aluminum Production Cells

*Partners:* Alcoa, Eltron Research, Inc.

*Title:* Potlining Additives

*Partners:* EMEC Consultants, Century Aluminum, NSA Aluminum, SGL Carbon, U.S. Borax, Inc.

*Title:* Inert Metal Anode Life in Low Temperature Aluminum Reduction Processes

*Partners:* Northwest Aluminum Technology, Goldendale Aluminum, Brooks Rand Labs, Electrochemical Technology Corp., Oregon State Univ.



### ***Chemicals***

*Title:* New Catalyst Technology for the Selective Oxidation of Feedstock Aromatic Compounds to Commodity Chemicals\*

*Partners:* Akzo Nobel, Inc., Argonne National Lab

*Title:* Selective Catalytic Oxidative Dehydrogenation of Alkanes to Olefins\*

*Partners:* Akzo Nobel, Inc., Sandia National Lab

*Title:* Alkane Functionalization Catalysis

*Partners:* Los Alamos National Lab, Akzo Nobel, Inc., California Institute of Technology

*Title:* Oxidative Cracking of Hydrocarbons to Ethylene

*Partners:* Los Alamos National Lab, Sandia National Lab, Dow Corp., Reaction Engineering Int'l.

*Title:* New Electrochemical Reactors Enabling Significant Cuts in U.S. Electric Power Consumption and a Concomitant Reduction in CO<sub>2</sub> Emissions

*Partners:* Los Alamos National Lab, Dow Corp.

*Title:* Direct Production of Silicones from Sand\*

*Partners:* GE Research and Development Center, Molecular Simulations, Inc., OMG Americas

*Title:* New Nanoscale Catalysts Based on Molybdenum and Tungsten Carbides and Oxycarbides\*

*Partners:* Hyperion Catalysis Int'l., Worcester Polytechnic Institute, Raytheon Engineers & Constructors, Inc., Pacific Northwest National Lab

*Title:* Biocatalysis Under Extreme Conditions for the Chemical Industry\*

*Partners:* Rensselaer Polytechnic Institute, Univ. of California-Berkeley, MIT, Oak Ridge National Lab

*Title:* Novel Membrane-based Process for Producing Lactate Esters

*Partner:* Argonne National Lab

*Title:* Production of Succinic Acid from Lignocellulosic Hydrosylates  
*Partners:* Oak Ridge National Lab, Applied CarboChemicals, Arkenol

*Title:* Fractionation of Corn Fiber for Production of Polyols  
*Partner:* National Renewable Energy Lab, National Corn Growers Association

*Title:* Advanced Sorbents as a Versatile Platform for Gas Separation\*  
*Partners:* Praxair, Tonawanda

*Title:* Development of a Selective Surface Flow Membrane for High Pressure Gas Separation\* (Applications in the Chemical and Refining Industries)  
*Partners:* Air Products and Chemicals, Inc., Coors Technical Ceramics Co., Oak Ridge National Lab, Penn State Univ.

*Title:* Olefin Recovery from Chemical Industry Waste Streams\*  
*Partners:* Membrane Technology and Research, Inc., Amoco, Phillips

*Title:* Advanced Electrodeionization Technology for Product Purification, Waste Recovery, and Water Recycling  
*Partner:* Argonne National Lab

*Title:* Advanced Materials for Reducing Energy Consumption and Manufacturing in the Chemicals and Petroleum Refining Industries  
*Partners:* Sandia National Lab, Amoco Chemical Co., Coors Technical Ceramics Co.

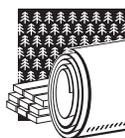
*Title:* Simulating Industrial Scale Turbulent Gas Solid Flows  
*Partners:* Los Alamos National Lab, Sandia National Lab, Pacific Northwest National Lab, Chevron Research & Technology, Cray Research, Dow Chemical, Dow Corning, DuPont Central Research and Development, Exxon Research and Engineering

*Title:* Application of Multi-Phase Computational Fluid Dynamics to Fluid-Particle Systems  
*Partners:* Lawrence Berkeley National Lab, Oak Ridge National Lab, Dow Corning, Fluent Technologies, FETC

*Title:* Clean Fractionation: An Inexpensive Source of Cellulose for the Production of Cellulose Plastics  
*Partners:* National Renewable Energy Lab, Eastman Chemical

*Title:* Separation and Recovery of Thermoplastics for Reuse via Froth Flotation  
*Partners:* Argonne National Lab, Vehicle Recycle Partnership, Americom Plastics Council, Institute of Scrap Recycling Industries, Appliance Recycling Centers of America

