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Study Examines Growing Trade Deficit in Products of Energy-intensive Industries

As the overall U.S. trade deficit has worsened over the past several years, U.S. imports for many commodities produced and used by energy intensive U.S. industries have increased, as well. These are the preliminary results of an OIT-sponsored study by the National Coalition for Advanced Manufacturing (NACFAM).

The idea for the study originated during a meeting of NACFAM's Advanced Manufacturing Leadership Council in late September 2001. In discussing the new national security environment and its potential impacts on U.S. manufacturing, the assembled manufacturers, academics, and policymakers wanted to know just how extensively U.S. manufacturing relies on international trade for input commodities. How much do U.S. manufacturers use foreign sources of materials? What countries supply the materials critical to U.S. manufacturing operations? To what degree have imports penetrated U.S. markets?

Because of the Leadership Council's interest in these questions, OIT asked NACFAM to study import trends for supplies used and products manufactured by most of the energy-intensive industries participating in the Industries of the Future partnership. Accordingly, NACFAM researchers have focused their recent efforts on assessing the trends in international trade flows and resource origins for energy-intensive U.S. manufacturing industries.

The ongoing study consists of two parts. The first examines the import dependence (defined as the percentage of net imports in domestic consumption) of final products consumed in the U.S. The second part examines the commodity use patterns of the

U.S. aluminum, chemicals, forest products, glass, metal casting, and steel industries.

As widely reported in the media, the U.S. trade deficit soared in the latter half of the 1990s, jumping by more than 30% between 1996 and 2000. Not surprisingly, imports rose across the entire spectrum of U.S. industry. The extent to which energy-intensive industries relied on imported final products jumped dramatically between 1997 and 1999. In glass and glass products manufacturing, for example, import dependence rose by more than 350%. Similarly, the forest products industry saw import penetration double in two subsectors: pulp, paper, and paperboard and veneer, plywood, and engineered wood products.

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As one would expect, relative levels of domestic self-sufficiency vary from one industry to the next, but the overall picture is fairly consistent. In evaluating the degree to which energy-intensive industries rely on imported commodities to produce their final products, the study finds that the U.S. has been running persistent trade deficits in many leading commodity inputs. In the chemical industry, for example, the U.S. runs a trade deficit in 51 of the 101 traded commodities and, between 1996 and 2000, imports jumped 39% in the sectors that provide those commodities. For the steel industry, the U.S. runs a trade deficit in 46 of the 68 traded commodities, and imports in the sectors

(continued on page 12)



QUARTERLY HIGHLIGHTS



ALUMINUM

www.oit.doe.gov/aluminum/

New vision and roadmap available

OIT's **Aluminum** Team is pleased to have a new and up-to-date aluminum industry vision plus a technology roadmap for alumina manufacture. "In addition, by year's end, we hope to have a new aluminum industry roadmap to update the 1997 document," notes OIT Aluminum Team Leader Sara Dillich.

The Aluminum Association published *The Aluminum Industry Vision: Sustainable Solutions for a Dynamic World* in November 2001. The 34-page document recasts the industry's long-term goals against a backdrop of the latest energy and economic projections, likely business scenarios, and recent technology advances and global events. The document emphasizes opportunities that capitalize on aluminum's unique properties and life-cycle energy benefits, particularly its ability to be energy-efficiently recycled repeatedly and without loss of quality.

The *Alumina Technology Roadmap* represents a unique, multinational effort organized by the Australian Mineral Industries Research Association, the Australian Aluminum Council, and The Aluminum Association.

The effort embraced contributions from a variety of industry groups including 10 firms from four continents, universities, OIT/DOE, and other government agencies. The roadmap represents a concerted look by the global alumina industry at its technology challenges over the next 20 years. It identifies six major themes for high-priority R&D: Bayer process chemistry and alternatives, resource utilization, energy efficiency, process and knowledge management, residue treatment and reuse, and safety/human exposure.

Copies of both documents are available on OIT's website (www.oit.doe.gov/aluminum) and that of The Aluminum Association (www.aluminum.org).



STEEL

www.oit.doe.gov/steel/

Re-balancing R&D portfolio for the future

Over the past several months, members of OIT's **Steel** Team have been busy laying the groundwork to re-balance the team's R&D portfolio for a longer-term focus. "The industry needs more breakthrough technologies that will mean greater energy benefits," explains Team Leader Isaac Chan. "This means more long-term projects must be added to our R&D portfolio, and this change is reflected in our two most recent solicitations based on the priorities in the recently released *Steel Industry Roadmap*."

