INFORMATION RESOURCES CATALOG

NEARLY 500 PUBLICATIONS, CD-ROMS, VIDEOS AND OTHER RESOURCES THAT CAN HELP YOU INCREASE INDUSTRIAL ENERGY EFFICIENCY AND PRODUCTIVITY, WHILE REDUCING WASTE AND POLLUTION

2000

OFFICE OF INDUSTRIAL TECHNOLOGIES

ENERGY EFFICIENCY AND RENEWABLE ENERGY • U.S. DEPARTMENT OF ENERGY

INFORMATION RESOURCES CATALOG 2000

OFFICE OF INDUSTRIAL TECHNOLOGIES

THE OFFICE OF INDUSTRIAL TECHNOLOGIES

The Office of Industrial Technologies (OIT) is helping industry identify and pursue technology needs through public-private sector partnerships. OIT, an office of the U.S. Department of Energy, through its customer-driven Industries of the Future strategy, encourages energy-intensive industries to work together to:

- Create broad, industry-wide goals for the future
- Identify specific needs and research and development priorities through industry-led roadmaps
- Form cooperative alliances to help attain those goals through technology partnerships

ABOUT THIS CATALOG

The OIT *Information Resources Catalog* describes publications, videos, software, and other products available from OIT. These resources can help industrial firms improve energy efficiency and competitiveness, while reducing waste and pollution.

The **Contents** section on page ii and the **Index** on pages 70 through 95 can help you quickly locate catalog resources. Because many OIT resources have applications in multiple areas, the Index is organized as a matrix. This format enables you to easily find resources depending on your area of interest.

For Additional Assistance

See the **Customer Service Guide** on page 98. This quick reference guide provides phone numbers and e-mail addresses for OIT staff for each program area.

On-line Catalog

OIT's *Information Resources Catalog* is also available on-line at www.oit.doe.gov/catalog. Customers can order products via the Web at this address.

HOW TO ORDER

Most of the items in this catalog are available at no cost. Use one of the following methods to order products from this catalog:

Telephone:

Contact OIT's Clearinghouse at (800) 862-2086

Fax:

Fax the form on page 99 to (202) 586-1658

E-mail:

E-mail your order to resource@ee.doe.gov

Web Site:

Order using OIT's on-line catalog at www.oit.doe.gov/catalog

Mail:

Tear off and mail the attached postcard or send requests to:

U.S. Department of Energy EE-20
Attn: OIT Resource Center, 5F-064
1000 Independence Ave., SW
Washington, DC 20585

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OIT'S FAMILY LOOK

Over the last two years, OIT has begun to bring more uniformity to its many communications products. "Industry of the Future" team brochures, fact sheets, videos, and reports now share a common "family" design and format with materials for each industry team and program area distinguished by a unique icon and color. The new "family look" should help customers find the information they need as quickly as possible.

To Our Valued Customers:

As DOE's Assistant Secretary for Energy Efficiency and Renewable Energy, I'm frequently asked questions such as, "What energy-related technologies are you developing? How is the Department of Energy helping U.S. industries to be more competitive? What role will clean energy technologies supported by the DOE play in helping industry save energy and reduce emissions?"

The Department of Energy is leading efforts to research, develop, and deploy clean, efficient, and renewable energy technologies to help meet America's energy needs while protecting the environment and strengthening the economy. Energy technologies supported and promoted by the Department will play a key role in providing clean energy for the 21st century.

The Department of Energy's Office of Industrial Technologies'(OIT) *Information Resources Catalog, 2000* describes publications, software, and videos sponsored by OIT and its industry partners that can help answer these key questions and others related to our industrial technology programs.

For more than 20 years, the Department, through OIT, has worked with industry, its national laboratories, states, universities, and associations to support industrial research, development, and deployment. These "technology partnerships" not only pool financial resources, but leverage resources like knowledge and equipment. The successful results of many of these efforts can be found in new industrial technologies and more efficient industrial processes throughout the nation. These OIT-sponsored programs and resulting technologies have been documented in brochures, reports, project fact sheets, and videos which are now available from OIT.

We invite you to contact OIT's Clearinghouse to obtain the products in this catalog. OIT program managers are also available to answer your questions about a particular industry, partnership program, emerging technology, or process. For your convenience, this catalog is also on the Web at www.oit.doe.gov/catalog.

We look forward to working with you to continue the research, development, and deployment of clean and efficient energy technologies in the 21st century.

Dan W. Reicher
Assistant Secretary
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy

Office of Industrial Technologies Corporate Information

OIT is helping industry identify and address technology needs through public-private sector partnerships. In the next ten years, new energy efficiency tools and technologies resulting from these partnerships on an annual basis could help industry cut its energy use by over a quadrillion Btu and save about $4 billion. Greenhouse gas emissions could also be reduced by over 25 million tons as a result of these new technologies and processes.

Publications and products in this section describe various aspects of OIT's overall program.

Office of Industrial Technologies

Brochure, February 1999, 16 pp.

This brochure explains how OIT's Industries of the Future strategy is helping turn industry visions into reality through frameworks for action, major process innovations, adoption of advanced technologies, and more. Each Industry of the Future is highlighted, as are OIT programs and tools that support the industries. Special inserts also summarize industry partnership technology portfolios.

Order no. DOE99-CORP5.

SERIES PREVIEW: NEWSLETTERS

THE OIT TIMES

Quarterly, 12 pp.

The OIT Times is one of three newsletters published by OIT. These newsletters are an important component of OIT's communications strategy since they keep our customers up-to-date on OIT's recent and upcoming activities. Information included in the newsletters—such as solicitation dates, project milestones, and training opportunities—can be valuable in obtaining financial assistance, staying current on OIT news, and, of course, saving energy in plants. OIT's two other newsletters are *Energy Matters* and *CFCC News*. *Energy Matters* is a bimonthly publication focusing on energy efficiency opportunities for today. *CFCC News* is geared toward OIT partners interested in DOE's Continuous Fiber Ceramic Composites program.

While *Energy Matters* and *CFCC News* focus on specific areas of OIT, *The OIT Times* provides an overview of OIT activities. In addition to feature articles, a number of sections appear in every issue. These include Quarterly Highlights, Calendar, New Publications, Awards, Industry Trends, and Guest Editorial. To view or download a PDF or HTML version of *The OIT Times*, go to OIT's Web site at www.oit.doe.gov/oit-times. For customers who prefer the printed version of the newsletter, there is a registration form on OIT's site that will allow you to sign up to receive the newsletter by mail. If you want to keep up with what's going on in OIT, getting on *The OIT Times* mailing list is a must.

Order no. DOE99-CORP6.

Impacts: Summary of Program Results

Report, January 1999, 136 pp.

Over the past 22 years, OIT has supported hundreds of research, development, and deployment projects. Many of these technologies have been successfully commercialized. In 1997 alone, OIT-supported technologies saved more than 115 trillion Btu. Dozens of others are nearing commercialization. These "emerging" technologies, which show excellent energy savings potential, are expected to be commercialized within the next year or two. This report describes these commercialized and emerging technologies and quantifies their benefits to industry including energy savings, waste reduction, increased productivity, lowered carbon dioxide and air pollutant emissions, and improved product quality.
Order no. DOE/EE-0184.

Building Industry Partnerships: The Industries of the Future Model for Success

Brochure, December 1998, 12 pp.

Public/private partnerships are central to OIT's Industries of the Future (IOF) strategy to advance technology goals. This informative brochure explains how to create new alliances by emphasizing thoughtful planning and developing strategic roadmaps for R&D. The processes—of visioning and roadmapping, entering into compacts, developing operating procedures, conducting R&D, and meeting technology goals—are discussed in a step-by-step fashion. A sampling of successful partnerships is highlighted, and a variety of resources is also described.
Order no. DOE99-CORP3.

Office of Industrial Technologies Strategic Plan: A Work in Progress

Report, September 1999, 10 pp.

This plan describes the vision, mission, goals, and strategies of the Office of Industrial Technologies. It describes OIT's mission of working in partnership with industry, government, and non-government organizations to develop and deliver advanced technologies and practices that assist industry in meeting energy efficiency, environmental, and competitiveness goals.
Order no. DOE99-CORP4.

Industries of the Future: Profiles and Partnerships 2000

Report, Coming Soon!

Profiles and Partnerships details OIT's programs and services, focusing on OIT's customer-oriented Industries of the Future strategy, and the strategic visioning and technology roadmapping activities central to that approach. This report also provides current data on energy, economic, and environmental characteristics of the most energy-intensive U.S. industries.
Order no. DOE99-CORP2.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Turning Industry Visions Into Reality: Office of Industrial Technologies Video

Video, February 1999, 15 min

For more than 20 years, OIT has funded research, development, and demonstration efforts—usually on a cost-shared or cooperative basis with industry partners, universities, and associations. The successful results of many of these efforts can be found in new technology and more efficient industrial processes throughout the nation. This video provides an overview of OIT's work in this area and its Industries of the Future strategy.
Order no. DOE99-CORP1.

OIT Technical Reports—1998

CD-ROM, January 1999.

For the first time, the full text of technical reports resulting from OIT-supported RD&D projects for an entire year have been compiled onto a single CD-ROM.
Order no. DOE/EE 99001361-CD.

Industrial Projects Locator

Software, January 1999.

Use OIT's state-of-the-art, user-friendly database to gather R&D data for your technology, connect with researchers in your field, and leverage R&D funds. The *IPLocator* provides access to information on more than 10,000 federally sponsored research, development, and demonstration projects that focus on energy efficiency in industry. You can quickly retrieve information on a wide range of industrial technologies, including materials, processes, and components. In addition, you can find project details that may be relevant to your own research such as supporting agency programs, key contacts and participants, funding, and references. Order the PC/Windows-based version of the database on CD-ROM. The database is also available on-line at www.oit.doe.gov/iplocator.
Order no. DOE97-CORP5.

Powerful Partnerships: The Federal Role in International Cooperation on Energy Innovation

Report, June 1999, 270 pp.

This report was developed by the President's Committee of Advisors on Science and Technology (PCAST). The report helps address the President's request for recommendations on "ways to improve the U.S. program of international cooperation on energy R&D." The report describes the committee's findings and recommendations.
Order no. PCAST99-1.

Laboratory Coordinating Council Partnerships with Industry

Tri-fold, November 1998, 2 pp.

DOE's network of laboratories and facilities holds an extensive store of research and development expertise garnered from their various missions. This pamphlet describes the Laboratory Coordinating Council (LCC) program design, which enables potentially interested industrial partners to be efficiently matched up with the right contacts within the lab system.
Order no. DOE/GO-10098-673.

Industries of the Future

Through its Industries of the Future strategy, OIT encourages the most energy-intensive industries to identify and prioritize their technology needs. Industry next forms partnerships with OIT, universities, national laboratories, trade associations, and government agencies to address these needs. This strategy works because it effectively targets industry's priority R&D areas and leverages available public and private technology resources.

Many of the following products—such as the visions and roadmaps—have been developed by those industries that are participating in OIT's Industries of the Future strategy.

Agriculture

www.oit.doe.gov/agriculture

Plant/Crop-Based Renewable Resources 2020: A Vision to Enhance U.S. Economic Security through Renewable Plant/Crop-Based Resource Use

Vision, January 1998, 24 pp.

Initiated by a National Corn Growers Association-sponsored vision workshop in late 1996, this industry-produced document broadly outlines how using crops, trees, and agricultural residues instead of oil for industrial chemicals can begin to play a major role at the core of our national manufacturing base in the next century. Industry laid out ambitious goals for increasing the market share for renewable bioproducts by 2020.

Order no. DOE/GO-10098-385.

The Technology Roadmap for Plant/Crop-Based Renewable Resources 2020: Research Priorities for Fulfilling a Vision to Enhance U.S. Economic Security through Renewable Plant/Crop-Based Resource Use

Roadmap, February 1999, 42 pp.

Developed from two workshops held in Indianapolis, IN, in the summer of 1998, this industry-produced roadmap identifies performance goals. It establishes a focused R&D agenda for developing the technologies needed to make the agriculture industry vision a reality. Technical and market barriers to technology advances are discussed. Specific research and development needs are presented across the four critical areas of plant science, production, processing, and utilization.

Order no. DOE/GO-10099-706.

Agriculture Industry of the Future: Aligning Technology Investments to Meet Agricultural, Industrial, and National Goals

Brochure, February 1999, 8 pp.
Activities of OIT's Agriculture Industry of the Future Team are highlighted in this informative brochure. The agriculture industry's vision and roadmap are discussed, and areas of high-priority technology needs are identified. Successful projects from OIT's agriculture-related R&D are presented, and information on services and resources for the agriculture industry are also provided. Order no. GPO 454-567/80095.

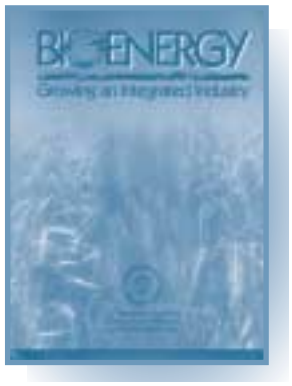
DOE-USDA MOU: Cooperation and Coordination in Technology Research, Development, Transfer, Utilization and Commercialization

Memorandum of Understanding, 1995, 4 pp.
The Memorandum of Understanding (MOU) between the U.S. Department of Energy and the U.S. Department of Agriculture establishes policies and administrative methods for cooperation and coordination between the two Departments. In addition to covering the objective, authorities, and responsibilities of the MOU, this document contains mutually-agreed guidance for provision of outreach and public affairs materials, and appropriate patent and intellectual property provisions for interagency agreements.
Order no. DOE95-IOFAg1.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Partnerships for New Industries: Plant/Crop-Based Renewable Resources 2020

Compact, February 1998, 2 pp.
Building on the 1995 Memorandum of Understanding between the Departments of Energy and Agriculture, about 20 organizations including the Agricultural Research Institute, the American Soybean Association, the National Corn Growers Association, the National Association of Wheat Growers, and the Center for Waste Reduction Technologies signed a public-private partnership agreement to implement the Renewables 2020 vision, and reduce energy use and cut pollution. The agreement, or "Compact," signed on February 23, 1998, at the Commodity Classic Conference and Exposition in California, represents an unprecedented alliance between the federal government, and the agriculture, chemical, life sciences, and forest products communities to work together to identify the most promising new technologies in the "renewable bioproducts" area.
Order no. DOE98-IOFAg1.



Bioenergy: Growing an Integrated Industry

Brochure, 1999, 8 pp.
Along with other federal agencies and private partners, DOE has launched a bioenergy initiative to develop an integrated industry that will produce power, fuels, and chemicals from crops, trees, and wastes. This brochure explains the significance, benefits, and challenges of bioenergy. It describes DOE's bioenergy effort and provides the bioenergy initiative's 10 point action plan.
Order no. DOE99-EERE/AG-1.

Aluminum

www.oit.doe.gov/aluminum

Agriculture Industry of the Future Project Fact Sheets

Fact Sheets, 1999.

These fact sheets describe OIT's agriculture R&D. Each fact sheet includes benefits and applications, project milestones, and project partners and contacts.

Included in this series:

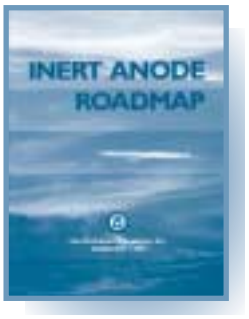
Bioconversion of Sugar Cane Molasses
Order no. NICE3AG-1

Energy-Efficient Irrigation
Order no. I-AG-753

Aluminum Industry: Industry/ Government Partnerships for the Future

Vision, March 1996, 28 pp.

The aluminum industry's vision document addresses DOE's challenge to define opportunities for industry/government partnerships aimed at enhancing global competitiveness and environmental performance. This report describes long-term market, industry, and technical challenges and identifies trends and priority R&D needs. It defines three key areas for potential cooperative R&D: Raw Materials and Semifabricated Production Technology, Manufacturing and Enabling Technology, and Application Technology. Published by the Aluminum Association.
Order no. AlAssn96-IOFAl1.



Inert Anode Roadmap

Roadmap, February 1998, 30 pp.

The aluminum industry identified advanced cell technology as one of its highest R&D priorities for the next 20 years. An extension of the aluminum industry's technology roadmap, this document describes the industry's framework to guide the development of inert anode technology. Read about key technical performance characteristics for successful operation of an electrolytic cell using inert anode technology, and find out about the sequence of development steps for any new inert anode technology. The document also discusses the potential economic, energy efficiency, and environmental benefits of this technology and key technical challenges the aluminum industry must overcome in developing it. Published by The Aluminum Association, Inc.
Order no. AlAssn98-IOFAl1.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Aluminum Industry Technology Roadmap

May 1997, 46 pp.

The *Aluminum Industry Technology Roadmap* is one in a series of roadmaps developed by energy-intensive U.S. industries. Each technology roadmap is a detailed agenda that identifies and prioritizes the steps necessary to achieve the industry's strategic vision. Roadmaps identify specific areas of R&D and provide quantified performance targets and milestones for the work. In some cases, they may also suggest appropriate roles for government and other research partners.

The aluminum industry developed its roadmap with the help of The Aluminum Association and DOE. For the aluminum industry, the roadmap is a vehicle for responding to new market opportunities and challenges. Based primarily on results of a roadmap workshop, the document describes the industry's R&D priorities, agenda, and performance targets for reducing energy use, increasing productivity, and improving the environment. The aluminum roadmap assigns highest priority to the development of improved anode and cathode technology for smelting, particularly the development of a viable inert (or non-consumable) anode. Other key targets set by the roadmap are to improve the energy efficiency of the smelting process by 13% within 10 years and 27% by 2020.
Order no. AlAssn97-IOFAl1.

Aluminum Partnerships for the Future

Compact, 1996, 1 p.

In March 1996, the U.S. aluminum industry outlined its vision for maintaining and enhancing its competitive position in the world market. Then, in October 1996, the industry reaffirmed its commitment to the vision by signing this compact with DOE to collaborate on R&D that meets goals shared by industry and government. This brief document outlines the industry/government partnership to improve energy efficiency, environmental performance, and competitiveness, and facilitate growth of new applications for aluminum.
Order no. DOE96-IOFAl1.

Implementing the Aluminum Technology Roadmap

Report, 1997, 6 pp.

This report summarizes the aluminum industry's roadmap. The roadmap is intended to help align the technical resources of industry and government to achieve the goals described in the industry's strategic vision.
Order no. DOE97-IOFAl20.

Aluminum Industry of the Future: Aligning Technology Investments to Meet Aluminum Industry and National Goals

Brochure, November 1998, 8 pp.

In a unique partnership, aluminum industry leaders teamed with the U.S. Department of Energy's Office of Industrial Technologies to focus on innovative technologies that will strengthen the aluminum industry's competitive position and further national industry goals. This document outlines the aluminum industry's vision and roadmaps and summarizes OIT's aluminum portfolio and other resources available to support the industry.
Order no. GPO454-567/80023.

Energy and Environmental Profile of the U.S. Aluminum Industry

Report, July 1997, 114 pp.
DOE's comprehensive report details the current status and trends in energy use in the U.S. aluminum industry. The report supports the DOE/Aluminum Industry Partnership to accelerate the development of the technologies and processes that will improve the industry's energy efficiency and environmental performance. Find out which technologies can improve energy efficiency and reduce pollution for a competitive aluminum industry.
Order no. DOE97-IOFAl2.

Summary of Ongoing DOE Research and Development Relevant to the Aluminum Industry

Report, January 1997, 382 pp.
This report provides a complete matrix of R&D relevant to the aluminum industry at DOE's national labs, and details technical capabilities of each lab and lists points-of-contact. It is further categorized into nine research areas, including Alumina Refining, Primary Aluminum Production, Fabrication, Environmental, Infrastructure, Transportation-Automotive, Health and Safety, Education and Special Facilities.
Order no. DOE97-IOFAl6.

Technical Working Group on Inert Anode Technologies

Report, July 1999, 538 pp.
The American Society for Mechanical Engineers' Technical Working Group prepared this report with support from OIT on inert anodes, technologies that are relevant for the advanced smelting of aluminum. The report provides a broad assessment of open literature and patents that exist in the area of inert anodes and their related cathode systems and cell designs. The report also discusses the opportunities, barriers, and issues associated with these technologies from technical, environmental, and economic viewpoints.
Order no. CRTD-VOL.53.

Aluminum Industry of the Future Project Fact Sheets

Fact Sheets, 1999.
This series describes OIT's aluminum RD&D projects. Each fact sheet includes benefits and applications, project milestones, and partners and contact information.

Included in this series:

Aluminum Scrap Decoater
Order no. NICE3AL-3.

Advanced Anodes and Cathodes Utilized in Energy-Efficient Aluminum Production Cells
Order no. DOE99-IOFAL2.

Brazing and Spot Welding Innovations for Joining Aluminum Alloys
Order no. I-AL-734.

Detection and Removal of Molten Salts from Molten Aluminum Alloys
Order no. DOE99-IOFAL3.

High-Efficiency, High-Capacity, Low-NOx Aluminum Melting Using Oxygen-Enhanced Combustion
Order no. DOE97-IOFAL11.

Improved Grain Refinement Process for Aluminum
Order no. DOE99-IOFAL4.

Improved System Yields $100,000 Annual Savings
Order no. DOE/GO-10099-545.

Inert Metal Anode Life in Low Temperature Aluminum Reduction Process
Order no. DOE99-IOFAL5.

Innovative Vertical Flotation Melter (VFM) and Scrap Dryer
Order no. DOE97-IOFAL14.

Microsmooth™ Process on Aluminum Wheels
Order no. NICE3AL-1.

Novel Technique for Increasing Corrosion Resistance
Order no. I-AL-593.

Potlining Additives
Order no. DOE99-IOFAL7.

Prevention of Molten Aluminum-Water Explosions
Order no. DOE97-IOFAL15.

Processing and Recycling of Aluminum Wastes
Order no. ALUM99-6.

Recycling Aluminum Salt Cake
Order no. DOE97-IOFAL16

Recycling of Aluminum Dross/Saltcake
Order no. NICE3AL-2.

Reducing Chloride Emissions from Aluminum Production
Order no. NICE3AL-4.

Semi-Solid Aluminum Alloys
Order no. DOE99-IOFAL8.

Technology for Converting Spent Potliner (SPL) to Useful Glass Fiber Products
Order no. DOE97-IOFAL18.

Wettable Ceramic-Based Drained Cathode Technology for Aluminum Electrolysis Cells
Order no. DOE97-IOFAL19.

Aluminum Success Stories

Fact Sheets, 1999.
This series presents successfully completed OIT projects in the U.S. aluminum industry. Each success story includes a description, benefits and applications, and project partners and contacts.
Included in this series:
Aluminum-Rich Concentrate from Municipal Waste
Order no. I-AL-243.

Onsite Process for Recovering Waste Aluminum
Order no. NICE3AL-5.

Reflective Aluminum Chips
Order no. I-AL-283.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Chemicals

www.oit.doe.gov/chemicals

Technology Vision 2020: The U.S. Chemical Industry

Vision, December 1996, 91 pp.

Leaders from the chemical industry, including representatives from the American Chemical Society, the American Institute of Chemical Engineers, the Chemical Manufacturers Association, the Council for Chemical Research, and the Synthetic Organic Chemical Manufacturers Association, met over a two-year period to identify their industry's technology needs for the 21st century. Their long-term strategy, *Technology Vision 2020*, identifies new chemical science and engineering technology, supply chain management, information systems, and manufacturing and operations as critical areas for improving the industry's competitiveness. *Technology Vision 2020* also concludes that the chemical industry's growth and competitive advantage depend upon individual and collaborative efforts of industry, government, and academia to improve the nation's R&D enterprise. Order no. ACS96-IOFC1.

Technology Roadmap for Computational Fluid Dynamics

Roadmap, January 1998, 30 pp.

This roadmap describes in detail the chemical industry's R&D needs in computational fluid dynamics. It identifies process-specific issues including pneumatic handling of solids, chemical containment and safety, and general process inefficiencies to be of particular importance to the chemical industry. Order no. DOE-21.

Vision 2020: 1998 Separations Roadmap

Roadmap, 1998, 88 pp.

The *1998 Separations Roadmap* is part of an industry-wide effort to create a blueprint of the research and technology milestones that are necessary to achieve long-term industry goals. This report documents the results of workshops on the technology barriers, research needs, and priorities of the chemical industry as they relate to separation technologies. Published by the Center for Waste Reduction Technologies of the American Institute of Chemical Engineers. Order no. AIChE98-IOFC1.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Roadmap for Computational Chemistry

Roadmap, April 1999, 73 pp.

This industry-produced report describes the computational molecular science research needs for the chemical industry to achieve the goals set forth in *Technology Vision 2020*. Advances in computational chemistry have contributed directly to goals stated in the chemical industry vision including shortened product-process development cycles, optimization of existing processes to improve energy efficiency and minimize production of waste, efficient design of new products and processes, and improvements in health, safety, and the environment. The priorities outlined in this roadmap will be used as the basis for making new R&D investments by government and industry.

