

Case Study

Saucon Valley Country Club Weyhill Guest House

Boiler Replacement Needs: A historic guest house at a Pennsylvania country club required replacement of a steam heating system. At 50 years old, the heating system was nearly as old as the country club and was failing. Facility needs included higher efficiency, long-term cost savings, smart features and increased reliability.

Project Installation Date: September 2015

Type of Facility: 13-room bed and breakfast

Name of Building: Weyhill Guest House

Location: Bethlehem, Pennsylvania

Construction Details: Equipment required for job -
Three boilers and two water heaters

Solution: Weil-McLain Evergreen® 399 boiler
Weil-McLain Aqua Plus® 85 water heater

Installing Contractor: Dual Temp

Background

Weyhill, a tranquil region in the gentle green Lehigh Valley of Bethlehem, Pennsylvania, was settled by Jakob and Susanna Gangewere almost 50 years before the Revolutionary War. Their grandson, Henry Gangewere, gives us our first direct link to the Weyhill Guest House, which was built in 1790. The guest house was included when the Saucon Valley Country Club was established over a century later in 1920.



The Saucon Valley Country Club, founded in 1920



The Weyhill Guest House, a historic PA landmark



Three new Evergreen 399 boilers in the Weyhill Guest House boiler room

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Saucon Valley Country Club

Weyhill Guest House

Situated in the rolling hills of the Saucon Valley, the club's 10,000 square-foot Weyhill Guest House operates as a historic boutique bed and breakfast, offering 12 guest rooms and a suite, and serving as a venue for corporate meetings, weddings and other events. The building's heating system consisted of a boiler nearly as old as the facility itself – a 1.15 million BTU steam boiler installed in the 1950s that was deteriorating rapidly.

"The steam boiler was the first automatic heating system installed in the structure and its longevity was quite remarkable," said Fred Kauth, HVAC technician for Saucon Valley Country Club. "It had replaced the coal-fired units and fireplaces that were in operation when the facility was previously a farm house."

With the boiler failing, Kauth saw an opportunity to improve facility comfort, improve access to hot water and reduce energy bills. Kauth reviewed several mechanical contractor company proposals and, after weighing his options based on timeline and allocated budget, chose mechanical contractor Dual Temp, based in Allentown, Pennsylvania, to handle the HVAC upgrade.

Tom Byrnes, director of service with Dual Temp, designed and oversaw the project. "In addition to the steam boiler, the old system included a hot

water steam bundle, an older model 600,000 BTU water heater with a 250-gallon storage tank, and air handlers with steam coils in guest rooms," said Byrnes.

"Our charge was to implement a more efficient and cost effective heating solution for the building." Byrnes worked closely with Brent Connolly and his team at Bath Supply in Bath, Pennsylvania, to help design a more efficient system for the Weyhill Guest House. Working together, they recommended installation of three Weil-McLain Evergreen® 399 boilers.

At 96.5% AFUE, the Evergreen 399 boiler from Weil-McLain is ideal for light commercial or large residential projects and offers simple controls, flexible functionality and durable design. Built with contractors in mind, it's easy to install, use and maintain. Additionally, Byrnes specified two 80-gallon Weil-McLain Aqua Plus® indirect fired water heaters with the necessary system pumps and valves.

Project Work Heats Up Amid Challenges

The HVAC upgrade project presented several challenges. First, the conversion to the new unit had to occur while the Weyhill Guest House was still occupied. "The entire installation took place while we were open for business with clients and guests staying at the house," said



The existing steam boiler in the Weyhill Guest House boiler room, prior to installation of the new equipment

Kauth. "This presented many logistical challenges such as making sure guests had hot water at all times and ensuring we didn't interrupt meetings or other events."

Dual Temp developed a detailed operational timeline over several weeks to ensure no disruptions took place. Another challenge included moving equipment in and out of the building.

"The original gas-fired steam boiler was very large and had to be removed, which required a lot of manpower and effort on Dual Temp's part," said Kauth. Dual Temp also engineered several modifications and enhancements to ensure optimal operation. These included installation of three-way valves and configuring the Evergreen units to designate one as primary for domestic water.

Piping changes were made to make the system more serviceable. "We fed all of the equipment through a header and installed all new circulators," said Byrnes. "For two existing areas that were steam we cut the coils out and replaced them with hot water coils so we could stay hydronic." In addition to installing and re-piping

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the new hot water heaters, Dual Temp ran a new hot water loop that connected all equipment and removal of the steam bundle to convert it into a dedicated heating system with zones.

“With the automatic sequencing feature, the boilers communicate directly with one another, sequencing themselves and rotating as needed,” said Byrnes. “The units operate at the lowest rate to optimize efficiencies, a great feature of these boilers.”

Numerous Benefits Realized

The entire operation was complete and operational in a few weeks. With the new boilers in service, several benefits were quickly realized.

First, Kauth estimates that the facility has saved about 28% on energy expenses based on the new equipment installation.

Additionally, the compact size of the Evergreen units has allowed them to save on floor space in the mechanical room. According to Kauth, the new system provides peace of mind.

“The set-up is completely redundant and the units modulate back and forth,” said Kauth. “It’s been very reliable thus far and we haven’t experienced any faults or failures.”

Most importantly, guest comfort is enhanced. Utilizing Weil-McLain boilers

to upgrade the heating system helped ensure that continued “home away from home” experience for guests. “The entire space is more comfortable than it has ever been,” said Kauth. “The combination of the Dual Temp effort and Weil-McLain products has restored this historic guest house to its former heating glory.”



Three new Evergreen 399 boilers in the Weyhill Guest House boiler room



Two new Aqua Plus water heaters in the Weyhill Guest House boiler room



Dakota Brown from eastern Pennsylvania-based contractor Dual Temp installing the new equipment