\*selected and under negotiation



### **Forest Products**

*Title:* Reducing Emissions of Volatile Organic Compounds  
*Partners:* Sanitaire, Georgia-Pacific, Univ. of Washington

*Title:* Producing a True Lignin Depolymerase for Biobleaching Softwood Kraft Pulp  
*Partner:* Univ. of Minnesota

*Title:* Electrically Switched Ion Exchange for Separation of Potassium and Chloride Ions to Enhance Water  
*Partners:* Electrosynthesis Co., Pacific Northwest National Lab, Univ. of Idaho

*Title:* Low-Odor, High-Yield Kraft Pulping  
*Partners:* Univ. of Washington, Univ. of Idaho, National Council of the Paper Industry for Air and Stream Improvement (NCASI)

*Title:* Reducing Volatile Organic Compound (VOC) Press Emissions from Oriented Strand Board (OSB)  
*Partner:* Michigan Tech Univ.

*Title:* A New Freeze Concentration Process for Minimum Effluent Processes in Bleached Pulp Mills  
*Partners:* Tufts Univ., Swenson, Weyerhaeuser, NCASI

*Title:* Improvement of Pulping Uniformity by Measurement of Single Fiber Kappa Numbers  
*Partners:* Champion Int'l., Univ. of Washington, Weyerhaeuser

*Title:* Design and Demonstration of Multiport Cylinder Dryers  
*Partners:* Argonne National Lab, Beloit, Univ. of Illinois

*Title:* High-Speed Microwave Treatment for Rapid Wood Drying  
*Partners:* Oak Ridge National Lab, Univ. of Tennessee, Bechtel

*Title:* Moisture Distribution and Flow During Drying of Wood and Fiber

*Partners:* Virginia Tech, State Univ. of New York

*Title:* Characterization and Conditioning of Tars Produced During Black Liquor Gasification

*Partners:* National Renewable Energy Lab., Oregon State Univ.

*Title:* Biological Augmentation of Kraft Recycle

*Partner:* Univ. of Washington

*Title:* Growth and Property Development of Convection-Pass Deposits in Recovery Boilers

*Partners:* Sandia National Lab., Oregon State Univ., B&W

*Title:* Contactless Real-Time Monitoring of Paper Mechanical Behavior During Papermaking

*Partners:* Measurex, Idaho National Engineering Lab, IPST, Georgia Institute of Technology

*Title:* Real-Time Wood Chip Moisture Content and Cross Direction Measurement of Web Caliper and Basis

*Partners:* Weyerhaeuser, Measurex, Union Camp Corp., Lawrence Berkeley National Lab

*Title:* Acoustic Separation Technology

*Partners:* Sonic Concepts, IPST, NUWC

*Title:* The Removal of Wax Stickers from OCC

*Partners:* Doshi & Associates, Univ. of Maine

*Title:* Dominant Negative Mutations of Floral Genes for Engineering of Sterility in Forest Trees

*Partner:* Oregon State Univ.

*Title:* Pine Gene Discovery Project

*Partners:* North Carolina Forest Biotech, Inc., Univ. of Minnesota, U.S. Department of Agriculture

*Title:* Molecular Physiology of Nitrogen Allocation in Poplar

*Partners:* Union Camp Corp., Univ. of Florida

*Title:* Control of Growth Efficiency in Young Plantation Loblolly Pine and Sweetgum

*Partners:* International Paper, Auburn Univ.

*Title:* Influence of Surface and Subsurface Tillage on Soil Physical Properties and Soil/Plant Relationships to Planted Loblolly Pine

*Partners:* Champion Int'l., North Carolina State Univ.

*Title:* Sustaining the Productivity and Function of Intensively Managed Forests

*Partners:* Virginia Tech, Westvaco

*Title:* Assessing the Significance of Belowground Carbon Allocation of Fast- and Slow-Growing Families of Loblolly Pine

*Partners:* Boyce Thompson Institute, North Carolina State Univ.

*Title:* What Causes the Density Effects in Young Forest Plantations?

