# Star Building Systems

CASE SUMMARY 20

## STAR BUILDING SYSTEMS

Monticello, Iowa
Jones County


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### The Company

Founded in 1927, Star Buildings Systems (Star) produces pre-engineered steel buildings for many types of markets including commercial, industrial, and recreational markets. Headquartered in Oklahoma City, Star has three manufacturing plants across the United States, including the Monticello location. Star produces more than 3,800 buildings a year, and their customers include companies such as Toys 'R' Us, Roadway Express, Lockheed Martin, Coca Cola, and Anheuser Busch.

### Project Background

The Monticello plant has already made several commitments to environmental issues, such as the environmental and safety audit held each year. Employees are informed of ways they can help with reducing energy consumption. Also, Star has a recycling program for scrap items such as office supplies, cardboard, wooden pallets, and steel drums.

### Incentives to Change

Star wanted to reduce the electrical peak demand, and as a result, lower its overall energy costs. By installing more energy efficient equipment, as well as updating the current machinery through maintenance operations, it is possible to reduce the energy use of the facility, decrease input costs, lengthen equipment life, advance the quality of work, increase productivity, and improve the safety of employees.

### Results

The recommended opportunities for economic cost savings and reduced waste include:

**Lighting**

Star currently uses several different types of light bulbs, the majority consisting of mercury vapor lamps. These are either 400 or 1,000 watt bulbs, that over their lifetime of use, lose almost all of their light output while still consuming the same amount of electrical energy. By installing T5 high bay fluorescent lighting throughout the facility, $64,075 can be saved in energy costs each year.

**Compressed Air Leaks**
Two main rotary screw compressors are located in the facility. With the help of an ultrasonic leak detector, a total of fifty-eight air leaks were identified. The leaks have been tagged, and a spreadsheet detailing the information about each individual leak has been developed. Using this information, the leaks will be fixed, which will lead to savings of $18,883 per year.

**Motors**
Some of the equipment used at Star is older, therefore the motors running this machinery have become outdated. Compared to more modern motors, the current ones are very inefficient. Replacing the motors with super efficiency motors can save Star $52,742 a year.

**Weld flux**
Weld flux is used in subarc welding processes to help join two pieces of metal together. Star uses two different types of weld flux, and last year alone, 90,000 pounds of weld flux were consumed. Slag, or used weld flux, can be swept up and transported to a company where the weld flux is reclaimed. This process is estimated to save Star up to $20,000 a year in reduced virgin flux costs.

**Wooden Spools**
Star receives weld wire on large wooden spools several times a year. On average, Star uses 10 spools a month and stores them for return back to the spool manufacturer for recycling. Currently, the weld wire manufacturer will only allow the spools to be used three times. After the third time, Star must find a means of disposal for these spools. They cannot be burned because the top and bottom are constructed of plywood. If another means of using these spools cannot be found, Star will have to send them to the landfill, which can be expensive and have a negative impact on the environment.

Project Summary Table

| Project Description | Environmental Impact | Economic Cost Savings | Status |
|---|---|---|---|
| Lighting | 161,106 kW/year | $64,075/year | Implementation In Progress |
| Air Compressor Leaks | 180,997 kWh/year | $18,883/year | Implementation In Progress |
| Motors | 58,600 kW/year | $52,742/year | Recommended |
| Reclaimed Slag | 90,000 lbs/year | $20,000/year | Recommended |
| Wooden Spools | 120 spools/year | Not Available | Needs further research |
| Total | | $155,700/year | |