MONTEZUMA MANUFACTURING

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MONTEZUMA

COMPANY BACKGROUND

Montezuma Manufacturing, a division of Cosma International, first opened its doors in 1972. The company specializes in deep draw stamping mild and stainless steels and robotic welding lines featuring metal inert gas (MIG), spot and projection welding. Major customers include General Motors (GM), Ford and Chrysler, to whom the company provides frame rails, heat shields, panel wheelhouses, door reinforcements, inlet pipes, catalytic converter shields and floor pans.

PROJECT BACKGROUND

The focus of the 24-week project was to conduct a facility energy audit to identify opportunities to improve efficiency of the compressed air, heating, ventilation and air conditioning (HVAC), and lighting systems. The focus was on compressors, make-up and infrared heating, traditional air conditioning, ventilation for welding processes, and fluorescent and halide lighting. The intern completed the energy audit in the first 12 weeks and will continue to research options for these systems and provide recommendations to reduce energy consumption during the remaining time on site.

INCENTIVES TO CHANGE

As part of Cosma International, Montezuma Manufacturing is joining its parent company's global initiative to cut costs and reduce energy wherever possible. To achieve these goals, the company needs to conduct a thorough energy audit, develop energy-saving strategies and adopt pollution prevention methodologies. By minimizing waste at the source, the company will reduce emissions, costs and risks and exceed regulatory standards.

RESULTS

Normalize Electrical Demand: Peak demand charges represent over 35 percent of the electrical utility bill at Montezuma Manufacturing. These charges may be reduced by normalizing the plant's half-hourly energy consumption. Methods of achieving these savings include schedule changes and the use of soft starting motors.

Repair Compressed Air Leaks: Almost 40 percent of compressed air output is currently being lost to air leaks. More than one compressor is necessary to supply leaks alone. The intern used an ultrasonic leak detector to find and tag air leaks in the system. Most of the leaks can be repaired with little or no capital cost, which would greatly reduce operating costs.

Convert Compressor Oil to Off-Brand Synthetic Lubricant: The company could reduce costs by switching to an alternate lubricant. Alternate synthetic lubricants can meet or exceed the performance of manufacturer-supplied lubricants at a fraction of the cost. Changing to a synthetic lubricant has proven to increase the operating efficiency of the equipment and provide cost savings to the company.

Intake Outside Air for Compressors: Compressors currently run in a high heat and contaminant environment. Industry's common practice of pulling outside air would provide the cool, dry, clean inlet air the compressors need to run at optimum efficiency. Minimal implementation costs would be incurred to install the necessary piping.

Increase Compressed Air Storage: Proper demand side storage normalizes system pressure, allowing for decreased production pressure, and also decreases loaded cycle time for all compressors. Although initial costs may be high, the indirect savings that would be realized by increasing compressed air storage could make this option feasible.

Increase Compressor Maintenance Check Frequency: Proactive preventative maintenance is essential for keeping compressors running at optimum efficiency. The company could realize considerable cost savings by increasing preventative maintenance of its compressors.

Eliminate Cleaning with Compressed Air: Cleaning with compressed air is a costly, inefficient and often unidentified electrical consumer, so minimizing its use is recommended. Often, cleaning can be accomplished equally well with brushes and brooms. In cases where blowing is required, an electrical blower would use 15 times less energy than compressed air.