*Partners:* Oregon State Univ., Weyerhaeuser

*Title:* Trees Containing Built-in Pulping Catalysts

*Partner:* IPST

*Title:* Elimination of the Calcium Circle: Direct Electrolytic Caustizing

*Partners:* IPST, Georgia Tech

*Title:* Bleach Plant Capital Reduction with Rapid Do Bleaching

*Partner:* IPST

*Title:* Apparatus for Removing Bark from Whole Logs (Inventions & Innovation)

*Partner:* Jeffrey P. Sasko



## **Glass**

*Title:* Diagnostics and Modeling of High-Temperature Corrosion of Superstructure Refractories in Oxy-Fuel Glass Furnaces

*Partners:* PPG Industries, Inc., Sandia National Lab, Air Liquide, Air Products, BOC, Ford Motor Co., Praxair, Inc.

*Title:* Development and Validation of a Coupled Combustion Space/Glass Bath Furnace Simulation

*Partners:* Technoglas, Owens Corning, Pilkington-Libbey-Owens-Ford, Argonne National Lab, Purdue Univ., Mississippi State Univ.

*Title:* Integrated Ion Exchange Systems for High-Strength Glass Products

*Partners:* Alfred Univ., TransResources, AFG Industries, Viracon, Libbey, Inc., Vitro Corp., Canandaiqua Wine Co., Ford Motor Co.

*Title:* Glass Furnace Combustion and Melting User Research Facility

*Partners:* Ford Motor Co., Sandia National Lab

*Title:* Dynamic Expert Systems Control for Optimal Oxy-Fuel Melter Performance

*Partners:* Air Products and Chemicals, Inc., Ohio State Univ., Sandia National Lab, Techneglas, McDermott Technologies, Advanced Control Solution, PPG, GE Lighting

*Title:* Method for Producing Glass Fiber (Inventions & Innovation)

*Partner:* Warren W. Drummond



### ***Metalcasting***

*Title:* Machinability of Cast Steel

*Partners:* American Steel Foundries, Atchison Casting Corp., Dominion Castings LTD, Electric Steel Castings Co., Falk Corp., Fosco-Morval, Inc., Harrison Steel Castings Co., Keokuk Steel Castings, Inc., KO Steel, Maynard Steel Casting Co., Pelton Casteel, Premier Refractories & Chemicals, Sawbrook Steel Casting Co., SFSA, Texas Steel Co., Univ. of Alabama-Birmingham

*Title:* Re-Engineering Casting Production Systems

*Partners:* Carondelet Corp., Durametal Corp., Falk Corp., GH Hensley Industries, Inc., McConway & Torley Corp., Mercury Marine, NACO Technologies, Shenango Industries, Inc., Texas Steel Co., Varicast, Inc., Waukesha, Iowa State Univ.

*Title:* Heat Transfer at the Mold/Metal Interface in Permanent Mold Casting of Aluminum Alloys

*Partners:* AMCAST Automotive, American Foundrymen's Society, CMI Tech Center, UES, Inc., Univ. of Michigan

*Title:* Mechanical Properties of Squeeze and Semi-Solid Cast A356

*Partners:* Case Western Reserve Univ., A-Mold, A-CMI, CMI-International, Hot Metal Molding, Inc., SPX/Contech

*Title:* Clean Cast Steel: 1) Flow of Steel in Gating Systems; 2) Control Ladle Temperature

*Partners:* Air Liquide, American Magotteaux, American Steel Foundries, Ancast, Inc., Ameson Foundry, Inc., Atchison Casting Corp., Dominion Castings LTD, Electric Steel Castings Co., Harrison Steel Castings Co., Keokuk Steel Castings, Inc., Maynard Steel Castings Co., National Castings, Premier Refractories & Chemicals, Selee Corp., Stainless Foundry & Engineering, Texas Steel Co., Falk Corp., Sawbrook Steel Casting, Wisconsin Centrifugal, Inc., Univ. of Alabama-Birmingham

*Title:* Ferrite Measurements in Duplex Stainless Steel Castings

*Partners:* Steel Founders Society of America, Atlas Foundry and Machine, CMI-Quaker Alloys, Inc., Keokuk Steel Castings, Inc., Lincoln Electric Co., Welding Research Council, Wollaston Alloys, Inc., Univ. of Tennessee

*Title:* Thin Section Steel Castings

*Partners:* GM Powertrain, Steel Founders' Society of America, Pelton Casteel, Durametal, Pennsylvania Steel, Quaker Alloy, Pennsylvania State Univ.