The two solicitations, the *Steel Industry Research Challenge* and the *Steel Industry Ironmaking Challenge*, were issued in February and will close in April 2002. The Steel Industry Research Challenge is the second round of solicitations to develop concepts for innovative, next-generation technologies that offer the potential for major energy savings in steelmaking. The Steel Industry Ironmaking Challenge is similarly geared to stimulate development of advanced ironmaking technologies with high savings potential. Both solicitations are closely tied to priorities defined in the industry's technology roadmap.

For the near term, the Team plans to "kick up a notch" its efforts to reach out to the industry. These efforts include increased participation in the industry's technical conferences, more visits to steel production facilities, and the addition of the first OIT Allied Partner from the steel industry—the Pittsburgh-based Iron and Steel Society.



Isaac Chan,
Steel Team Leader



METAL CASTING

www.oit.doe.gov/metalcast/

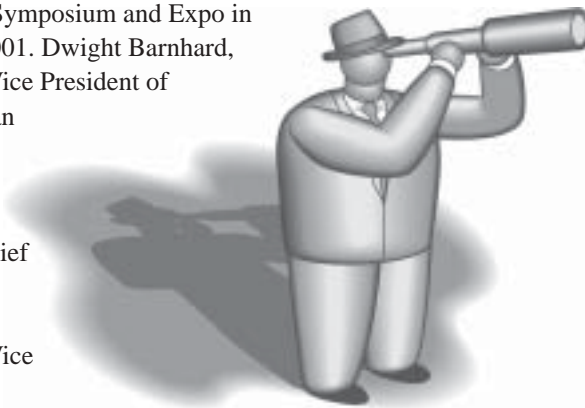
Visionary venture

The **Metal Casting** Industry of the Future partnership is building upon its past achievements, working toward a positive future, and updating its industry vision. Since the publication of its original vision, *Beyond 2000: A Vision for the American Metal Casting Industry*, the industry has worked through the Cast Metals Coalition (CMC), bringing industry, government, and universities together to address research challenges.

The process to update the industry vision started with the "Future Think Forum." The Forum was held in conjunction with OIT's 4th Industrial Energy Efficiency Symposium and Expo in February 2001. Dwight Barnhard, Executive Vice President of the American Foundry Society, and Paul Mikkola, Chief Operating Officer & Executive Vice President at Hitchiner

Manufacturing Co., led a discussion of the major challenges the industry expects to face over the next 25 years. This was followed by a two-day workshop held in October 2001 at Ohio State Univ. where leaders from the metal casting industry, DOE, EPA, and the Dept. of Defense identified common challenges and goals in several areas. These included improved design capabilities, process advances, communicating the societal importance of metal casting, and attracting qualified students and employees to metal casting.

Achieving the goals set forth in the vision will contribute to improved productivity and energy efficiency in the industry and speed the development and application of advanced, clean technologies in metal casting processes. You will be able to access the draft roadmap from both the CMC website (<http://cmc.atcorp.org>) and the OIT Metal Casting Team's website (www.oit.doe.gov/metalcasting).



Forging industry credits roadmap for recent R&D grants

The forging industry has a story to tell. The story starts with a technology roadmap and ends with a grant of nearly \$15 million and a new spirit of cooperation in a formerly fragmented industry.

George Mochnal, Director of Research and Education for the Forging Industry Association (FIA), explains that the technology roadmap that FIA created with OIT assistance has led to several OIT and Department of Defense (DOD) grants. In addition, creating a roadmap and working with OIT has led to a new alliance among and between forgers, Industries of the Future, and crosscutting industries.

Mochnal joined FIA in 1994 and learned of the roadmap process from early meetings with OIT. "It became evident that a plan could be put together that would be of great interest to our industry members—a plan that would focus us on those areas that are important to help the forging industry stay competitive in the future," says Mochnal. The FIA put together a vision and organized roadmap meetings with assistance from OIT. The forging industry completed its technology roadmap in November 1997.

Although the first proposal that the forging industry submitted was not awarded a grant, the submission process itself was a success. "One of their failures turned into one of their greatest successes," explains OIT Deputy Assistant Secretary Denise Swink. Mochnal agrees, saying that after the first proposal application, companies were excited about working together toward common technology goals. In fact, the positive experience resulted in publication of an FIA pamphlet on collaborative research.

Several successful proposals followed the forging industry's first attempt. The largest of these recently resulted in a \$12 million grant from DOD. "The DOD and Defense Logistics Agency specifically said that the grant—\$12 million from DOD and \$3 million in-kind from industry—was to implement portions of the technology roadmap," says Mochnal. "The technology roadmap has not only been a base to work from with DOE, but also with other agencies."



