

Industries of the Future – West Virginia (IOF-WV): A Partnership Program

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The DOE's Industrial Technologies Program

- Created in 1994 as Industries of the Future
- Managed by the Office of Industrial Technologies (OIT) in the U.S. DOE Office of Energy Efficiency and Renewable Energy (EERE)
- What will our energy-intensive industries look like in five years, in ten years, in twenty years? (Vision)
 - Aluminum, steel, glass, chemicals/polymers, wood/forest products, metal casting, mining
- How do they evolve in an energy and resource efficient, economically viable manner? (Technology Roadmaps)
- OIT website: www.oit.doe.gov

How does a state IOF program work?

- Industry concerns frequently occur on a state or regional basis
- State IOF programs can incorporate a state's particular industry profile, economic development needs, and research strengths
- IOF-WV was the nation's first state IOF program
- For further information visit our website:
<http://iofwv.nrcce.wvu.edu>

IOF-WV Program

- West Virginia was the first state to launch a state IOF program in 1997 in partnership with the WV Development Office
- The IOF-WV goals:
 - Provide forums for interdisciplinary collaboration
 - Engage new technologies for the benefit of traditional industries
 - Develop teams and obtain co-funding for high priority R&D projects

WV Industry Comparisons (2000 data)*

Industry Sectors	GSP (\$M)	Employment	GSP/Emp
Primary Metals	918	10,707	\$85,738
Fabricated Metals	369	6,192	\$59,593
Stone, Clay, & Glass	337	6,604	\$51,030
Chemicals & Polymers	2,899	14,254	\$203,382
Rubber & Plastics	173	3,727	\$46,418
Lumber & Wood Products	591	13,018	\$45,399
Paper & Allied Products	73	1,233	\$59,205
Total for IOF-WV Sectors	5,360	55,735	\$96,169
Total for WV Manufacturing	6,760	84,557	\$79,946
IOF-WV % of Manufacturing	79%	66%	
Coal Mining	2,126	16,140	\$131,722
State Totals	42,271	889,370	\$47,529

*Source: U.S. Department of Commerce, Bureau of Labor Statistics, www.bea.doc.gov

R&D Value of IOF-WV Projects Since 1997

Federal and State Funding	\$16.6 M
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Non-federal cost share	\$10.2 M
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R&D Value of IOF-WV

Program to West Virginia:	\$26.8 M
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Examples of IOF-WV Projects

- Targeted energy savings at Century Aluminum of \$15 million per year with new diagnostic and control system
- Energy savings of \$20 million at Weirton Steel since 1998, equivalent to \$8 per ton cost reductions
- Permitting productive reuses of spent foundry sand has saved HK Casting \$657,000 to date

- \$1.48 million in energy saving opportunities at Bayer Chemical with a payback of 12 months
- Center for Extrusion Compounding of Additives for Superior Plastics Performance. One of six Research Challenge Grants funded by the WV Higher Education Policy Commission
- Energy assessments at eight wood products companies show that West Virginia's wood/forest products industry could save more than 1.2 trillion BTUs per year equivalent to \$8.6 million and approximately 525 million pounds of CO₂ annually

Six Representative Project Areas

- Design and Development of Materials for Molten Metal Handling and Processing
- Conversion of Biomass to Fuels and Chemicals- Alternate Feedstocks for Commodity and Specialty Chemicals & Polymers
- Improved Critical Melter Refractory Products

- Efficient use of Excess Heat and Waste Gas from Industrial Processes
- Recovery and Utilization of Coal Fines and Waste Coal
- Intelligent manufacturing sensors & controls, including a structured methodology for energy analysis, diagnostics, and continuous assessment

Chemicals and the IOF Program

- Chemical Industry Vision 2002 Technology Partnership
 - Industry-led collaborative process
 - Accelerate innovation and technology development by leveraging financial resources and technical expertise
 - \$92 million in 2002 – 82 companies, 21 universities, 14 government offices and labs
- Priority research areas
 - Energy efficiency and renewable energy
 - Computations
 - Advanced separations
 - Materials
 - Utility systems

R&D Challenges for the Future

- Project development sessions in December 2002 identified 147 key project topics
 - 64 for metals (aluminum, steel, metal casting)
 - 19 for chemicals/polymers
 - 9 for glass/refractory products
 - 17 for wood/forest products
 - 22 for mining
 - 7 for CHP/distributed and renewable energy
 - 9 crosscut technologies

Other IOF-WV Activities

- Annual IOF-WV Symposia
- Annual IOF-WV Day at the State Capitol
- Talks, exhibits, and consulting on the IOF-WV “journey”
- Newspaper and magazine articles
- Radio and television interviews
- IOF-WV Video

IOF is Part of the Answer

- Puts energy and resource efficiency on the front burner
- Encourages industry commitments to sustainable development
- Best Practices programs yield short-term results
- Long-range R&D develops new technologies and incents corporate investment