Technology Roadmap for Materials of Construction, Operation and Maintenance in the Chemical Process Industries

Roadmap, December 1998, 36 pp.

This technology roadmap, also produced by industry, identifies performance targets, technology barriers, and research needs and priorities for materials of construction in the chemical industry. Advancements in materials for chemical process equipment will be an essential part of the industry's strategy for achieving its vision.
Order no. AIM99-4.

Energy and Environmental Profile of the U.S. Chemical Industry

Report, Fall 1999

This comprehensive report on energy use and environmental impacts in the chemical industry focuses on six chemical chains that account for the bulk of energy use in chemical production. These include ethylene, propylene, benzene, butadiene, agricultural chemicals, and caustics.
Order no. DOE-51.

Chemical Industry of the Future Video

Video, Fall 1999, 15 min.

This video looks at the U.S. chemical industry's participation in OIT's Industries of the Future (IOF) strategy. The video describes today's chemical industry and explains how the IOF process helps address industry needs. Program participants from industry and government detail the industry's participation in IOF. The video also describes some of the technologies that have emerged from this process.
Order no. DOE-52.

Chemical Industry of the Future: Building Partnerships for the Chemical Enterprise

Brochure, January 1999, 8 pp.

This brochure presents an overview of the vision, technology roadmap, and research and development partnerships of the U.S. chemical industry in collaboration with OIT. A portfolio of projects is highlighted, and case studies of successful projects are briefly described. OIT resources and services available to the chemical industry are also described.
Order no. DOE/GO-10099-708.

Industry Identified Combustion Research Needs for the Chemical Industry

Brochure, 1997, 6 pp.

This document identifies current innovative combustion technologies needed to improve energy conservation and environmental practices in the U.S. chemical industry. Research needs are identified by industry, studies by OIT, previous OIT combustion research assessments, and private research programs.
Order no. DOE/GO-10095-170.

Preliminary Workshop Report on Alternative Media, Conditions, and Raw Materials

Report, July 1999, 58 pp.
This report contains results of four workshops sponsored by the chemical industry and DOE in 1998. The workshops brought the industrial, academic, and government research communities together to generate new ideas for developing alternative or "green" synthetic pathways for the chemical industry. The report is available on-line at http://membership.acs.org/i/iec.

Chemical Industry: On-Site Power Market Assessment Final Report

Report, September 1997, 52 pp.
This study investigates the potential for on-site electric generation in the chemical industry as a means to reduce the cost of electricity and the cost of thermal supply in cogeneration applications. It also reviews the characteristics of the installed on-site power capacity potential for each chemical industry subsector. Based on site-by-site analysis, the report describes remaining on-site potential and identifies those sites that appear most suitable for industrial gas turbines.
Order no. DOE97-AIM2.

Chemicals: The Nation's Economic Vitality and Quality of Life

Memorandum of Understanding, Spring/Summer 1998, 2 pp.
This Memorandum of Understanding (MOU), signed by industry and DOE in February 1997 at OIT's second annual Expo, provides a framework for identifying appropriate areas of public-private partnerships between the federal government and the chemical industry. For Vision 2020 to become a reality, the MOU encourages both the formation of new agreements and the continuation of activities already underway in the chemical, physical, and biological sciences; process science and engineering; energy efficiency; and waste reduction technologies.
Order no. DOE98-IOFC3.

Chemical Industry of the Future Project Fact Sheets

Fact Sheets, 1999
This series describes OIT's chemicals RD&D projects. Each fact sheet includes benefits and applications, project milestones, and partners and contact information.

Included in this series:

Advanced Electrodeionization Technology for Product Purification, Waste Recovery, and Water Recycling
Order no. DOE99-IOFC2.

Advanced Membrane Materials for Reducing Consumption in p-Xylene Separation
Order no. DOE99-IOFC3.

Advanced Sorbents as a Versatile Platform for Gas Separation
Order no. DOE99-IOFC4.

Alkane Functional Catalysis
Order no. DOE99-IOFC5.

Biocatalysis under Extreme Conditions for the Chemical Industry
Order no. DOE99-IOFC6.

Clean Fractionation-Inexpensive Cellulose for Plastics Production
Order no. DOE99-IOFC7.

Computational Fluid Dynamics for Multi-Phase Flow
Order no. DOE99-IOFC8.

Development of Selective Surface Flow (SSF) Membranes for Applications in Chemical and Refining Industries
Order no. DOE99-IOFC9.

Direct Production of Silicones from Sand
Order no. DOE99-IOFC10.

Fractionation of Corn Fiber for Production of Polyols
Order no. DOE99-IOFC11.

Fuel-Based Nitrogen Generator
Order no. NICE3CH-10.

Low-Frequency Sonic Mixing Technology
Order no. I-CH-745.

Manufacture of Industrial Chemicals from Levulinic Acid: A New Feedstock for the Chemical Industry
Order no. DOE99-IOFC12.

Multi-Phase Fluid Dynamics Research Consortium
Order no. DOE99-IOFC13.

New Catalyst Technology for the Selective Oxidation of Feedstock Aromatic Compounds to Commodity Chemicals
Order no. DOE99-IOFC14.

New Electrochemical Reactors Could Significantly Cut U.S. Electric Power Consumption and Power Plant Emissions
Order no. DOE99-IOFC15.

New Nanoscale Catalysts Based on Molybdenum and Tungsten Carbides and Oxycarbides
Order no. DOE99-IOFC16.

Novel Membrane-Based Process for Producing Lactate Esters—Nontoxic Replacements for Halogenated and Toxic Solvents
Order no. DOE99-IOFC17.

No-VOC Coating Technologies
Order no. NICE3CH-8.

Olefin Recovery from Chemical Industry Waste Streams
Order no. DOE99-IOFC18.

Optimizing Electric Motor Systems at a Corporate Campus Facility
Order no. DOE/GO-100990-711.

Oxidative Cracking of Hydrocarbons to Ethylene
Order no. DOE99-IOFC19.

Plastic Foam and Film Recovery through Thermal Densification
Order no. NICE3CH-2.

Production of Chemicals from Thermoset Plastics
Order no. DOE99-IOFC20.

Production of Succinic Acid from Wood Wastes and Plants
Order no. DOE99-IOFC21.

Selective Catalytic Oxidative Dehydration of Alkanes to Olefins: Effective Catalysts
Order no. DOE99-IOFC22.

Separation and Recovery of Thermoplastics for Reuse Via Froth Flotation
Order no. DOE99-IOFC23.

Solvent Vapor Recovery
Order no. NICE3CH-9.

UV-Curable Coatings for Aluminum Can Production
Order no. NICE3CH-1.

Chemical Industry of the Future Success Stories

Fact Sheets, February 1999, 2-4 pp.
This series provides insight into successful new innovations and developments completed by the U.S. chemical industry. Each success story includes technology descriptions, benefits, results, and applications.

Included in this series:
Methanol Recovery from Hydrogen Peroxide Production
Order no. NICE3CH-5.

Paint Wastewater Recovery
Order no. NICE3CH-3.

Powder Paint Coating System
Order no. NICE3CH-4.

Ultrasonic Tank Cleaning
Order no. NICE3CH-7.

Water-Washed Overspray Paint Recovery
Order no. NICE3CH-6.

Overview of the Chemical Industry Motor Systems Showcase Demonstration Projects

Fact Sheet, January 1997, 4 pp.
This overview describes ongoing demonstration projects for OIT's motors program in the chemical industry. These processes cover a broad range of technologies, such as energy-efficient electric motors, adjustable speed drives (ASDs), and motor-driven equipment. The program is intended to demonstrate the benefits of efficient motor systems in varied industrial settings including the chemical industry.
Order No. DOE97-MC1.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Multi-Phase Fluid Dynamics Research Consortium

February 1999, 2 pp.
Multi-Phase Fluid Dynamics Research Consortium is one of over three hundred project fact sheets available from OIT. These fact sheets describe RD&D projects that have been selected by industry and OIT for funding. The fact sheets are an important component of OIT's Industries of the Future strategy—although it's important to fund energy-saving projects, it's just as important to get the word out on the projects so that advanced technologies are adopted by industry. Most fact sheets are available through OIT's Web site at www.oit.doe.gov/fact sheets.

Multi-Phase Fluid Dynamics Research Consortium is a chemical industry project. The two-page project fact sheet describes the consortium and a project it is currently undertaking on modeling gas-solid flow. The fact sheet summarizes the process, its purpose, and goals, and also describes benefits and applications, progress and milestones, and the commercialization plan. While this particular fact sheet includes a schematic of a computational model of gas-solid flow, other fact sheets display photos. For customers that want to learn more about a particular project, point-of-contact data are provided.
Order no. DOE 99-IOFC13.

Forest Products

www.oit.doe.gov/forest

Agenda 2020: A Technology Vision and Research Agenda for America's Forest, Wood, and Paper Industry

Vision, November 1994, 21 pp.

This document, prepared by the American Forest and Paper Association, presents:

- the forest, wood, and paper industry's perspective of where the industry stands today
- a desired state for the industry 25 years into the future
- the technology-related issues that must be addressed to accomplish the industry's vision of the future.

Order no. AFPA94-IOFF1.

Agenda 2020 The Path Forward: An Implementation Plan

Roadmap, 1999, 32 pp.

This document identifies critical research targets for the forest products industry in six key areas. Significant industry research needs and the "pathways" to obtain desired results and breakthroughs are described. The "pathways" provide invaluable guidance for individuals who wish to participate in the execution of future industry R&D.

Order no. DOE99-IOF19.

Forest Products Industries of the Future: Building a Sustainable Technology Advantage for America's Forest Products Industry

February 1999, 8 pp.

OIT's forest products brochure is part of a series of team and program brochures that describe industry's partnership with OIT. These brochures are intended to provide an introductory overview of OIT's nine industry teams and its major program areas. Each industry brochure highlights the development and content of the industry's vision and roadmap(s), the "Industries of the Future" strategy, portfolio highlights, resources, and how to get involved. The sections describing portfolio highlights and resources incorporate information on OIT's crosscutting programs, which include technical and financial assistance programs, enabling technologies, and distributed generation programs. Each brochure contains photos and diagrams, which enable the reader to better understand the processes and concepts presented.

OIT's forest products team brochure presents an overview of the U.S. forest products industry's collaboration with DOE. The brochure describes the industry vision document, *Agenda 2020: A Technology Vision and Research Agenda for America's Forest, Wood and Paper Industry*. It also discusses the forest products industry roadmap, *The Path Forward, An Implementation Plan*, which defines technology priorities and performance targets based on the broad goals identified in *Agenda 2020*. A project portfolio offers the reader some insight into the types of technologies that the forest products industry is pursuing in partnership with OIT. The brochure also details some successful projects, for example, "Improved Composite Tubes for Kraft Recovery Boilers."

Order no. GPO 454-567/80079.

Forest Products Success Stories

Fact Sheets

This series presents successfully completed OIT projects in the U.S. forest products industry. Each success story includes a description, benefits and applications, and project partners and contacts.

Included in this series:

Chemical for Increasing Wood Pulping Yield
Order no. NICE3FP-4.

Environmentally-Friendly Polymer Replaces Petroleum-Based Resins
Order no. I-FP-232.

New Technology Revolutionizes Industrial Drying
Order no. I-FP-536.

Pallet Production Using Postconsumer Wastepaper
Order no. NICE3FP-5.

Materials Needs and Opportunities in the Pulp and Paper Industry

Report, August 1995, 77 pp.

The purpose of this study is to identify the materials R&D needs and opportunities for the pulp and paper mill of the future.
Order no. ORNL/TM-12865.

Forest Products Industry of the Future Project Fact Sheets

Fact Sheets

These fact sheets describe OIT forest products R&D projects. Each fact sheet includes benefits and applications, project milestones, and project partners and contacts.

Included in this series:

Acoustic Humidity Sensor
Order no. I-FP-595.

Acoustic Separation Technology
Order no. DOE98-IOFF2.

Apparatus for Removing Bark from Whole Logs
Order no. I-FP-653.

Assessing the Significance of Below-Ground Carbon Allocation of Fast- and Slow-Growing Families of Loblolly Pine
Order no.DOE98-IOFF3.

Bleach Plant Capital Reduction with Rapid D Bleaching and Simplified [D/E/D] Stages
Order no. DOE98-IOFF4.

Christian Veneer Dryer
Order no. I-FP-596.

Closed-Cycle Bleach Kraft Pulp Production
Order no. NICE3FP-8.

Design and Demonstration of Multiport Cylinder Dryers
Order no. DOE98-IOFF5.

Electrically Switched Ion Exchange (ESIX) for the Separation of Potassium and Chloride Ions to Enhance Water Recycle Opportunities in Pulp Mills
Order no. DOE98-IOFF6.

Electrochemical and Integrated Process Opportunities for On-Site/On-Demand Generation of Chlorine Dioxide at Reduced Costs
Order no. DOE98-IOFF7.

Energy and Environmental Innovations for Chemically Preserved Wood Wastes
Order no. I-FP-737.

Fiber Loading for Paper Manufacturing
Order no. NICE3FP-1.

4-D Characterization of Paper Web at the Wet End
Order no. DOE98-IOFF8.

Georgia-Pacific's Insulation Upgrade Leads to Reduced Fuel Costs and Increased Process Efficiency
Order no. DOE/GO-10099-546.

Growth and Property Development of Convection-Pass Deposits in Recovery Boilers
Order no. DOE98-IOFF9.

Improving Several Fan-Driven Systems in an Oriented-Strand Board Manufacturing Facility
Order no. DOE/GO-10099-709.

Linear Corrugating
Order no. I-FP-723.

Long Wavelength Catalytic Infrared Drying System for Wood Fiber
Order no. NICE3FP-2.

Lumber Defect Detection System
Order no. NICE3FP-7.

Manufacturing Tissue Paper Products Using a High Content of Recovered Office Papers
Order no. NICE3FP-3.

Molten Film Paper Dryer
Order no. I-FP-677.

Non-Contact Laser Acoustic Sensor for On-Line Measurement of Paper Stiffness
Order no. DOE98-IOFF11.

Pine Gene Discovery Project
Order no. DOE98-IOFF12.

Predictive Diagnostic System for DC Motor Drives
Order no. NICE3FP-6.

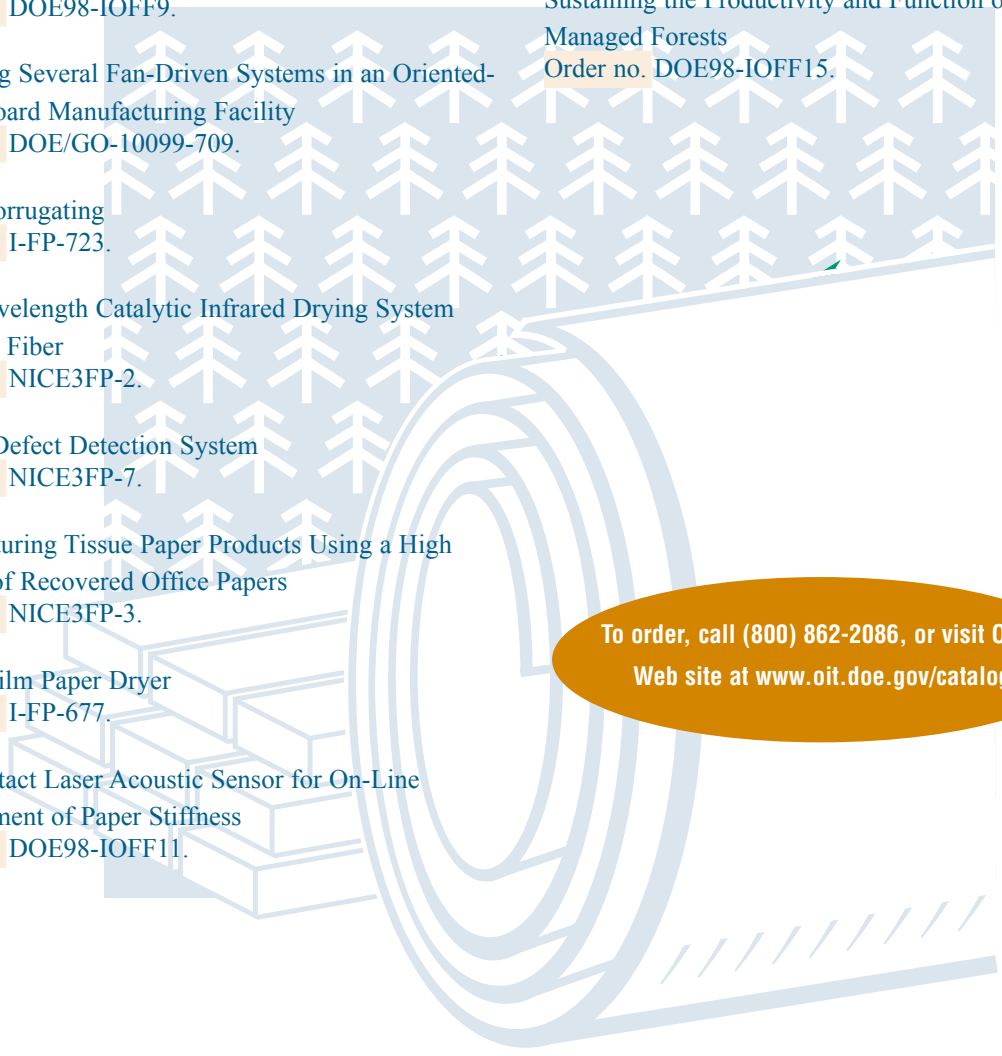
Pulp and Paper Mills: Profiting from Efficient Motor System Use
Order no. DOE/GO-10099-547.

Radiofrequency-Induced VOC Pre-Extraction from Softwood Lumber
Order no. DOE98-IOFF13.

Recycling of Bleach Plant Filtrates by Electrodialysis Removal of Inorganic Non-Process Elements
Order no. DOE98-IOFF14.

Replacement of Thermally Produced Calcined Clay
Order no. I-FP-602.

Sustaining the Productivity and Function of Intensively Managed Forests
Order no. DOE98-IOFF15.



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Glass

www.oit.doe.gov/glass

Glass: A Clear Vision for a Bright Future

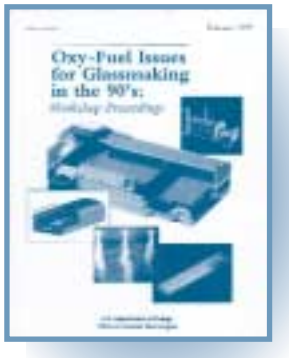
Vision, January 1996, 29 pp.
Learn how the U.S. glass industry is responding to the competitive, environmental, and technological challenges facing it. This industry-produced document outlines the industry's vision, its R&D priorities and long-range goals to maintain and build its competitive market position. The report provides an overview of the glass industry, past, present, and future, and identifies industrial, academic, and government technology partnerships to ensure a bright future.
Order no. DOE96-IOFG1.

Glass Technology Roadmap Workshop

Roadmap, September 1997, 77 pp.
Recognizing the need for cooperative technology planning for a competitive future, the glass industry, facilitated by OIT, held the "Glass Technology Roadmap Workshop." This detailed report documents the workshop, which brought together 38 industry experts, universities, and national laboratories to help identify key targets of opportunity, technology barriers, and R&D priorities in the glass industry. Learn what participants defined as key focus areas, specific technology needs, and how these discussions provide the foundation for the industry's research and technology roadmap.
Order no. DOE97-IOFG1.

Glass Industry of the Future: Investing in Technology to Provide a Bright Future for the Industry and the Nation

Brochure, February 1999, 8 pp.
The glass industry's vision, technology roadmap, and its partnership with DOE are described in this OIT brochure. Highlights of OIT's glass technology portfolio are included as are brief case studies of successful projects. OIT services and resources available to the glass industry are also included.
Order no. GPO 454-567/80085.



Oxy-Fuel Issues for Glassmaking in the 90's: Workshop Proceedings

Report, February 1997, 317 pp.
DOE provides a complete review of the "Oxy-Fuel Issues for the '90s Workshop," held in February 1997. These proceedings explore technical issues associated with oxy-fuel firing and its prospects for helping the entire glass industry save energy and reduce emissions. This report reproduces presentations delivered by industry experts at the workshop and notes key points of the open discussions that followed.
Order no. DOE/Conf-970292.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Oxy-Fuel Issues II: Approaching the New Millennium - Workshop Proceedings

Report, February 1999, 274 pp.
In February 1999, the Glass Manufacturers Industry Council (GMIC) held a workshop that featured a series of roundtables on oxygen generation technologies, combustion and emissions, refractories, sensors and modeling, and waste heat recovery. Proceedings from the workshop, including 26 papers, presentation graphics, and summaries of Q&A, are now available. To order a copy, visit the GMIC at www.gmic.org. Proceedings cost $35 for non-members and $25 for GMIC members plus shipping.

Industry Identified Combustion Research Needs for the Glass Industry

Report, 1997, 9 pp.
Based on information from the glass industry, past OIT studies, and expertise from Idaho National Engineering Laboratory, this report presents recommendations for R&D to improve combustion technologies in the glass sector. In keeping with the glass industry's vision, the information covers 10 identified combustion research needs and potential technologies to improve energy efficiency and environmental performance.
Order no. DOE-IOFG1.

Glass Industry Profiles Final Report: Energy Profiles for the U.S. Industry

Report, December 1990, 42 pp.
This overview of the glass industry looks at current trends, projected energy use, and future opportunities. Appendices include information on historical energy trends, and a process flow diagram for industry technology scenarios.
Order no. DOE-IOFG3.

Glass: A Clear Vision for a Bright Future

Compact, February 1999, 1 p.
DOE and representatives of the U.S. glass industry signed this compact in 1999 to show their commitment to pursuing collaborative technology efforts. The compact summarizes areas for joint research, development, and technology demonstrations that will help the industry achieve energy efficiency, environmental, and economic goals.
Order no. DOE96-IOFG2.

Insulation Benefits in Everyday Life: Facts About Fiber Glass and Mineral Wool Insulation

Brochure, May 1997, 20 pp.
This North American Insulation Manufacturers Association (NAIMA)-commissioned study quantifies the benefits of insulation. Using easily understood examples, the brochure provides information about current and potential benefits of insulation in residential, commercial, and industrial sectors. Please order directly from NAIMA at (703) 684-0084 or www.naima.org.

Fiber Glass & Slag Wool Insulations: Environmentally Responsive

Fact Sheet, May 1997, 4 pp.
NAIMA's fact sheet explains the benefits of fiber glass and slag wool products in the insulation of buildings. The fact sheet highlights key environmental considerations for selecting insulation—recycled content, energy savings potential, manufacturing processes, pollution emissions, and service life—and describes how fiber glass rates in these areas. Please order directly from NAIMA at (703) 684-0084 or www.naima.org.

Materials Needs and Opportunities in the Glass Industry

Report, 1998, 52 pp.
This report presents OIT's Advanced Industrial Material program assessment of material R&D needs and opportunities that will support the glass industry's vision to improve energy-efficiency and productivity. It provides an overview of glass manufacturing and addresses common issues specific to the processing of final products. The report also summarizes capabilities of the national laboratories that have glass industry applications.
Order no. DOE98-AIM21.

Advanced Ceramics in Glass Production: Needs and Opportunities

Report, January 1999, 132 pp.
Advanced ceramics offer significant advantages over conventional materials currently used in glass manufacturing. This report summarizes the results of a workshop that examined how advanced ceramics can be adapted and applied to meet the needs of glass production.
Order no. DOE/ORO2082.

Glass Industry of the Future Fact Sheets

Fact Sheets, 1999, 2 pp.
These fact sheets highlight OIT's glass industry R&D projects. Each fact sheet includes benefits and applications, project milestones, and partner and contact information.

Included in this series:

Advanced High-Temperature Materials for Glass Applications
Order no. GLASS99-23.

Advanced Process Control for Glass Production
Order no. DOE99-IOFG2.

Auto Glass Process Control
Order no. GLASS99-24.

Development and Validation of a Coupled Combustion Space/Glass Bath Furnace Simulation
Order no. DOE99-IOFG4.

Development, Experimental Validation, and Application of Advanced Combustion Space Models for Glass Melting Furnaces
Order no. GLASS-MAY993.

Development of Advanced Refractories for the Glass Manufacturing Industry
Order no. DOE95-IOFG12.

Diagnostics and Modeling of High-Temperature Corrosion of Superstructure Refractories in Oxyfuel Glass Furnaces
Order no. DOE99-IOFG5.

Dynamic Expert System Controls for Optimal Oxyfuel Melter Performance
Order no. DOE99-IOFG6

Enhanced Cutting and Finishing of Handglass Using a Carbon Dioxide Laser
Order no. DOE99-IOFG7.