CHEMICALS

www.oit.doe.gov/chemicals/

Reporting results, reviewing projects, producing a CD

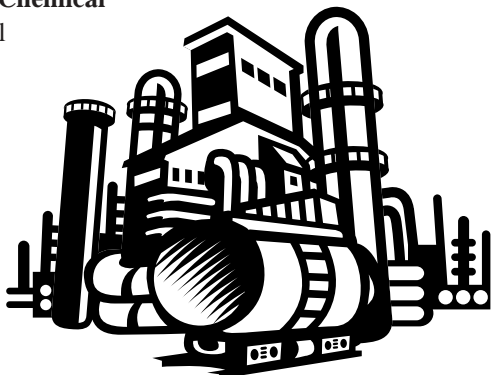
Several new products and initiatives of the **Chemical Team**—its annual report, spring portfolio review, Chemical Plus project, and interactive CD—work together to wrap up the past, report on the present, and move into the future.

The **Chemical Team's** annual report, published in October 2001, highlights the activities of the Chemicals Industry of the Future (IOF) and identifies the achievements of 2001. The report also describes the issues affecting R&D portfolio development. To read or order the report, visit the **Chemical Team** website: www.oit.doe.gov/chemicals.

The **Chemical IOF** portfolio review took place at the American Institute of Chemical Engineers meeting in March. **Chemical Team Leader Paul Scheihing** explains that the review gives the **Team** and its partners the opportunity to discuss 30 of its core and emerging research projects, to expose the projects to new potential partners, and to make decisions on resource allocation. "Most important," says Scheihing, "we'll be able to identify any gaps we have in our portfolio, so future solicitations can be shaped to fill those gaps."

The **Chemical Team** is supporting the Vision 2020 Technology Partnerships new Chemical Plus initiative. Under the initiative, OIT is cost-sharing feasibility and scoping studies that will lead to precompetitive R&D collaborations. The three current Chemical Plus projects are Biomass to Energy, Computational Methods for Chemical and Physical Properties, and Direct Capture of Products.

The **Team's** new CDROM was released at the AICHE Spring Meeting in March. It contains tips and tools, as well as information on OIT-supported emerging and future technologies for increasing energy efficiency in the chemical industry. Links will be also provided to the OIT and AICHE websites. For more information on the CD, call the OIT Clearinghouse at 1-800-862-2086.



AGRICULTURE

www.oit.doe.gov/agriculture/

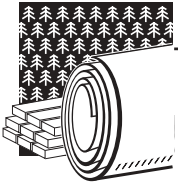
DOE integrating bio-products and bio-energy programs

The **Agriculture Team** and other OIT Teams are working with other DOE offices to more fully integrate DOE's biobased products and bioenergy programs under DOE's Office of Energy Efficiency and Renewable Energy (EERE). In addition to OIT, others involved in the effort include DOE's Office of Transportation Technologies, Office of Power Technologies, Doug Kaempf, (DOE's biobased products and bioenergy coordinator), and Doug Faulkner (DOE's Principal Deputy Assistant Secretary for EERE). The initiative is aligned with and responsive to the Biomass R&D Act of 2000, and the new National Energy Policy. Biobased products and bioenergy include chemicals and materials, fuels such as ethanol, and the generation of electricity and heat from biomass feedstock such as crops, crop residues, trees, forest residues and animal wastes.

What will this mean to OIT's customers? Now, people looking for information will find one-stop shopping, whereas before it might have felt like multi-stop shopping among several DOE offices and programs, explains Mark Paster, Agriculture Team Leader.

In the near future, EERE will release biobased products and bioenergy solicitations in a coordinated and integrated fashion. We're emphasizing solicitations in technologies that cut across and impact products, fuels, and power, explains Paster. More emphasis will also be placed on the biorefinery concept where at least two out of the three of bioproducts, biofuels and biopower will be produced at one facility. This can optimize the use of all the biomass most efficiently, he said.





FOREST PRODUCTS

www.oit.doe.gov/forest/

New industry strategic business plan underway

The **Forest Products** Team and its industry partners, on the heels of the Augusta showcase (see sidebar), are releasing a new industry business plan and updated technology platforms. The forest products industry's new business plan builds on last year's technology summit and has more quantitative detail than past vision and roadmap documents. "The plan pulls results from the summit into one concise plan and strategy," says Valri Robinson, Forest Products Team Leader. "It makes an economic case for why R&D is important, and what technologies could make a difference to the forest products industry."



Valri Robinson,
Forest Products
Team Leader

The Forest Products Team is also working with updated and expanded forest products technology platforms. Four of the six platforms—higher-value raw material supply through sustainable forestry, significantly reduced manufacturing costs, superior environmental performance, and improved energy performance—are updates of the previous focus areas. The other two platform areas—technologically advanced workforce and forest-based materials—are new this year. The current solicitation is based on the six technology platforms and requests proposals for gasification, higher value raw materials through sustainable forestry, fiber modification, and VOC and HAP emissions technology.

