

Plant-Wide Assessment Summary — Forest Products

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

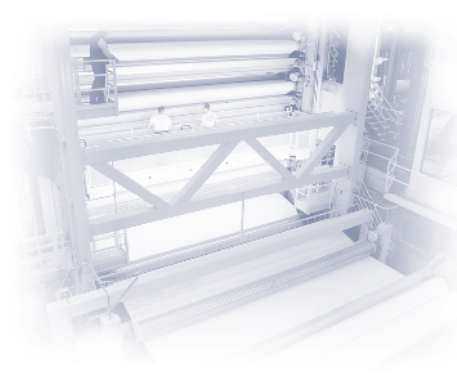
\$3.5 Million in Savings Identified in Appleton Assessment

Appleton Papers, Inc., and its partners applied a systematic plant-wide assessment (PWA) methodology to identify energy- and cost-saving opportunities at the corporation's paper mill in West Carrollton, Ohio. The assessment team identified \$3.5 million in potential annual savings. An additional recommendation, installation of a fluidized-bed boiler, would save another \$2.6 million.

The West Carrollton facility produces 182,000 tons of carbonless paper annually and uses 5 million pounds per day of process steam. The assessment team's comprehensive strategy focused on energy use, waste prevention, and process manufacturing improvements. Twenty-one separate recommendations emerged from the assessment. Of those, five projects would save \$200,000 or more each, including: recover heat from paper machine vents, recover usable fiber from low-consistency screen rejects, install oxygen and carbon

monoxide monitoring equipment to control boiler combustion, reuse uhle-box seal water, and reduce silo temperatures. A separate project to add a fluidized bed boiler could save an additional \$2.6 million annually, but the associated capital cost is substantial.

DOE funded the assessment at \$100,000 and required at least a matching amount from Appleton. The table below highlights the overall savings opportunities identified.



Appleton West Carrollton Assessment

| | |
|---|-------------------------------|
| Cost savings | \$3.5 million/year |
| Electrical energy savings | 4.8 million kWh/year |
| Natural gas savings | 150,000 MMBtu/year |
| Payback range for primary recommendations | Immediate to 3.4 years |

Project Partners

Appleton Papers, Inc.
West Carrollton, OH

Edison Materials Technology Center

Ohio's Office of Energy Efficiency

International Center for Water Resources Management

CSGI

Energy Information Systems

Mid-West Building Diagnostics

Conduct your own Plant-Wide Assessment

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Energy Efficiency and Renewable Energy
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Respond to annual PWA solicitations:
www.oit.doe.gov

For technical details, visit:

www.oit.doe.gov/bestpractices/factsheets/newapple.pdf
www.oit.doe.gov/bestpractices/case_studies_pwa.shtml

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U.S. Department of Energy
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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.

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.

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/.

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.