



Industries of the Future – West Virginia

Update on IOF-WV

WV Manufacturers Association Annual Meeting

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What is IOF-WV?

- IOF-WV is a cooperative effort between the WV Development Office and WVU.
- The goal is to develop alliances and partnership projects to improve energy and resource efficiency and productivity of energy-intensive manufacturing and production companies.
- IOF-WV was originally modeled after the U.S. DOE's national IOF program – now referred to as the Industrial Technology Program (ITP).

Examples of On-going Projects

- *Multifunctional Metallic and Refractory Materials for Molten Metal Handling* – WVU, UMR, ORNL, Wheeling-Nisshin, Special Metals, Sturm Rapid Response, ...
- *Preventing Solidification Defects in Large Superalloy Castings Used in Advanced Electric Power Systems* – WVU, Penn State, Special Metals
- *Plant-wide Assessment at PPG Industries* – WVU, PPG
- *Technologies and Processes for Durable, High-Strength Wood-Polymer Composites* – WVU, Crompton

Examples of On-going Projects (con't)

- *University-Industry Center for Extrusion Compounding of Additives for Superior Plastics Performance* – WVU, PAZ, ...
- *Demonstration of Crosswell Imaging Technology and Advanced Drillstring Radar Navigation for Horizontal Directional Drilling* – WVU, CONSOL, Sandia, ...
- *Low-Cost, Reliable Energy & Chemical Feedstocks for Energy-Intensive Industry Clusters: Marshall County Feasibility Study* – WVU, Marshall Co. Chamber of Commerce, PPG, Bayer, Ormet, Venco ...

Proposals and Co-Funding

- Over the past two years, approximately 30 proposals have been submitted – ten projects have been funded
- Since 1997, more than \$19 million in federal and state funding and about \$10 million in industry cost share for a total R&D value to the State of more than \$29 million
- The ITP budget in FY 2003 was \$90 million – the administration's request for FY 2006 was \$57 million

Sample Results for Completed Projects

- Targeted energy savings at Century Aluminum of \$15 million per year with new diagnostic and control system
- Pechiney plant-wide assessment - \$2.5 million per year in energy savings with average payback period of less than eight months
- Permitting productive reuses of spent foundry sand has saved HK Casting over \$1 million over the past four years

Sample Results for Completed Projects (cont'd)

- \$1.48 million in energy saving opportunities at Bayer
- Development of new processes to disperse polymer adhesives in pressure sensitive adhesives – potential annual savings to the industry of \$6 million and 1 trillion BTU per year by 2020.
- Energy assessments at eight WV wood/forest products plants revealed opportunities for saving more than \$8.6 million annually for the industry

Proposals and New Initiatives

- *Response of Materials Manufacturing Industries to High and Variable Energy Prices* – Alfred P. Sloan Foundation
- *West Virginia Center for Materials Industries Innovation Partnerships* – National Science Foundation
- *Strategic Growth of the Mid-Atlantic CHP Application Center* – U.S. DOE State Energy Program

Proposals and New Initiatives (con't)

- *Natural Gas Utilization Center* – WVDO Energy Efficiency Program
- *2005 IOF-WV Project* – U.S. DOE State Energy Program
- *Manufacturers Resource Network* – WVMMA, IOF-WV, WVU College of Business & Economics
- *Waste Heat Recovery* at M&G Polymers
- *Utilization of by-product H_2* at PPG, Bayer and Mittal-Weirton Steel

Innovation

- ***Wood/polymer composites***
 - Development of composite materials utilizing residues from wood products industry and virgin or recycled plastics. North American WPC annual market growth is projected at 15% through 2010.
- ***Continuous optimization of manufacturing/utility systems***
 - An expert system that couples advanced sensor and control technologies with data mining techniques and industrial best practices can result in significant energy savings and productivity improvements for manufacturing operations. This process incorporates data and experience from hundreds of industrial energy assessments and technologies developed on other IOF-WV projects

IOF-WV Team

- *IOF-WV Researchers*

- Larry Banta, Xingbo Liu, Bruce Kang, Rakesh Gupta, Richard Turton, Joe McNeel, Ben Dawson-Andoh, Bob Creese, B. Gopalakrishnan, Syd Peng, Richard Bajura, Ken Means

- *Other technical assistance programs in WV*

- WVU Industrial Assessment Center, Projects with Industry, Wood Industry Assistance Program, Glass Industry Assistance Program, WVU Polymer Research Center, WVU Manufacturing Extension Partnership, WVU Extrusion Compounding Center

IOF-WV Team (con't)

- Co-Directors: Carl Irwin, Jeff Herholdt
- Engineering Scientist 1: Bill Johnson
- Engineering Scientist 2: Pending
- Program Coordination: Kathleen Cullen, Nadine Kelly

Visit <http://iofwv.nrcce.wvu.edu>

**See you at the 2005 IOF-WV Symposium,
November 8-9, Charleston, WV**