In early April, the Forest Products Team will be involved with a State Industries of the Future event in Washington state. Weyerhaeuser will host about 100 participants from the forest products, agriculture, mining, aluminum, and petroleum industries—the largest industries in the Pacific Northwest. Attendees will discuss needs that cut across these industries: sensors and controls, energy management best practices, power supply and sources, environmental issues, and processing.

Augusta Newsprint showcase demonstrates energy efficiency in action

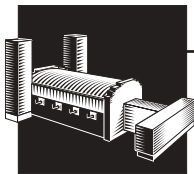
OIT's **Forest Products** Team, the Institute of Paper Science and Technology, Augusta Newsprint Company, TAPPI, and AF&PA hosted the Augusta Newsprint Company 2002 Showcase at the Radisson Riverfront Hotel in Augusta, Georgia, on March 6-7. The showcase focused on practical solutions to common problems and energy-efficient technologies and practices that can save money in industrial applications.

The Augusta Newsprint Showcase began with keynote speaker Bob Collez, General Manager of Augusta Newsprint Co., who described the energy- and process-efficiency improvements featured at the firm's newsprint mill. Later, representatives of Honeywell-Measurex Corp., Rockwell Automation, the Johnson Corp., E-Group, Goodrich Air-Science Engineering Division, and Pacific Simulation gave briefings on topics relating to *Energy-saving Technologies for Today: Results and Lessons Learned*. In her luncheon speech, OIT's Denise Swink discussed public-private partnership opportunities that can help improve pulp and paper mill efficiency while saving energy.

The showcase—held in conjunction with TAPPI's annual convention in Atlanta—concluded with a tour and exhibition at Augusta's newsprint mill. Attendees viewed demonstrations of energy efficiency best practices tools and witnessed the latest, energy-efficient technologies in action. The showcase featured more than 20 exhibits from both the private and public sectors, including Georgia Power, General Electric Co., Dean Oliver International, and Emerson/Fisher-Rose.



QUARTERLY HIGHLIGHTS



GLASS

www.oit.doe.gov/glass/

Industry roadmap to be published

The Glass Manufacturing Industry Council (GMIC) will publish the eagerly-awaited *Glass Industry Technology Roadmap* this spring. The document is the culmination of a process that began in 1997 when industry representatives first came together to define their R&D priorities. The publication reflects industry input gained during two more recent workshops and a rigorous industry review orchestrated by the GMIC. Key R&D priorities identified in the roadmap include advanced sensors and controls, furnace modeling, development of next-generation melting systems, improved materials for operations, new glass compositions and raw materials, and advanced processing techniques for novel glass product applications. Copies will be available from OIT's website and Clearinghouse as well as GMIC.

"OIT is already working with GMIC and the industry to help address some of these top R&D needs—most recently in the area of advanced melting processes," notes OIT's Glass Team Leader Elliott Levine. The latest solicitation by OIT's **Inventions and Innovation (I&I)** program placed primary focus on new and innovative concepts for glass melting. Proposed concepts were to substantially reduce energy requirements and capital costs per unit of glass, while maintaining glass quality and producing equal or lower emissions compared to traditional methods. Awards for the I&I solicitation are expected by late summer.

OIT plans to issue a new R&D solicitation this spring based on priorities identified in the *Glass Industry Technology Roadmap*. OIT's glass portfolio supports the GMIC initiative to develop more efficient technologies and practices for the U.S. glass industry. These efforts are expected to boost the industry's energy efficiency and competitiveness in the global marketplace today and in the future.



PETROLEUM REFINING

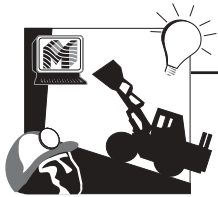
www.oit.doe.gov/petroleum/

Upcoming events to promote energy efficiency

OIT's **Petroleum** Team is helping organize an energy efficiency showcase in the Houston, TX area for March, 2003. While the specific topics and technologies to be addressed are still under discussion, focus will be on technologies that reduce energy use in refining and chemical manufacture, and associated NO_x and VOC emissions. Also under discussion are plant tours, technology exhibits, seminars, and a congressional forum.

While research to improve petroleum processes is underway, the team is encouraging the industry to take advantage of tools, resources, and technologies available right now. Several refineries will take part in "California Energy Solutions for Industry—Ways to Improve Operations and Profitability," on May 15, in Buena Park, CA. The event is the third in a series of energy fairs cosponsored by OIT to help California industries become more energy efficient and remain competitive. The fair will help improve awareness among California refineries and other energy-intensive industries about available technologies, best practices, suppliers and similar resources that can help them cut their energy use.



