Combined Cooling, Heat and Power System Saves Schools Money

K-12 EDUCATION

Company Name
The East Irondequiot Central School District

Location
Rochester, NY

Installation Date
2013

Operating Experience
February 1, 2013

CHP Equipment
UTC Power Pure Comfort Solution Model 325M CARB (low emissions)

Generating Capacity
325 kW

Heat Recovery Application
Space Heating and Cooling

Type of Fuel
Natural Gas

Annual Efficiency
50% (LHV)

"...when everything is completed by September 2012 we will have upgraded facilities which will provide our students with the tools they need to be successful."

- Susan K. Allen
EICSD, Superintendent of Schools

BACKGROUND

Aerial view of Eastridge High School,

The East Irondequiot Central School District's (CSD) 2009 Generations project (The Project) involves renovations and additions to several district schools including Eastridge High School (student population of approximately 1,000). The high school project involves the new construction of an auditorium, gymnasium, fitness center, locker rooms and classrooms for a total school size of 240,888 sq ft. This project installed a combined cooling, heat and power system (CCHP) resulting in lower electric bills and to provide year-round cooling and heating capability.

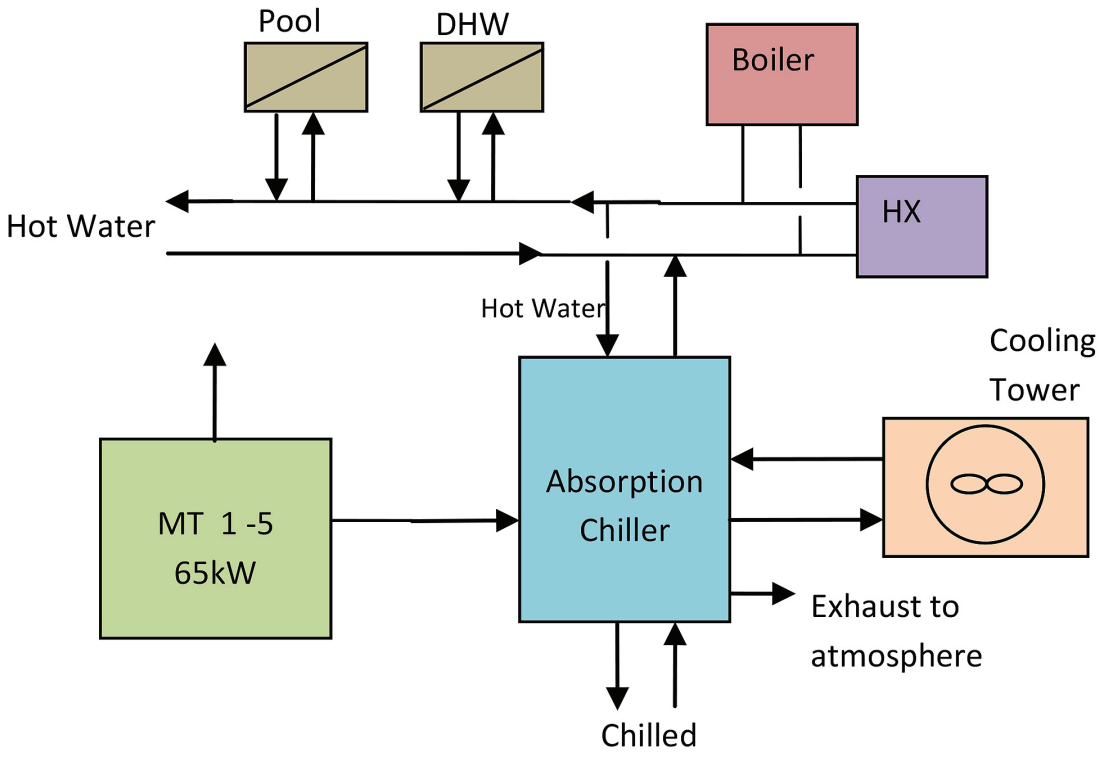
THE APPLICATION

The co-generation system is a CCHP system using five 65-kW microturbines. The electricity generated by the system supplements the existing utility electrical power, and is also used for emergency power. The waste heat from the microturbine exhaust is captured to power an absorption chiller that provides heating and cooling capacity to the building. The cooling potential of the absorption chiller is the sole cooling source for the facility. The system controls allow the cooling to take priority over heating.

CHP SYSTEM AND EQUIPMENT

Heat from the microturbine exhaust is directly used to drive the 182-ton hot water absorption chiller. The heating capacity of the absorption chiller is supplemented by a high-efficiency condensing boiler and a steam-to-hot water heat exchanger.

Combined Heat and Power for a K-12 Education Institution



ECONOMICS AND ENVIRONMENTAL BENEFITS

The CCHP system at East Irondequiot CSD is expected to operate at an annual efficiency of 50% (LHV) and achieve an 80-90% thermal utilization. It provides a more efficient use of fuel with lower greenhouse emissions. Because CHP systems are located on-site at the energy consumer, the distribution losses that central power plants experience are eliminated. Monitored data are being collected from the site and are available in an hourly format on NYSERDA's DG/CHP website starting from February 2013.

SUMMARY OF BENEFITS

- Eliminates energy losses from seasonal changes in system operations.
- Reduces CO2 emissions.
- Reduces reliance on the grid.

East Irondequiot CSD's CCHP 65kW Microturbines

ADDITIONAL RESOURCES

- **Developer/Engineer:** www.clarkpattersonlee.com
- **DG Integrated Data System:** chp.nyserda.org

nyserda.ny.gov/chp
1-866-NYSERDA

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