A combined heat and power (CHP) system supplied by MTU Onsite Energy and installed by distributor W.W. Williams yielded significant savings in its first year of operation at an Ohio high school and recreation center.

CHP SYSTEM ADDS UP FOR SCHOOL

MTU Onsite Energy natural gas powered cogeneration unit generates savings for Ohio high school and community center

In its first year of operation, a combined heat and power (CHP) system supplied by MTU Onsite Energy to a high school in Ohio received high marks for energy and financial savings.

In April of last year, a Series 400 CHP unit was chosen to update Medina High School and the adjacent Medina Community Recreation Center after the existing boiler system failed. This is one of the first five North American installations for the system, the first of which was installed at MTU America's headquarters in Novi, Mich., in 2012 (see November 2013 *Diesel Progress*).

The cogen unit was selected as part of a state government energy conservation program that allows school districts to make efficiency improvements based on the savings generated by the replacement technology. The Medina City School District looked at wind and solar options, which were ruled out because of expense and an extended payback period as long as 20 years. Working with energy services company Brewer-Garrett, the district concluded that the MTU Onsite Energy package would cost significantly less, offer a shorter break-even period and provide utility cost savings.

"We've essentially put an electrical power plant on-site at Medina High School," said Tom Drake, gas and power system sales for MTU Onsite Energy distributor W.W. Williams. "With the MTU Onsite Energy CHP, the school is able to use nearly 90% of the power generated."

CHP systems are not a common choice for most districts, as schools don't typically need heat year-round. However, Medina High's community rec center has two swimming pools, making it more suitable, as the system preheats the aquatic center's water before it goes into the boilers used to heat the entire facility. The constant heat load supplied by the pools and the facility absorbs 125 kW of heat energy through its engine exhaust and jacket water system on a continuous basis.

The natural gas-powered Series 400 CHP unit produces 128 kWe and recovers 747,000 Btu of heat per hour. During the first year, the CHP unit generated 970,553 kWh and delivered 5.736 billion Btu of recovered heat to the HVAC and aquatic center heating loop. For full optimization, the district has changed its heating system controls to maximize the benefit of the cogen unit's thermal output. In the colder months, the school relies on the CHP unit for all heating.

The district estimated that it saved more than $80,000 in utility costs, and when natural gas fuel costs and periodic service of the unit are considered, net savings exceeds $61,000, the district said. The system is now projected to yield a payback of approximately seven years.

"The MTU Onsite Energy CHP is a sound investment, yielding economic, operational and environmental benefits," said John Burkhart, director of business affairs, Medina City School District. "Environmental responsibility is important to us and to our students, and implementing this energy-saving solution reaffirms that commitment."

In addition to natural gas, the Series 400 CHP system can also be fueled by biogas, landfill gas or sewage gas. MTU Onsite Energy also offers a larger Series 4000 model fueled by natural gas and biogas, producing 763 to 2129 kWe. **dp**

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