Glass Furnace Combustion and Melting User Research Facility
Order no.DOE99-IOFG8.

High-Luminosity, Low-NOx Burner
Order no. DOE95-IOFG7.

Improved Refractories for Glass
Order no. GLASS99-22.

In-Situ Real-Time Measurement of Melt Constituents
Order no. I-XSC-748.

Integrated Batch and Cullet Preheater System
Order no. DOE95-IOFG8.

Integrated Ion-Exchange Systems for High-Strength Glass Products
Order no. DOE99-IOFG9.

Modeling of Glass Making Processes
Order no. DOE95-IOFG9.

Molybdenum Disilicide Composites for Glass Processing Sensors
Order no. DOE99-IOFG10.

On-Line Chemical Vapor Deposition of Coatings in Float Glass
Order no. GLASSMAY991.

On-Line Sensor System for Monitoring the Cure of Coatings on Glass Optical Fibers and Assemblies
Order no. DOE99-IOFG11.

Producing Glass Fiber
Order no. I-GL-700.

Redox State Sensor Technology in Glass Melts
Order no. GLASSMAY992.

Rotary Electric Glass Furnace (Lehr)
Order no. I-GL-680.

Single-Chip Color Sensor for Glass Recycling and Quality Control
Order no. DOE99-IOFG12.

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Metalcasting

www.oit.doe.gov/metalcast

Beyond 2000: A Vision for the American Metalcasting Industry

Vision, September 1995, 20 pp.
The metalcasting industry's vision evaluates the current state of the American metalcasting industry and includes performance targets for its future. The future challenges the industry faces are presented against the backdrop of its history and important characteristics. Collaborative efforts between private- and public-sector organizations to help the industry meet its future challenges are also described.
Order no. DOE95-IOFM1.

Metalcasting Industry Technology Roadmap

Roadmap, January 1998, 68 pp.
This industry-produced roadmap discusses:

- the current situation of the industry
- the critical trends and driving forces affecting it
- the performance targets listed in the vision document, *Beyond 2000*
- the technical and other barriers preventing the industry from achieving these performance targets
- the research and development activities that the industry has recommended for overcoming the barriers. Published by the Cast Metal Coalition.

Order no. DOE98-IOFM1.

SERIES PREVIEW: ENERGY AND ENVIRONMENTAL PROFILES

Energy and Environmental Profile of the U.S. Metalcasting Industry

September 1999, 102 pp.

The *Energy and Environmental Profile of the .S. Metalcasting Industry* is one of a series of industry profiles developed by OIT. The profiles provide a comprehensive view of the energy and environmental aspects of the industries participating in the Industries of the Future strategy. Rich in quantitative energy use and environmental data for major processes within these industries, the profiles help establish a baseline for assessing an industry's future technology advancements and progress toward energy and environmental goals.

The *Energy and Environmental Profile of the .S. Metalcasting Industry* provides a descriptive overview of major processes used in metalcasting and melting including:

- moldmaking and coremaking
- cupola melting
- electric melting
- fuel-fired melting
- refining, pouring and cooling
- cleaning and finishing
- investment casting
- lost foam casting
- die casting
- other casting

For each process, estimates of energy use by fuel type are provided, and emissions, effluents, byproducts, and hazardous wastes are characterized. Existing treatment and control technologies are also discussed in the 102-page report.
Order no. METAL-SEP99.

Metalcasting Industry of the Future: An Integrated Approach to Delivering Energy Efficiency Products and Services

Brochure, December 1998, 8 pp.

Through a partnership with DOE, the metalcasting industry is working to increase energy efficiency and productivity. This OIT brochure describes the metal casting industry's vision, technology roadmap, and research needs. Sample OIT projects and a technology portfolio are highlighted. Also included is information on OIT services and resources for the metalcasting industry.
Order no. DOE98-IOFM7.

Industry Identified Combustion Research Needs for the Metalcasting Industry

Brochure, 1997, 6 pp.

Several areas for improving energy conservation and environmental protection in the U.S. metalcasting sector are described in this document. Also included is the industry R&D needed to resolve current combustion-related problems. In addition, the document provides views from industry sources and reviews of previous combustion research assessments.
Order no. DOE-IOFM1.

Trends Affecting R&D in the Metalcasting Industry

Report, March 1996, 53 pp.

This report provides an overview of:

- trends in employment and foundry operations
- the international competitiveness of the industry
- opportunities for improving efficiency in energy consumption and environmental safety
- the metalcasting industry's vision for the future.

Order no. DOE96-IOFM1.

Department of Energy Metalcasting Competitiveness Research Act of 1990: Annual Report Fiscal Year 1997

Report, 1998, 26 pp.

After the closure of hundreds of foundries during the 1980s, the Metalcasting Competitiveness Research Act was enacted to help rebuild the metalcasting industry. This report looks at the industry and describes ongoing R&D projects as well as metalcasting project accomplishments.

Order no. DOE98-IOF2.

Metalcasting: The Foundation of the United States Manufacturing Base

Compact, October 1995, 1 p.

This Compact describes the voluntary collaborative effort between the metalcasting industry and the U.S. Department of Energy. The Compact also provides a framework for identifying appropriate areas for joint research, development, and technology demonstrations. Specific areas that this partnership addresses include production efficiency, recycling, pollution prevention, application development, process control, and new technology development.

Order no. DOE95-IOFM2.

Metalcasting Success Stories

Fact Sheets

This series presents successfully completed OIT projects in the U.S. metalcasting industry. Each success story includes a description, benefits and applications, and project partners and contacts.

Included in this series:

Meta-Lax Stress Relief Process
Order no. I-MC-412.

New Technology Brings Ideas to the Marketplace Quicker
Order no. I-MC-333.

Metalcasting Industry of the Future Fact Sheets

Fact Sheets, 1998 and 1999, 2 pp.

This series describes OIT's metalcasting RD&D projects. Each fact sheet includes benefits and applications, project milestones, and partner and contact information.

Included in this series:

A Process to Recover and Reuse Sulfur Dioxide in Metalcasting Operations
Order no. NICE3MC-1.

Advanced Lost Foam Casting
Order no. DOE98-IOFM3.

Clean Cast Steel
Order no. DOE99-IOFM1.

Clean Metal Casting
Order no. DOE99-IOFM6.

Consistent Casting of High Strength Ductile Iron
Order no. DOE99-IOFM7.

Development of High Temperature Phase Separation Technology
Order no. DOE99-IOFM8.

Die Casting Copper Motor Rotors
Order no. NICE3MC-2.

Die Life Extension
Order no. DOE99-IOFM5.

Filtering Molten Metal
Order no. I-MC-693.

Government-Industry Partnership Improves Lost Foam Casting Process
Order no. DOE98-IOFM11.

Metalcasting Fact Sheets, continued

Highly Efficient Rapid Tooling Using Optimized Cooling Passages
Order no. I-MC-733.

Intelligent Control of the Cupola Furnace
Order no. DOE98-IOFM12.

Macro-Inclusions Atlas
Order no. DOE98-IOFM4.

Mechanical Properties of Permanent Molds
Order no. DOE98-IOFM5.

Method and Apparatus for Production of Three-Dimensional Objects by Photosolidification
Order no. I-MC-543.

Mobile Sand Reclamation
Order no. DOE98-IOFM6.

Success Through Partnership: Lost Foam
Order no. DOE98-IOFM7.

Unconventional Methods for Yield Improvement
Order no. DOE98-IOFM8.

Visualization Tools for Die Casting
Order no. DOE99-IOFM2.

Mining

www.oit.doe.gov/mining

The Future Begins with Mining: A Vision of the Mining Industry of the Future

Vision, September 1998, 16 pp.
Outlined in this document is the U.S. mining industry's vision for 2020 and beyond. Development and use of advanced production and environmental technologies is a precondition to cleaner and more efficient mining processes and products that will offer higher value to mining's customers. The strategy for achieving this vision encompasses several critical initiatives, which are described in this publication. Published by the National Mining Association.
Order no. MIOF/NMA-VI-9801.

Mining Industry Roadmap for Crosscutting Technologies

Roadmap, February 1999, 30 pp.
This roadmap highlights future technology developments that will help the mining industry achieve its goals outlined in *The Future Begins with Mining: A Vision of the Mining Industry of the Future.* These goals include:

- responsible emission and by-product management
- safe and efficient extraction and processing
- superior exploration and resource characterization
- low cost and efficient production
- advanced products

• positive partnership with government
• improved communication and education.

Jointly published by OIT and the National Mining Association.
Order no. MIOF/NMA-RM-9901.

The Future Begins with Mining

Compact, June 1998, 1 p.
This fact sheet describes a compact signed by the DOE and the National Mining Association, in which they agree to pursue collaborative efforts to develop, demonstrate, evaluate, and accelerate new technologies that will meet mining and energy needs.
Order no. MIOF/NMA-CP-9801.

Mining Industry of the Future Project Fact Sheets

Fact Sheets, 1999, 2 pp.
This series describes OIT's mining RD&D projects. Each fact sheet includes benefits and applications, project milestones and partner and contact information.

Included in this series:

Crosswell System for Imaging Ahead of Mining
Order no. MIOF/DOE-IF9901.

Density Separation in Complex-Mode Vibration Fluidized Beds
Order no. I-MI-644.

Development and Deployment of On-Board Machine Fluid Analysis Systems
Order no. MIOF/DOE-IF9902.

Drilling and Blasting Optimization
Order no. MIOF/DOE-IF9903.

High-Temperature Superconductors in Underground Communications
Order no. MIOF/DOE-IF9904.

Hydride-Fuel Cell Mining Vehicles
Order no. MIOF/DOE-IF9905.

Mine Compatible Laser Analysis Instrument for Ore Grading
Order no. MIOF/DOE-IF9908.

Mining Byproduct Recovery
Order no. MIOF/DOE-IF9906.

Mining Industry Profile
Order no. MIOF/DOE-IF9910.

Optimized Pump Systems Save Coal Preparation Plant Money and Energy
Order no. MIOF/DOE-BP9901.

Particulate Briquetting Technology for Steel Industry
Order no. NICE3ST-7.

Ramex Tunneler
Order no. I-MI-561.

Robotics Technology for Improving Mining Productivity
Order no. MIOF/DOE-IF9907.

Selective Flocculation of Fine Mineral Particles
Order no. MIOF/DOE-IF9909.

Variable Wall Mining Machine with Dual Duct Ventilation System
Order no. I-MI-394.

Wireless Telemetry for Mine Monitoring and Emergency Communications
Order no. I-MI-580.

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Petroleum

www.oit.doe.gov/petroleum

Technology Vision 2020: A Technology Vision for the U.S. Downstream Petroleum Industry

Vision, Coming Soon!

This document describes the U.S. petroleum industry's role in today's economy and its future research needs. The vision targets technology needs of the downstream petroleum industry: the refining, distribution, and marketing components of the petroleum business. By addressing its technology needs, the petroleum industry aims to ensure that America has an adequate supply of fuels that are clean, safe, efficient, and competitive.
Order no. DOE99-IOFPVIS.

Energy and Environmental Profile of the U.S. Petroleum Refining Industry

Report, December 1998, 122 pp.

Through this comprehensive petroleum refining industry profile, research managers, policy makers, industry analysts, and others can gain a general perspective of energy use and environmental aspects in the U.S. petroleum refining industry.
Order no. DOE98-IOFP1.

Petroleum Industry of the Future Project Fact Sheets

Fact Sheets, 1998, 2 pp.

This series describes OIT's petroleum RD&D projects. Each fact sheet includes benefits and applications, project milestones, and partners and contacts.

Included in this series:

Ammonia Absorption Refrigeration Unit Provides Environmentally-Friendly Profits for an Oil Refinery
Order no. PETR991.

Catalytic Cracking Demonstration Plant
Order no. NICE3PE-2.

Development of a Computational Fluid Dynamic (CFD) Model of Fluid Catalytic Cracking (FCC)
Order no. DOE99-IOFP3.

Fouling Minimization
Order no. DOE99-IOFP4.

Gas Imaging for Advanced Leak Detection
Order no. DOE99-IOFP9.

Gasoline Biodesulfurization
Order no. DOE99-IOFP5.

Motor System Upgrades Smooth the Way to Savings of $700,000 at Chevron Refinery
Order no. DOE/GO-10099-734.

New Technology for Sulfide Reduction and Increased Oil Recovery
Order no. I-PT-659.

Process Analysis for the Sulfuric Acid Petroleum Refining Alkylation Process
Order no. NICE3PE-1.

Robotics Inspection System for Storage Tanks
Order no. NICE3PE-3.

Very Low Emissions: Forced Internal Recirculation (FIR) Burner
Order no. DOE99-IOFP6.

Very Low Emissions: Radiation Stabilized Burner
Order no. DOE99-IOFP7.

Very Low Emissions: Vortex Inertial Staged Air (VIStA) Burner
Order no. DOE99-IOFP8.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Steel

www.oit.doe.gov/steel

Steel Industry Technology Roadmap

Roadmap, March 1998, 156 pp.
In its roadmap, the steel industry identifies the critical technology advances needed to help it remain competitive. The roadmap translates the industry's strategic vision into a tactical agenda and prioritizes R&D needs. The information in the report discusses:

- the industry's four vision areas
- key processes and products
- technological barriers, trends and drivers
- new and emerging technologies
- R&D needs

Published by the American Iron and Steel Institute and the Steel Manufacturers Association.
Order no. AISI/SMA97-IOFS1.

Steel Industry of the Future: Meeting the Material Challenges of the 21st Century

Brochure, February 1999, 8 pp.
This brochure provides an overview of the industry's vision and roadmap, research needs and technology portfolio. OIT's steel R&D projects are summarized and resources and services available to the steel industry are also discussed.
Order no. GPO 454-567/80080

SERIES PREVIEW: VISIONS

Steel: A National Resource for the Future

May 1995, 19 pp.

Steel: A National Resource for the Future is one of nine industry-produced vision documents. Development of an industry "vision" is the first step in OIT's Industries of the Future strategy—a process that promotes industrial energy efficiency and increased productivity through development of industry/government partnerships. To start the process, leading representatives from each industry are asked to anticipate the likely economic, regulatory, and market pressures on their industry over the next 20 years. On the basis of those projections, these industry representatives jointly develop a unified vision of their desired future, which includes capabilities the industry will need to succeed.

The steel Industry of the Future is represented by the American Iron and Steel Institute and the Steel Manufacturers Association. These groups joined together to develop the industry's vision, which provides an assessment of the current state of the industry and a direction for the future. The report presents an overview of the steel industry, emphasizing its history of collaboration on R&D efforts. Also described are the current competitive challenges facing the industry and technological and other issues that must be addressed to meet these challenges and accomplish the vision.
Order no. AISI/SMA95-IOFS1.

Steel: A National Resource for the Future

Compact, February 1999, 1 p.

DOE and representatives of the steel industry signed this compact in 1999 showing their commitment to pursuing collaborative technology efforts. The compact summarizes areas for joint research, development, and technology demonstrations that will help industry increase competitiveness and achieve environmental goals.
Order no. DOE95-IOFS25.

Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988: Annual Report of the Metals Initiative for FY 1997

Report, 1997, 48 pp.

This document summarizes OIT's activities in the steel and aluminum industries for 1997 under the Steel and Aluminum Energy Conservation and Technology Act of 1988. Through this initiative, OIT's focus is to increase energy efficiency, enhance competitiveness, and conduct research and development of steel and aluminum technologies. The annual report reviews two steel and three aluminum R&D projects supported by the initiative in FY 1997. The report also provides an appropriations history, a 1997 funds distribution summary, and an estimate of funds needed to continue the projects in 1998.
Order no. DOE/EE-0195.

Federal Programs Performing Steel Industry-Related Research and Development

Report, August 1996, 66 pp.

This report is a guide for identifying federal programs sponsoring steel industry-related R&D. This document is intended to affect the goals outlined in the Energy Policy Act of 1992, (a program to further competitiveness and energy efficiency of the United States industrial sector).
Order no. DOE96-IOFS2.

Industry Identified Combustion Research Needs for the Steel Industry

Report, 1997, 9 pp.
This booklet describes several potential research areas for improving energy efficiency and environmental protection in the U.S. steel industry. The suggested R&D projects were determined with information collected from manufacturers, industrial operators, trade organizations, and various funding organizations, and supplemented with the expertise at the Idaho National Engineering and Environmental Laboratory.
Order no. DOE97-IOFS1.

Energy and Environmental Profile of the U.S. Iron and Steel Industry

Report, July 1996, 90 pp.
OIT has prepared this detailed report on six key manufacturing processes of the U.S. iron and steel industry and their energy use and environmental characteristics. The document presents an economic profile for the entire industry, including market trends and statistics, and the industry's efforts to improve energy efficiency. Sections on each key process describe inputs and outputs, energy requirements, and environmental factors such as emissions, effluents, by-products, and hazardous wastes.
An updated version of this report will be available fall/winter 1999.
Order no. DOE96-IOFS1.

Overview of the Steel Industry Showcase Demonstration Projects

Fact Sheet, January 1997, 4 pp.
Showcase Demonstration Projects are central to OIT's BestPractices-Motors program, which targets electric motor-driven system efficiency and productivity opportunities in specific industrial applications. This fact sheet summarizes two steel industry Showcase projects that show potential to increase efficiency in order to encourage replication of such projects at other steel-manufacturing operations. Learn how Bethlehem Steel Corporation and LTV Steel Corporation both plan to capture energy and costs savings, increase productivity, and improve operating efficiency by modifying their motor-driven systems.
Order no. DOE97-MCSD2.

Steel Industry of the Future

Fact Sheet, September 1999, 2 pp.
This fact sheet profiles the steel industry and describes the industry's efforts to develop a steel vision and roadmap. The fact sheet lists R&D projects resulting from the vision and roadmapping process. OIT and industry contacts are also provided.
Order no. DOE99-IOFS20.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Steel Industry of the Future Project Fact Sheets

Fact Sheets, 1998 and 1999, 2 pp.
This series describes OIT's steel R&D projects. Each fact sheet includes benefits and applications, project milestones, and partners and contact information.

Included in this series:

Advanced Control of Operations in the Blast Furnace
Order no. DOE99-IOFS2.

Clean Production of Coke from Waste Carbonaceous Fines
Order no. I-ST-726.

Cold Work Embrittlement of Interstitial-Free Steels
Order no. STEEL99-16.

Continuous Casting/Inside Rolling of Hollow Rounds
Order no. I-ST-400.

Detection of Radioisotopes in Steel Scrap
Order no. DOE99-IOFS3.

Development and Application of Laser Assisted Arc Welding to Steel
Order no. STEEL-14.

Development of Cost-Effective, Energy-Efficient Steel Framing
Order no. DOE99-IOFS4.

Development of Submerged Entry Nozzles that Resist Clogging
Order no. DOE99-IOFS5.

Dilute Oxygen Combustion
Order no. DOE95-IOFS8.

Effect of Residuals in Carbon Steel
Order no. DOE99-IOFS6.

Energy-Efficient Process for Hot-Dip Batch Galvanizing
Order no. NICE3ST-1.

Enhanced Inclusion Removal from Steel in the Tundish
Order no. DOE99-IOFS7.

Hot Blast Stove Process Model and Model Based Controller
Order no. DOE99-IOFS19.

Hot Oxygen Injection into the Blast Furnace
Order no. DOE99-IOFS8.

Improving Refractory Service Life and Recycling Refractory Materials in EAF Steel Production
Order no. DOE99-IOFS9.

Intelligent Inductive Processing
Order no. STEEL-15.

Intermetallic Alloy Development for the Steel Industry
Order no. DOE99-IOFS10.

Lightweight Steel Containers
Order no. NICE3ST-2.

Method of Making Steel Strapping and Strip
Order no. I-ST-719.

Microstructure Engineering in Hot Strip Mills
Order no. DOE95-IOFS15.

Minimizing NOx Emissions from By-Product Fuels in Steelmaking
Order no. DOE99-IOFS11.

NOx Emission Reduction by Oscillating Combustion
Order no. DOE99-IOFS12.

On-Line, Non-Destructive Mechanical Properties Measurement Using Laser Ultra Sonics
Order no. DOE99-IOFS13.

Optical Sensors and Controls for Improved Basic Oxygen Furnace (BOF) Operations
Order no. DOE95-IOFS26.

Particulate Briquetting Technology for Steel Industry
Order no. NICE3ST-7.

Processing Electric Arc Furnace Dust into Saleable Chemical Products
Order no. NICE3ST-3.

Recycling of Waste Oxides in Steelmaking Furnaces
Order no. DOE99-IOFS14.

Reducing BOF Hood Scrubber Energy Costs at a Steel Mill
Order no. DOE/GO-10099-710.

Removal of Residual Elements in the Steel Ladle
Order no. STEEL9.

Solidification Control of Stationary Ingots
Order no. NICE3ST-6.

Steel Manufacturers Association–Department of Energy Fellowship Co-operative Education Initiative
Order no. STEEL99-21.

Steel Reheating for Further Processing
Order no. NICE3ST-4.

Strip Casting: Anticipating New Routes to Steel Sheet
Order no. DOE99-IOFS17.

Study of Deformation Behavior of Lightweight Steel Structures under Impact Loading
Order no. DOE99-IOFS18.

Temperature Measurement of Galvanneal Steel
Order no. STEEL99-18.

Steel Industry Success Stories

Fact Sheets
This series presents successfully completed OIT projects in the U.S. steel industry. Each success story includes a description, benefits and applications, and project partners and contacts.

Included in this series:
Hydrochloric Acid Recovery System
Order no. NICE3ST-5.

Power Line Damage, Electrical Outages, Reduced in the "Sleet Belt"
Order no. I-ST-136.

Recycling Acid and Metal Salts from Pickling Liquors
Order no. I-ST-657.

Other Supporting Industries

Carbon Products

The Carbon Products Industry Vision for the Future

Vision, September 1998, 27 pp.
The Carbon Products Consortium (CPC) developed this long-term vision for the future. The document incorporates the conclusions of a vision workshop sponsored by CPC, OIT, and West Virginia University. It also reflects broad input from the carbon products industry in general. The vision proposes four areas for future elaboration: material forms and products, manufacturing technologies, energy and environment, and training and human resource issues.
Order no. CARBON-1.

Forging

Forging Industry Vision of the Future

Vision, November 1996, 8 pp.
The forging industry presents its vision for meeting the competitive challenges of the future. This report discusses the importance of forging to the metal-manufacturing process, and how it can become the cost-effective, preferred process for producing superior metal products in the future. It explains the industry's new focus on partnerships with government agencies and others to address critical issues such as technology development, energy efficiency, market trends, and labor force needs. Published by the Forging Industry Association and the Forging Industry Educational and Research Foundation.
Order no. FIA96-IOFFg1.

Forging Industry Technology Roadmap

Roadmap, November 1997, 57 pp.
Forging's technology roadmap provides a tactical plan to help the industry achieve technological goals described in its long-term vision. This report summarizes the industry's "Technology Roadmap Workshop," held in August 1997, which brought together 44 industry experts to identify opportunities, technology barriers, and high-priority research needs for the forging industry. The report also defines critical research needs in the areas of Tooling and Materials, Energy and Environment, and Quality and Productivity. It is an important communication tool for the industry in creating collaborative research opportunities with organizations that have common goals and objectives. Published by the Forging Industry Association and the Forging Educational and Research Foundation.
Order no. FIA98-IOFFg1.

Summary of Ongoing DOE Research and Development Relevant to the Forging Industry Laboratory Capabilities Matrix

Report, December 1997, 1160 pp.
This notebook summarizes ongoing DOE research and development efforts for the forging industry. Each technical summary includes a description of the activity, the organization funding the effort, and contact information. A summary matrix is provided that identifies technical capabilities of various DOE laboratories.
Order no. FORG-1.

Heat Treating

Heat Treating Industry Vision 2020

Vision, 1996, 15 pp.
The heat treating industry's vision document presents an overview of the industry and its vital role in many metal manufacturing processes. The report focuses on heat treating's long-term goals to establish global safety and environmental standards, improve operations, and work more closely with governmental agencies to promote industry competitiveness. This document also looks at the technological, economic, and other challenges facing the industry today and how collaborative efforts with DOE and other stakeholders can provide solutions to these challenges. Published by ASM Heat Treating Society.
Order no. ASMHTS96-IOFHT1.

Heat Treating Technology Roadmap Workshop

Roadmap, April 1997, 22 pp.
In February 1997, 26 leaders in the heat treating industry held a roadmapping workshop to identify key research efforts that will move the industry closer to its vision for the year 2020. This report summarizes the meeting and defines three major areas of discussion:
- equipment and hardware
- process and materials
- energy and the environment

The heat treating industry's technology needs, barriers to progress, and proposed actions to meet these challenges are described. Published by ASM Heat Treating Society.
Order no. ASMHTS97-IOFHT1.

Enabling Technologies

A number of OIT-supported technologies have applications in more than one industry. Because of the potential widespread use of these technologies, even small energy improvements could mean substantial energy and cost savings throughout the industrial sector.

