



Becoming more energy productive within the industrial sector

can spur job creation and cost savings. Midwestern companies are not just leaders in utilizing cutting-edge solutions and technology, but they are also the manufacturers of the new, efficient equipment that firms around the world are demanding in their efforts to be more energy productive.

This series will highlight those initiatives and companies that are leading the nation in energy productivity.

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7

REVITALIZING THE MIDWEST THROUGH
INDUSTRIAL ENERGY PRODUCTIVITY

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STEEL SERVES AS THE BACKBONE OF MODERN LIFE. It is in office buildings, factories, roads, bridges, cars, ships, trains, daily appliances, wind turbines and life-saving medical devices. However, it is incredibly energy-intensive to produce. For instance, to just melt the iron ore pellets, temperatures of over 3,800 degrees Fahrenheit must be attained inside the blast furnace.

One company is finding ways to save energy in its steel production. ArcelorMittal, a Luxembourg-based firm operating in 20 countries worldwide, is the world's largest producer of steel. In the United States, it employs 18,000 employees at several facilities, predominantly in the Midwest. "Our domestic steel industry has reduced its energy intensity by 30 percent in the past two decades. Even though we have come a long way in reducing our energy intensity, ArcelorMittal continues to pursue energy efficiency improvements in its operations," reports Larry Fabina, energy coordinator for ArcelorMittal USA. "In fact, since 2006, the company's U.S. facilities have saved more than \$151 million through focused improvements in energy management."

IMPROVING ENERGY MANAGEMENT

ArcelorMittal has three integrated steel production facilities in the United States. These facilities, one of which is located in Cleveland, Ohio and two in Indiana, house the company's largest and most energy-intensive operations. In 2011, these facilities began developing ten-year "roadmaps" to focus on energy reductions, under the direction of the "plant energy champions" and the plant energy teams. "Over the past five years, we have witnessed a transformation at ArcelorMittal—both operationally and culturally—to be diligently focused on improving energy management," says Fabina. "From shop floor to desk space, many employees have become conscious about how energy use affects their day-to-day life at work and home."

These roadmaps are building on a solid foundation of energy savings:

- **Cleveland:** ArcelorMittal's Cleveland, Ohio plant operates two blast furnaces and employs 1,700 workers that produce steel for a wide variety of applications. In 2010, the plant installed a steam-driven turbine generator to use additional blast furnace gas (BFG) to generate more electricity. This generator has reduced carbon dioxide emissions by 160,000 tons per year and has returned as much as 20 MW to power the steelmaking process—the equivalent of the energy needed to power 20,000 homes. The Cleveland plant has three more generators that are similar in operation.
- **Indiana Harbor:** The Indiana Harbor, Indiana plant, on Lake Michigan near Indiana's Chicago border, is North America's largest steel facility, employing 5,900 people and operating five blast furnaces with an annual output capacity of 10 million tons. Indiana Harbor has installed dilute oxygen combustion technology on three reheat furnaces in their hot strip mill saving \$160,000 worth of natural gas each month. They were also able to use additional blast furnace gas (that was previously flared) to produce more electricity which saved \$255,000 per month in electricity purchases. With a matching grant from the U.S. Department of Energy, Indiana Harbor is currently undertaking an ambitious project of installing an additional boiler to burn more BFG to cogenerate steam and electricity. The boiler, expected to be up and running this summer, will generate 350,000 pounds of steam per hour, which will be used to produce electricity at the plant.
- **Burns Harbor:** ArcelorMittal's Burns Harbor, Indiana plant, located east of Indiana Harbor on Lake Michigan, has 4,000 employees manufacturing steel for the automotive industry. At this facility, the plant installed 21 variable frequency drives on its hot dip coating line to control the speed of the fans which cools the steel strip. These drives are saving about \$79,000 in electric and maintenance cost per month.



RECOGNIZED COMMITMENT

ArcelorMittal's commitment to energy savings has continually been recognized by the federal government. In March of 2012, the company received its fifth consecutive ENERGY STAR® award from the U.S. Environmental Protection Agency. In 2008, it was the first steel company to be named an ENERGY STAR® Partner of the Year.

ArcelorMittal USA President and CEO Mike Rippey adds, "We will continue to focus on reducing energy intensity while increasing operational excellence to ensure our facilities are more competitive and maintain a cost leadership position."

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