SHOWCASE PROJECT: SAINT-GOBAIN CORPORATION: MILFORD COMPRESSED AIR SYSTEM IMPROVEMENT

SOLUTION OVERVIEW

As part of its commitment to reducing its energy intensity, Saint-Gobain undertook a large compressed air system retrofit project at its Milford, Massachusetts glass plant. Upon completion, the compressed air system improvement is expected to deliver energy savings of 15% compared to the system it is replacing.

Used for purposes ranging from pneumatic controls to blow molding, compressed air is an expensive but often overlooked consumer of energy at many industrial facilities. At Saint-Gobain's Milford glass container plant, the primary use of compressed air is to form the glass container, making compressed air a critical part of the manufacturing process. Compressed air is the largest individual electrical energy consumer in the plant, making up approximately one third of total plant-wide power consumption. To initiate the project, Saint-Gobain commissioned an external consultant to conduct a compressed air system assessment, which identified significant opportunities for efficiency improvements. In addition, Saint-Gobain identified the need for improved air quality, primarily better moisture control from the compressed air system. The project was developed from a cost-benefit perspective and ultimately made possible by utility incentives.

SECTOR TYPE

Industrial

LOCATION

Milford, Massachusetts

PROJECT SIZE

100,000 Square Feet

FINANCIAL OVERVIEW

Project Cost $4 million

SOLUTIONS

The project consisted of replacing three inefficient compressors with two new, more efficient compressors and heat of compression dryers. The new configuration allowed the plant to run with fewer compressors and provided some redundancy. The redundancy will allow the plant to avoid downtime and continue operating through periods of unexpected equipment malfunctions. Due to the installed redundancy, the plant expects to gain additional cost savings from increased runtime

and from eliminating the need for short-term rental compressors.

The heat of compression dryers added to the drying capacity of the system and replaced refrigerated dryers, providing improved moisture control. Improved moisture control yielded some process benefits that aided the financial justification of the project. In conjunction with the compressor installation, the company replaced an older cooling tower to gain greater efficiency. An updated central compressor control system was installed to control all compressors, dryers and cooling towers. The new control system now manages all of the components of the compressed air system to maximize efficiency under varying demands and conditions.

National Grid of Massachusetts' Custom Project incentive program provided incentives to offset project costs. The combination of energy savings, water savings and incentives, along with anticipated benefits in the process and reduced rental costs, provided the financial justification for the project.

OTHER BENEFITS

The energy efficiency project yielded additional environmental benefits, specifically the elimination of once-through cooling water in the compressor system. Previously, water supplied from the local utility would be passed through the compressor system one time to provide cooling and then would be discharged directly to the sewer. Installation of a more efficient cooling tower now allows the plant to recirculate the cooling water in a closed-loop system, which has significantly reduced the plant's water needs.

Annual Energy Use

(Source EUI)

Baseline(2010)

120,000 MWh

Expected(2012)

102,000 MWh

Actual()

Coming soon

Energy Savings

15%

Annual Energy Cost

Baseline(2010)

$4,700,000

Expected(2012)

$4,000,000

Actual()

Coming soon

Cost Savings

$700,000

The compressor room at the Milford plant

A compressor used at the Milford plant