



Case in Point

SYNC Boilers and Armor Water Heaters provide Cost Savings for the Lorain Metro Housing Authority

The Lorain Metro Housing Authority is the largest landlord in Lorain, OH on the coast of Lake Erie. Since 1938, LMHA has provided comfortable, safe and affordable housing for low income families. In 2010, the 12 story property at John F. Kennedy Plaza, 1730 Broadway Avenue, Lorain, OH was in need of a space heating and domestic water heating upgrade.

The existing boilers were pulse type boilers. Of these, twelve 300,000 Btu/hr models were dedicated to space heating and five 150,000 Btu/hr models provided domestic hot water with four phase III 119 gallon indirects. The existing boilers were maintenance prone, parts were becoming increasingly more difficult to obtain and the heat exchangers were failing regularly. At the time the retrofit job started, at least four boilers were down for maintenance.

R.E. Warner & Associates were the consulting engineers for the job and they faced a number of design challenges. The existing equipment reportedly operated at approximately 90-91% efficiency, provided redundancy and a total

12:1 turndown. The new design called for higher efficiency, more redundancy, equal or better turndown and web-based access control for both the owner and the service contractors. Initially, REW considered the Lochinvar Intelli-Fin boilers with Lochinvar's Hot Water Generator systems to provide the domestic hot water.

After consulting with the local Lochinvar representative, Campbell Equipment Company, a decision was made to separate the two systems and use three 1,500,000 Btu/hr SYNC boilers for the space heating and two 500,000 Btu/hr Armor water heaters coupled with an RJA504 storage tank on the domestic side.

"The Lochinvar boilers met all aspects of the design basis and throughout the design process, we found Lochinvar to be an excellent technical partner in providing the client with engineered solutions to their needs."

Brian Emery, PE
Mechanical Engineering Manager
R.E. Warner



PROJECT:

LORAIN METRO HOUSING AUTHORITY



LOCATION:

LORAIN, OH

LOCHINVAR PRODUCTS INSTALLED:

- 3 – SYNC CONDENSING BOILERS
- 2 – ARMOR WATER HEATERS
- 1 – LOCHINVAR STORAGE TANK

DESIGNERS/CONTRACTORS:

R.E. Warner & Associates Inc.
Westlake, OH



Lucas Plumbing and Heating, Inc.
Lorain, OH



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The new SYNC boiler system would provide 10:1 full modulation at each boiler for a total 30:1 system turndown. The SYNC boilers offered excellent redundancy, two-way communication via Modbus protocol and sidewall Direct Vent capabilities with low cost PVC pipe for the vent and air intake. The existing mechanical room was 6 feet below grade and extremely crowded with the old equipment. The contract stipulated that the mechanical room floor be raised to grade. The mechanical contractor, Lucas Plumbing & Heating of Lorain, Ohio was able complete the work in three phases to avoid total system shut down and the need for expensive temporary heat.

The center section was done first. The Armor water heaters were installed in this section while some of the existing boilers were kept on line to provide building heat. After the new domestic system was started, Lucas was able to demolish more of the existing equipment, raise a second section of the mechanical room floor and install two of the three SYNC boilers. The new heating plant was switched over in November and the final SYNC boiler was operational several weeks later. It was estimated that by phasing in the new equipment, LMHA saved up to \$100,000 in temporary heat packages.

Now operational, the new control system allows LMHA personnel, Lucas and the control contractor to monitor and communicate remotely with the SYNC boilers to optimize efficiency, rotate boilers and notify LMHA and Lucas in the case of boiler alarm. All parties can now access the web based site and see in real time boiler status, firing rate, system and boiler pump status, set points, system and outdoor temperatures, alarm histories, etc. Additionally, the new mechanical room is clean, well lit and less congested with a large amount of extra floor space due to the compact design of Lochinvar boilers and water heaters.

In a project review meeting with LMHA directors, Joe Lucas from Lucas Plumbing along with local Lochinvar Rep Tim Campbell, gas bills from Columbia Gas were reviewed and a savings of 30% was achieved for the three coldest months of the season. These savings were especially remarkable for two reasons: a) the building load increased and b) the pulse type boilers that were replaced are reported to be in the 90-91% efficiency range.

The small foot print, PVC venting and BMS interface flexibility of the SYNC boilers and Armor water heaters provided the engineer and mechanical contractor with cost savings options not available from other manufacturers. The 10:1 boiler turndown and 5:1 water heater turndown plus Modbus interface provide unsurpassed management capability. In a building this size, there is almost always a load during the heating season and the turndown enables the BMS to micromanage on even the most marginal heating days. Run times for Armor water heaters exceed 2 ½ hours and boiler run times are even longer.



The elimination of boiler cycling significantly increases efficiency. The added benefit is the elimination of mechanical wear and tear to boiler components which will translate to reduced maintenance costs for LMHA.

For information about high-efficiency boilers, water heaters, pool heaters and solar thermal heating systems from Lochinvar, visit www.Lochinvar.com.

ABOUT LOCHINVAR

Lochinvar Corporation is a leading manufacturer of high-efficiency water heaters, boilers, pool heaters and storage tanks. Based in Lebanon, TN, with facilities in Detroit, Orlando, Tampa, Pompano Beach, Dallas and Phoenix, Lochinvar stocks all products in all locations.

