

ENERGY PROJECT CASE STUDY

BOILER CONDENSING ECONOMIZER

Financials

- ◆ Total Turnkey Installed Cost: \$317,000
- ◆ Annual Energy Cost Savings: \$118,000
- ◆ Simple Energy Funded Capital Payback: 2.7 year
- ◆ Average Project IRR: 36%

Description of Facility

- ◆ Manufacturing
- ◆ Production, packaging, warehouse, and offices
- ◆ Facility utilizes a central plant to provide steam and hot water for process heating and building heating



System Description

- ◆ Two 500 HP natural gas fired steam boilers
- ◆ Summer operation requires one boiler, winter operation requires two boilers to be operating
- ◆ Process uses steam for heating and for some direct injection
- ◆ Building hot water heating is provided by steam to hot water heat exchangers

System Opportunities/Issues

- ◆ Optimization of the boiler sequencing and operation
- ◆ Installation of condensing economizer in boiler flue gas exhaust to recover heat
- ◆ Interface with Building Automation System for better system control

Project Description

- ◆ Installed new digital controls on boilers to provide optimized control and sequencing and interface to BAS
- ◆ Installed new fully condensing boiler economizer to recover flue gas heat along with associated pumping equipment
- ◆ Installed new heat exchanger to heat cold DI water and generate hot DI water
- ◆ Implemented new heat exchanger to preheat supply water to RO system

Project Benefits

- ◆ New more efficient boiler controls and heat recovery equipment
- ◆ Optimized and more efficient operation of the boiler operation
- ◆ Reduction in energy usage
- ◆ Reduction in O&M costs and better overall operation of the boiler system