The products in this section reflect many different technologies that are used across industry boundaries. Many of the technologies described are already helping multiple industries increase their efficiency, productivity, and competitiveness.

Enabling Technologies: Supporting the Development and Use of Innovative, Energy-Efficient, and Environmentally Friendly Products and Processes

Brochure, February 1999, 8 pp.

Enabling technologies reduce energy use, improve environmental performance, and boost productivity and competitiveness across multiple industry sectors. They include advanced industrial materials, continuous fiber ceramic composites, combustion systems, and sensors and controls. This brochure provides an overview of OIT's Enabling Technologies programs and presents case studies of successful research projects.
Order no. GPO 454-567/80093.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Advanced Industrial Materials

www.oit.doe.gov/materials

Advanced Industrial Materials (AIM) Program: Compilation of Project Summaries and Significant Accomplishments FY 1998

Report, May 1999, 93 pp.

This report of accomplishments focuses on key transformations that the Advanced Industrial Materials program underwent in FY 1998. It summarizes research projects with the common goal of developing new or improved materials with potential benefits to all the Industries of the Future. Additional objectives include increases in productivity, product quality, and energy efficiency.
Order no. ORNL/TM-1999/84.

Annual Progress Report FY 1998

Report, May 1999, 251 pp.

This technical report summarizes the work of materials scientists and engineers while addressing specific projects, major advances, and materials needs and opportunities assessments of all the Industries of the Future.
Order no. ORNL/TM-1999/83.

Materials Needs and Opportunities in the Pulp and Paper Industry

Report, August 1995, 77 pp.
The purpose of this study is to identify the materials R&D needs and opportunities for the pulp and paper mill of the future.
Order no. ORNL/TM-12865.

Materials Needs and Opportunities in the Glass Industry

Report, 1998, 52 pp.
This report presents the AIM program's assessment of material R&D needs and opportunities that will support the glass industry's vision to improve energy-efficiency and productivity. It provides an overview of glass manufacturing and addresses common issues specific to the processing of final products. The report also summarizes capabilities of the national laboratories that have glass industry applications.
Order no. DOE98-AIM21.

Advanced Industrial Materials Program

Tri-fold, June 1997, 2 pp.
This pamphlet explains AIM's mission, how it supports OIT's Industries of the Future, what projects AIM is working on, and how AIM can assess your company's materials needs and opportunities. AIM also devotes attention to its annual program review meeting in this pamphlet, which comes complete with a registration form.
Order no. DOE97-AIM1.

Metals-Processing Laboratory User Center (M Plus+) User Program

Tri-fold, 2 pp.
This informative fact sheet explains how the Metals-Processing Laboratory User Center (M Plus+) is designed to assist researchers in key U.S. industries, universities, and federal laboratories in enhancing the U.S. metals industry and its IOF customers in the global market. This pamphlet also mentions specific objectives of the M Plus+ User Center and primary user centers.
Order no. DOE-AIM2.

Advanced Industrial Materials Project Fact Sheets

Fact Sheets, February 1999, 2 pp.
Fact sheets in this series describe OIT-supported R&D projects in a variety of industrial applications using advanced industrial materials. In addition to project descriptions, the benefits and applications of each technology are highlighted. Progress and milestones for each project, as well as partners and contacts are also provided.

This series includes:
Advanced Intermetallic Alloys
Order no. DOE99-AIM2.

Advanced Materials Development Related to the Forest Products Industry
Order no. DOE99-AIM3.

Advanced Materials Processing with Uniform-Droplet Spray Process
Order no. DOE99-AIM4.

Advanced Materials/Processes
Order no. DOE99-AIM5.

Manufacturing Wear-Resistant, Metal Reinforced Carbon Composites
Order no. I-XAM-613.

Metals-Processing Laboratory Users (M Plus+) Facility
Order no. DOE99-AIM6.

Combustion

www.oit.doe.gov/combustion

Industrial Combustion Vision

Vision, 1998, 20 pp.
This industry-produced vision document represents the first step in a three-step approach adopted by the industrial combustion community to devise and implement a comprehensive technology development plan. Manufacturers and users of burners, boilers, furnaces, and other process heating equipment met to discuss the challenges facing their industry. The industry's vision, strategic targets, and key competitive challenges facing the combustion industry today and for the next 20 years are described.
Order no. DOE98-COMB1.

Industrial Combustion Technology Roadmap

Roadmap, January 1999, 54 pp.
This technology roadmap is a descriptive plan of R&D activities necessary to achieve the performance targets identified in the *Industrial Combustion Vision*. The proposed activities range from fundamental research into combustion phenomena and development of improved enabling technologies (e.g., models and materials), to development and demonstration of new combustion systems. The value of the roadmap lies in its alignment of proposed research in burners, boilers, and industrial heating systems across industry, academia, and the Federal sectors.
Order no. DOE99-COMB1.

Industry Identified Combustion Research Needs for the Chemical Industry

Brochure, 1997, 6 pp.
This document identifies innovative combustion technologies needed to improve energy conservation and environmental practices in the U.S. chemical industry. Research needs are identified by industry, studies by OIT, previous OIT combustion research assessments, and private research programs.
Order no. DOE/GO-10095-170.

Industry Identified Combustion Research Needs for the Glass Industry

Report, 1997, 9 pp.
Based on information from the glass industry, past OIT studies, and expertise from Idaho National Engineering Laboratory, this report presents recommendations for R&D to improve combustion technologies in the glass sector. In keeping with the glass industry's vision, the information covers 10 identified combustion research needs and potential technologies to improve energy efficiency and environmental performance.
Order no. DOE-IOFG1.

Industry Identified Combustion Research Needs for the Metalcasting Industry

Brochure, 1997, 6 pp.
Several areas for improving energy conservation and environmental protection in the U.S. industrial metalcasting sector are described in this document. Also included is the industry R&D needed to resolve current combustion-related problems. In addition, the document provides views from industry sources and reviews of previous combustion research assessments.
Order no. DOE-IOFM1.

Industry Identified Combustion Research Needs for the Steel Industry

Report, 1997, 9 pp.
This booklet describes several potential research areas for improving energy efficiency and environmental protection in the U.S. steel industry. The suggested R&D projects were determined with information collected from manufacturers, industrial operators, trade organizations, and various funding organizations, and supplemented with the expertise at the Idaho National Engineering and Environmental Laboratory.
Order no. DOE97-IOFS1.

Combustion Project Fact Sheets

Fact Sheets, January 1999, 2 pp.
The OIT-supported projects highlighted in these fact sheets demonstrate successful partnerships using combustion technology. Each fact sheet summarizes a new technology or innovation—developed through collaborative efforts—to address needs in multiple industry sectors, and employing combustion technology.

The series includes:

Dilute Oxygen Combustion System
Order no. DOE99-COMB2.

Minimizing NO_x Emissions from By-Product Fuels in Steelmaking
Order no. DOE99-COMB3.

NO_x Emission Reduction by Oscillating Combustion
Order no. DOE99-COMB4.

Very Low Emissions: Forced Internal Recirculation (FIR) Burner
Order no. DOE99-COMB5.

Very Low Emissions: Radiation Stabilized Burner
Order no. DOE99-COMB6.

Very Low Emissions: Vortex Inertial Staged Air (VIStA) Burner
Order no. DOE99-COMB7.

Continuous Fiber Ceramic Composites

www.oit.doe.gov/cfcc

Summary of the DOE's Continuous Fiber Ceramic Composite Program

Brochure, March 1998, 4 pp.
This brochure provides a good overview of DOE's Continuous Fiber Ceramic Composite (CFCC) Program, including:

- the need for these materials
- their advantages for industry
- program participants, applications and benefits
- a list of components being developed for specific industries
- a publications list
- contact information.

Order no. DOE97-CFCC1.

Continuous Fiber Ceramic Composite Program Plan Update: Executive Summary

Brochure, February 1999, 8 pp.
Continuous Fiber Ceramic Composites (CFCC) are of potential use in a wide variety of industrial applications with high temperature and/or corrosive environments. OIT's CFCC program seeks to increase the global competitiveness of U.S. industry through energy efficiency, and pollution and waste reduction technologies using the outstanding properties of continuous fiber ceramic composite materials. This brochure describes the progress and accomplishments of the program and includes a list of partners, CFCC projects, and remaining challenges.
Order no. DOE99-CFCC1.

Advanced Ceramics in Glass Production: Needs and Opportunities

Report, January 1999, 132 pp.

Advanced ceramics offer significant advantages over conventional materials currently used in glass manufacturing. This report summarizes the results of a workshop that examined how advanced ceramics can be adapted and applied to meet the needs of glass production.

Order no. DOE/ORO2082.

CFCC News

Newsletter

This newsletter covers current news from DOE's Continuous Fiber Ceramic Composite (CFCC) Program. *CFCC News* includes CFCC project milestones along with tables, graphs, and photos. The publication also includes a program event calendar. The newsletter is available in print or on-line at www.hsrd.ornl.gov/cfcc/newshome.html.

Order no. DOE99-CFCC4.

Opportunities for Advanced Ceramics to Meet the Needs of the Industries of the Future

Report, December 1998, 138 pp.

This document summarizes the results of a study to assess the potential of advanced ceramic-based materials to help the Industries of the Future meet their long-range visions of energy efficiency and pollution reduction, improved capital effectiveness, and increased productivity. The report:

- reviews the status and potential of key advanced ceramic-based materials
- provides a review of needs in each industry
- recommends specific ceramic material candidates for applications in each industry.

Prepared by the U.S. Advanced Ceramics Association. Available on-line at http://www.ms.ornl.gov/cfcc/doe2076.htm.

Order no. DOE98-CFCC2.

Continuous Fiber Ceramic Composites Project Fact Sheets

Fact Sheets, February 1999, 2 pp.

This series of two-page fact sheets highlights some of the industrial applications of OIT's continuous fiber ceramic composites program. Each fact sheet includes a description of the research project, the benefits and applications of the technology, progress and milestones, and a list of partners and contacts.

The series includes:

CFCC Cyclone Components for Particle Separation
Order no. DOE99-CFCC2.

CFCC Heat Treating Furnace Fan
Order no. DOE99-CFCC3.

CFCC Hot Gas Candle Filters
Order no. DOE99-CFCC4

CFCC Immersion Tube
Order no. DOE99-CFCC5.

CFCC Natural Gas Infrared Burners
Order no. DOE99-CFCC6.

CFCC Radiant Burner Screen
Order no. DOE99-CFCC7.

CFCC Refinery Pipe Hangers
Order no. DOE99-CFCC8.

Industrial Gas Turbine CFCC Components
Order no. DOE 99-CFCC9.

Sensors and Controls

www.oit.doe.gov/sens_cont

Sensors and Controls Crosscutting Program: Program Plan

Report, April 1999, 23 pp.

This report describes the goals, strategies, and projected FY99 accomplishments and performance metrics for DOE's newly formed Sensors and Controls Program.
Order no. DOE99-SC1.

Industrial Applications of Laser Ultrasonics

Report, March 1998, 173 pp.

In December 1997, OIT held the "Industrial Applications of Laser Ultrasonics Workshop" to gather information for laser-based ultrasound (LUS) research and implementation in industrial processes. This report describes the outcome of the workshop and highlights the key LUS performance criteria and technological needs identified by the workshop participants. It covers five important parameters for LUS systems—reliability, cost drivers, performance, functionality, and long-term R&D needs—and the steps that could lead to improvement in each of the areas. The report also includes a list of workshop participants and summaries of speaker presentations.
Order no. DOE98-SC2.

Proceedings of Workshop on Nondestructive Evaluation and Diagnostic Needs for Industrial Impact

Report, October 1996, 26 pp.

This report summarizes the proceedings of a 1996 workshop to assess the current status and future opportunities for applications of nondestructive evaluation (NDE) and diagnostic technologies in industry. The report includes keynote presentations and the results of a group discussion to identify research needs and potential benefits of NDE and diagnostic technologies in three broad areas of application: product, process, and system.
Order no. ISA96-SC1.

Sensors and Controls Project Fact Sheets

Fact Sheets, January 1999, 2 pp.

This fact sheet series describes a number of collaborative OIT R&D projects using sensor and control technologies in different industrial applications. The benefits and applications of each technology are highlighted. Progress and milestones for each project are given, and project partners and contacts are listed.

This series includes:

Fiber-Optic Raman System for In-Line Chemical Process Analysis
Order no. DOE99-S&C15.

Fiber-Optic Sensor for Industrial Process Measurement and Control
Order no. DOE99-S&C14.

High Temperature Micromachined Sensors for Industrial Gas Streams
Order no. DOE99-S&C10.

In-Situ, Real-Time Measurement of Melt Constituents
Order no. I-XSC-748.

Intelligent Extruder
Order no. DOE99-S&C3.

Miniature, Inexpensive, Amperometric Oxygen Sensor
Order no. I-XSC-744.

New Optical Coupling of Infrared Analyzers to Industrial Processes
Order no. DOE99-S&C11.

On-Line Laser-Ultrasonic Measurement System
Order no. DOE99-S&C8.

On-Line Sensors for Emissions Monitoring
Order no. DOE99-S&C7.

Real-Time Gas Composition Analyzers for On-Line Process Control
Order no. DOE99-S&C12.

Sensing and Control of Cupola Furnace
Order no. DOE99-S&C4.

Sensor Fusion for Intelligent Process Control
Order no. DOE99-S&C5.

Thermal Imaging Control of High-Temperature Furnaces
Order no. DOE99-S&C6.

Wireless Telemetry for Industrial Applications
Order no. DOE99-S&C9.

X-Ray Diffraction System for In-Line Process Control in the Steel Industry
Order no. DOE99-S&C13.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Industrial Power Generation

www.oit.doe.gov/cogen

OIT's Industrial Power Generation program supports the development of technologies that will improve the energy, environmental, and financial performance of power generation and cooling/heating/power systems for industrial manufacturing and processing. Program participants include industrial electricity users, equipment manufacturers, utilities, energy service companies, state and Federal agencies, and the research and development community.

The following section describes products related to OIT's Industrial Power Generation program.

Distributed Generation

Brochure, January 1999, 8 pp.
This brochure describes the distributed generation vision and technology needs. Sample projects and a technology portfolio are highlighted. Also included is information on OIT services and resources for the distributed generation industry.
Order no. DOE99-DG1.

Chemical Industry: On-Site Power Market Assessment Final Report

Report, September 1997, 52 pp.
This study investigates the potential for on-site electric generation in the chemical industry as a means to reduce the cost of electricity and the cost of thermal supply in cogeneration applications. It also reviews the characteristics of the installed on-site power capacity potential for each chemical industry subsector. Based on site-by-site analysis, the report describes remaining on-site potential and identifies those sites that appear most suitable for industrial gas turbines.
Order no. DOE97-AIM2.

Food Industry On-Site Power Market Assessment

Report, September 1997, 51 pp.
OIT and the Gas Research Institute jointly sponsored a study to analyze on-site generation opportunities in the food industry. This report reviews the study and its results, and provides introductory information about the economic and environmental benefits of on-site generation. It describes the existing cogeneration market and energy requirements of specific industry subsectors. The estimated on-site potential is also given, based on the study's site-by-site analysis. The analysis further indicates remaining on-site power potential of sites most suitable for industrial gas turbines.
Order no. DOE98-AIM1.

Advanced Turbine Systems: Providing Clean Affordable Energy

Brochure, October 1998, 6 pp.
OIT's Advanced Turbine Systems (ATS) program is developing revolutionary gas turbine systems to meet efficiency, environmental, and cost-effective electric power generation and cogeneration requirements. Program goals, principles, objectives, and benefits are outlined in this brochure.
Order no. DOE98-ATS3.

Gas Turbine Power Generation Combined Heat and Power: Environmental Analysis and Policy Considerations

Report, November 1998, 46 pp.

This report provides an account of work for the U.S. Department of Energy and the Gas Research Institute concerning generated power alternatives. It summarizes the recognition of the future roles and advantages of small-scale power generating technologies.

Order no. COG-1.

Report to Congress: Comprehensive Program Plan for Advanced Turbine Systems

Report, February 1994, 50 pp.

This program plan was developed in response to the Energy Policy Act of 1992, Section 2112, which identifies work for improving gas turbines. The plan outlines an eight-year Advanced Turbine Systems (ATS) Program, including rationale and planning. The program will ensure that advanced power systems burning natural gas will be available to meet the country's needs.

Order no. DOE94-ATS1.

Proceedings of the 1998 Advanced Turbine Systems Annual Program Review Meeting

CD-ROM, November 1998

This CD-ROM contains proceedings from the 1998 Advanced Turbine Systems Annual Review, which was held November 2-4, 1998 in Washington, D.C. The CD-ROM also includes speaker presentations from the meeting, in PDF format. A list of contact information for meeting attendees is also on the CD-ROM.

Order no. DOE98-ATS4.

Advanced Turbine Systems: Facilities Capabilities/ Laboratories Poster Session

Report, November 1998, 28 pp.

This booklet is comprised of 21 poster papers presented at the Annual Program Review for the Advanced Turbine Systems (ATS) Facilities Capabilities/Laboratories Poster Session held in Washington, DC, on November 2-4, 1998. Summaries of 21 DOE research centers' and laboratories' capabilities and expertise in the field of Advance Turbine Systems are presented along with contacts.

Order no. DOE98-ATS1.

Advanced Turbine Systems: Annual Program Review

Report, November 1998, 118 pp.

This publication provides one-page descriptive technical abstracts submitted for presentation at the Annual Turbine Systems (ATS) Program Review held in Washington, DC, on November 2-4, 1998. Included are oral presentations, the program's supplemental activities, the university program poster session, the Facilities Capabilities/Laboratories Poster Session, and biographies of the oral presenters.

Order no. DOE98-ATS2.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Advanced Turbine Systems Materials/ Manufacturing Technology Needs

Report, December 1996, 20 pp.
This report reviews current materials/manufacturing concerns related to Advanced Turbine Systems. The publication focuses on technology needs in the categories of:

- coatings and process development
- single crystal airfoil manufacturing technology
- materials characterization
- technology information exchange
- turbine airfoil development
- ceramics development, and
- catalytic combustor materials.

Order no. DOE/OR-2007.

Materials Technologies for Advanced Turbine Systems

Tri-fold, 2 pp.
This pamphlet describes advances in revolutionary gas turbine systems. Also described are methodologies for meeting the requirements for the most efficient, environmentally beneficial, and cost-effective electric power generation and cogeneration options.
Order no. DOE98-ATSPH

Advanced Turbine Systems Program

Fact Sheet, 1997, 2 pp.
The Advanced Turbine System (ATS) program's goals and progress for meeting the growing demands for clean efficient energy for the 21st century are described in this fact sheet.
Order no. DOE97-ATS4.

Advanced Turbine Systems Program

Tri-fold, 2 pp.
This pamphlet provides an introductory look at the U.S. Department of Energy's Advanced Turbine Systems (ATS) Program. Discussed are:

- benefits and market potential
- research and development activities
- team participants
- ATS' involvement with the Office of Industrial Technologies.

Order no. DOE-ATS1.

Industrial Power Generation Project Fact Sheets

Fact Sheets, February 1999, 2 pp.
This series of two-page fact sheets highlights some of OIT's industrial power generation projects.

The series includes:
Advanced Turbine Systems
Order no. IND99-4.

Ceramic Stationary Gas Turbine (CSGT)
Order no. IND99-3.

Solar Mercury™ 50 Gas Turbine
Order no. IND99-2.

Thermal Barrier Coatings
Order no. IND99-1.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Summary of the Microturbine Technology Summit

Report, December 1998, 120 pp.
The Microturbine Summit was held to discuss the current status and future prospects for microturbines as power generation technologies, primarily in industrial applications. Potential research, development, and demonstration barriers and opportunities for microturbines were discussed. This report summarizes the results of the discussions that were held and highlights major themes and issues.
Order no. DOE/ORO 2081.

New Cogeneration System Uses High Efficiency Diesel Engine to Produce Heat and Power

Fact Sheet, February 1993, 2 pp.
Order no. DOE/CH10093-169.

Combined Heat and Power (CHP): A Vision for the Future of CHP in the U.S. in 2020

Vision, September 1999
The CHP vision is the result of discussions on CHP drivers, barriers, visions, and goals at a CHP workshop held in June 1999. The workshop and vision were facilitated by the U.S. Combined Heat and Power Association, which aims to "create a regulatory, institutional and market environment that fosters the use of clean, efficient CHP as a major source of electric power and thermal energy in the U.S."
Order no. DOE/USCHPA99-CHP1

Market Assessment of Combined Heat and Power in the State of California

Report, September 1999
This report, prepared for the California Energy Commission, describes leading Combined Heat and Power technologies, their efficiency, size, cost to install and maintain, fuels, and emission characteristics. The document also discusses the market potential for Combined Heat and Power, and provides a market assessment for the technology.
Order no. DOE/CEC99-CHP1.

Combined Heat and Power Fact Sheets

This series provides up-to-date information on the use of efficient Combined Heat and Power (CHP) technologies in industry. The fact sheets describe recent developments, promote innovative ways to accelerate the use of CHP, as well as provide detailed project descriptions and contact information.

Included in this series:

Coal-Fired Air Turbine (CAT) - Cycle Plant
Order no. I-XHP-604.

CHP and District Energy
Order no. DOE98-CHP7.

CHP and Utility Restructuring
Order no. DOE98-CHP3.

CHP as an Economic Development Strategy
Order no. DOE98-CHP4.

CHP's Role in Cleaning the Air
Order no. DOE98-CHP5.

A Dual Fuel Conversion System for Diesel Engines
Order no. I-XHP-649.

Gas Turbine Cooling Improvement
Order no. I-XHP-668.

Combined Heat and Power Fact Sheets, continued

The New CHP Initiative
Order no. DOE98-CHP2.

What CHP Offers Your State
Order no. DOE98- CHP8.

What is CHP?
Order no. DOE98-CHP6.

Combined Heat and Power Success Story

Auxiliary AC, Heating and Engine Warming System
Order no. I-XHP-475.

High Performance Steam System Boosts Energy Efficiency and Broadens Markets for Cogeneration

Fact Sheet, February 1993, 2 pp.
Order no. DOE/CH10093-168.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Financial Assistance

Two OIT programs—Inventions and Innovation and NICE^3—provide independent inventors, technology developers, and industry with easy access to a flexible package of financial assistance and commercialization services. Together, these programs issue 35-40 new grants each year to address pressing energy and environmental needs.

The information presented in this section will help you learn more about these programs and OIT's other commercialization resources and financial assistance options.

Financial Assistance: Investing in a More Energy-Efficient and Clean U.S. Industry

Brochure, February 1999, 8 pp.

OIT's Financial Assistance programs are designed to help technology developers overcome the barriers to commercial acceptance. Two grant programs—Inventions and Innovation and National Industrial Competitiveness through Energy, Environment and Economics (NICE^3)—are described in this brochure. Successful participants can receive financial assistance and technical expertise to speed the development of new energy-saving, environmentally friendly technologies and demonstrate their potential savings and commercial value. Samples of successful projects are highlighted, and information is provided on resources and contacts.
Order no. DOE/GO-10099-693.

Toolbook for Financing Energy Efficiency and Pollution Prevention Technologies

Handbook, 1998, 240 pp.

Because few conventional sources of financing focus on energy efficiency technologies, particularly dealing with the production process, OIT conducts innovative financing workshops and sponsored the development of this handbook. It provides background information, and describes financing options and strategies. It also includes case studies and a list of state and federal programs that provide financing to businesses for developing energy efficiency technologies.
Order No. DOE98-IIP1.

Financing Manufacturing Efficiency and Growth, A Manufacturer's Guide to State and Federal Resources

Handbook, 1998, 334 pp.

This handbook, which was developed by the Northeast-Midwest Institute, focuses on the federal and state programs and tax incentives best suited to advance manufacturing modernization. You will find information on the economic development process, objectives of public-sector financing programs, a framework for the types of financial assistance that manufacturers rely on, examples of federal and state programs that provide financing, and an extensive list of program contacts and data for use by manufacturers, interested agencies and economic development advocates. Available through the Northeast-Midwest Institute in Washington, DC. Send your electronic mail request to ddevaul@nemw.org.

Inventions and Innovation

www.oit.doe.gov/inventions

Inventions and Innovation: Helping Bring Your Energy Ideas to Market

Tri-fold, Fall 1999, 2 pp.
This informative brochure describes the Inventions and Innovation program. Included is information on how to access resources and expertise, and how to make your idea become a reality.

Order no. DOE/GO-10098-596.

Inventor Assistance Source Directory, Fifth Edition

Directory, December 1999, 44 pp.
The fifth edition of the directory provides assistance to inventors and entrepreneurs in locating helpful organizations. The directory lists organizations by state, the services they provide, and contact information.
Order no. DOE96-IIP1.