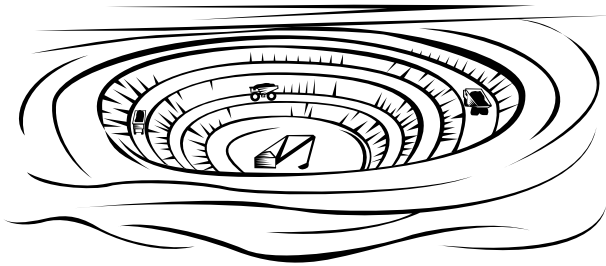


MINING

www.oit.doe.gov/mining/

Nevada, Georgia showcases planned

Emerging technologies and smart energy practices will be highlighted at two **Mining** Team showcases now in the planning stages. The Nevada Showcase to be held in Elko, NV, in August 2003 will feature the Newmont Mining Corp., Cortez Gold Mines, Barrick Mines, and Anglo Gold Corp. The Georgia Clay Showcase to be held in Macon, GA, in April 2004 will feature Imerys, Englehard, Thiele Kaolin, and Huber. Both events will include plant tours, a Congressional forum, and a State partnership signing ceremony.



In February, OIT and the National Mining Association announced two new, laboratory-led mining R&D projects. In the first, Albany Research Center and its partners will develop a *Smart Screening System for Taconite Processing* that should cut energy use and boost productivity at iron ore processing plants. The Idaho National Engineering and Environmental Laboratory will lead the second project, *Alternative Anode Reaction for Copper Electrowinning*, to reduce energy use and ambient acid gas emissions in copper processing.

A workshop was held in late February to develop the fourth and final roadmap called for in the original mining industry strategic vision. The Education Roadmap focuses on opportunities for industry and universities to work together to strengthen mining degree programs and ensure qualified training of the future work force.

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1-800-862-2086**

OIT Co-sponsoring California 'Energy Fairs'

How did California get itself into an energy crisis? That was the question posed by California State Assemblyman Fred Keeley on January 16, 2002, at the San Jose, CA, energy event—Energy Solutions for California Industry. And, helping California industry remain profitable during the energy crisis is the purpose of the Energy Solutions series.

The San Jose energy event was the second in the series, informally known as “energy fairs.” OIT and the California Energy Commission (CEC), which co-sponsors the series, held the first fair in Sacramento on August 14, 2001. “The events bring together public- and private-sector organizations, including financial institutions, technical services firms, and utility companies, and provide attendees with information and tools to achieve cost and energy savings,” said David Garman, DOE’s Assistant Secretary for Energy Efficiency and Renewable Energy. The events concentrate on energy improvements in pumping and compressed air systems, motors, and drives.

OIT’s Chris Cockrill, an organizer of the Energy Solutions events, explains that they began when the CEC approached OIT last year about working together to help California industry weather the energy crisis. At about the same time, Gunnar Hovstadius from Allied Partner ITT Fluid Technologies was talking to OIT about pulling together an Allied Partner event in California. The efforts came together, and in April 2001 OIT and CEC agreed to schedule three energy events in California.

“They are very serious forums that allow industry leaders to talk face to face with solution providers from the ranks of our Allied Partners,” explains Cockrill. “It’s not a trade show. Exhibitors are hand-picked from our Allied Partners. We focus on solutions, not products.” The events typically feature 25 to 35 exhibitors and 200 to 300 attendees. Simultaneous breakout sessions are presented throughout the day.

The next energy event is scheduled for May 15, 2002, in Buena Park, CA. For more information on the energy events, please see the California Energy Events Web site: www.projectperformance.net/caenergyevents/



STATES INDUSTRIES OF THE FUTURE

www.oit.doe.gov/states/

Connecting partners across the country



The **State IOF Team** recently issued two solicitations: State Energy Program Special Projects and the 2002 Broad-based Solicitation (BBS) Task.

The State Energy Program Special Projects solicitation encourages participants to submit proposals relating to the development of State-level Industries of the Future

projects. These projects promote the adoption and expansion of national Industries of the Future activities to state-level partnerships. Approximately \$3.0 million in federal and private-sector funds will be awarded over 20 states. Selection announcements will be made in May 2002.

The 2002 BBS Task encourages applicants who are part of a university or university extension program to help catalyze the development of state-led IOF programs. Approximately \$350,000 of federal funds will be awarded.

