Steinway and Sons improves productivity and efficiency

Case Study

FlexTech Consultant:
Energy & Resource Solutions (ERS)

Location:
Long Island City, NY

Sector:
Manufacturing

Building Square Footage:
500,000

Annual Cost Savings:
$30,000

Annual Electricity Savings
81,220 kWh

Annual Gas Savings:
648 MMBtu

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Background

For more than a decade, Energy and Resource Solutions (ERS) has helped Steinway & Sons address productivity and energy issues at their 150-year-old manufacturing facility in New York City. ERS worked with Steinway to assess and install a host of energy-efficient measures and systems to support plant productivity, lower energy costs, and improve the environmental conditions in the facility.

In addition to best practice energy efficiency measures, innovative and cutting-edge systems have been installed and evaluated including a closed-loop dust collection system and a rooftop tracking solar thermal cooling/dehumidification system. At the time of installation, the solar thermal system was the largest of its kind in the world.

Innovative Collaboration — Solar Thermal Dehumidification

In the summer, the solar fluid drives a 100-ton, double-effect absorption chiller that enables humidity management in the department where the intricate keyboard mechanism of the piano is manufactured. If dehumidification is not needed and enough sun is available to generate hot water above 275°F, a steam generator is used to develop 15 psig steam to offset a portion of the plant's continuous steam load. Simultaneous dehumidification and steam generation is also supported by this system.

Thirty-eight roof mounted Abengoa Model PT-1 solar collectors concentrate the sun's energy and transfer it to a pressurized water and glycol mixture circulated in a pipe at the focal point of the collectors. The actual temperature developed varies with solar availability but is limited to a maximum of 350°F. When cooling is needed, the diverting valve directs hot water to a 100-ton, double-effect absorption chiller. If solar is not available, the dual-fuel chiller can run either entirely on natural gas or use gas to supplement solar-sourced energy. When dehumidification is not needed, and the collectors can generate hot water above 275°F, the hot water circulates through a vertical helical tube and shell steam generator heat exchanger, which produces 15 psig process steam to offset a portion of the plant's constant 1,200 kBtu/h load.
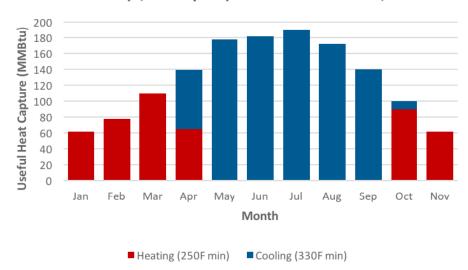
"For over ten years ERS has been a trust-ed energy advisor to our management and facility team at our manufacturing facility in Long Island City, New York. The solar thermal project was a highly successful project that resulted in Steinway and Sons receiving an award for the best renewable energy project of the year in our region."

— *Andrew Horbachevsky*

Results

As a result of strong collaboration, multiple energy assessments, energy procurement support, innovative system deployment, and overall energy management, ERS helped the plant improve productivity, add specialized production lines efficiently, reduce waste, lower energy costs, and improve overall yield for environmentally sensitive parts. ERS is still actively engaged with Steinway and has branched out to other facilities across the country.

Total Useful Solar Thermal Production
38 Panels (5,735 Sq. Ft.) NW-SE Orientation, NYC

■ Heating (250F min) ■ Cooling (330F min)

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