Making the Licensing Decision

Handbook, October 1998, 33 pp.
This document provides inventors and small businesses with information on the licensing process. The publication describes the innovation process—how technology proceeds from product definition to full production. The innovation process is viewed as a series of technical, market, and organizational development tasks that can be clearly defined, and which must be completed to achieve commercial success.
Order no. DOE/GO-10098-667.

From Invention to Innovation: Commercialization of New Technology by Independent and Small Business Inventors

Handbook, 1999, 85 pp.
This handbook is designed to guide inventors through the commercialization process—from concept to engineering prototype to production to commercialization. This process requires you to answer questions about the market, your competition, your business structure, and legal and regulatory requirements. Careful and honest consideration of these questions is crucial for inventors expecting to penetrate the market in a sustained way. The lessons learned of over 400 inventors have been incorporated into this handbook.
Order no. DOEGO-10099-810.

Regional Resource Centers for Innovation

Tri-fold, July 1998, 1 p.
Through the Department of Energy's Inventions and Innovation (I&I) Program, the Regional Resource Centers for Innovation (RRCI) help developers of innovative energy-efficient technologies navigate the difficult journey from idea to marketplace. This pamphlet describes what the RRCI have to offer, their achievements, and commercialization assistance grants.
Order no. DOE/GO-100098-574.

Inventions and Innovation Project Fact Sheets

Fact Sheets, 1999, 2 pp.
These fact sheets highlight ongoing projects funded under OIT's Inventions and Innovation program. In addition to project descriptions, the benefits and applications of new technologies are also described. Project partners and contact information are also provided.

Included in this series:

Agriculture
Energy-Efficient Irrigation
Order no. I-AG-753.

Aluminum
Brazing and Spot Welding Innovations for Joining Aluminum Alloys
Order no. I-AL-734.

Novel Technique for Increasing Corrosion Resistance
Order no. I-AL-593.

Chemicals
Low-Frequency Sonic Mixing Technology
Order no. I-CH-745.

Forest Products
Acoustic Humidity Sensor
Order no. I-FP-595.

Apparatus for Removing Bark from Whole Logs
Order no. I-FP-653.

Christian Veneer Dryer
Order no. I-FP-596.

Energy and Environmental Innovations for Chemically Preserved Wood Wastes
Order no. I-FP-737.

Linear Corrugating
Order no. I-FP-723.

Molten Film Paper Dryer
Order no. I-FP-677.

Replacement of Thermally Produced Calcined Clay
Order no. I-FP-602.

Glass
Producing Glass Fiber
Order no. I-GL-700.

Rotary Electric Glass Furnace (Lehr)
Order no. I-GL-680.

Metalcasting
Filtering Molten Metal
Order no. I-MC-693.

Highly Efficient Rapid Tooling Using Optimized Cooling Passages
Order no. I-MC-733.

Method and Apparatus for Production of Three-Dimensional Objects by Photosolidification
Order no. I-MC-543.

Mining
Density Separation in Complex-Mode Vibration Fluidized Beds
Order no. I-MI-644.

Ramex Tunneler
Order No. I-MI-561.

Variable Wall Mining Machine with Dual Duct Ventilation System
Order no. I-MI-394.

Wireless Telemetry for Mine Monitoring and Emergency Communications
Order no. I-MI-580.

Petroleum
New Technology for Sulfide Reduction and Increased Oil Recovery
Order no. I-PT-659.

Steel
Clean Production of Coke from Waste Carbonaceous Fines
Order no. I-ST-726.

Continuous Casting/Inside Rolling of Hollow Rounds
Order no. I-ST-400.

Method of Making Steel Strapping and Strip
Order no. I-ST-719.

Inventions and Innovation Fact Sheets, continued

Crosscutting

Advanced Industrial Materials

Manufacturing Wear-Resistant, Metal Reinforced Carbon Composites
Order no. I-XAM-613.

Industrial Power Generation/ Combined Heat and Power

Coal-Fired Air Turbine (CAT) - Cycle Plant
Order no. I-XHP-604.

A Dual Fuel Conversion System for Diesel Engines
Order no. I-XHP-649.

Gas Turbine Cooling Improvement
Order no. I-XHP-668.

Motors

Increasing Efficiency in Permanent Magnet DC Motors
Order no. I-XMO-743.

Sensors and Controls

Method and Apparatus for Charge Distribution Analysis
Order no. I-XSC-566.

Miniature, Inexpensive, Amperometric Oxygen Sensor
Order no. I-XSC-744.

In-Situ, Real Time Measurement of Melt Constituents
Order no. I-XSC-748.

Other

A DSP-Based Power Electronics Interface for Alternate/Renewable Energy Systems
Order no. I-OT-749.

Coal Log Fuel Pipeline Transportation Systems
Order no. I-XII-466.

Development of a Composite-Reinforced Aluminum Conductor
Order no. I-OT-735.

Electrocaloric Materials for Room Temperature Refrigeration
Order no. I-OT-738.

Fault Warning Device for Prevention of Destructive Arc Faults in Electrical Switchgear and Bus
Order no. I-OT-752.

High-Efficiency, High-Capacity Cooling and Refrigeration
Order no. I-OT-736.

High-Speed Permanent Magnet Motor Testing for the AC Market
Order no. I-OT-741.

Industrial Fuel Cell Micro-Generator
Order no. I-OT-742.

Membrane Technology to Remove Entrapped Air from Ammonia Refrigeration Systems
Order no. IOT-729.

Method of Recycling Hazardous Waste
Order no. I-XII-621.

Microtube Strip Heat Exchanger
Order no. I-XII-440.

Mobile Zone Optimized Control System for Ultra-Efficient Surface Coating Operations
Order no. I-XII-489.

Monolithic Refractory Material
Order no. I-XOT-751.

Multi-Element Selective Emitter: A New High-Efficiency Incandescent Light Source
Order no. I-OT-747.

Novel 4-Way Refrigerant Reversing Valve for Heat Pumps
Order no. I-OT-746.

Rotary Burner
Order no. I-OT-750.

Tribopolymerization as an Anti-Wear Mechanism
Order no. I-XII-584.

New Technology Revolutionizes Industrial Drying

February 1999, 2 pp.

New Technology Revolutionizes Industrial Drying is an Inventions and Innovation program success story. OIT's BestPractices-Motors and NICE^3 programs have also developed this type of fact sheet, which describes completed projects that were technical and commercial successes in a variety of industrial applications. The success stories summarize the problem and present the solution—an OIT-sponsored technology or process. The fact sheet describes the benefits of the new technology or process, funding dollars, and detailed project results.

The success story, *New Technology Revolutionizes Industrial Drying*, describes how difficult it can be to estimate the time required to dry materials, such as wood, textiles, and agricultural products. The solution presented is a sensor and control mechanism called Delta T Dryer Control that works inside industrial dryers. Temperature probes continually measure the moisture content of the product inside the dryer during the drying cycle and readjust the time and temperature of the dryer accordingly. Other I&I success stories are listed below.
Order no. I-FP-536.

Included in this series:

Aluminum

Aluminum-Rich Concentrate from Municipal Waste
Order no. I-AL-243.

Reflective Aluminum Chips
Order no. I-AL-283.

Forest Products

Environmentally-Friendly Polymer Replaces Petroleum-Based Resins
Order no. I-FP-232.

Metalcasting

Meta-Lax Stress Relief Process
Order no. I-MC-412.

New Technology Brings Ideas to the Marketplace Quicker
Order no. I-MC-333.

Steel

Recycling Acid and Metal Salts from Pickling Liquors
Order no. I-ST-657.

Crosscutting

CHP

Auxiliary AC, Heating, and Engine Warming System
Order no. I-XHP-475.

Compressed Air

Aerocylinder Technology Replaces Single Action Cylinders and Reduces Downtime
Order no. I-XCA-519.

Other

Energy from Organic Waste
Order no. I-OT-623.

High-Efficiency Ozone Generator System
Order no. I-XII-422.

Method and Apparatus for Preheating Ventilation Air for Buildings
Order no. I-XII-563.

New Bearings Increase Productivity for High-Performance Machinery
Order no. I-XOT-399.

Power Guard
Order no. I-XII-638.

Inventions and Innovation Success Stories, continued

Power Line Damage, Electrical Outages, Reduced in the "Sleet Belt"
Order no. I-ST-136.

Products from Metal Powders
Order no. I-XOT-666.

Vacuum Bagging Apparatus
Order no. I-XII-515.

Waste Flow Energy Recovery System
Order no. I-XII-382.

WeldComputer™ Resistance Welder Adaptive Control
Order no. I-XOT-588.

National Industrial Competitiveness through Energy, Environment and Economics (NICE³)

www.oit.doe.gov/nice3

NICE³: Financial Support to Demonstrate Energy-efficient and Pollution-preventing Technologies

Tri-fold, June 1999, 2 pp.
This informative brochure describes OIT's National Industrial Competitiveness through Energy Environment and Economics program, known as NICE³. The pamphlet details program features, grant eligibility and evaluation criteria, and a project timeline. The publication also provides examples of NICE³ success stories.
Order no. DOE/GO-10098-526.

National Industrial Competitiveness through Energy, Environment and Economics (NICE³) Project Fact Sheets

Fact Sheets, 1999, 2 pp.
NICE³—National Industrial Competitiveness through Energy, Environment and Economics—is an innovative, cost-sharing technology demonstration program to promote energy efficiency, clean production, and economic competitiveness in industry. Funded projects cover a wide range of industry applications and advanced energy efficiency and clean production technologies. Fact sheets in this series describe projects in progress including their benefits and applications. Each fact sheet also lists project partners and program contacts.

Included in this series:

Agriculture

Bioconversion of Sugar Cane Molasses
Order no. NICE3AG-1.

Aluminum

Aluminum Scrap Decoater
Order no. NICE3AL-3.

Microsmooth™ Process on Aluminum Wheels
Order no. NICE3AL-1.

Recycling of Aluminum Dross/Saltcake
Order no. NICE3AL-2.

Reducing Chloride Emissions from Aluminum Production
Order no. NICE3AL-4.

Chemicals

Fuel-Based Nitrogen Generator
Order no. NICE3CH-10.

No-VOC Coating Technologies
Order no. NICE3CH-8.

Plastic Foam and Film Recovery through Thermal Densification
Order no. NICE3CH-2.

Solvent Vapor Recovery
Order no. NICE3CH-9.

UV-Curable Coatings for Aluminum Can Production
Order no. NICE3CH-1.

Forest Products

Closed-Cycle Bleach Kraft Pulp Production
Order no. NICE3FP-8.

Fiber Loading for Paper Manufacturing
Order no. NICE3FP-1.

Long Wavelength Catalytic Infrared Drying System for Wood Fiber
Order no. NICE3FP-2.

Lumber Defect Detection System
Order no. NICE3FP-7.

Manufacturing Tissue Paper Products Using a High Content of Recovered Office Papers
Order no. NICE3FP-3.

Predictive Diagnostic System for DC Motor Drives
Order no. NICE3FP-6.

Metalcasting

A Process to Recover and Reuse Sulfur Dioxide in Metalcasting Operations
Order no. NICE3MC-1.

Die Casting Copper Motor Rotors
Order no. NICE3MC-2.

Petroleum

Catalytic Cracking Demonstration Plant
Order no. NICE3PE-2

Process Analysis for the Sulfuric Acid Petroleum Refining Alkylation Process.
Order no. NICE3PE-1.

Robotics Inspection System for Storage Tanks
Order no. NICE3PE-3.

Steel

Energy-Efficient Process for Hot-Dip Batch Galvanizing
Order no. NICE3ST-1.

Lightweight Steel Containers
Order no. NICE3ST-2.

Particulate Briquetting Technology for Steel Industry
Order no. NICE3ST-7.

Processing Electric Arc Furnace Dust into Saleable Chemical Products
Order no. NICE3ST-3.

Solidification Control of Stationary Ingots
Order no. NICE3ST-6.

Steel Reheating for Further Processing
Order no. NICE3ST-4.

NICE^3 Fact Sheets, continued

Other

Direct Copper Plating
Order no. NICE3OT-2.

Dyebath Reuse in Carpet Manufacturing
Order no. NICE3OT-11.

Industrial Refrigeration System
Order no. NICE3OT-7.

SO_3 Cleaning Process in Semiconductor Manufacturing
Order no. NICE3OT-1.

Textile Brine Separation
Order no. NICE3OT-13.

National Industrial Competitiveness through Energy, Environment and Economics (NICE^3) Success Stories

Fact Sheets, February 1999, 4 pp.

The success stories in this series focus on NICE^3 projects that have been successfully completed. Information provided includes project description, benefits and applications, and successes.

Included in this series:

Aluminum

Onsite Process for Recovering Waste Aluminum
Order no. NICE3AL-5.

Chemicals

Methanol Recovery from Hydrogen Peroxide Production
Order no. NICE3CH-5.

Paint Wastewater Recovery
Order no. NICE3CH-3.

Powder Paint Coating System
Order no. NICE3CH-4.

Ultrasonic Tank Cleaning
Order no. NICE3CH-7.

Water-Washed Overspray Paint Recovery
Order no. NICE3CH-6.

Forest Products

Chemical for Increasing Wood Pulping Yield
Order no. NICE3FP-4.

Pallet Production Using Postconsumer Wastepaper
Order no. NICE3FP-5.

Steel

Hydrochloric Acid Recovery System
Order no. NICE3ST-5.

Other

Brick Kiln Design Using Low Thermal Mass Technology
Order no. NICE3OT-9.

Cathodic Arc Deposition Technology
Order no. NICE3OT-4.

Energy-Efficient Food Blanching System
Order no. NICE3OT-5.

Ink Jet Printer Solvent Recovery
Order no. NICE3OT-10.

Membrane Filtration Technology to Process Black Olives
Order no. NICE3OT-6.

Real-Time Neural Networks for Utility Boilers
Order no. NICE3OT-8.

Textile Finishing Process
Order no. NICE3OT-12.

Waste-Minimizing Plating Barrel
Order no. NICE3OT-3.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

BestPractices Resources

www.oit.doe.gov/bestpractices

As an extension of the IOF strategy, OIT BestPractices brings together the best available tools, technologies, processes and practices to help industry begin reducing energy use, saving money, and improving productivity right away!

BestPractices offers a complete portfolio of technical assistance and information resources designed to deliver immediate payback—including case studies, software decision tools, technical publications, training, and more. Through the BestPractices approach, industry has easy access to the tools needed to identify plant-wide cost-cutting opportunities, prioritize energy efficiency investments, select the best equipment and understand near- and long-term technology solutions.

As part of our ongoing effort to be more responsive to industry's plant-wide needs, OIT has integrated the resources of the "Challenge" programs—Motor, Steam, Compressed Air, Combined Heat and Power and the Industrial Assessment Centers—into the OIT BestPractices portfolio. This new delivery strategy allows easier, more comprehensive access to all OIT products and services.

No special enrollments or sign-ups are required to take advantage of OIT's BestPractices resources. The materials described here will provide information you can use to begin realizing energy savings in your operations—today!

INTRODUCTION TO BESTPRACTICES

These publications provide an informative introduction to the BestPractices approach, including tools and services available, program highlights and successes, energy-efficient opportunities for industry, and information on how to get involved.

BestPractices Overview

Coming Soon!

This brochure provides an overview of BestPractices, OIT's new approach to integrating and streamlining its industrial energy outreach programs. It describes how the BestPractices approach can help industry impact its bottom line ***right now.*** OIT's comprehensive portfolio of technical assistance that is readily available to industrial users—the BestPractices tool kit—is also described.

BestPractices Fact Sheets

OIT's BestPractices Technical Assistance resources focus on opportunities for immediate cost savings for industry in electric motor, steam, compressed air, and combined heat and power systems. These fact sheets highlight tools and services available to help industry implement productivity improvements at the plant level. Training workshops and software, on-site evaluations, newsletters, and case studies are just a few of the many products covered in these informative fact sheets.

Included in this series:

Plant Assistance
Order no. DOE/GO-10099-712.

Tools and Information
Order no. DOE/GO-10099-713.

Training
Order no. DOE/GO-10099-714.

Energy Matters

Newsletter, bi-monthly
Formerly the *Turning Point* newsletter, this newly reformatted bi-monthly publication now includes a more comprehensive energy systems approach that addresses the full spectrum of productivity-enhancing energy-efficiency opportunities for industry including energy-efficient motors, steam, compressed air, combined heat and power, and industrial energy assessments. Each issue is loaded with articles from industry experts, tips for performance optimization, case studies of successful projects, and current program activities. Subscribe to this newsletter to keep current on energy-efficiency opportunities for your company by calling the OIT Clearinghouse at 1-800-862-2086.
Order no. BP10010.

Energy Matters Steam Challenge Supplement

Newsletter Supplement, 1999, 8 pp.
This publication is a special supplement to the BestPractices newsletter *Energy Matters.* The document provides a description of OIT's BestPractices-steam program, and tips and case studies on steam system optimization.
Order no. DOE-52.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

REPORTS

Here is your one source for research findings from a wide range of key industrial market segments and technology applications. These comprehensive studies present information that industry, government agencies, and other stakeholders can use to cut energy use and costs, benchmark purchases and procedures, and achieve efficiency goals.

Motor Systems

United States Industrial Motor Systems Market Opportunities Assessment: Executive Summary

Report, December 1998, 22 pp.

Through BestPractices, DOE provides resources designed to help industry capture energy cost savings by increasing the efficiency of motor systems. This market assessment executive summary report takes stock of current motor-driven equipment in U.S. industrial facilities, characterizes the opportunities to improve motor system energy efficiency, and profiles motor system purchase and maintenance practices.
Order no. DOE98-MC1.

United States Industrial Electric Motor Systems Market Opportunities Assessment

Report, December 1998, 322 pp.

This document is the full assessment report described in the Executive Summary above. This study presents information that factory managers can use to identify motor system energy savings opportunities in their own facilities, and to benchmark their current motor system purchase and management procedures. It is of value to manufacturers, distributors, engineers, and others in the supply channels for motor systems.
Order no. MA-10002.

National Transformation Strategies for Industrial Electric Motor Systems, Vol. I

Report, May 1996, 85 pp.

This comprehensive report, the first of two volumes, presents the results of an intensive joint effort by DOE, industry, and other organizations to develop a national effort to:

- increase the U.S. market penetration of energy-efficient motors and motor-driven systems
- transform the market from "component-focused" to "systems-oriented."

The report focuses on findings from research on motors and drives, and three key manufacturing application segments: process pump systems, industrial fan and blower systems, and industrial air-compressor systems. Based on interviews, meetings, and roundtable discussions with a wide range of market players, the report outlines a blueprint for action for industry, government agencies, and all others interested in helping achieve the goals of market transformation.
Order no. DOE/PO-0444 Vol. 1.

National Transformation Strategies for Industrial Electric Motor Systems, Vol. II: Market Assessment

Report, May 1996, 254 pp.
Volume II of this in-depth study of the U.S. industrial motor market provides an expanded and more detailed reporting of the market assessment findings in DOE's Market Transformation main report. It describes Easton Consultants, Inc.'s, market research on air compressors and fans/blowers and research sponsored by DOE on process pump systems. The document also provides information about specific motor system application segments to help stake-holders and other organizations involved in promoting energy efficiency efforts and implementing market transformation initiatives.
Order no. DOE/PO-0044 Vol. II.

Industrial Energy Technology Conference: Steam Session Papers

Session Papers, 1998, 52 pp.
This report contains ten papers on steam-related topics presented at the Industrial Energy Technology Conference held April, 1998 in Houston, TX. The presentations focus on optimizing steam systems to save energy, reduce waste and pollution, cut costs, and increase productivity.
Order no. DOE-51.

INDUSTRY SOURCEBOOKS

These reference books are an indispensable resource for those seeking current information about increasing energy efficiency in a broad range of plant operations. Each sourcebook includes an overview of the application area, a roadmap that identifies system improvement opportunities, fact sheets that describe these opportunities, and a directory of programs, resources, and tools to further assist the user.

Motor Systems

Improving Pumping System Performance: A Sourcebook for Industry. ($18.75)

Order No. PS10001.

Improving Motor and Drive System Performance: A Sourcebook for Industry

Coming Soon!

Improving Fan System Performance: A Sourcebook for Industry

Coming Soon!

Steam Systems

Improving Steam System Performance: A Sourcebook for Industry

Coming Soon!

Compressed Air Systems

Improving Compressed Air System Performance: A Sourcebook for Industry. ($19.95)

Order no. CA60001.

HANDBOOKS

These educational guides offer helpful information and how-to tips on many aspects of energy efficiency in plant operations.

Motor Systems

Energy Management for Motor Driven Systems

Handbook, June 1997, 100 pp.
This publication is designed to help plant managers establish a facility energy-management program, identify and evaluate energy-efficiency opportunities involving motor-driven equipment, and design a motor improvement plan. Energy-management tools covered in this educational guide include how to use information such as utility bills and plant production data to target opportunities, how to determine the dollar benefits associated with energy-efficiency actions, and how to establish preventative and predictive maintenance programs.
Order no. DOE/MC-10021.

Motor Repair Tech Brief

Coming Soon!
This easy-to-follow overview addresses the three most critical motor repair issues: why motors fail, when to repair instead of replace, and how to ensure reliability and efficiency in a repair. The brief also examines the bottom-line benefits of installing new energy-efficient motors in instances when long-term savings outweigh costs.

Service Center Evaluation Guide

Coming Soon!
This handy how-to resource offers motor owners step-by-step guidelines for evaluating the quality, competence, and capabilities of motor repair shops. It includes advice on using interviews and walk-through inspections to evaluate a shop's adherence to quality workmanship as well as a comprehensive Service Center Capability Checklist to help owners select a repair shop that uses techniques to optimize reliability and efficiency.

Model Repair Specification Guide

Coming Soon!
This concise, model-specific guide includes all the information necessary to achieve consistent, high-quality diagnosis, repair, and/or overhaul of low voltage induction motors. The guide features sections on repair procedures, quality control, sample motor repair forms and a handy reference glossary.

Selected Bibliography on Electric Motor Repair

Coming Soon!
A "one-stop" solution for anyone, at any level, looking for information on motor repair and replacement. This annotated bibliography offers more than 75 sources of up-to-date information on every aspect of motor repair and replacement—from guidelines for quality motor repair…to the replacement decision process…to legislative actions and issues related to efficient motors.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Steam Systems

Steam Systems Energy Efficiency Handbook

Handbook, 1998, 64 pp.
This publication helps owner/operators get the best and most energy-efficient performance out of their steam systems. This manual gives information and helpful operational tips on virtually every aspect of steam system operations—from water treatment through combustion and heat recovery, to flue gas treatment, steam trap maintenance, steam pipe insulation, and cogeneration. Limit of one copy per customer.
Order no. DOE98-Stm1.

Industrial Insulation for Systems Operating above Ambient Temperature

Brochure, September 1995, 12 pp.
This bulletin provides readily accessible information about the use of thermal insulation on piping and flat surfaces in which the operating temperatures are above the temperature of the surroundings. The tables in this document provide the means for quick estimates of the possible savings with thermal insulation. Also included are information references.
Order no. ORNL/M-4678.

SOFTWARE TOOLS

Now the fast, accurate, decision-making information you need to improve competitiveness and profitability is at your fingertips. This portfolio of software tools includes products to assist you in repair/replace decisions, upgrades and improvements, system optimization, fuel consumption monitoring, and estimating potential energy and cost savings.

Motor Systems

MotorMaster+ (MM+) 3.0: Featuring An Interactive Training Course

CD-ROM, 1999
MotorMaster+ is an energy-efficient motor selection software and powerful motor and motor-driven equipment management tool. With a catalog of over 20,000 AC motors, MM+ will help simplify motor repair/replace decisions. Version 3.0 features expanded motor inventory management, maintenance log tracking, efficiency analysis, savings evaluation, energy accounting, and environmental reporting capabilities. The CD-ROM includes a comprehensive, six-module training tutorial that walks users through the fundamentals and advanced features of MM+, provides examples for using MotorMaster+ to make informed motor purchase decisions, and highlights and compares different approaches to purchase decision making.
Order no. DOE99-MC5.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

ASDMaster: Adjustable Speed Drive Evaluation Methodology and Application Software

Software

ASDMaster helps nontechnical plant or operations professionals apply ASDs from a total-system perspective, maximizing the likelihood of a successful and profitable installation. The Windows software program allows the user to:

- determine the economic feasibility of an ASD application
- predict how much electrical energy may be saved by using an ASD compared to other control methods
- compile equipment specifications
- specify parameters
- search a database of standard drives.

The software package includes two 3 1/2-inch diskettes, user's manual, and user's guide. Published by the Electric Power Research Institute. Distributed by Bonneville Power Administration. Call 800-982-9294 to order a copy or receive more information about the product.

Pump System Assessment Tool (PSAT) Software

PSAT helps industrial users assess the efficiency of pumping system operations and identifies possible motor and/or pump optimization upgrade improvements. This program also allows users to estimate potential energy and cost savings. The software is available online at www.ornl.gov/etd-equip/psat/psatdesc.htm.

