

Constant maintenance to high performance: Increasing efficiency at the Sturgeon Bay YMCA

Located in North-Eastern Wisconsin, the Sturgeon Bay YMCA offers a wide range of programs and facilities to local residents and members, including two pools, multiple gymnasiums, childcare area, multipurpose rooms, and locker/shower facilities. To supply domestic hot water and space heating for these facilities, three 2 million BTU fin-tube boilers, along with two 200 Gallon storage tanks were used for years, along with an additional 2 million fin-tube boiler for pool heating.



As the tanks and boilers aged, more and more maintenance was required to keep the heating system up and running. [Synergy Geothermal](#) in Sturgeon Bay was contracted to do the work. Derrick Ellefson, Vice President and Co-Owner of Synergy Geothermal, explained that as the YMCA's heating system deteriorated, it became difficult to maintain the equipment only on an emergency basis. "We decided to donate the maintenance to the Y at that point," Ellefson explained. "It made it a lot easier to help us predict maintenance issues before so we could do the work on our own time, not waiting for an emergency."

While fighting with control issues across the heating system and other ongoing problems, a heat exchanger in the pool's boiler cracked, leading to the ever-pressing question of whether to [repair or replace the boiler](#). After a cost-analysis, Synergy Geothermal and the Sturgeon Bay YMCA decided to replace the pool's boiler with a highly efficient heating system, and chose a [Vitodens 200 B2HA cascade system](#). With the increase in heating efficiency, the 2 million BTU requirement was reduced to 1.5 million BTUs required to maintain constant heating for the facility's two pools, whirlpool, and water slide.

While working on the pool boiler replacement, more questions were raised when a hole was discovered inside the combustion chamber of the space heating and DHW system. A second cost analysis was done, this time in partnership with state initiatives and using rebates available for upgrading heating equipment to high-efficiency, more environmentally-friendly products. With the available incentives, and because the YMCA was in no doubt of maintaining their presence in the community, they decided to move forward with a complete overhaul of the facility's heating system, replacing the two fin-tube boilers and DHW tanks with a single [Vitocrossal 300 CA3B](#), capable of handling 5 million BTUs of heating and hot water output.

The main challenge in the upgrade was the location of the boiler room - the second floor, with no freight elevator. "We had to disassemble the whole thing and reassemble" Ellefson chuckled.

The move took Ellefson and his team of two others only about a day and a half. "It was surprisingly un-painful; I've done other projects with cast iron boilers where you have to disassemble and reassemble and those were a lot more labor intensive. It was quite the challenge, but actually it was a lot of fun," he said. "The whole process was a lot easier than somebody might think to replace a 5 million BTU boiler, especially disassembling and reassembling it."

The full heating and hot water system overhaul took the team less than two weeks to complete, and since that time there have been no issues with the heating, hot water, or pool heat at the facility. "It was pretty simple," Ellefson explained. "We had to iron out a few controls in the first week, but since then there hasn't been any issues."

Since the Vitocrossal was installed, the YMCA has been pleased with how well it has been able to keep up with the high DHW demands, especially since replacing the 400 gallons of storage. "It's amazing how fast that thing can crank out hot water," Ellefson explained when asked about the system's performance.

Additionally, Ellefson explained, the YMCA was able to [receive an incentive](#) of nearly \$40,000 from the State of Wisconsin, with additional operational savings up to \$1,000 each month, which allows for more money to be dedicated to programs and activities at this important community fixture; "they are able to spend all that money in other places now."

Despite the initial and natural hesitations of upgrading the massive heating system at the Sturgeon Bay YMCA, it is estimated that the new [Viessmann heating system](#) will pay for itself in under 10 years when factoring in the large savings in operating costs. The system replacement is still running smoothly without issues, and being maintained regularly to maximize its lifetime savings and performance. In fact, when recently taken apart for general inspection and cleaning, Ellefson was shocked at how clean the system remained while in constant operation.

All in all, the boiler system upgrade received positive feedback across the board. "This might sound cliché," Ellefson prompted, "but it's been awesome."



Vitodens 200 Cascade System provides heat for multiple pools at the Sturgeon Bay YMCA



A single Vitocrossal 300 CA3B Provides complete space heating and DHW for the entire facility.