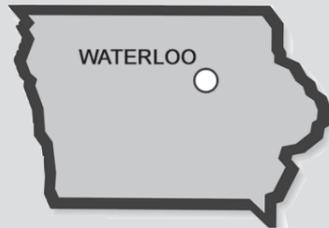


Tyson Fresh Meats, Inc.

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Tyson Foods, Inc., founded in 1935, is the world's largest processor and marketer of chicken, beef, and pork and the second largest food company in the FORTUNE 500. Tyson Foods also sells many non-food by-products from their processes into diverse markets. The Tyson Fresh Meats Inc., Waterloo plant has a maximum capacity of 19,350 head per day, currently one of the highest volume pork slaughter operations in the United States. With increasing global competition and increasing energy costs, optimization of resource consumption is increasingly important at Tyson.

Project Background

The project goal was to decrease resource consumption, related utility costs and environmental impacts. Several aspects of the operation were examined, with emphasis on projects that would easily scale out to other Tyson facilities. The company doesn't have a dedicated energy management team, so ease of implementation was an important factor in developing P2 projects for Tyson Foods. Major systems investigated were lighting, ventilation, refrigeration and compressed air.

Incentives to Change

Meat processing is an energy intensive process because of the amount of product separation involved, necessary sanitation procedures, and the refrigeration required for most intermediate and finished product. Many facets of the operation were originally designed only to meet these standards, with resource consumption an afterthought. As energy costs rise, there is increasing incentive for Tyson

Foods to improve energy efficiency and reduce its production costs.

Results

Compressed Air Leak Repair

Compressed air production is a highly ignored, high cost utility in most industrial facilities. Significant leakage was known to occur in the plant, so an ultrasonic inspection was performed on a majority of the facility. Leaks were tagged and logged to facilitate repair by maintenance staff, and leak volume was estimated based on ultrasonic signature.

Metal Halide Lamp Upgrades

All general lighting in the plant is provided by metal halide lights. Replacing fixtures was ruled out as an option in many areas because of stringent USDA requirements for light levels at inspection stations. For these areas it is recommended that all compatible 400-watt metal halide fixtures be upgraded to 360-watt high efficiency lamps.

LED Dock Lamps

The Waterloo facility has a number of dock doors for handling outgoing product, all of which require signal light fixtures visible to the truck drivers outside. Upgrading to LED lamps reduces electrical consumption, reduces the amount of spent lamps requiring disposal and reduces the labor required to keep working lamps in all signal fixtures

Air Compressor Consolidation

The Waterloo facility has a separate pair of air compressors supplying a critical process in the plant. It is suggested an air line be run from the main air system, and the dedicated compressors only run in case of main air system failure.

High Efficiency Compressed Air Nozzles

The sanitation process in the plant uses air for drying. Currently compressed air is blown from open pipes; the proposed air amplification nozzles would provide equivalent blowing force while conserving enough compressed air to pay for themselves in two months.

Reduced MQ Operation

The MQ process rapidly cools meat to maintain ideal color and lock in moisture. However, this refrigeration system consumes massive amounts of energy in order to remove heat quickly. By eliminating some of the unnecessary runtime on the MQ process, a significant electrical cost savings could be had. This project is currently in testing to ensure maintenance of product quality.



Air Pollutants Diverted in Tons

	Total for all sectors
SO2	8.6
CO	0.9
NOX	4.1
VOC	0.1
LEAD	0.0
PM	0.2

Green House Gases Diverted in Tons (CO2 Equivalent)

	Total for all sectors
CO2	1,595.0
CH4	52.7
N2O	17.5
CFCS	19.4

Project	Annual Cost Savings	Environmental Results	Status
COMPRESSED AIR LEAK REPAIRS	\$20,838	513,901 kWh	Implemented
HIGH EFFICIENCY METAL HALIDE LAMPS	\$7,373	163,926 kWh	Recommended
LED DOCK SIGNAL LAMPS	\$1,724	10,343 kWh 52 lamps	Recommended
AIR COMPRESSOR CONSOLIDATION	\$3,955	Oil 50 gallons Repair parts	Recommended
COMPRESSED AIR AMPLIFICATION NOZZLES	\$9,044	192,054 kWh	Recommended
REDUCED MQ OPERATION	\$94,400	2,357 kWh	Testing in Progress