*Title:* In-Stream Inoculation for Aluminum Alloy Casting Processes

*Partners:* Alchem Aluminum, Ford Motor Co., Hickman Williams, KB Alloys Inc., Maco Corp. NEMAK, Reynolds Metals Co., Oak Ridge National Lab

*Title:* Enhancements in Magnesium Die Casting Die Life and Impact Properties

*Partners:* Chrysler Corp., CMM Services, Crucible Steel, DCD Technology, Dow Chemical, Empire Die Casting, A. Finkl & Sons Co., Ford Motor Co., General Die Casters, General Motors, Mercury Machine, PNGV, STM Heat Treating, UBE Machinery, Case Western Reserve Univ.

*Title:* Fast Response Measurements of Internal Die Cavity Temperature Using an Infra-Red Sensing Pyrometer

*Partners:* North American Die Casting Association, Tennessee Tool, Inc., Oak Ridge National Lab

*Title:* Accelerated Transfer of Clean Steel Technology to the Steel Industry

*Partners:* American Steel Foundries, Atchison Casting Corp., Dominion Castings LTD, Electric Steel Castings Co., Harrison Steel Castings Co., Keokuk Steel Castings, Inc., Maynard Steel Castings Co., Premier Refractories & Chemicals, Texas Steel Co., Falk Corp., Sawbrook Steel Casting, Univ. of Alabama-Birmingham

*Title:* Systematic Microstructural Corrosion Performance Evaluation of N-3MN and CK-3MCUN High Molybdenum Stainless Steel

*Partners:* Atlas Foundry and Machine, Esab Welding & Cutting Products, Keokuk Steel Castings, Inc., Quaker Alloy, Inc., Steel Founders' Society of America, Welding Research Council, Wollaston Alloys, Inc., Univ. of Tennessee

*Title:* Optimization of Squeeze Casting Process for Aluminum Alloy Parts

*Partners:* Blaze Technical Sensors, CMI, DCD Technology, Delory Tool Steel, Dollner, Euclid Heat Treat, Ford Motor Co., ITT Automotive, Latrobe Steel Co., Lindberg Heat Treat, Nicollet, UBE Machinery, Case Western Reserve Univ.

*Title:* Gating of Aluminum Permanent Mold Castings

*Partners:* Arrow Aluminum, CMI-Precision Mold, Inc., Flow Science Inc., Case Western Reserve Univ.

*Title:* Thin Wall Iron Castings - Microstructure/Molding

*Partners:* American Foundrymen's Society Thin Wall Iron Group, Foseco, Inc., Superior Graphite, RTZ Iron & Titanium America, Miller & Co., Chrysler Foundry, Navistar Casting Corp., Caterpillar, Inc., Elkem Metals Co., GM Powertrain, Badger Mining Corp., CT South, American Colloid Co., Intat Precision, Inc., Ford Motor Co., Automated Analysis Corp., Citation Corp., Internet Technical Center, Univ. of Alabama-Tuscaloosa

*Title:* A Process to Recover and Reuse Sulfur Dioxide in Metalcasting Operations (NICE<sup>3</sup>)

*Partners:* Adsorption Research, Inc., Ohio Department of Development, Office of Energy Efficiency



## ***Steel***

*Title:* Effects of Residuals in Carbon Steels

*Partners:* CANMET (NRC), AK Steel, Bethlehem Steel Corp., IPSCO Inc., LTV Steel Co., National Steel Co., The Timken Co., USS Research, Weirton Steel Corp.

*Title:* Strip Casting: Anticipating New Routes to Steel Sheet

*Partners:* Carnegie Mellon University, AK Steel, Dofasco, Kvearner Metals, LTV Steel Co., National Steel Co., SMS, USS Research

*Title:* Hot Oxygen Injection into the Blast Furnace

*Partners:* Praxair, Bethlehem Steel Corp., LTV Steel Co., USS Research, Wheeling-Pittsburgh Steel

*Title:* Study of Deformation Behavior of Lightweight Steel Structures Under Impact Loading

*Partners:* Oak Ridge National Lab, Auto Steel Partnership

*Title:* Removal of Residual Elements in Steel Ladle by a Combination of Top Slag and Deep Injection

*Partners:* McMaster Univ., Dofasco, USS Research, Weirton Steel Corp.

*Title:* Development of Submerged Entry Nozzles That Resist Clogging

*Partners:* Univ. of Missouri-Rolla, Acme Steel Co., AK Steel, Bethlehem Steel Corp., Inland Steel Industries, LTV Steel Co., National Steel Co., Rouge Steel Co., Stelco Inc., The Timken Co., USS Research, Weirton Steel Corp.

