

# Plant-Wide Assessment Summary—Metal Casting

Industrial Technologies Program — Boosting the productivity and competitiveness of U.S. industry through improvements in energy and environmental performance

## \$3.6 Million in Savings Identified in AMCAST Assessment

AMCAST and its partners applied a systematic plant-wide assessment (PWA) approach to identify energy- and cost-saving opportunities at the company's facility in Wapakoneta, Ohio. The team initially identified \$3.6 million in savings opportunities resulting from increased energy and productivity efficiencies with paybacks ranging from 0 to 29 months. Additional savings opportunities surfaced as plant personnel were implementing the initial recommendations, and the total saving opportunities have grown to nearly \$6 million.

Encouraged by these savings, AMCAST has replicated the PWA methodology at five plants throughout the corporation and introduced projects from the assessment into its other plants. AMCAST's strategy is succeeding; personnel predict that company-wide savings will reach nearly \$36 million over the next several years.



The Wapakoneta facility spends millions of dollars and uses energy-intensive processes in its production of low-pressure aluminum castings for automotive suspensions. The team focused the assessment on all energy-intensive plant systems, including furnaces, boilers, electrical equipment, compressed air, fans, and pumps. The assessment resulted in 12 separate projects that would improve efficiency of production processes, decrease energy consumption, and reduce scrap rate.

DOE funded the assessment at \$75,000 and required at least a matching amount from AMCAST. The table below highlights the overall savings opportunities identified.

### AMCAST Wapakoneta Assessment

Cost savings	<b>\$3.6 million/year</b>
Plant savings realized	<b>\$6 million/year</b>
Electrical energy savings	<b>672,000 kWh/year</b>
Natural gas savings	<b>91,000 MMBtu/year</b>

#### Project Partners

AMCAST Industrial Corporation  
Wapakoneta, OH

Capital Surini Group International, Inc.

Edison Materials Technology Center

Miami Valley Diagnostics

Ohio Department of Development  
Office of Energy Efficiency

University of Dayton

#### Conduct your own Plant-Wide Assessment

DOE Information Clearinghouse  
Phone: (800) 862-2086  
Fax: (360) 586-8303  
clearinghouse@ee.doe.gov

Industrial Technologies Program  
Energy Efficiency and Renewable Energy  
U.S. Department of Energy  
Washington, DC 20585-0121

**Respond to annual PWA solicitations:**  
[www.oit.doe.gov](http://www.oit.doe.gov)

#### For technical details, visit:

[www.oit.doe.gov/bestpractices/factsheets/amcast.pdf](http://www.oit.doe.gov/bestpractices/factsheets/amcast.pdf)  
[www.oit.doe.gov/bestpractices/case\\_studies\\_pwa.shtml](http://www.oit.doe.gov/bestpractices/case_studies_pwa.shtml)

#### Or, contact:

Bob Leach, Oak Ridge National Laboratory  
Phone: (865) 946-1352  
E-mail: [leachre@ornl.gov](mailto:leachre@ornl.gov)



U.S. Department of Energy  
Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

DOE/GO-102004-1983 • revised August 2004

## Plant-Wide Energy Assessments

Plant-wide energy assessments (PWAs) investigate overall energy use in industrial facilities—energy use can account for 10% or more of an industry's total operating costs. PWAs also highlight opportunities for best energy management practices for industry, including the adoption of new, efficient technologies. The Office of Energy Efficiency and Renewable Energy's Industrial Technologies Program works with companies to identify energy-saving projects that can be replicated in other facilities and industries for multiplied savings. On average, the findings from a single assessment can be replicated multiple times—often ten times or more—at other facilities with equivalent systems and energy use. For a relatively low initial investment, companies that participate in assessments can realize a minimum of \$1 million in savings annually from diminished energy costs, reduced waste, and increased productivity—usually with a payback of less than 18 months. For more information, visit [www.oit.doe.gov/bestpractices/assessments.shtml](http://www.oit.doe.gov/bestpractices/assessments.shtml).

The Industrial Technologies Program publishes a case study for each completed PWA. The case studies describe how the companies have conducted plant-wide assessments to achieve energy and cost savings, improve productivity, and reduce environmental impacts. You can help your company replicate these savings by learning about and implementing the cost- and energy-saving projects identified in these case studies. Frequently, projects can be replicated across many industries. Find out which projects could benefit your company! To learn more, visit [www.oit.doe.gov/bestpractices/case\\_studies\\_pwa.shtml](http://www.oit.doe.gov/bestpractices/case_studies_pwa.shtml).

### Annual Savings Opportunities Identified Through Plant-Wide Energy Assessments

3M	\$1,094,000	Corning	25,920,000
Akzo Nobel	1,170,000	Equilon Enterprises	52,500,000
Alcoa (alumina production)	1,072,000	Ford	3,280,000
Alcoa (aluminum extrusion)	1,974,000	Georgia-Pacific Crossett	9,600,000
AMCAST	3,600,000	Inland Paper	9,500,000
Anchor Glass Container	1,638,000	Metlab	518,000
Appleton Paper	3,459,000	North Star Steel	2,640,000
Bayer	1,478,000	Utica Corporation	1,880,000
Boise Cascade	707,000	Weyerhaeuser Longview	3,100,000
Caraustar	1,280,000	WR Grace	840,000

## Additional Assessment Opportunities

Small- to medium-sized manufacturers, with annual energy bills between \$100,000 and \$2 million, may be eligible to receive energy assessments by university-based Industrial Assessment Centers (IAC.) These IAC's are located at 26 universities located throughout the country. Teams of engineering faculty and students from the Centers conduct energy, waste-reduction, and productivity-improvement audits, and then provide recommendations to manufacturers. Manufacturers must meet certain minimum requirements, which include appropriate manufacturing NAICS codes that fall within the energy-use range. Recommendations from industrial assessments have averaged \$55,000 in potential annual savings for each manufacturer. For more information, visit [www.oit.doe.gov/iac/](http://www.oit.doe.gov/iac/).

### A Strong Energy Portfolio for a Strong America

*Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.*