

Nucor Steel

TEEA 2015 Winner: Pollution Prevention



Energy Efficiency Projects Significantly Reduce Energy Use

For any energy-intensive industry, energy-reduction projects can be costly and end up on the back burner. That is not the case at Nucor Steel-Texas. The company has been proactively searching for new ways to reduce its Jewett plant's energy use.

In 2012 Nucor began an innovative project to replace its five large baghouse fan blades with higher-efficiency backward-inclined blades. These fans evacuate emissions from the production of steel in an electric arc furnace. By incorporating the new blade design in the needed replacement, Nucor achieved increased efficiency and eliminated the need to replace the fan housing completely. Increased efficiency of the design allowed Nucor to reduce the fans required from four to three to achieve the same minimum airflow. Additionally, the three fans running use less electricity each than the previous four. Operation of just three fan blades saved 2,000 kilowatts every hour of operation.

Nucor reviewed other energy saving opportunities following the success of the baghouse upgrade. The company has been installing variable-frequency drives throughout the facility, saving even more energy throughout the site. The newest application of VFDs at Nucor has been to several large cooling towers and water pumps. These projects include two 250-horsepower VFDs on the cooling-tower fans. By operating the towers based upon water temperature, the motors of the fans operate at reduced speeds from the VFDs, and consume less electricity. While the application of VFDs within the steel industry is not a new concept, their creative use in cooling towers is much less common. The VFDs on the cooling towers and water systems save over \$100,000 annually in electrical costs. In addition, these projects have conserved water by minimizing the amount that evaporates.

Nucor is passionate about the successes it has achieved—successes due, in part, to challenging the expectations within its own industry and not settling for the standard by which things have always

been done.