*Title:* Cold Work Embrittlement of Interstitial Free Steels

*Partners:* CANMET (NRC), AK Steel, Dofasco, LTV Steel Co., National Steel Co., Rouge Steel Co., Stelco Inc., USS Research, Weirton Steel Corp.

*Title:* Enhanced Inclusion Removal from Steel in the Tundish

*Partners:* Univ. of Alabama, Acme Steel Co., Weirton Steel Corp.

*Title:* Recycling of Waste Oxides in Steelmaking Furnaces

*Partners:* Carnegie Mellon Univ.-CISR

*Title:* Development of Cost-Effective, Energy-Efficient Steel Framing

*Partners:* National Association of Home Builders

*Title:* Novel Steel Dispensing Container Uses Less Steel (NICE<sup>3</sup>)

*Partners:* Dispensing Containers Corp., Pennsylvania Department of Environmental Protection



## ***Inventions and Innovation***

*Title:* Density Separation in Complex-Mode Vibration Fluidized Beds

*Partner:* Arthur P. Fraas

*Title:* Method of Recycling Hazardous Waste

*Partner:* Carl T. Philipp, P.E.

*Title:* Thermal Energy Storage for the Small Packaged Terminal Air Conditioning Unit (Ice Bear-Ice Storage Air Conditioner)

*Partner:* Sharon L. Hart

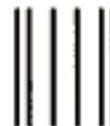
*Title:* Two-Phase Hero Turbine with Curved No Separation Nozzles

*Partner:* Gracio Fabris

*Title:* Laser Ultrasonic Furnace Tube Coke Monitor

*Partner:* David Walter Warren

(continued on page 13)



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Assistant Secretary  
Energy Efficiency and Renewable Energy

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OIT's Third Industrial Energy Efficiency Symposium and Exposition will be held February 7-9, 1999 at the Renaissance Washington, DC Hotel. The 1997 Expo provided more than 100 exhibitors and 800 individuals with the unique opportunity to address far-reaching national and global energy challenges. The 1999 Expo promises to be better than ever, providing leading-edge thinking, latest trend information, and an opportunity to highlight advanced technology products and services.

Participants in the Third Expo will include:

- Industry specialists
- Research managers
- Plant managers
- Technology executives
- Marketing representatives
- Members of Congress
- Federal government leaders

This is your opportunity to position your organization as a leader working in partnership with government to address critical issues as we move toward the year 2020. The Expo will focus on customers, suppliers, and Federal initiatives that will impact the development of your future markets. Opportunities to participate in the 3<sup>rd</sup> Expo include Silver or Gold Co-Sponsorship, Exhibitorship, and/or attendee at the event. Co-sponsorship gives your organization a spotlight in event brochures, pre-event advertising, exhibit space, and special mention during the Expo. Exhibitors can showcase their technology and key initiatives in the Exhibit Hall while meeting with representatives from government, industry, and research organizations. Attendees will hear key industry speakers, visit exhibitors during dedicated times, attend customer, supplier, and/or vision industry sessions, and network with peers throughout this exciting 2<sup>nd</sup> day Expo.

Join us at the 3<sup>rd</sup> Industrial Energy Efficiency Symposium and Exposition and see why "2020 is Better than Hindsight." For information about registering, exhibiting, or co-sponsoring, please call 877-OIT SYMP or look for information on our website ([www.doe.oit.gov](http://www.doe.oit.gov)) in the coming weeks. See you there!

*Title:* The Hydrostatic Mooring  
*Partner:* Jens Korsgaard

*Title:* Cyclic Microwave Treatment of Pressed Garments  
*Partner:* Alan E. Miller

*Title:* High Throughput Manufacturing of High Efficiency Solar Cells  
*Partner:* Kurt L. Barth

*Title:* Electronic Refrigerant Leak Detector  
*Partner:* Elie Talamas, Jr.

*Title:* An Efficient Compressor Valve  
*Partner:* Norbert W. Overfield

*Title:* The Anaerobic Pump  
*Partner:* Keith A. Schimel, P.E.