Compressed Air Systems

Airmaster+ Software

Coming Soon!

This comprehensive compressed air system energy management program gives users a complete portfolio of tools to determine the bottom-line benefits of low-cost compressed air system upgrades. Users can list compressors that satisfy design specifications, determine the energy savings and air flow reduction consequences of implementing eight common energy-efficiency measures, and analyze the cost effectiveness of retrofitting or adding new compressors to meet expanded air flow requirements. Users can also schedule and track maintenance activities and perform after-tax life cycle cost analyses.

Steam Systems

3E Plus Software

With the 3E Plus program, users can quickly and easily determine whether boiler systems can be optimized through the insulation of boiler steam lines. The program calculates the economic thickness of industrial insulation for a wide variety of operating conditions. Five different fuel types and surface orientations are included. The system allows users to make calculations using the built-in thermal performance relationships of generic insulation materials or supply conductivity data for other materials. Download the software from the OIT Web site at www.oit.doe.gov/steam/files/software.html.

TRAINING MODULE SERIES

This series of turn-key modules—originally produced to help Allied Partners conduct training activities for their customers—includes transparencies, trainer notes, and handout materials. Each module can be used independently or as part of other training activities. These modules are only available through the allied partnership program.

Motor Systems

Introduction to Motor Systems Management

Training Module

This module, which was produced as an overview of the training series, explains the importance of developing and implementing an effective motor systems management plan and gives customers an understanding of the entire electric motor system.

Industrial Motor Basics

Training Module

This module covers the basics of using and maximizing electric motors at industrial or manufacturing sites.

Repair/Replace Decision Making Policy

Training Module

Based on Industrial Electrotechnology Laboratory's informative publication, *HorsePower Bulletin*, this module provides the technical and practical information motor management professionals need to develop a sound electric motor "repair or replace" policy. The module explains how to use motor-operating parameters to determine repair or replacement and provides guidance on establishing an inventory and finding a top-quality repair shop.

Pumping System Optimization Training Module

Coming Soon!

Adjustable Speed Drive Systems Training Module

Coming Soon!

Steam Systems

Steam System Training Module

Coming Soon!

TECHNICAL FACT SHEETS

Each fact sheet in this series focuses on one element of industrial energy efficiency and provides technical data and practical guidance to help industry professionals implement energy- and cost-saving strategies.

Motor Systems

Buying Energy-Efficient Electric Motors
Order no. BP10003.

Determining Electric Motor Load Factor
Order no. BP10006.

Optimizing Your Motor Drive System
Order no. BP10005.

Reducing Power Factor Cost
Order no. BP10007.

Replacing an Oversized and Underloaded Electric Motor
Order no. BP10008.

The Impacts of the Energy Policy Act of 1992 on Industrial End Users of Electric Motor-Driven Systems

Fact Sheet, September 1996, 4 pp.
This information sheet answers key questions about the impact of the Energy Policy Act of 1992 on industrial-motor end users. Find out which motors are affected by the Act and which are exempt, how motors should be tested and certified "energy-efficient," and what efficiency levels the Act prescribes for various motors.
Order no. BP10009.

INDUSTRY PROFILES

The industry-wide benefits that can be realized by using energy-efficient tools and technologies are highlighted in these profiles.

Motor Systems

Pulp and Paper Mills: Profiting for Efficient Motor System Use
Order no. DOE/GO-10099-547.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

TECHNICAL CASE STUDIES

The projects presented in this series document methods companies have used to achieve energy savings, productivity gains, and process improvements. Each case study provides a project summary, company background, project description, and results of the project. These fact sheets provide informative examples of how industry can use existing technologies to realize near-term gains in energy efficiency.

Motor Systems

Alumax Inc.: Improving Dust Collection System at an Aluminum Refinery
Order no. ORNL/MC-CS5.

Bethlehem Steel Corporation: Reducing BOF Hood Scrubber Energy Costs at a Steel Mill (Steel)
Order no. DOE/GO-10099-710.

The City of Long Beach, California: Improving the Performance of a Waste-to-Energy Facility
Order no. ORNL/MC-CS10.

City of Milford, Connecticut: Saving Energy at a Sewage Lift Station Through Pump System Modifications
Order no. ORNL/MC-CS6.

General Motors (GM): New Water Booster Pump System Reduces Energy Consumption by 80 Percent and Increases Reliability
Order no. DOE/MCTC-001.

Greenville Tubing Corporation: Improving Efficiency of Tube Drawing Bench Reduces Energy Use by 34 Percent
Order no. DOE/GO-10099-544.

Lockheed Martin Armament Systems: Improving Ventilation System Performance at a Metal Plating Facility
Order no. ORNL/MC-CS1.

Louisiana Pacific Corporation: Improving Several Fan-Driven Systems in an Oriented-Strand Board Manufacturing Facility (Forest Products)
Order no. DOE/GO-10099-709.

Technical Case Studies, continued

Minnesota Mining and Manufacturing (3M): Optimizing Electric Motor Systems at a Corporate Campus Facility (Chemicals)
Order no. DOE/GO-10099-711.

Nisshinbo California Inc.: Improving Ventilation System Energy Efficiency in a Textile Plant
Order no. ORNL/MC-CS7.

Oxy USA: Improving the Performance of Oil Well Pumping Units
Order no. ORNL/MC-CS9.

Peabody Holding Company: Optimizing Pump Systems at a Coal Slurry Plant
Order no. ORNL/MC-CS3.

Peabody Holding Company: Optimized Pump Systems Save Coal Preparation Plant Money and Energy (Mining)
Order no. DOE/GO-10099-796.

Performance Improvements at Wastewater Treatment Plants
Order no. ORNL/BP-CS04.

Stroh Brewery: Improving the Efficiency of a Brewery's Cooling System
Order no. ORNL/MC-CS12.

Town of Trumbull: Improving Sewage Pump System Performance
Order no. ORNL/MC-CS8.

Steam Systems

Bethlehem Steel, Burns Harbor: Improving Steam Turbine Performance at a Steel Mill
Order no. ORNL/SC-CS1.

BWX Technologies: New Combustion Control Systems and Steam Traps Save $250,000 Annually
Order no. ORNL/BP-CS03.

Georgia-Pacific's Insulation Upgrade Leads to Reduced Fuel Costs and Increased Process Efficiency (Forest Products)
Order no. DOE/GO-10099.

Reducing Steam Pressure Saves $42,000 Annually at Vulcan Chemicals
Order no. ORNL/BP-CS01.

Velsicol Chemical Corporation: Improved Steam Trap Maintenance Increases System Performance and Decreases Operating Costs
Order no. ORNL/BP-CS05.

SUCCESS STORIES

This series highlights the successful implementation of energy-efficient technologies. Each success story provides a project summary, company background, project description, and results of the project.

Motor Systems

Alcoa: Improved System Yields $100,000 Annual Savings
Order no. DOE/GO-10099-545.

Blue Circle Aggregate: DOE Industrial Assessment Center Helps Georgia Quarry Reduce Maintenance Requirements and Energy Costs
Order no. DOE/MSBP-004.

McBroom Electric Teams with Cummins Engine Company to Save an Estimated $200,000 Yearly in Energy Costs
Order no. DOE/MCSS-002.

Motor System Upgrades Smooth the Way to Savings of $700,000 at Chevron Refinery
Order no. DOE/GO-10099-734.

Steam Systems

Nalco Chemical Company: Reducing Steam Header Pressure Provides Attractive Operating Costs Savings
Order no. ORNL/BP-CS02.

BUSINESS CASE STUDIES

This series examines the bottom-line benefits that can result from successful applications of energy-efficient practices and technologies. Each case study describes an industrial user's problem or issue, the energy-efficient systems selected to address the problem, and the outcomes of the project, including a cashflow analysis.

Motor Systems

City of Milford Pump Optimization Project Yields $96,000 Net Present Value
Order no. DOE/MCBC-002.

Alcoa/Alumax Reduces Energy Costs While Improving its Dust Collection Systems
Order no. DOE/MCBC-003.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

SERIES PREVIEW: BUSINESS CASE STUDIES

City of Milford Pump Optimization Project Yields $96,000 Net Present Value

February 1999, 2 pp.

The *City of Milford Pump Optimization Project Yields $96,000 Net Present Value* is one of several business case studies developed by OIT. These fact sheets present case studies on successful applications of energy-efficient technologies while focusing on the financial aspects of the project. Each case study describes a problem or issue that needed to be solved, the energy-efficient systems selected to solve the problem, and the outcomes of the project, including a cashflow analysis. Business case studies are useful because they address the bottom-line financial aspects of new energy-efficient practices or technologies.

One of several business case studies developed by OIT, this study details the cause and effect of a decision by the Connecticut city to replace a pump at one of its 37 sewage stations. The study describes the results of the decision, including over 15% reduction in energy consumption due to lower outflow rate, which further reduced losses in the piping system. The study also presents information on equipment costs versus estimated savings.
Order no. DOE/MCBC-002.

TIP SHEETS

Find a wealth of useful ideas and information on energy-efficiency measures in a variety of application areas in this series.

Steam Systems

Improve Your Boiler's Combustion Efficiency
Order no. DOE/GO-10099-808.

Inspect and Repair Steam Traps
Order no. DOE/GO-10099-733.

Insulate Steam Distribution and Condensate Return Lines
Order no. DOE/GO-10099-807.

Use Feedwater Economizers for Waste Heat Recovery
Order no. DOE/GO-10099-809.

Motor Systems

Coming Soon!

INDUSTRIAL ASSESSMENT CENTERS

www.oit.doe.gov/IAC

Find out how teams at 30 universities across the country are helping small- and medium-sized manufacturers conserve energy and save money through energy, waste, and productivity assessments. This series includes IAC program descriptions, assessment results, technical training, and more.

Industrial Assessment Centers: Is Your Business Manufacturing?

Tri-fold, 1998
This pamphlet describes OIT's Industrial Assessment Center program. It details program features, eligibility requirements, and benefits. The brochure also provides a list of participating schools and school IAC program contacts.
Order no. 10097-501.

Industrial Assessment Centers Contact List

List, 1999, 2 pp.
This list contains the appropriate contact name, department, university, address, phone number, and e-mail information for each of the 30 Industrial Assessment Centers located throughout the U.S.
Order no. DOE-IAC1.

The DOE Industrial Assessment Database (Version 5.0)

Database
This database contains both DOE Industrial Assessment Center (IAC) program-specific data and recommendations from IAC analyses of small- and medium-sized manufacturer waste streams and industrial processes. It can be downloaded from the World Wide Web by customers using software designed for computer platform independence at http://oipea-www.rutgers.edu.

The DOE Industrial Assessment Database User Information (Version 5.0)

Manual, updated October 1996, 23 pp.
The IAC database manual supplements the DOE-sponsored IAC program database, which is available at no cost from the Rutgers University where it is stored. It can be downloaded from the World Wide Web by customers using software designed for computer platform independence at http://oipea-www.rutgers.edu.

Assessment Recommendation Code System for the DOE Industrial Assessment Center Database (Version 6.0)

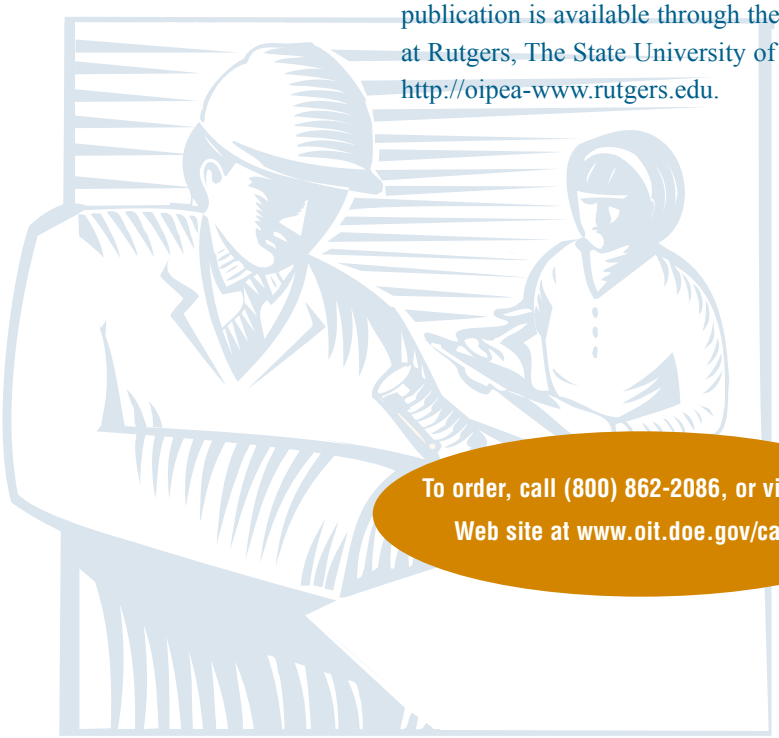
Manual, November 1996, 34 pp.
The Industrial Assessment Database resulting from assessments carried out by DOE-sponsored universities contains a list of recommendations involving enhancements in energy efficiency, waste minimization, and manufacturing productivity. In order to organize the data in a useful way, this coding system, called the Assessment Recommendation Code (ARC), was developed to list each recommendation. This publication is available through the World Wide Web at Rutgers, The State University of New Jersey at http://oipea-www.rutgers.edu.

Industrial Productivity Training Manual

Manual, Updated March 1998, 136 pp.
This manual is intended to be a complement to *Modern Industrial Assessments: A Training Manual.* It addresses manufacturer concerns that energy/waste assessments must acknowledge production issues. Recommendations provide a "win-win" scenario enhancing the sustainable viability of the company. It is designed to show a number of examples of productivity recommendations, and provides several tools that can be applied directly. This publication is available through the World Wide Web at Rutgers, The State University of New Jersey at http://oipea-www.rutgers.edu.

Modern Industrial Assessments: A Training Manual (Version 1.0b)

Manual, Updated December 1995, 372 pp.
This comprehensive training manual provides technical training to a range of potential end users interested in performing industrial assessments at small- to medium-sized manufacturing plants. Industrial assessments, as discussed in this manual, refer to detailed reviews of existing plant-level operations with an eye to improving productivity in a number of ways. This publication is available through the World Wide Web at Rutgers, The State University of New Jersey, at http://oipea-www.rutgers.edu.



To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

Self-Assessment Workbook for Small Manufacturers

Report, 80 pp.

This workbook, produced by Rutgers University's Office of Industrial Productivity and Energy Assessment, provides the small manufacturer with a self-assessment method of improving operations and reducing costs. Included is a step-by-step process of identifying and calculating energy savings, waste reduction opportunities, and productivity enhancements frequently available only to larger companies. This publication is available on-line at http://oipea-www.rutgers.edu.
Order no. DOE12.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

State and Geographic Resources

OIT is helping states facilitate industry involvement in roadmapping and visioning to help energy-intensive industries at the state and local level identify their R&D priorities. One way that U.S. industry can participate in RD&D is through state energy or economic development agencies that receive DOE Special Energy Project grant awards. With these funds, some states help DOE sponsor technical training workshops in areas such as motor systems, compressed air and steam efficiency improvements.

OIT's international activities help to promote cooperative ventures in energy technologies and practices that lead to economic and environmental benefits. These cooperative activities have led to new partnerships and opportunities for the participants, while advancing energy-efficient technologies and systems.

This section describes OIT's resources for its state-level and international initiatives.

National Inventory of Manufacturing Assistance Programs

Database, 1998

OIT and the Alliance to Save Energy created this on-line inventory of more than 300 technical assistance centers and programs to help address the information and networking needs of manufacturers. Search the network for useful information on energy efficiency resources across the country. Each entry includes a program description, center and services description, and identifies key contacts. Learn what energy efficiency programs are available to your company by accessing the network at www.oit.doe.gov/nimap. It is also available on a 3 1/2-inch diskette.
Order no. DOE98-ST1.

States Industries of the Future
www.oit.doe.gov/states

States Industries of the Future: Federal/State/Industry Partnerships for a Sustainable Technology Edge

Tri-fold, November 1999, 2 pp.

OIT's States Industries of the Future team helps:

- focus implementation of the Industries of the Future strategy in individual states and regions
- provide access to national visioning, roadmapping and partnership activities
- support state efforts with OIT products and services.

This brochure provides an overview of the team's activities and includes a listing of contacts.
Order no. DOE/GO-10099-707.

1999 State Fact Book

Report, July 1999, 286 pp.
Use this report to find out about OIT partners and projects in each state as of 1998. You'll find easy-to-read, state-by-state statistics on the industrial sector's energy expenditures, number of employees, wages, and sales for each of the Industries of the Future as well as a list of OIT partners and highlights.
Order no. DOE98-ST2.

International Initiatives

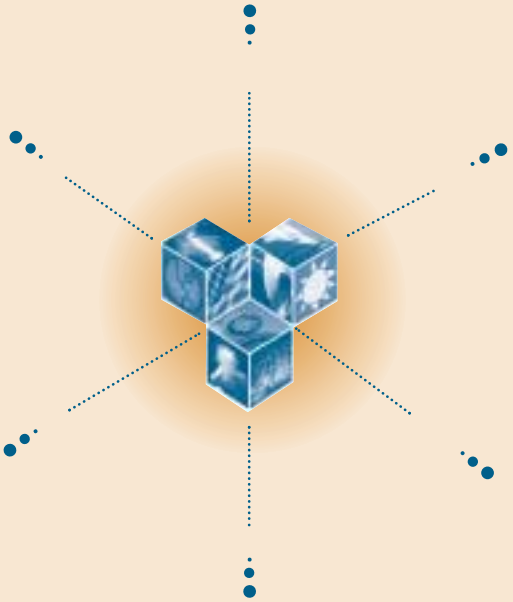
www.oit.doe.gov/intl.shtml

International Energy Efficiency Activities

Fact Sheet, February 1999, 4 pp.
OIT's international initiatives promote cooperative ventures in energy-efficiency technologies and practices that lead to economic and environmental benefits to the U.S. and the host country. This fact sheet provides an overview of OIT cooperative activities with several countries including China, Ghana, South Africa, and Brazil.
Order no. DOE99-Intl1.

To order, call (800) 862-2086, or visit OIT's Web site at www.oit.doe.gov/catalog

OIT'S NEW CLEARINGHOUSE IS YOUR "ONE-STOP SHOP" FOR QUESTIONS ABOUT OUR PRODUCTS AND SERVICES



- An R&D manager in the forest products industry wanted to know about potential Government cost-sharing opportunities.
- A petroleum refinery energy manager needed help justifying a preventative maintenance program for his steam system.
- An aluminum industry supplier heard about the industry's vision and roadmaps and wanted to know how to get copies.
- A foundry with 8,000 hp of air compressors had a moisture carry-over problem.
- A glass firm was looking for funding to help demonstrate an innovative melting technology.
- A chemical manufacturer heard that OIT helps plants assess their energy consumption and opportunities for improved performance, and wanted to know how he might be able to benefit.
- An associate professor at a community college was having trouble finding what she needed on OIT's Web site.

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

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

You, too, are invited to call them about any of the products and services that OIT offers including technical assistance for your motor, steam, compressed air, and combined heat and power systems.

If the Clearinghouse doesn't have the information needed, they'll refer you to appropriate OIT staff members, materials, or contacts in OIT's referral network.

As OIT partners with U.S. industry to develop and deliver technologies and best practices that improve efficiency and profits and reduce waste, our Clearinghouse can be your first stop on the way to solutions.

The OIT Clearinghouse is open to answer your questions Monday through Friday, 9 am to 8 pm Eastern Time. Call them at 1-800-862-2086!

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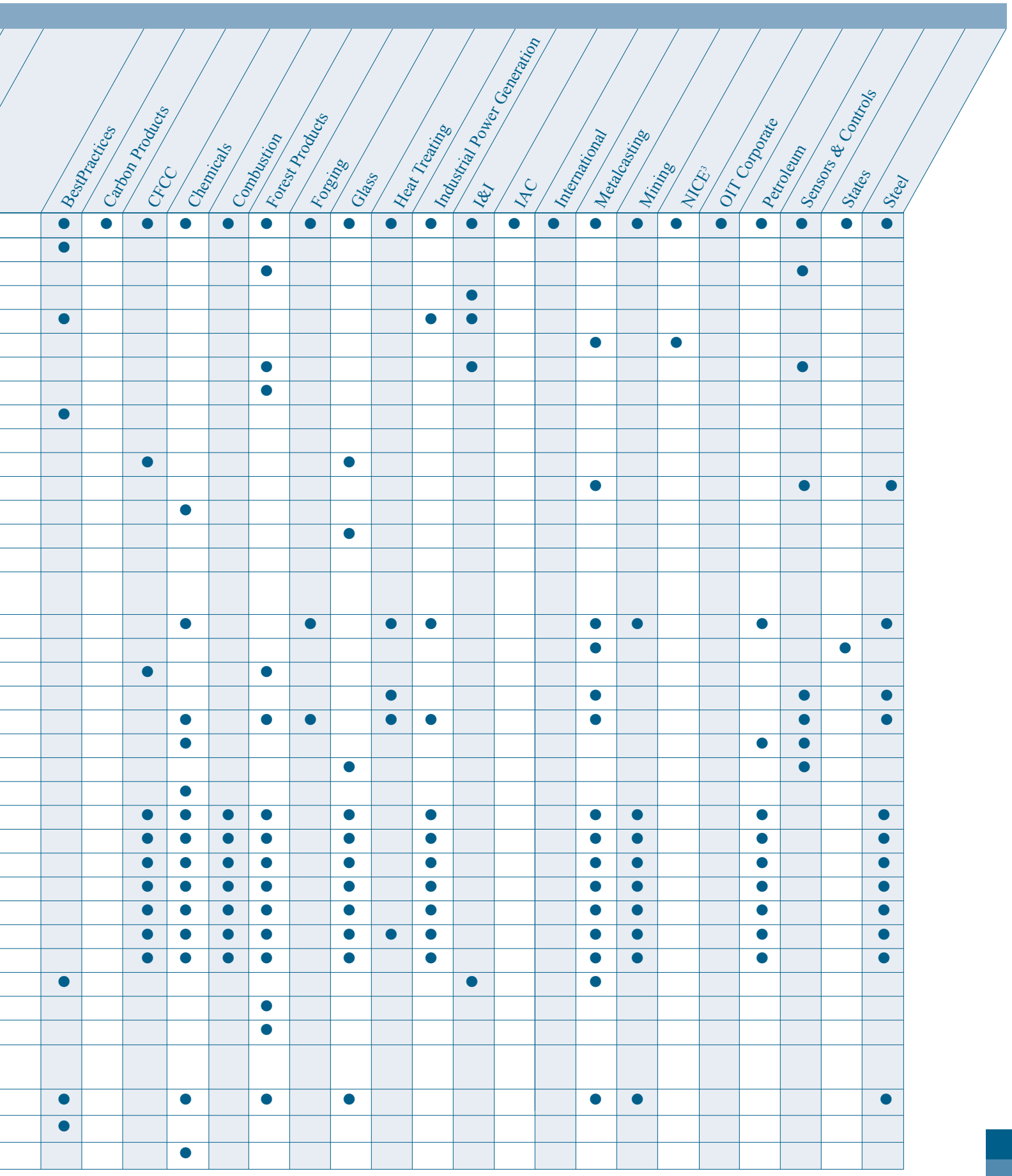

