

CASE STUDY: HEATING INFRASTRUCTURE IMPROVEMENTS

SYSTEM TYPE: Heating Units, Boilers, and Gas Meters

PROJECT FINANCIALS

- Total Turnkey Installed Cost: \$ 1,564,000
- Annual Energy Cost Savings: \$ 813,000
- Simple Payback with Labor: 1.47 years
- Average Project IRR: 67%
- CO2 Equivalent Reduction : 6,775 tCO2e (Natl. Avg. Emission Rate)

GLASS MANUFACTURING Facility Installs New Heating Equipment — Saves \$ 813,000 Annually

System Description

- Two older 34,000 lb/hr steam boilers with limited turndown capability
- Steam distribution system with potential future piping issues
- Condensate return around 60%
- Old boiler economizers that were not working
- No existing ability to control steam heaters other than turning on and off seasonally
- Insufficient heating in some areas which caused employee complaints
- Process heating required boilers to be in operation in summer for small load

System Opportunities

- Existing boilers were not operating efficiently and would require some repair
- Process load was much smaller than heating load but vital to facility operation
- Portions of steam distribution system would need piping replaced in future
- The operation of the boilers required boiler operators 24 hours per day, 7 days per week

Project Description

- Installed 22 new direct fired natural gas make up air and heating units with controls to provide facility heat
- Installed new natural gas and electric heating for remote process loads
- Installed new smaller boilers and auxiliary equipment to serve process load and improved distribution system
- Installed new heating and cooling for office areas and some remote steam loads
- Installed 33 new natural gas and electric unit heaters in areas where direct fired units could be used
- Installed new gas meters to monitor usage



Plant Profile

- 565,000 sq ft Glass Manufacturing Facility
- Production areas, Warehouse area, Administrative Offices
- Facility utilized older boilers to produce steam to provide heating for facility and process loads

Project Benefits

- Improved overall efficiency of various systems that previously utilized steam
- Energy Cost savings, chemical and water savings, and labor savings
- Installation of new efficient equipment and retirement of old equipment
- Elimination of future cost for replacement of steam piping
- Increased control of temperature which increased employee comfort levels
- Provided better load matching of process heating requirements

Key Benefits

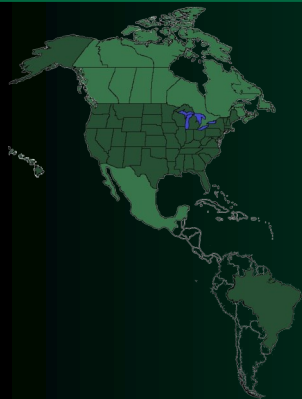
Annual Cost Savings	\$ 813,000
Carbon Reductions	6,775 tCO2e (Nat'l Avg. Emission Rate)
Chemical & Water Savings	\$ 55,250
Estimated Labor Savings	\$ 250,000
Payback	1.47 Years

Financial Data

Investment	\$ 1,564,000
System	Natural Gas Make Up Air & Heating Units, Boilers & Aux Equipment, New Gas Meters
Life Expectancy	N/A
Incentives/Rebates	N/A
Payback Period	1.47 Years
Project IRR	67%



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