*Title:* The Road Patcher  
*Partner:* Reginald J. Kneeland

*Title:* Nickel Based Superalloy with Improved Weldability and Oxidation Resistance  
*Partner:* George Simkovich

*Title:* Burner Control System  
*Partner:* Leonard Grech

*Title:* The BEI Hydrolysis Process—Continuous Saccharification of Ligno-Cellulosic Biomass in Two Stages  
*Partner:* Donald L. Brelsford

*Title:* Liquid Leak Detection System  
*Partner:* Bill Spiegel

*Title:* Peripheral Mower Blade  
*Partner:* John Darden

*Title:* Composite Electrodes for Advanced Electrochemical Applications  
*Partner:* Ravi Chandran

*Title:* Particulate Ejection Coal Fired Turbine  
*Partner:* Steven R. Wright



**NICE<sup>3</sup>**

*Title:* Pollution Prevention and Energy Conservation Through No-VOC Coating Technologies  
*Partners:* Aero Vironment Environmental Services, Inc., California Energy Commission

## Forging and heat treating industries begin implementing roadmaps

In addition to its work facilitating visions and roadmaps for the eight “Industries of the Future,” OIT has also been helping various other industries produce similar documents. For example, OIT recently met with representatives of the heat treating and forging industries to discuss their roadmap priorities.

The Heat Treating Society R&D Committee of ASM has developed its 1999 R&D plan in response to the heat treating industry’s roadmap. The plan will be discussed at ASM’s Heat Treating Vision 2020 meeting Oct 12-15, in Rosemont, IL. ASM, the Heat Treating Network and the Metals Treating Institute are also establishing a Heat Treating Center of Excellence.

OIT also recently participated in a meeting at Wright Patterson AFB to begin organizing a National Center for Precision Forging. This virtual center will provide a network for numerous R&D, demonstration and validation activities in support of the forging industry. The first of several regional meetings to discuss implementing the forging industry roadmap was held in Cleveland in July. The next meeting will be in Baltimore in November. For further information, contact OIT’s Sara Dillich at 202-586-7925.

*Title:* Recovery and Reuse of Solvent Vapors Produced as a Manufacturing Process Byproduct  
*Partners:* Alzeta Corp., California Energy Commission

*Title:* Predictive Diagnostic System for DC Motor Drives  
*Partners:* Environmental Air Co., Maine Department of Economic and Community Development

*Title:* Absorption-Augmented Engine Drive Refrigeration  
*Partners:* Energy Concepts Co., Maryland Energy Administration

*Title:* Energy Independent Fuel Production Through Thermal Efficiency Improvements and Waste Stream Utilization  
*Partners:* Puerto Rico Energy Affairs Administration, W2E

## CALENDAR

ASDMaster Training Workshop, Oct 1, Cleveland, OH\*

Mining Technology Roadmap Workshop, Oct 1-2, Denver, CO

ASDMaster Training Workshop, Oct 6, Stevens Point, WI\*

ASM Int'l. Materials Solutions Conference and Exposition (Industry/Government Partnerships Session), Oct 12, Rosemont, IL

Electrotechnologies and Alternative Reaction Mechanisms for U.S. Chemical Process Industries, Oct 19-21, Houston, TX

Metalcasting Industry Lost Foam Technology International Showcase Demonstration, Oct 27-29, Birmingham, AL

ASDMaster Training Workshop, Oct 29, Tulsa, OK\*

59<sup>th</sup> Annual Conference on Glass Problems, Oct 28-29, Columbus, OH

Inventions and Innovation Conference, late Oct, Seattle, WA

Advanced Turbine Systems Annual Meeting, Nov 2-4, Washington, DC

World Energy Engineering Congress, Nov 3-5, Atlanta, GA

How to Get the Most Out of Your Electric Motor Systems Workshop, Nov 5, Prescott, AZ; contact Gary Graham at (602) 280-1419

Workshop on Energy Technology Partnerships, Nov 8-10, Reston, VA, (540) 231-5182

International Gas Research Conference, Nov 8-11, San Diego, CA

Chemical Industry Roadmap Workshop on Materials for the Future, Nov 19-20, Univ. of Maryland Conference Ctr., College Park, MD

1998 Fall Meeting of the Materials Research Society, Nov 30-Dec 4, Boston, MA

Agenda 2020 Poster Session, Dec 3, Chicago, IL

23<sup>rd</sup> Annual Conference on Composites, Materials, and Structures, Jan 25-29, Cocoa Beach, FL

Third Industrial Energy Efficiency Symposium & Expo, Feb 7-10, Washington, DC

The Materials Society Annual Meeting, Feb 28-Mar 4, San Diego, CA

\*For information on ASDMaster Training Workshops, contact Anna Maksimova (360) 754-1934.