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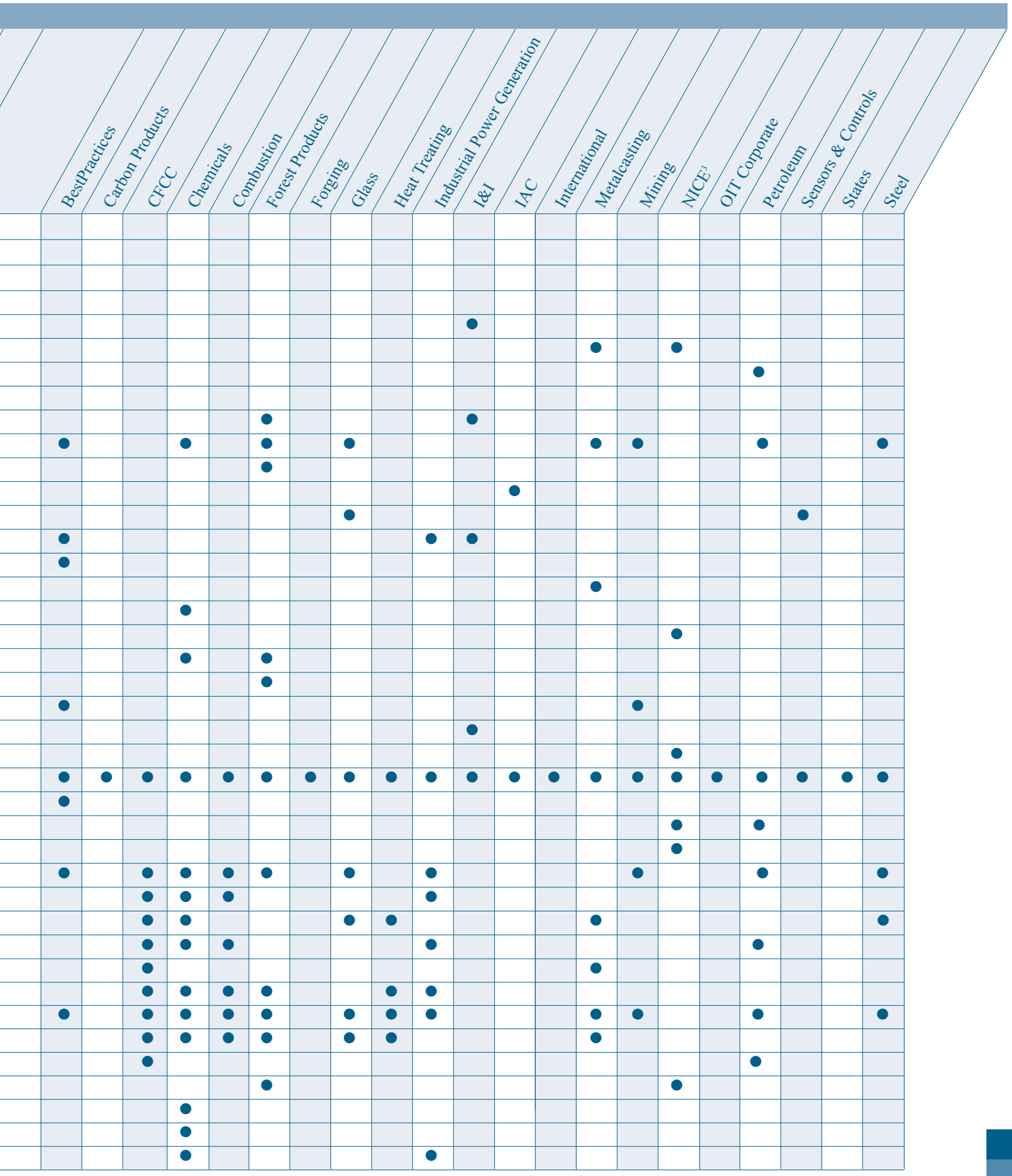

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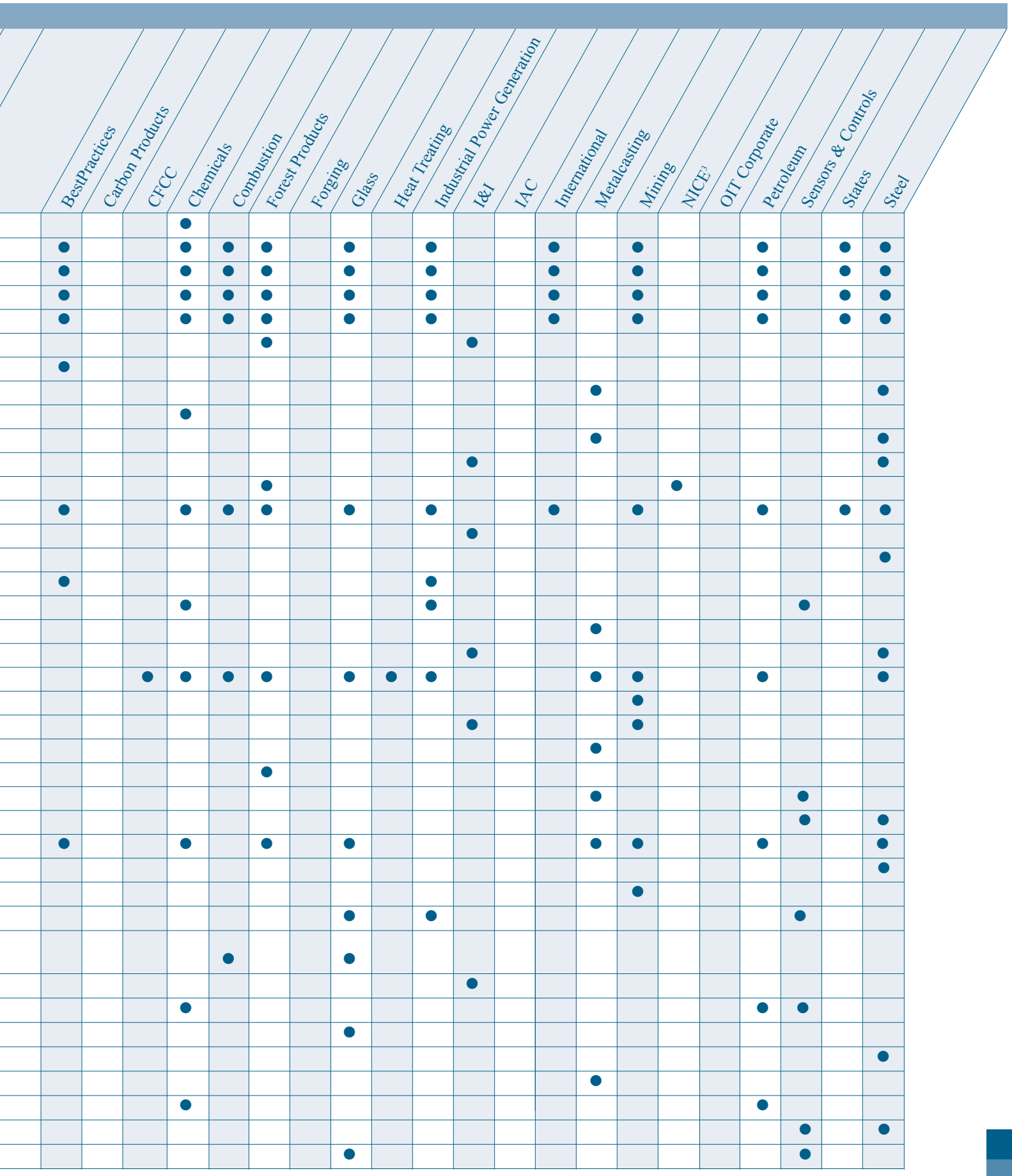

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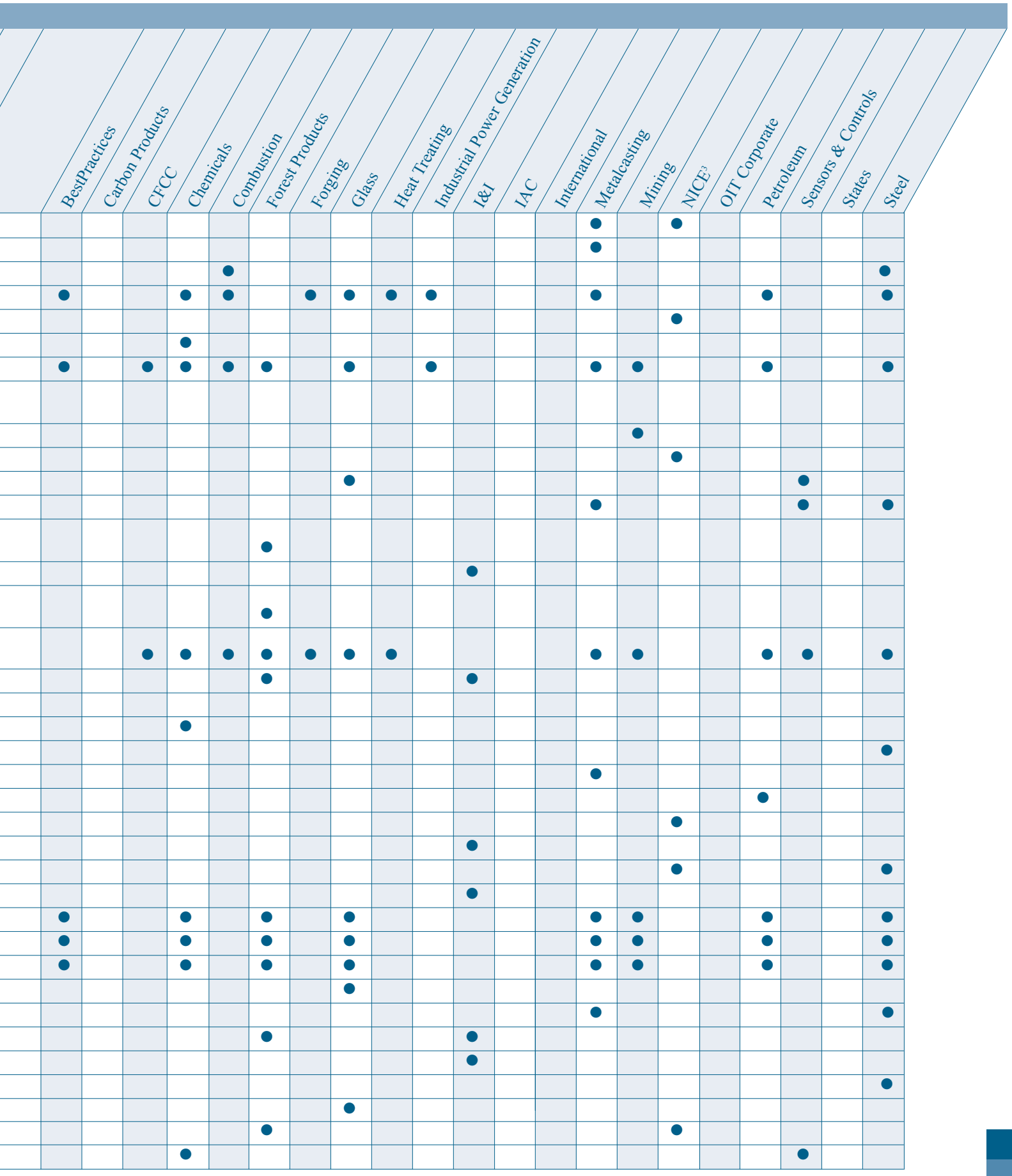

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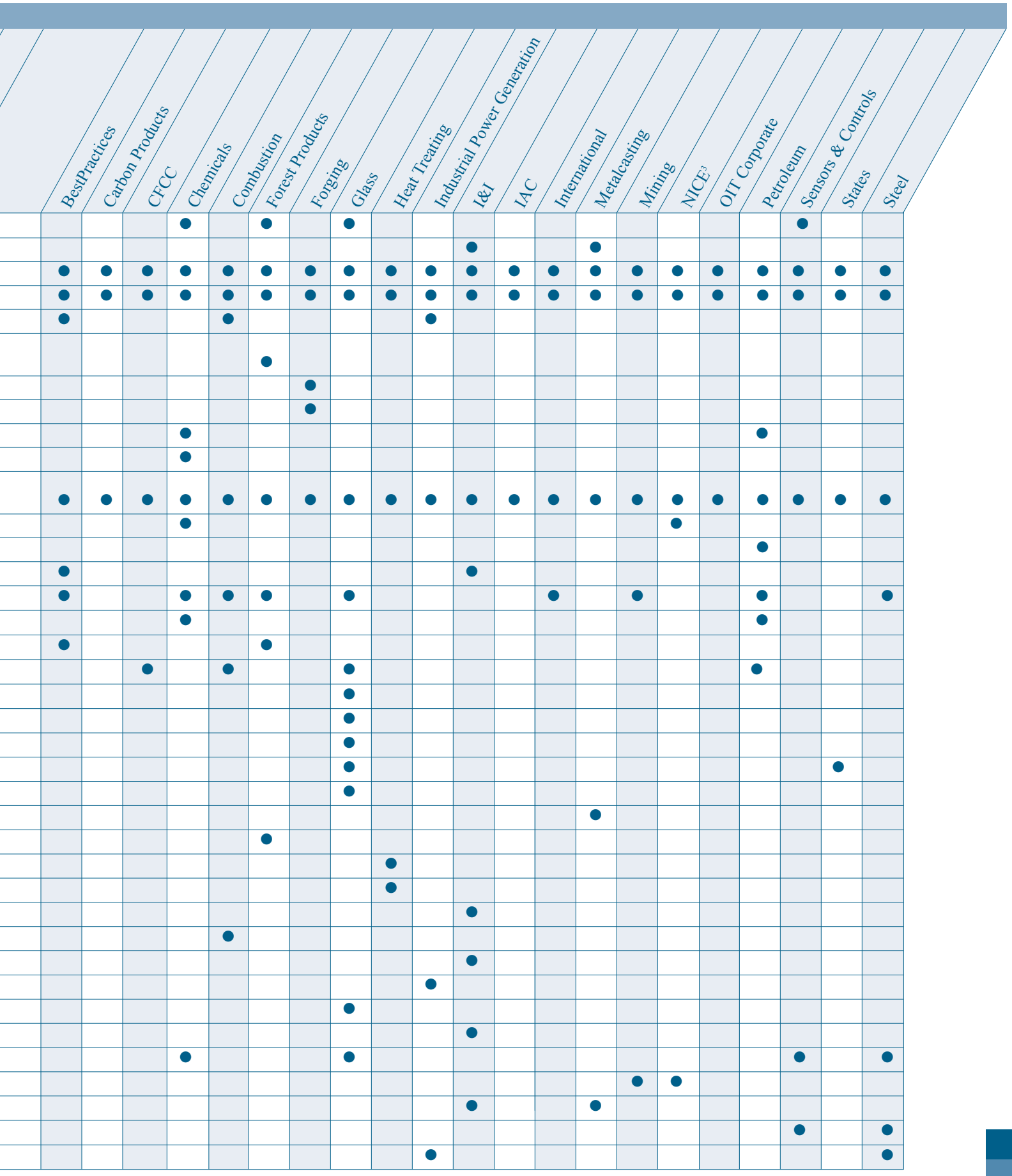

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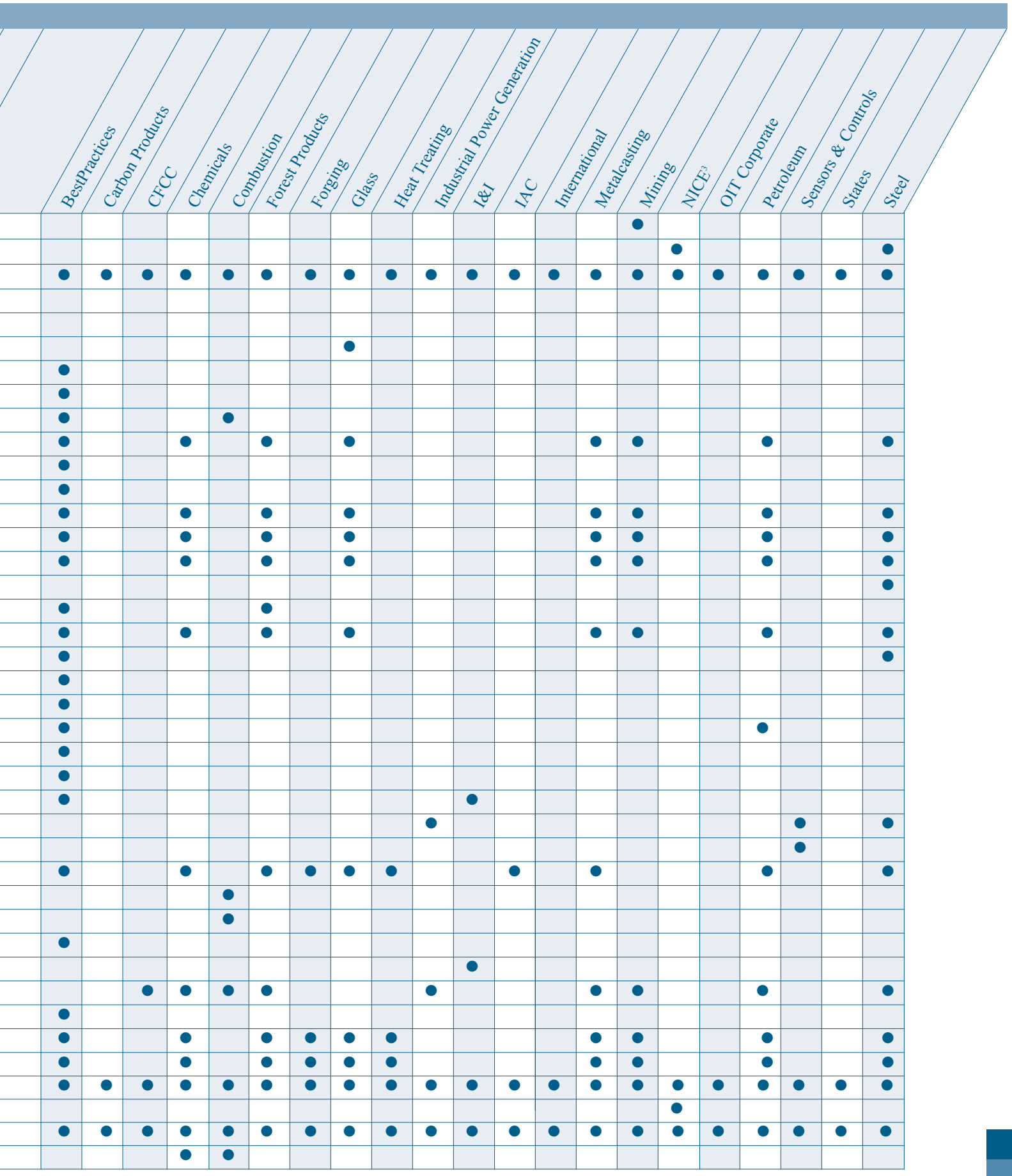

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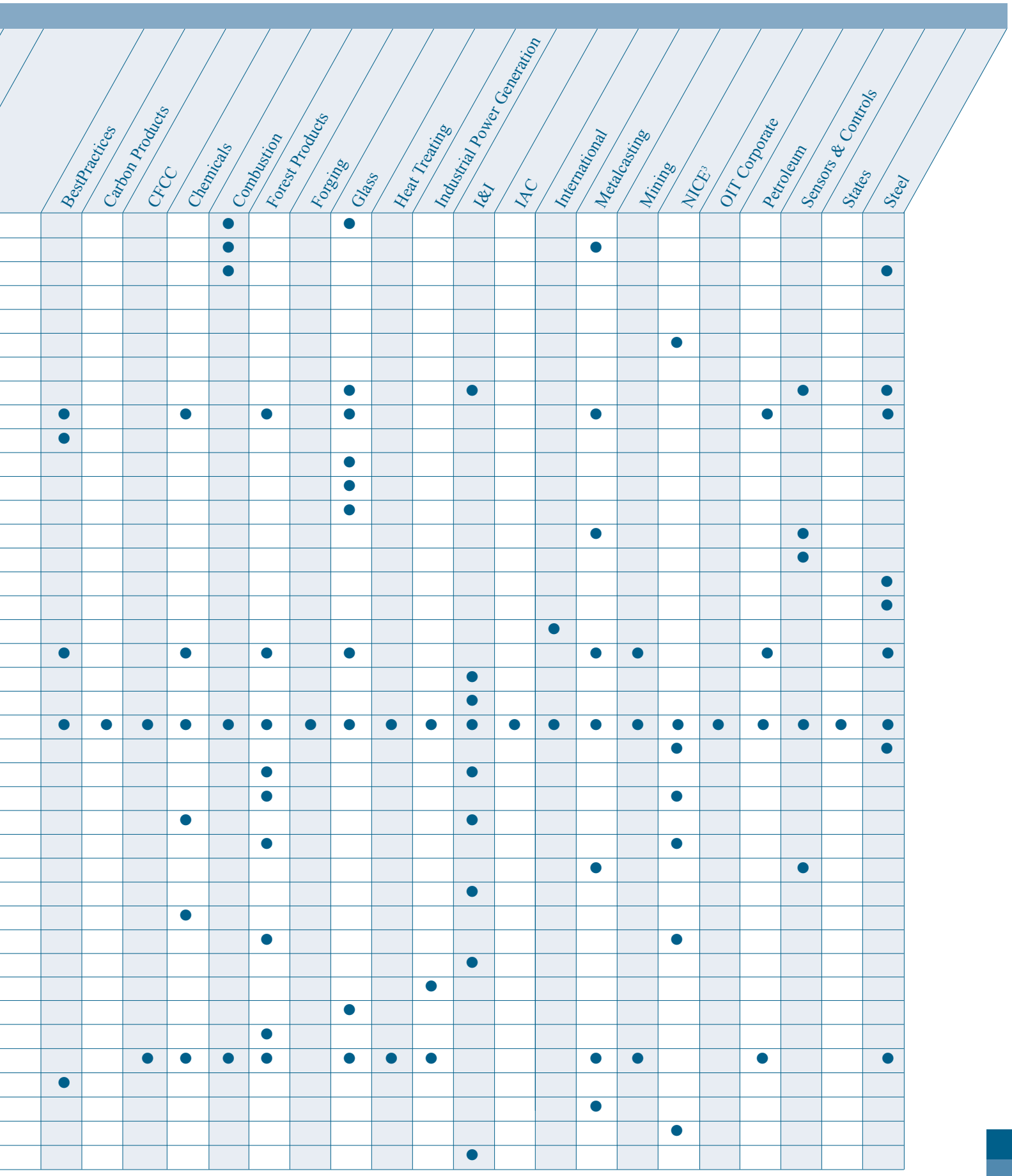

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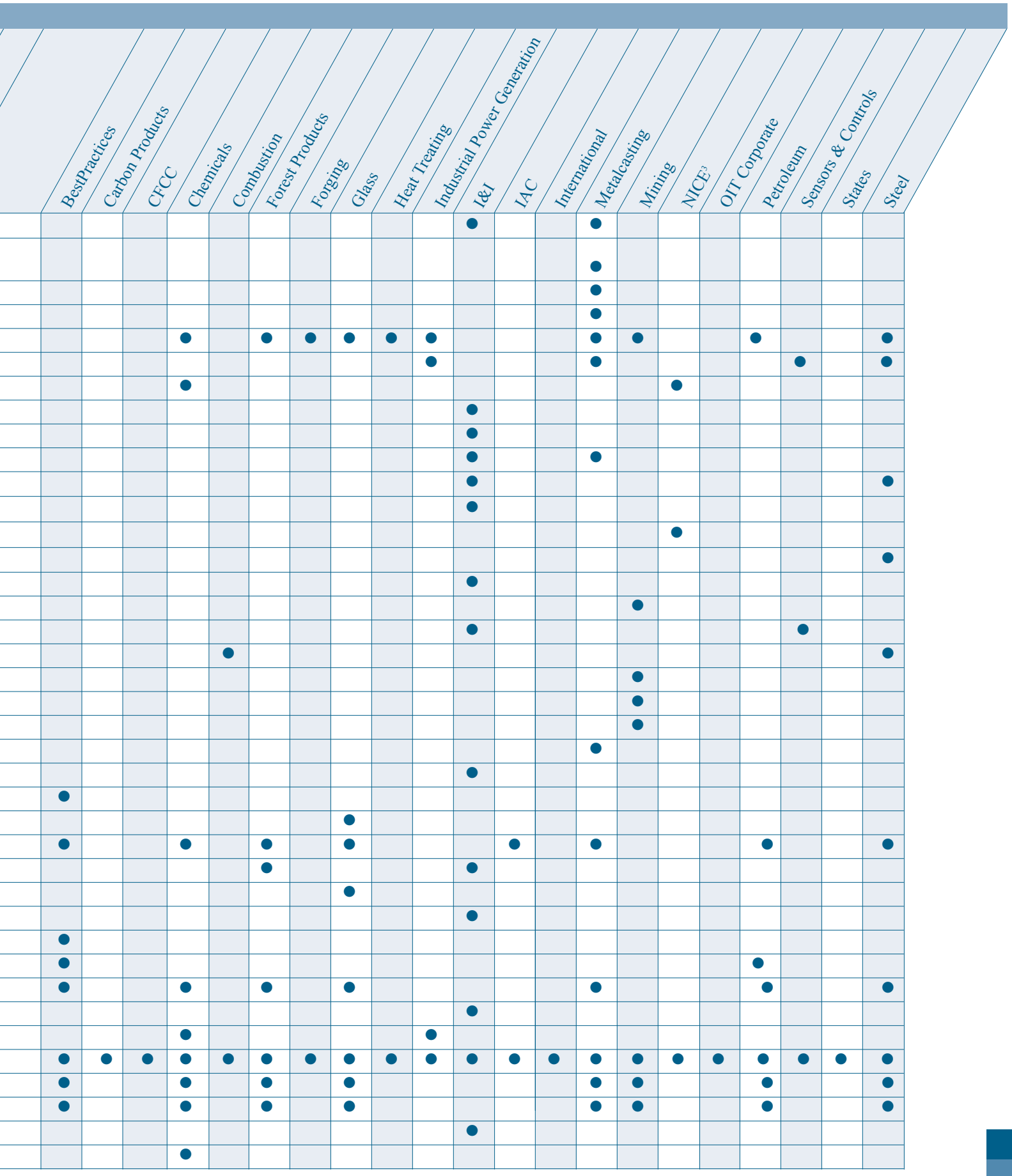