The State IOF program builds on the national IOF strategy and the national industry-developed visions and roadmaps. The program brings together industry, government, and other organizations to identify and address state priorities. The program promotes solutions that enhance economic development for local industry, while saving energy in both

the short and long terms. For more information on OIT's States IOF program, contact Sandy Glatt at or call the OIT Clearinghouse at 1-800-862-2086.



INVENTIONS & INNOVATION

www.oit.doe.gov/inventions/

Simplifying solicitations

The **Inventions and Innovation (I&I)** solicitation process just became a whole lot easier. The I&I team has recently debuted a user-friendly guide for submitting financial assistance proposals on-line. "We're working to anticipate and meet our customers needs," explains I&I Team Leader Lisa Barnett.

The new guide simplifies the proposal process by walking prospective partners through DOE's Industry Interactive Procurement System (IIPS). DOE now requires that all proposals go through the IIPS on-line submittal system. I&I's guide to navigating IIPS gives instructions on how to view solicitations and submit applications.

See the Quick Guide for I&I IIPS Users at: www.oit.doe.gov/inventions/solicitations/quickguide.shtml



NICE³

www.oit.doe.gov/nice3/

Flexible proposal process is well-received

Last year, the **National Industrial Competitiveness through Energy, Environment, and Economics (NICE³)** program announced a flexible proposal submission process. Based on results from the recently announced grant awards, the new process is filling the needs of industry and state offices, alike. "This has been a very well-received change," says NICE³ Program Manager Lisa Barnett.

In the past, NICE³ required industrial applicants to submit proposals through state energy, pollution prevention, or business development office. Last year, after discussions with state personnel on ways to improve NICE³, the program leaders decided to allow flexibility in how states participate in the NICE³ process.

Barnett explains that half of the most recent grant awards which OIT announced in December went through state offices while the other half are going to firms endorsed by state offices. In the true spirit of flexibility, many state and industry partners creatively balanced their roles. In one project, for example, the state endorsed the proposal submission and is staying actively involved in promotion of the technology.

Enabling Technologies Combustion, materials technology needs prioritized



COMBUSTION

www.oit.doe.gov/combustion/

The U.S. combustion community will soon benefit from the publication of an updated *Combustion Technology Roadmap*. The update is based on the efforts of 36 industry professionals who contributed their insights at a workshop in Chicago last August. While the draft document is still in the review process, OIT's Combustion Program Manager Bob Gemmer suggests, "The new roadmap places a greater emphasis on a systems approach—it seeks to better integrate combustion systems with the larger industrial processes they support." Publication is anticipated early this summer.



INDUSTRIAL MATERIALS FOR THE FUTURE

www.oit.doe.gov/imf/

"We now have sound data and analysis to guide the development of our advanced materials R&D portfolio," reports OIT's Industrial Materials for the Future Program Manager Charlie Sorrell. Sorrell is referring to the recently published *Industrial Materials for the Future (IMF) R&D Priorities*. The 44-page document highlights initial results from an exhaustive independent review of the vision statements, technology roadmaps, and other relevant documents for the Industries of the Future. The study identifies, categorizes, and prioritizes the materials R&D needs as defined by each industry.



Sensors and Controls

www.oit.doe.gov/sens_cont/

Some of the sensor-related R&D now being conducted for specific IOF industries may also be applicable to other industries. "We want to assess the potential for widening the applicability of these sensor-related R&D projects," explains Sensors and Control Program Manager Gideon Varga. A study is now underway to assess such projects and identify those that may be worth expanding to explore their potential for use in one or more additional IOF or supporting industries.



Best Practices

www.oit.doe.gov/bestpractices/

Validating performance of new technologies to boost their acceptance

Winners of the Technology Deployment solicitation, to be announced this spring, will field test emerging technologies developed by the IOFs. For each of these field tests, OIT will provide unbiased verification and validation of the associated energy, economic, productivity, and environmental benefits. By testing these technologies and assessing performance data under live-plant conditions, OIT hopes to mitigate the hurdle new technologies often face in gaining broad acceptance and use by industry.

The winning proposals for the latest Plant-Wide Assessment (Round 4) solicitation were recently announced. Nine companies received awards: North Star Steel, Formosa Plastics, Ford Motor Company, Pechiney Rolled Products, Weyerhaeuser, Georgia Pacific (Crossett), Charter Steel, Commonwealth Aluminum, and Jernberg Industries.

"Past assessments show that, on average, the potential value of identified energy savings exceeds OIT investment by over 10 to 1," said **Best Practices** Team Leader Peter Salmon-Cox. "Furthermore, replication of these results throughout the company and industry will greatly enhance actual and potential energy savings," he said.