## ***New Resource Center offers OIT customers easy access to wealth of information***

OIT held a "grand opening" for its new Resource Center in mid-September. The kickoff, which took place at OIT offices in Washington, DC, demonstrated the Resource Center's capabilities and processes including its fulfillment database. The database enables the Center to accurately track information requests and monitor quantities of material in stock.

By contacting the Resource Center, customers can obtain publications, videos, software and other informational products geared toward improving industrial energy efficiency and preventing waste and pollution. The Center's products and services help document successes and explain how to take part in industrial energy efficiency projects. OIT's *Information Resources Catalog* contains a list of all materials and services available at the Center, most of which can be obtained at no cost. The *Information Resources Catalog* has been on-line since April at [www.oit.doe.gov](http://www.oit.doe.gov). Customers can view a complete list of materials, then order on-line.

If the Center staff cannot provide requested materials, they will try to put the customer in touch with the appropriate industrial energy efficiency expert. The staff will also send multiple copies of publications to customers who would like to distribute them at a workshop or conference. According to Marilyn Burgess, who runs the Resource Center, "Customers can request materials in just about every way possible; on-line, by e-mail, fax, phone or U.S. mail. They can even walk in."

The OIT Resource Center is open between the hours of 8:30 am and 6:00 pm. Contact the Center staff in the following ways:

E-mail: [marilyn.burgess@ee.doe.gov](mailto:marilyn.burgess@ee.doe.gov)

Fax: 202-586-1658

Phone: 202-586-2090

Mail: U.S. Department of Energy

Attn: Marilyn Burgess EE-20

1000 Independence Ave, SW

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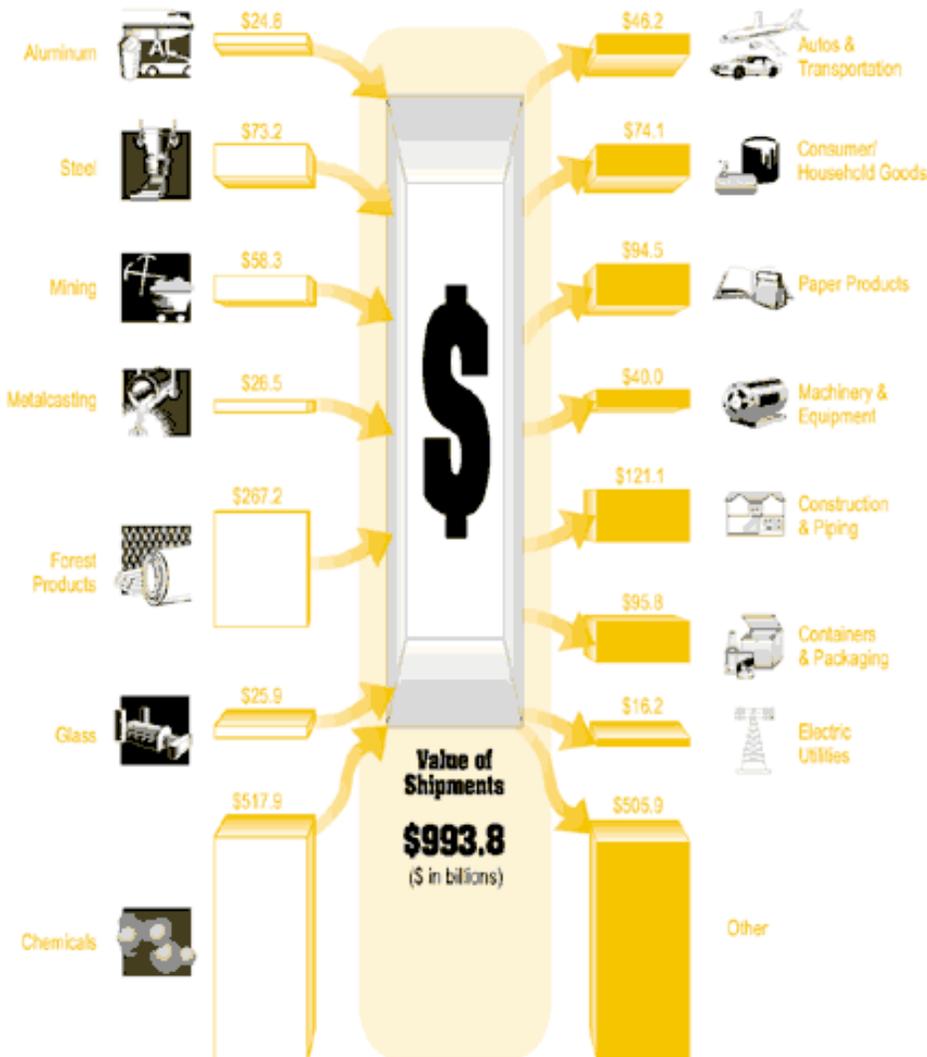
## NEW PUBLICATIONS