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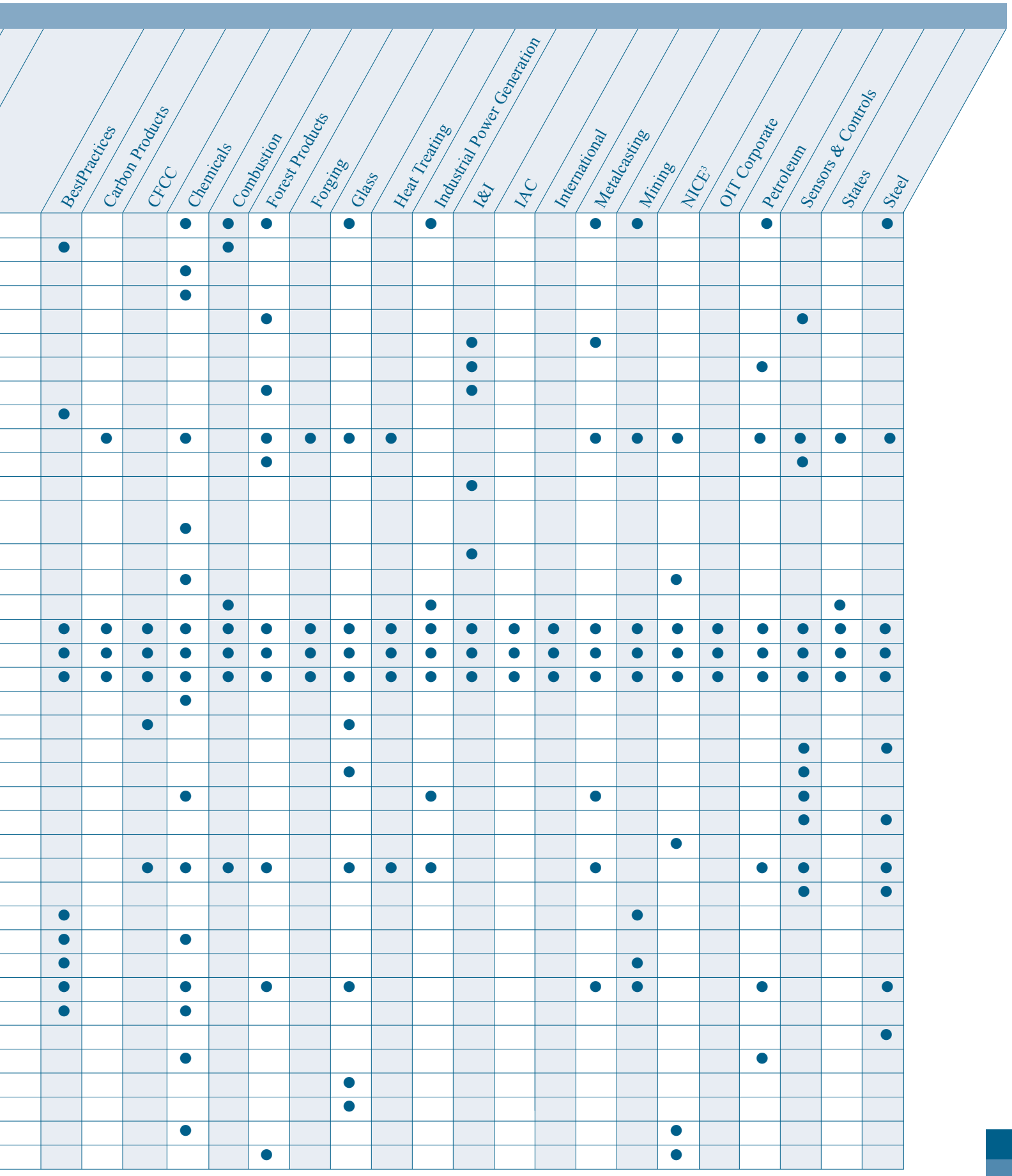

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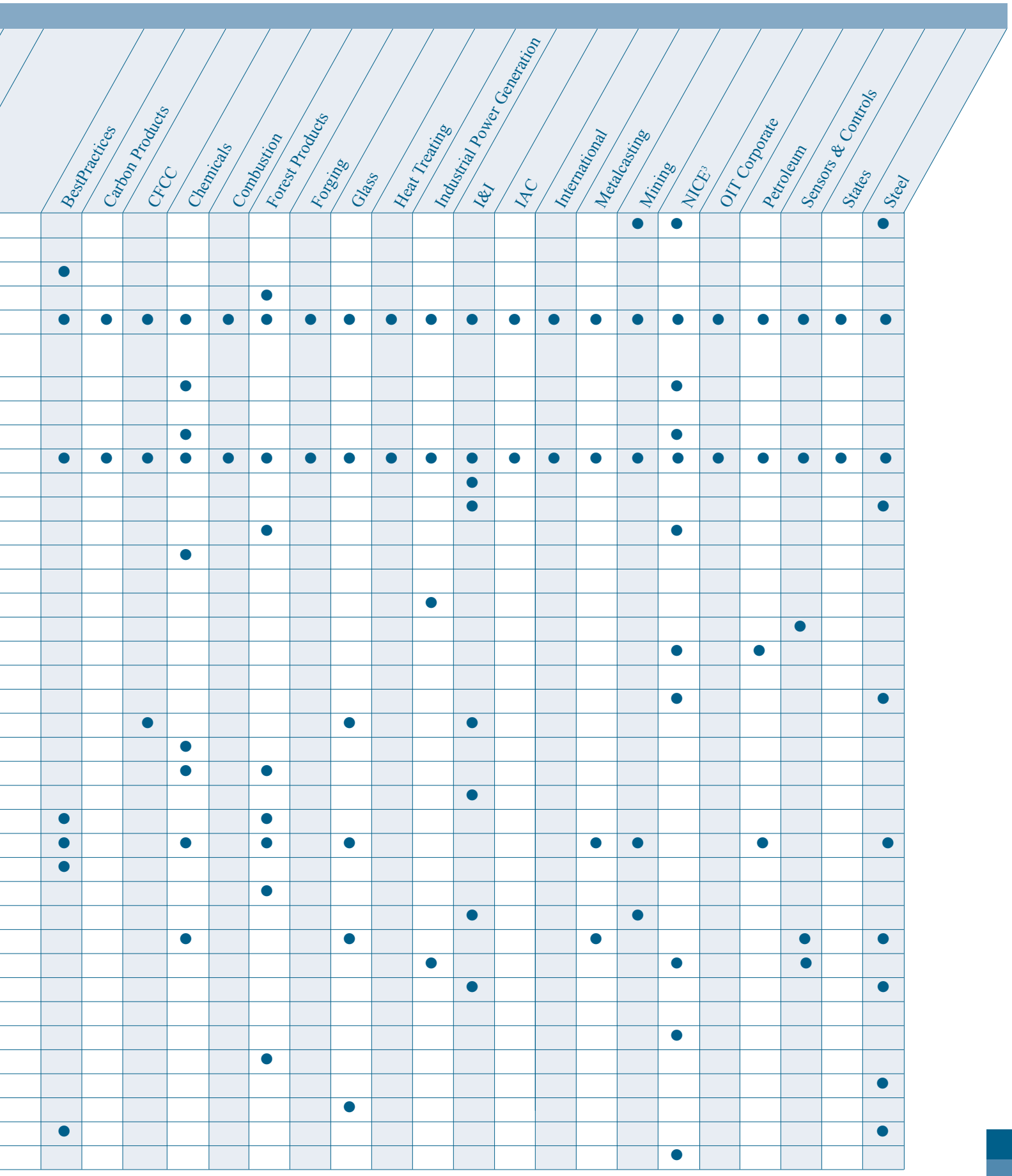

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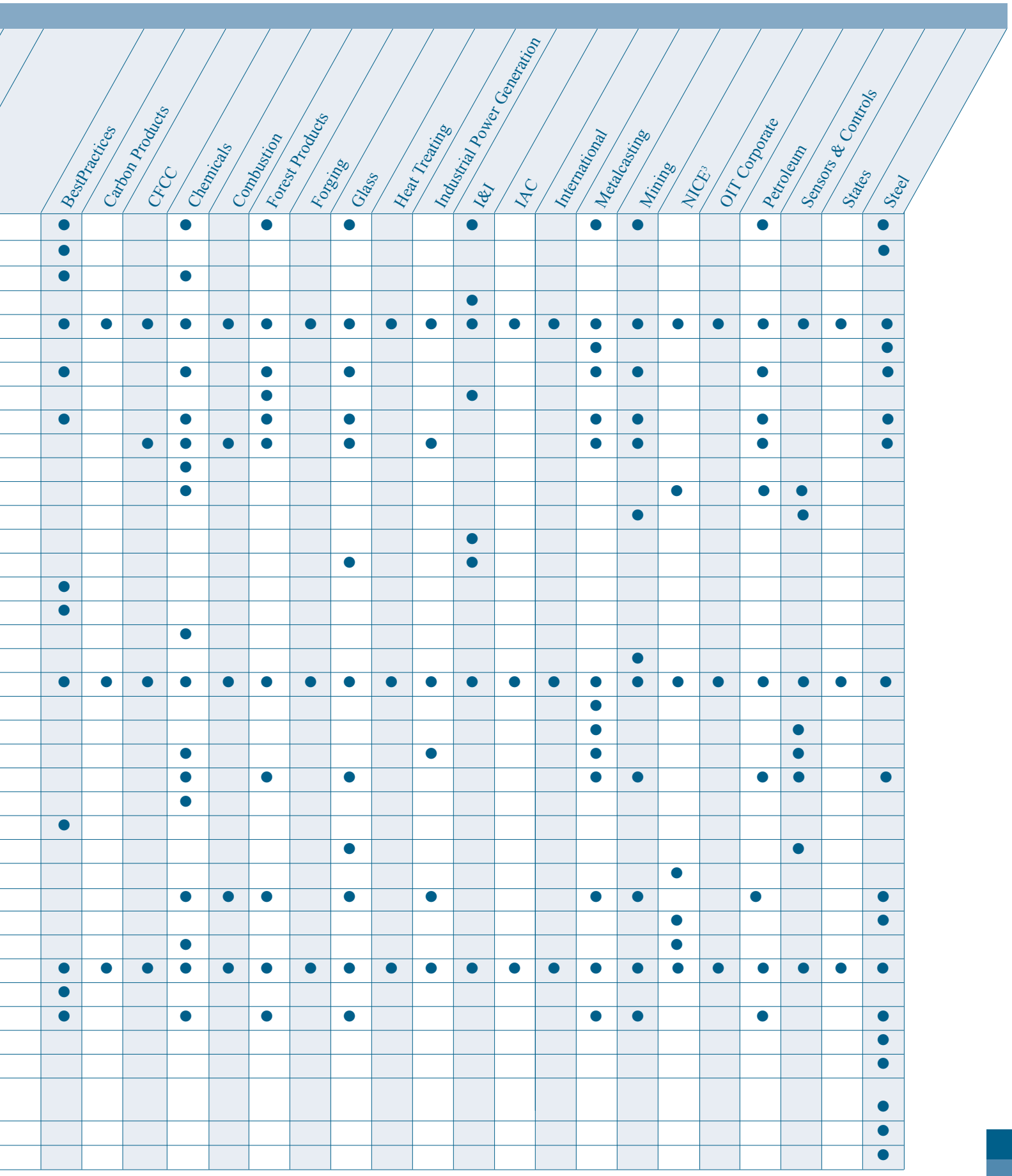

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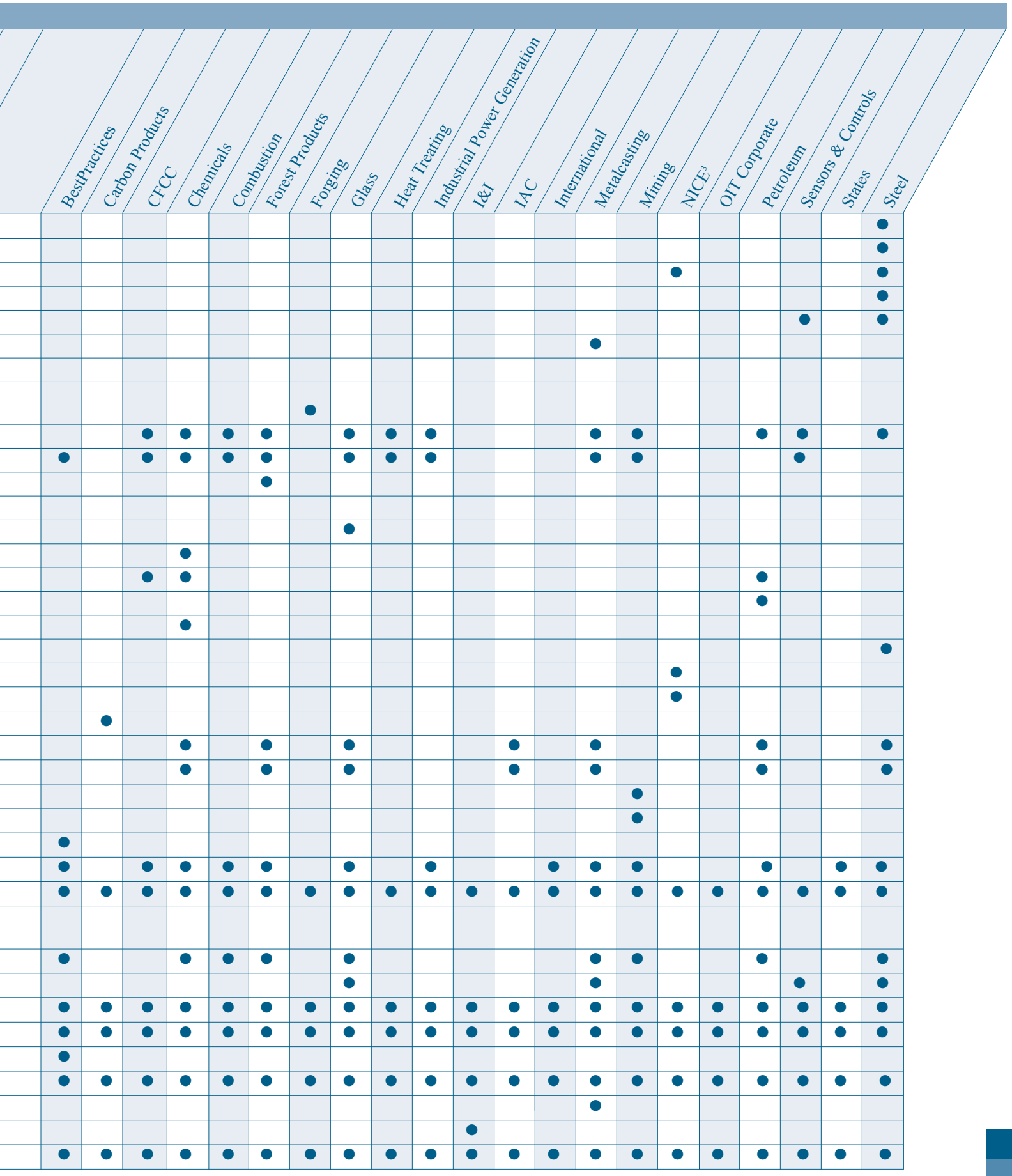

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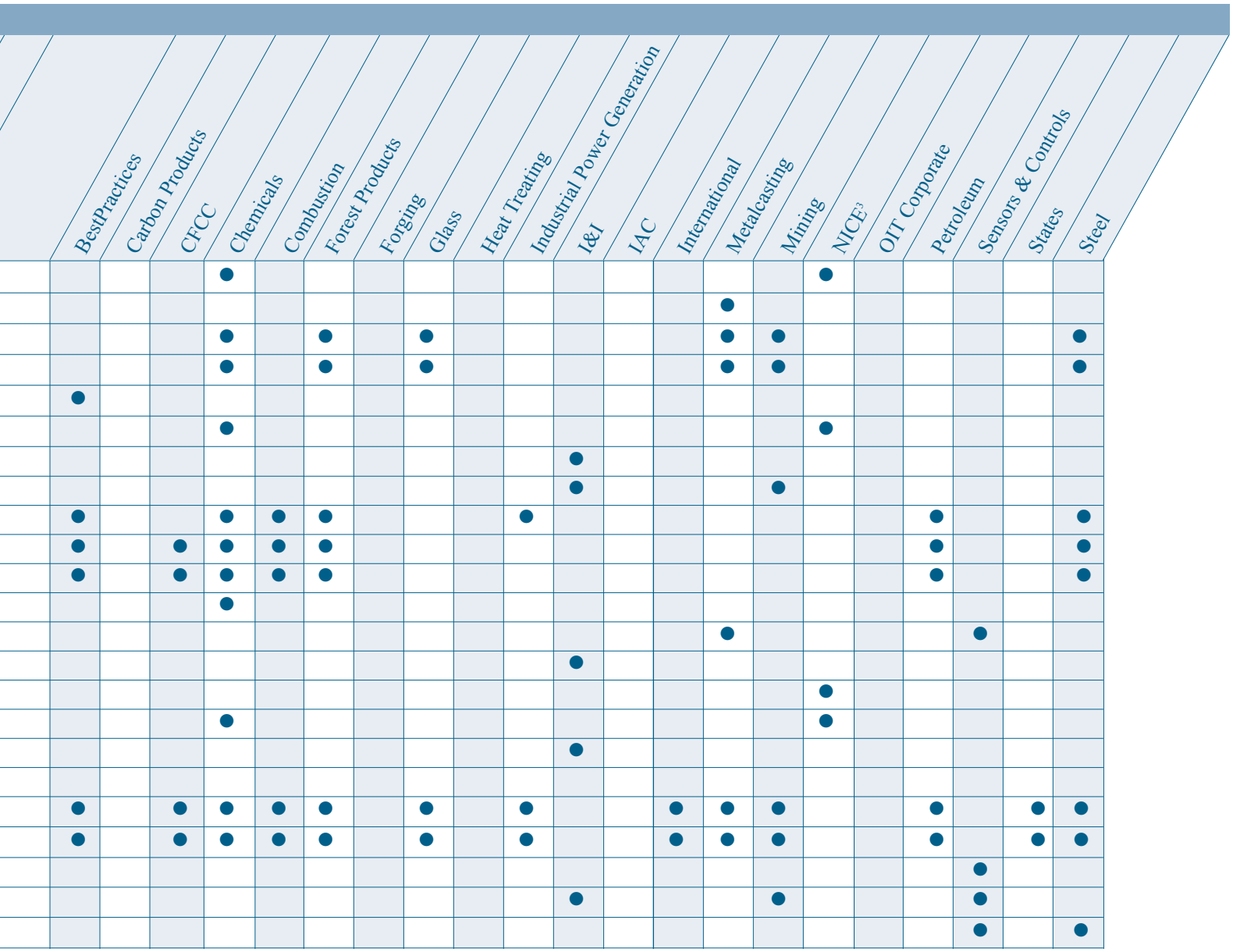

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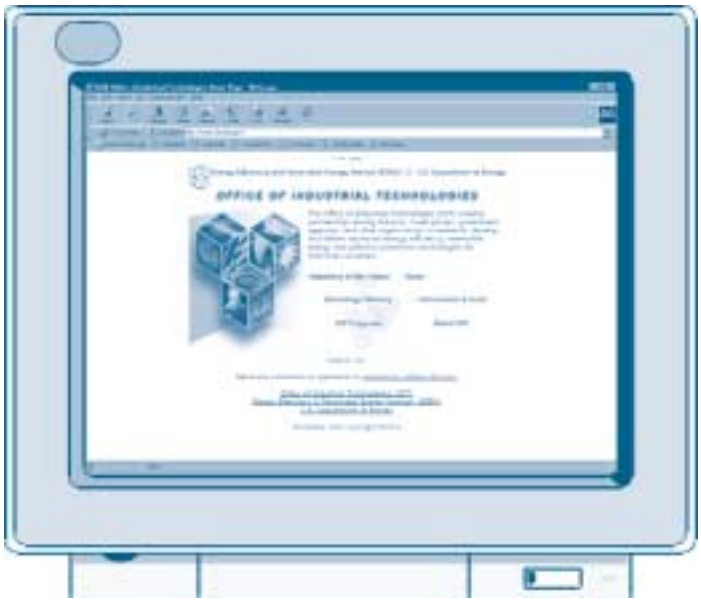

OIT offers a wide range of resources and partnerships to help industry increase energy efficiency. One of the best ways to gain an appreciation for the great variety of resources available from OIT is to visit our Web site at **www.oit.doe.gov.** It provides a comprehensive look at OIT's many programs, products, partnerships, and services. The contents of the site include solicitation schedules, databases, project fact sheets, technology news, links to other relevant sites, and much more. Because of the usefulness of OIT's Web site, it has been chosen as a "select site" by Dow Jones Business Directory. Information on the site is frequently updated, and the site was recently redesigned to enable customers to access this information as efficiently as possible.

Following are a few highlights of what you'll find on OIT's Web site:

Team/Program Sites

Nine energy-intensive industries are now partnering with OIT as Industries of the Future. OIT works with these industries through industry teams, for example, aluminum, chemicals, or steel. Each industry team has its own Web pages. Team sites are customized to meet the needs of their particular industries. Most of the team sites provide an industry profile, team member contact information, background on and links to the industry's vision and roadmap(s), solicitation dates and project selection criteria, OIT-sponsored projects for that industry, and links to other relevant industry sites.

Other OIT programs also have their own sites. Examples of these include:

- Financial Assistance programs—e.g., Inventions and Innovation
- BestPractices programs—e.g., Motors
- Enabling Technology programs—e.g., Combustion
- Industrial Power Generation programs—e.g., Advanced Turbine Systems
- States Industries of the Future
- International Initiatives

Databases

The Industrial Projects Locator and Industrial Assessment Center Database are two databases that can be accessed from the site. The Industrial Projects Locator contains over 10,000 federally-sponsored R&D projects of interest to OIT customers. The Industrial Assessment Center Database provides information on the results of more than 8,000 audits performed through OIT's Industrial Assessment Center program. In addition to these two databases, the site contains additional databases and other valuable tools.

Note that the *OIT Information Resources Catalog* is also available in database format. For more information on accessing the on-line catalog, see the inside back cover of this publication.

On-line Newsletters

The site offers customers access to current and past issues of two OIT newsletters, *The OIT Times* and *Energy Matters*. *The OIT Times* is available in HTML and PDF formats, while *Energy Matters* is available in PDF.

Press Releases

The site displays OIT's most recent headlines. By clicking on these headlines, customers are linked to the full document. Many of these news releases contain information on solicitation announcements and new project selections.

This is just a sample of the information available on OIT's Web site. To see for yourself, access the site at **www.oit.doe.gov.**

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To order products:	OIT Clearinghouse	(800) 862-2086

To speak to OIT team leaders and program managers:

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Aluminum:	Sara Dillich	(202) 586-7925
Chemicals:	Hank Kenchington	(202) 586-1878
Forest Products:	Valri Robinson	(202) 586-0937
Glass:	Theodore Johnson	(202) 586-6937
Metalcasting:	Harvey Wong	(202) 586-9235
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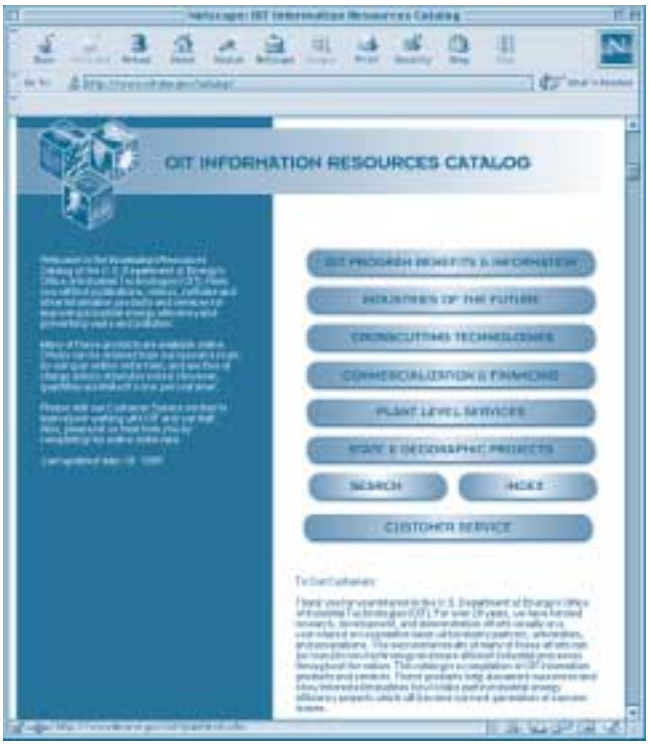

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