

Case Study

Belmont Harbor Condominiums

Boiler Replacement Needs: With a rapidly failing water heater, and an old, inefficient boiler, a 20-unit condominium building in Chicago required major upgrades to its heating system. High efficiency condensing boilers and indirect-fired water heaters from Weil-McLain provided the remedy needed.

Project Installation Date: November 2015

Type of Facility: Multi-family condominiums

Name of Building: Belmont Harbor Condominiums #7 and #8

Location: Chicago, Illinois

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

Solution: Weil-McLain Evergreen® 399 boilers
Weil-McLain Aqua PLUS® 85 water heaters

Installing Contractor: Hayes Mechanical

Background

“Our water heater was deteriorating rapidly and our boiler very old and inefficient,” said Mike Nowak, president of the board for the Belmont Harbor Condominium, a three story, 20-unit building on Chicago’s north side.

The building’s heating system featured a one million BTU boiler operated via an outdoor reset control and a 400,000 BTU/hr direct water heater with a 100-gallon storage tank. The individual condo units are heated by hot water baseboard heaters.



Belmont Harbor Condominiums in Chicago, IL



Two new Evergreen 399 boilers in the Belmont Harbor Condominiums boiler room

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“The skin of the water heater was melting and deforming, and the unit was leaking,” said Nowak. “It also caused the boiler room to become extremely warm because the unit was always on and not venting properly.”

The aging boiler also was failing and required regular maintenance. “The boiler was way past its expected life, and the heat output very inefficient,” said Nowak. “It operated continuously, especially if it was less than 56 degrees outdoors.”

Nowak added that some residents complained about excessive heat, especially those who lived above the boiler room area. Others complained about not having enough hot water.

Installation Upgrade Proceeds

Chicago-based Hayes Mechanical, who handled repairs to the building’s HVAC system for years, was selected to handle the heating upgrade.

The project began in mid-November 2015. Hayes Mechanical proceeded to install a new, advanced condensing boiler product: the 96.5%¹ AFUE Evergreen® 399 MBH boiler from Weil-McLain.

The Evergreen features advanced technology with simple controls, flexible functionality for multiple applications and a durable design, and is easy to install, use and maintain.

The unit is adaptable for most heating needs including light commercial or large residential applications and for single or multi-boiler installations.

The two Evergreen boilers were installed as a Multiple Boiler System (MBS) using a Modbus communication feature. In this lead lag configuration, a master boiler controls the modulation and sequencing of boilers on the network to achieve the desired system supply temperature.

According to the installing technician with Hayes Mechanical, with the automatic sequencing feature, the boilers communicate directly with one another so they sequence themselves and rotate as needed. Both operate at the lowest rate to optimize efficiencies, and they function with a built-in controller so no additional controls are needed.

The upgrade also included the installation of two Weil-McLain 80-gallon Aqua PLUS® indirect-fired water heaters to replace the existing direct-fired water heater and storage tank. The Aqua PLUS units feature high output stainless steel heat exchangers that deliver superior first hour ratings and recovery. The units’ compact size allows for easy installation in low ceiling basements or storage rooms, and thermostat connections are already installed for quick wiring.



New Aqua Plus water heaters in the Belmont Harbor Condominiums boiler room



The existing boiler and water heater in the Belmont Harbor Condominiums boiler room

One of Nowak’s concerns early on was the interruption of hot water for tenants. Hayes Mechanical made sure access to domestic hot water was only out for several hours one day in the beginning of the project.

¹Evergreen 399 rating is combustion efficiency

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In addition to installing the new systems, Hayes Mechanical upgraded the boiler room piping – including the boiler connections, indirect fired water heaters and the supply and return – with stainless steel pipes.

“The installation progressed smoothly with limited interruption to building occupants,” said Nowak. “Weil-McLain had an engineer who came out to advise us, answer our questions and to conduct diagnostic testing to ensure everything was in order.”

