CASE STUDY

Blasting and Coating Company Assesses Feasibility of a Heat-and-Power (Co-generation) Energy System

NYSP2I New York State Pollution Prevention Institute

Client

Located in Western New York, this blasting and coating company services all of Western New York and ships material nationwide. The company specializes in glass sphere (beads) and abrasive manufacturing, industrial/commercial sand blasting, and coatings.

Challenge

A company in western New York that specializes in commercial and industrial blasting and coating discovered that its three production furnaces produce and release more energy (as heat) than it consumes as a whole in the form of electricity. This led the company to inquire about the technical and financial feasibility of implementing a co-generation system that used wasted heat from production furnaces to generate electricity.

Solution

The company partnered with the New York State Pollution Prevention Institute (NYSP2I) to determine the potential of co-generation energy system that would transform wasted heat from its furnaces into electricity. To do this, NYSP2I staff analyzed the company's energy consumption and utility costs, and provided a stack analysis from one of its furnaces. They then evaluated the performance of four different co-generation systems when applied to the company's furnace exhaust. Lastly, they conducted a high-level financial analysis, which included a simple payback calculation. This was based on electrical energy cost savings, as well as the estimated implementation and operational costs of the four co-generation systems that were reviewed.

Results

The work performed by NYSP2I showed that the most efficient system was a simple Rankine cycle (steam turbine) with a duct burner. This system drives a generator with steam produced by a heat-recovery steam generator in the furnace exhaust. It is accompanied by a duct burner that is also in the furnace exhaust. The cost for the

Challenge

- A blasting and coating company wanted to evaluate the feasibility of implementing a combined heat-and-power (co-generation) energy system at its facility in Western New York.

Solution

- NYSP2I staff analyzed the company's energy consumption and utility costs, and provided a stack analysis from one of its furnaces.
- NYSP2I staff evaluated how four different co-generation systems would perform when applied to the company's furnace exhaust.

Results

- The work performed by NYSP2I staff showed that the most efficient system was a Rankine cycle (steam turbine) with a duct burner.

proposed system was estimated to be $308,400. It would consume an additional 340 thousand British thermal units (kBTU) of natural gas annually, which would cost $10,600 per year. It would generate 96.6 kilowatts (kW) of electricity, thus reducing the company's electrical cost by $70,500 per year. If implemented, the payback would be about five years.

Partners

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New York Manufacturing Extension Partnership

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