

Specialized Textile Manufacturer Seeks Feasible Measures to Improve Its Air Handlers and HVAC Equipment



Challenge

The employees at a specialized textile manufacturer in Central New York have linked temperature and humidity fluctuations to product quality, scrapped product, and machine breakage. The heating and cooling equipment in the plant is thought to be incapable of maintaining the environmental conditions needed for consistent product quality and trouble free equipment operation. This has resulted in an increase of product scrap and machine repair. The company wanted to identify feasible measures that would improve the environmental conditions within the manufacturing plant and eliminate product waste caused by machine failures due to temperature and humidity fluctuations.

Solutions

The New York State Pollution Prevention Institute (NYSP2I) collaborated with Advanced Institute for Manufacturing (AIM) to help evaluate the HVAC systems in the textile company's production areas. EMCOR Services Betlem (EMCOR), an experienced HVAC consultant, provided additional support. EMCOR calculated the heat loads in the facility, calculated the capacities of the air handlers, and evaluated alternative HVAC equipment capable of controlling environmental conditions.

Results

The results of the work show that the existing air handling equipment is incapable of maintaining the desired conditions for optimal production at the manufacturing plant. EMCOR developed two concepts for HVAC improvements. The first concept is a direct expansion based heat pump design that can provide cooling capacity at greatly increased electrical load but with the existing cooling water well in place. The increased electrical load of the first concept exceeded the power available at the facility. The second concept is an evaporative cooling based system can provide cooling at lower electrical load but with expanded well capacity.

Challenge

- A specialized apparel manufacturer wanted to identify feasible measures that would improve the environmental conditions within the manufacturing plant and eliminate product waste caused by machine failures due to temperature and humidity fluctuations.

Solution

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Results

- Results of the work show that existing air handling equipment is incapable of maintaining the desired conditions for optimal production at the plant.
- EMCOR developed two concepts for HVAC improvements.
- The total estimated budget for the purchase and installation of the required equipment for the evaporative cooling system is approximately \$1.7 million dollars.

Partners

The total estimated budget for the purchase and installation of the required equipment for the evaporative cooling system is approximately \$1.7 million. An increase in net energy costs was estimated at \$18,832, and a net annual reduction of scrap costs was estimated to be \$118,575.

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