

Case Study



School

HEWH-500-WS - High Efficiency Water Heater



Landstown High School in Virginia Beach, Virginia is the Governor's STEM & Technology Academy so it is quite fitting that they have one of the most thermodynamically advanced heating and cooling systems of any school in the state. The Ilios HEWH-500-WS, a natural gas engine-driven heat pump water heater was installed in Spring of 2015. In its first year the unit logged over 6,000 hours simultaneously producing hot water and chilled water to offset the legacy natural gas boiler and electric chiller. While the concept isn't exactly novel, driving the process with low cost natural gas is. Using natural gas ensures that, in addition to being extremely efficient, there is also a

substantial operating cost advantage compared to an electric heat pump. This cost savings is the result of the Ilios HEWH-500-WS utilizing the advantages of combined heat and power or "CHP" technology.

Because the unit recovers free waste heat from the engine and purposefully uses it to help heat the water, there is a major reduction in greenhouse gas emissions, a

big advantage over an electric heat pump. During its first full year of operation the Ilios HEWH-500-WS reduced the school's carbon footprint by 175 tons of CO₂. This carbon reduction resulted from saving roughly 18,000 therms of natural gas and 100,000 kWh's of electricity that had been required

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- John Hasher, Energy Manager,
Virginia Beach Public Schools*

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by the old boiler and chiller plant. As a side benefit, the free cooling by-product assisted the chiller so much during the part-load portion of the year (winter and shoulder months) that it resulted in significantly less chiller cycling. In fact, the school documented an average of 40 fewer start per month by the existing chiller. The addition of the HEWH-500-WS also resulted in cooling tower water savings of approximately 230,000 gallons in the first year.

Perhaps one of the most unique advantages of the system is that it comes with a full factory “bumper-to-bumper” parts and labor warranty. This comprehensive program has been offered by Tecogen for over 30 years and some customers have been participating for equally as long. It essentially allows the equipment to have an infinite life cycle. As critical wear items reach the end of their useful life, like the engine or compressor in the case of the Ilios HEWH-500-WS, they are replaced with new components on an as needed basis. Because billing for the service program is based upon the number of hours the unit actually runs, customers save money by paying for service and maintenance only when the unit is running and saving them money. Customers never pay for maintenance during downtime, such as during a seasonal shut-down or when the equipment has been turned off for service. This unique program truly aligns the interests of the equipment supplier and the customer since it is in the best interest of both parties to maintain consistent and outstanding uptime. A key component for maintaining that uptime is a remote connection to Tecogen via the internet or, in the case of Landstown High School, via a cellular connection. The unit is constantly monitored and the appropriate service manager is notified automatically anytime an issue arises. The remote diagnostic feature allows Tecogen to promptly and intelligently dispatch technicians and parts. Remote monitoring makes life easy for the Landstown School Facilities Manager as well as the technicians overseeing the mechanical systems. They know that Tecogen has it covered and they have one less thing to worry about.

In fact, because we never remove or disable the legacy heating and cooling equipment, facilities managers realize that the addition of the Ilios unit provides redundancy and resilience, along with a much higher efficiency.

John Hasher, Energy Manager for the Virginia Beach Public Schools, is pleased with the new Ilios unit, especially considering the school received a 7 point bump in its Energy Star rating after the HEWH-500-WS was installed. He remarked, “The energy savings we are receiving help us get one step closer to our sustainability goals and the unique service program certainly helps with our annual budgeting. We know ahead of time each year what the maintenance will cost.”



The Ilios HEWH-500-WS has a small 3' x 5' footprint which allows it to be easily retrofit into tight existing mechanical spaces as an energy efficiency measure.

For more information please visit www.iliosdynamics.com

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