Boiler Upgrade Benefits

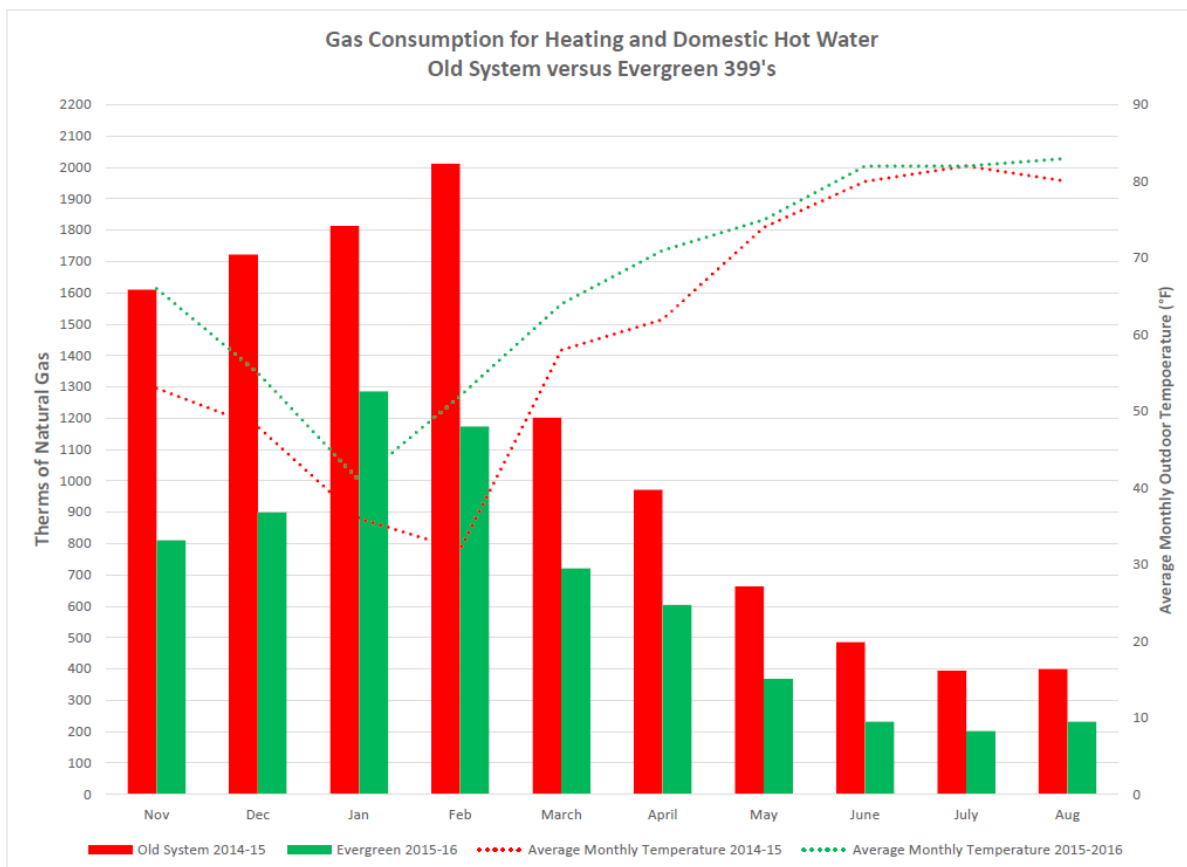
Both Nowak and residents of the Belmont Harbor building have experienced several benefits from the new system.

“The heat is very comfortable and building occupants are happy about that and appreciative of the ample supply of hot water now available,” said Nowak. Nowak also was pleased with the project timeline and management. “Throughout the project, the Weil-McLain and Hayes Mechanical

teams ensured everything was delivered on time and everyone was on top of their to-do lists,” said Nowak.

The most important benefit: after experiencing an entire winter with the new system installed, the facility realized a total fuel savings of 42%.

“Even if we bump up the heat a little, our bills don’t really change that much,” added Nowak. “It really is a phenomenal, efficient system and the energy savings have been fantastic.”



Pictured: Belmont Harbor Condominiums experienced a gas consumption reduction of 42% year over year after the installation of the Evergreen 399 boiler and Aqua Plus 80-gallon water heaters.