Title	Area
Fifth Edition of Inventor Assistance Source Directory, July, 1998	Inventions
Licensing Intellectual Property: A Primer, Fall, 1998	Inventions
Alternative Media Workshop Report, Fall, 1998	Chemicals
Polymer Research Workshop Report, Fall, 1998	Chemicals
<i>Technology Vision 2020: Partnerships for the Chemical Enterprise</i> (Video), Fall, 1998	Chemicals

Call 202-586-2090 to order copies.



## Trends Principal Domestic Markets for IOF\* Shipments, 1996



Aluminum Statistical Review for 1996; The Aluminum Association  
 OIT Technology Partnerships 1997; U.S. Department of Energy, Office of Industrial Technologies  
 Steel: Annual Statistical Report 1996; American Iron and Steel Institute  
 U.S. Chemical Industry Statistical Handbook 1996; Chemical Manufacturers Association  
 Various Reports from the U.S. Departments of Commerce, Energy, and the Interior  
 \* Industries implementing the Industries of the Future Strategy

## Inventions and Innovation: A New Vision

by Sandra Glatt,  
 OIT Inventions and Innovation  
 Program Manager

It's an exciting time for the Inventions and Innovation (I&I) Program. We've recently completed a total redesign of the program in order to improve overall efficiency and increase emphasis on OIT's Industries of the Future. Strong inventor and industry interest is already evident by requests for information on the first competitive solicitation under the new I&I program.

I&I provides funding to individual inventors and small businesses whose inventions demonstrate a significant energy impact and strong commercialization potential. The program also provides grantees with technical guidance, market analyses and commercialization support through OIT portfolio managers and a network of five Regional Resource Centers.

Past accomplishments of I&I are notable. They include funding more than 500 inventions with approximately 25% reaching the marketplace, cumulative sales of nearly \$710 million, and cumulative energy savings of 0.6 quadrillion Btus. In 1996, I&I-supported inventions saved the equivalent of 14 million barrels of oil.

By combining the former Energy-Related Inventions Program and the Innovative Concepts Program under one competitive solicitation, the new I&I will:

- increase funding to inventors
- reduce time from proposal submission to grant award
- assist inventors to reach early commercialization of their inventions.

But most exciting to OIT is I&I's new link to the Industries of the Future. The program is being marketed directly to industry with the goal of adding innovative, energy-efficient technologies to the industry teams' R&D portfolios.

## ***Industry Notes***

### ***IOF process results in creation of new glass industry group***

In late September, the Office of Industrial Technologies and members of the U.S. glass industry announced the creation of the Glass Manufacturers Industry Council (GMIC)—an organization that will develop, select and oversee a precompetitive R&D portfolio related to glass production. The ultimate goal of the GMIC is to strengthen the competitive position of the industry in materials markets.

Significantly, before development of the GMIC, the glass industry did not have a central organization to advance the technology and efficiency of glass manufacturing. The idea for the Council grew out of the glass industry's participation in OIT's Industries of the Future process. During the past two years, U.S. glass producers participating in IOF have worked to identify and plan precompetitive R&D that saves energy, improves environmental performance and increases productivity. As a result of those efforts, the industry has prepared a strategic vision and a draft technology roadmap. More than 60 R&D priorities outlined in the roadmap now await action from both industry and government. Due to competition and

segmentation in the glass industry, however, glass industry members felt that an umbrella organization was needed to serve as a focal point for this technology collaboration.

Development of the GMIC will promote the partnership that exists between the glass industry and OIT, since OIT will now work with a single organization to implement the R&D agenda outlined in the technology roadmap. In addition, the GMIC will serve as an efficient means of receiving and allocating funds to the glass research community, which will also benefit OIT.

According to James Shell, of Techneglas, "As part of DOE/OIT's Industries of the Future program, the U.S. glass industry has outlined its research and technological needs for the next 20 years. The Glass Manufacturer's Industry Council will be an extremely useful organization in helping to facilitate and coordinate the funding and management of R&D. Theo Johnson, OIT's Glass Team Leader, has been very supportive of our effort to organize GMIC."

## **THE OIT TIMES**

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