U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

ADVANCED MANUFACTURING OFFICE

Advanced Manufacturing Office: Saving Energy Big Time

Steelmaker Matches Recovery Act Funds to Save Energy & Reduce Steel Production Costs

ArcelorMittal Indiana Harbor Energy Recovery & Reuse 504 Boiler constructed and installed with DOE Recovery Act Funding

The Advanced Manufacturing Office (AMO) at the U.S. Department of Energy provided $31.6 million in American Recovery & Reinvestment Act (ARRA) funding to construct and install an energy-efficient boiler and upgrade ArcelorMittal Indiana Harbor steelmaking complex facilities. One of only nine industrial technology projects in the country to receive Recovery Act funding, this *mega boiler* project is expected to reduce steel manufacturing costs and displace demand for purchased electricity. Total project costs matched with private funding from ArcelorMittal, the *mega boiler* project captures blast furnace gas (BFG) and uses it to fuel a newly constructed boiler to cogenerate steam and electricity on site.

Over 500 jobs (including 200 local trades) were created during the project's construction, installation, and operation:

- **Nicholson & Hall Corporation in Buffalo, NY, built the boiler with the latest low nitrogen oxide burner technology. The boiler was shaped by 30 boilermakers and weighs in at over 1 million pounds.**
- **The *mega boiler* was shipped by truck and a lake freighter on the Buffalo River to the Indiana Harbor facility in Illinois.**
- **To accommodate the boiler on site, a new 17,000 square-foot boilerhouse was constructed along with a 290-foot exhaust stack. Nearly 620 feet of new 66-inch pipe was installed to carry the BFG to the boiler. A feedwater economizer and combustion air preheater were installed to remove waste heat from exhaust gases and improve the boiler efficiency. Draft fans, feedwater pumps, and a deaerator were also constructed to support the operation.**

ArcelorMittal anticipates cutting its annual energy costs by nearly $20 million, effectively lowering steel production costs by $5 per ton.

ArcelorMittal

ArcelorMittal Indiana Harbor, the largest steelmaking complex in North America, covers 3,100 acres crossing the Indiana Harbor canal on the southern shore of Lake Michigan in East Chicago. At full capacity, the integrated plant:

- **Operates 5 blast furnaces**
- **Has an annual raw steelmaking capacity of about 9.5 million tons of steel including hot-rolled, cold-rolled, and hot-dipped galvanized sheet products serving automotive, appliance, agricultural, and construction applications**
- **Employs about 6,000 people, as well as employment for another 26,800 indirectly.**

ArcelorMittal and union leadership, elected and public officials, and key community leaders

Groundbreaking, October 2010

Celebration of 3 months of successful operation

Commissioning, December 2012

Steel Production Facts

- **Nearly 100 million tons of raw steel was produced in the United States in 2012.**
- **Steel production accounts for about 1.5% of U.S. energy use; 40% of this energy is used in Blast furnaces.**
- **Energy accounts for about 17% of U.S. steel manufacturing costs.**
- **Only about 10% of the electricity used in U.S. steel manufacturing is generated on site.**