

# Case Study



**Athletic Center**

## HEWH-500-WS - High Efficiency Water Heater



### The Hotchkiss School Forest E. Mars Jr. Athletic Center

Alternative energy systems certainly are not new to The Hotchkiss School who installed a central biomass heating plant to serve the winter heating needs of their campus back in 2012. However, with limited summer heating loads, the school simply could not justify operating the central biomass plant outside of the main New England heating season. This forced a few buildings, including the Forest E. Mars Jr. Athletic Center, back to heating water with a

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legacy oil boiler during the warmer months. The oil boiler, originally sized with enough capacity for winter heating, before the biomass plant came online, was oversized for the smaller summer thermal loads which included pool heating and domestic hot water. This revealed the need for a much more efficient heating system during the milder parts of the year.

Enter the Ilios HEWH-500-WS high efficiency water heater from Tecogen Inc. The HEWH-500-WS, applied as a dedicated heat

## Heat Differently.™

recovery chiller, is a perfect fit for the 212,000-square-foot Mars Center due to the Center's simultaneous need for water heating and space cooling during the shoulder and summer months. By leveraging the advantages of combined heat and power, commonly referred to as "CHP", the Ilios unit is able to efficiently and cost effectively drive a heat pump process with a gaseous fueled reciprocating engine. Because the Hotchkiss School is off the natural gas grid, the engine is driven by clean burning propane. Tecogen's patented Ultra emissions aftertreatment package, ensures near zero criteria pollutants-a major plus over the legacy oil boiler. Waste heat from the engine's exhaust, block, and oil heat are recovered and added to the heat from the condenser of the heat pump cycle, increasing the source efficiency to levels much higher than that of an electric heat pump. This results in substantial lower greenhouse gas emissions, largely due to the lower carbon content of propane vs. heating oil.

"Working with Tecogen is a win-win", said John Bryant, Director of Facilities for The Hotchkiss School. "The Hotchkiss School is committed to sustainability and has a goal of becoming carbon neutral by 2020. It is this type of technology that not only provides significant greenhouse gas savings but an operating cost savings as well, that made it easy to make the right decision."

"This application is the perfect example of employing our product in a seasonal application. While the school only operates the Ilios HEWH-500-WS during the cooling season, essentially about 4,000 hours each year, it is still provides substantial operating cost

savings. Even when the cost of a full maintenance contract is included, the savings are roughly \$30,000 per year. The HEWH-500-WS also reduces the school's carbon foot print by more than 150 tons of CO<sub>2</sub> every year and saves over 150,000 gallons of water via offset cooling tower usage remarks Stephen

Lafaille, Product Manager for Ilios Dynamics." The project was funded, in part, by a grant from the Propane Education and Research Council (PERC), whose mission is to bring efficient propane fueled technologies, such as gas-engine driven heat pumps, to the forefront. PERC is committed to supporting efficient propane solutions, such as the Ilios High Efficiency Water Heater.

Due to Tecogen's unique full factory service program, the Hotchkiss School's facilities department has no additional responsibilities. The HEWH-500-WS is monitored remotely by Tecogen via internet and all parts and labor, for both scheduled and unscheduled service, are completely covered.

Speaking about his experience with Tecogen, Dave D'Andrea, the Hotchkiss School's Energy Management and HVAC Technician, said, "I was skeptical at first, but the unit is clean, quiet, and is always running. If it needs service I know Tecogen will be there before I have a chance to pick up the phone. It is one less thing I have to worry about."



The Ilios HEWH-500-WS's small foot print allows it to be easily retrofit into existing facilities as an energy savings measure.

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