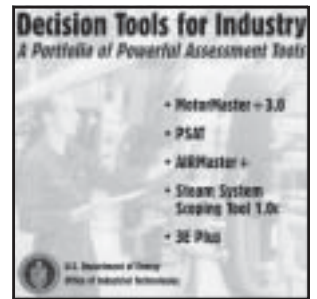
An assessment of training activities sponsored by OIT and delivered through the Compressed Air Challenge has shown that, at the end of the evaluation period last May, over 3,000 participants from 1,400 companies had participated in this training. Three-quarters of the industrial end users participating in the evaluation reported making changes to their compressed air systems as a direct result of the training. Energy savings resulting from these actions are conservatively estimated at 8%—a total annual savings of \$12.1 million.

New energy management 'Best Practices' tools available or coming soon

OIT's Best Practices Team offers energy management tools that can immediately help improve the efficiency of your motor, steam, compressed air, combined heat and power, and process heating systems. For more information on the tools described below, please call the OIT Clearinghouse at 1-800-862-2086 and order your copy of our *Decision Tools for Industry* CDROM or visit www.oit.doe.gov/bestpractices.

AIRMaster+

Provides information on assessing compressed air systems. Allows users to model proposed improvements to system operations and evaluate energy savings from efficiency measures. Properly used, the software is a powerful tool for modeling "what-if" scenarios on an existing or new compressed air system. DOE and the Compressed Air Challenge recognize compressed air system professionals as Qualified AIRMaster+ Specialists. A listing of specialists is available on the BestPractices website.



Pumping System Assessment Tool (PSAT)

Helps users assess energy savings opportunities in pumping systems. The software relies on field measurements of flow rate, head, and motor power or current to perform the assessment. PSAT estimates existing pump and motor efficiency and calculates the potential energy and cost savings if a system were optimized. DOE is working with the pumping industry and Allied Partner, the Hydraulic Institute, to train and qualify pump systems experts in the use of PSAT.

3E Plus®

The North American Insulation Manufacturers Association developed the 3E Plus® software program, available through DOE. The program simplifies the task of determining how much insulation is necessary to save money, use less energy, reduce plant emissions, and improve process efficiency. The National Insulation Association, an Allied Partner, has launched a program for Certified Insulation Energy Appraisers in cooperation with DOE.

Process Heating Assessment Tool (PHAST)

DOE is developing PHAST with the Industrial Heating Equipment Association, an Allied Partner. PHAST assesses energy saving opportunities in process heating systems. The software provides an introduction to process heating methods and conversion tools, allows the user to survey plant process equipment and identify the largest energy users, and run "what-if" scenarios on a variety of operating parameters. The software will be available in summer 2002. Look for PHAST training in fall 2002. **(Coming soon!)**

Fan System Assessment Tool (FSAT)

DOE is developing FSAT in partnership with the Air Movement and Control Association, an Allied Partner. FSAT will help end users and others assess the efficiency of their fan systems and identify system improvement opportunities. Look for FSAT software and training in late 2002. **(Coming soon!)**

Stay current with OIT's redesigned website

The newly redesigned OIT website offers expanded news, calendars and information about our numerous solicitations. The pages, run by database, allow you to keep up-to-date on OIT's many program and partnership activities and funding opportunities. To stay current with what's happening in OIT, bookmark the following 'corporate' pages and check on your favorite team sites for their news, calendar, and solicitations:

- **News and events:** www.oit.doe.gov/news/
- **Calendar:** www.oit.doe.gov/news/calendar.shtml
- **Solicitations:** www.oit.doe.gov/working/solicitations.shtml

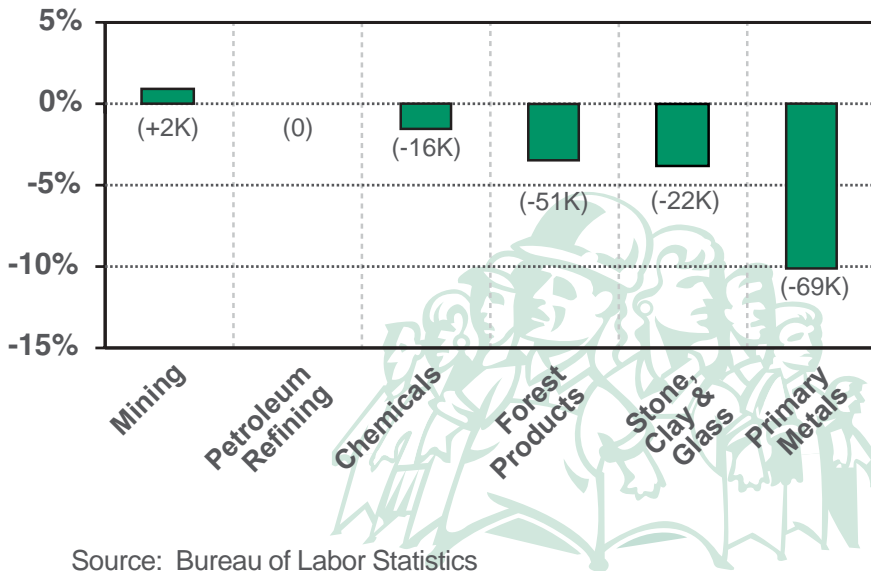


INDUSTRY TRENDS



GUEST EDITORIAL

Change in Employment Jan. 2001 - Dec. 2001 (Net change in workers in parentheses)



