

STEEL

Save Energy Now reveals new opportunities for steel manufacturers to reduce costs and energy use.

Focus on Process Heating and Steam

Nearly 74% of all manufacturing natural gas use is consumed by process heating and steam systems. The U.S. Department of Energy (DOE) Industrial Technologies Program (ITP) helps steel companies find ways to improve the efficiency of those energy-intensive systems by performing Save Energy Now energy assessments.

For the 23 U.S. steel manufacturing facilities that have participated in Save Energy Now to date, ITP has identified average process heating energy savings of 12% and steam energy savings of 3% per plant. The companies have also reported identifying total potential savings of:

- \$105.3 million in energy cost savings, which represents an average reduction of 10.2% in overall energy costs
- 10.4 trillion Btu of natural gas savings—the total amount of annual energy used by nearly 144,000 U.S. single family homes
- More than 736,000 metric tons of carbon dioxide emissions reductions—the equivalent of taking more than 134,000 cars off the road.

Through Save Energy Now, a national effort to drive a 25% reduction in industrial energy intensity in 10 years, energy assessments are conducted at large U.S. manufacturing plants. DOE Energy Experts utilize DOE's software tools to analyze how much energy is consumed by process heating and steam systems in steel companies.

During the three-day assessment, employees can learn how to use the software tools for ongoing system evaluation and use in other facilities. After completing the analysis, the Energy Expert shares the findings with employees and management

and provides recommendations for improvement, including the associated potential savings for each.

Determine Cost-Effective Recommendations

To help companies determine which Save Energy Now assessment recommendations will be economically feasible, DOE Energy Experts estimate high and low values of the capital costs for implementing each identified savings opportunity. The higher values are then used to estimate payback periods, which in most cases, is two years or less.

Annual Savings

Total potential energy cost savings identified:

\$105 million

Total potential avoided carbon emissions:

736,000 metric tons

Identified recommendations with a payback of 9 months or less:

44%

Total energy cost savings implemented:

\$8 million

Evaluate Key Barriers to Implementation

The majority of recommendations identified during Save Energy Now assessments have a payback period of two years or less. However, some recommendations may take longer to implement as they are more likely to require additional technical review or planning. In addition to return on investment, other major barriers could influence a plant's decision to implement identified energy-saving opportunities, including:

- Process limitations or concerns about operational changes
- In-house engineering availability may be limited



Assessment Recommendations: Top Identified Savings Opportunities for the Steel Industry

	System Area	Average Energy Cost Savings*	Average Energy Cost Savings as % of Plant Energy Costs
Near-Term (0 to 9 Months)			
Recover and use heat from industrial furnaces	Process Heating	\$4.7 million	2.2%
Eliminate excess unburned hydrocarbons	Process Heating	\$1.3 million	1.6%
Reduce flue gas oxygen content	Process Heating	\$374,000	1.4%
Clean heat transfer surfaces	Process Heating	\$880,000	1.1%
Improve boiler efficiency	Steam	\$755,000	0.8%
Medium-Term (9 Months to 2 Years)			
Improve load charge preheating	Process Heating	\$1.2 million	7.5%
Heat cascading	Process Heating	\$1.6 million	2.7%
Use process or exhaust air for combustion	Process Heating	\$591,000	2.2%
Reduce steam demand	Steam	\$934,000	1.0%
Reduce/eliminate furnace openings and air leakage	Process Heating	\$160,000	1.2%
Long-Term (2 to 4 Years)			
Use oxygen for combustion	Process Heating	\$1.2 million	4.2%
Reduce/eliminate internal cooling	Process Heating	\$137,000	1.1%
Proper furnace insulation/maintenance	Process Heating	\$334,000	0.5%
Improve furnace heat transfer	Process Heating	\$372,000	0.4%

- Operational downtime and reduced production
- Company policy changes on energy reduction
- Company merger or plant closure.

Identify Opportunities for Savings

The importance of energy performance is ever increasing for the steel industry, one of the largest energy consumers in the manufacturing sector. Save Energy Now energy assessments performed at steel manufacturing plants reveal steps that companies can take to reduce energy costs—oftentimes with a payback of less than two years. Time spent participating in the assessment can result in significant, long-term improvements

that decrease the amount of energy used per product, while improving a company's bottom line. In addition to improving their energy efficiency, industrial facilities can also reduce maintenance, decrease downtime, increase production throughput, and improve product quality.

Utilize ITP Resources

Visit ITP's Save Energy Now Web site to apply for an assessment and access technical assistance and resources, including tip sheets that can help your company implement energy savings recommendations.

www.eere.energy.gov/industry/saveenergynow

*Numbers are rounded up to the next thousand or million.

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.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

EERE Information Center
1-877-EERE-INF (1-877-337-3463)
www.eere.energy.gov/industry/saveenergynow

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

Save
ENERGY
Now[®]

August 2008
DOE/GO-102008-2626

Visit Our Web Site to Learn More and Sign Up to Receive Energy Savings Information
www.eere.energy.gov/industry/saveenergynow