



Deluxe Corporation: High Pressure Humidification

PROJECT INFORMATION

Organization

- Deluxe Corporation

Location

- Mountain Lakes, NJ

Project Contact

- Pete Wulfeck, Regional Facilities Manager

Technologies

- System peak capacity 1,360 lbs/hr
- ML System MLP800 Pump Station
- 17 ML System Princess Humidification Units
- Safe Water Technologies BLS 6000 Commercial Reverse Osmosis System

NJCEP Incentives

- \$68,000 NJ SmartStart Buildings®, Custom Measures

Total Project Cost

- \$122,500

PROJECT SAVINGS

Estimated Annual Savings

- 2,160 MMBtu (99% of humidification energy)
- \$28,000 in direct utility costs
- 250,000 lbs of carbon dioxide (CO₂)
- Simple Payback of 1.9 years (after incentive)

Project information, savings and environmental benefits were provided by the project contact.



High pressure humidifiers generate a cool, fine mist when relative humidity drops.

// The New Jersey Clean Energy Program has been a valuable partner in Deluxe's ongoing efforts to improve the efficiency of its operations. The relationship spans several years and has included significant incentives for the implementation of a variety of measures at multiple facilities. //

Pete Wulfeck
Regional Facilities Manager
Deluxe Corporation

Background

Building on its legacy as one of the top check producers in North America, Deluxe has evolved into a trusted and valued advisor to financial institutions and small businesses. A Fortune 1000 company with more than 8,000 employees, Deluxe helps financial institutions and small businesses grow their operations through a wide range of innovative products and services in fraud prevention, customer loyalty and brand building.

Deluxe is a proud community leader with a strong commitment to environmental stewardship and sustainable practices. The company is taking dramatic steps toward greater energy efficiency and conservation in its facilities throughout North America.

Challenge

In the commercial printing industry, space humidification is a critical aspect of business that requires precise control. Too much humidity produces wavy and worthless paper, while too little humidity leads to the buildup of static electricity that can cause paper jams and damage sensitive electronic equipment.

Deluxe's printing facility in Mountain Lakes, NJ previously used a gas-fired boiler to produce low-pressure steam for both heating and humidification purposes. Duct-mounted humidifiers injected this steam into the supply air ducts of the air handling units that serve the press room as necessary to maintain a relative humidity of approximately 50% in the space at all times. The facility's humidification season typically begins in October and extends through June.



Success Stories



The system includes reverse osmosis water treatment.



Pump stations provide fast and consistent humidification response with very low energy consumption.

Solution

With the help of JIT Services, Inc., its energy management partner, Deluxe replaced the facility's gas-generated steam system with a high-pressure humidification system. The new system includes a high-pressure, low-energy pump and 17 fan-powered humidification units located throughout the facility. It produces humidity by passing water under high pressure through tiny nozzles, at which point it atomizes, absorbs into the air, and distributes evenly throughout the space. The system also includes a reverse osmosis water treatment system to eliminate any mineral dusting that may occur within the space and an ultraviolet filter to guard against microbial growth.

The facility received a Custom Measures incentive of over \$68,000 from New Jersey Clean Energy's™ NJ SmartStart Buildings Program to offset the project's capital cost of \$122,500.

Benefits

The energy the facility uses for humidification decreased dramatically from approximately 1,320 Btu/lb to just 18 Btu/lb. On an annual basis, this facility expects to realize humidification energy savings of 2,160 million Btu (which represents a 99% decrease) and accompanying utility cost savings of nearly \$28,000. According to the U.S. Environmental Protection Agency, the project will reduce the emission of carbon dioxide into the atmosphere by over 250,000 lbs/yr. This is equivalent to planting 2,900 trees, recycling 39 tons of waste, or removing 21 passenger cars from the road.

Secondary benefits of the high-pressure humidification system include reduced load on the facility's air conditioning equipment. This is because the atomized water droplets have an evaporative cooling effect of 970 Btu/lb as they absorb into the air. With a peak capacity of 1,360 lbs/hr, the new humidification system reduces the facility's cooling load by as much as 110 tons.



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