Source: Bureau of Labor Statistics

SBIR and STTR offer \$200 million to address R&D needs

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Do you work for a small business and have a good idea but need financial assistance to help develop it?

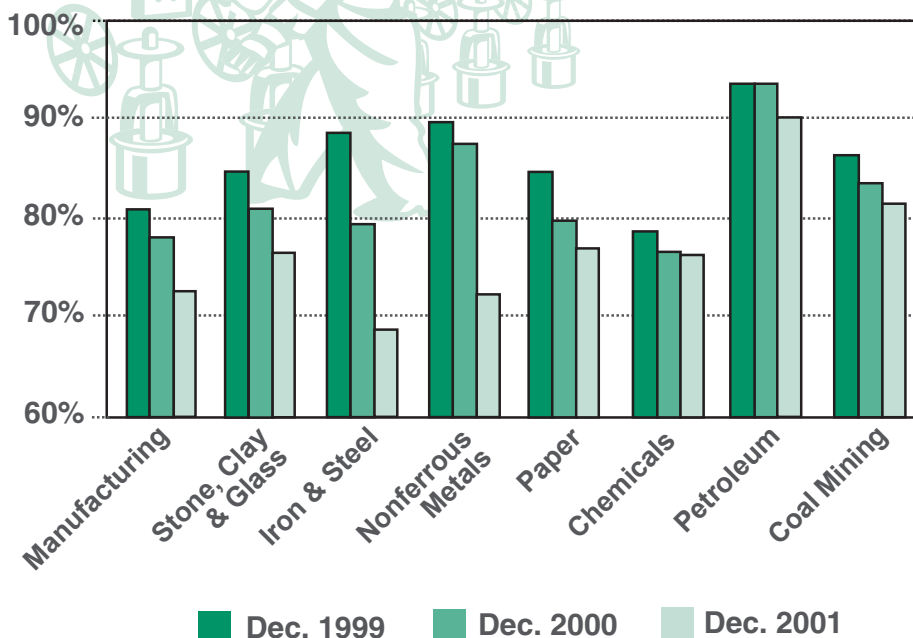
If so, you should be aware that each year about \$200 million is available for financial assistance from DOE's Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs. These programs help stimulate technology innovation and commercialization in the private sector, and improve the return on federally funded R&D investments.

In collaboration with the SBIR/STTR programs, OIT currently supports a \$65 million R&D portfolio with over a 66% industry cost-share. These projects address such areas as catalysis for refinery operations; fine chemical, commodity chemical, and petrochemical synthesis; process separations; advanced measurement and controls; and new materials. Technology advances in these areas are expected to bring a sustainable competitive edge to the U.S. petroleum refining and chemical industries, as well as large energy, economic and environmental benefits to the nation.

Now's the time to start planning for the next SBIR/STTR solicitation scheduled for October 2002. The solicitation is expected to offer 40 to 50 technical topic areas in which to compete. Many of these topics address key R&D needs in the Industries of the Future. Phase I awards typically amount to \$100K for a 6 to 9 month feasibility study. Phase II awards range between \$500-750K for a two-year R&D effort. For more information about financial assistance from the DOE SBIR/STTR programs contact me or visit <http://sbir.er.doe.gov/sbir>.

Remember, you can't win if you don't play! Yours may be the next technology of the future!

Capacity Utilization



Source: Federal Reserve Board

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providing those commodities jumped 52% over the same period. Notably, most of the imported commodities tend to come from countries that are generally considered friendly to U.S. interests.

The study used the National Input-Output Tables produced by the Commerce Department's Bureau of Economic Analysis to identify the leading commodities consumed by each industry. For each leading commodity, researchers then examined import trends over the last ten years, trade balances, and source country information. To complete the picture for each commodity,

the study also looked at U.S. output and productivity growth.

As a next step, NACFAM researchers may work with representatives from the energy-intensive industries to identify the commodities considered most critical to manufacturing operations, and then conduct more detailed analyses on those key commodities. The researchers will present of their findings on May 8 just prior to OIT's Customer Day.