



# Case in Point

## Lochinvar® Offers Energy Saving Rx for Rural Kansas Hospital



Holton Community Hospital in rural Holton, Kansas, provides healthcare services and emergency care to the local community within a 50 mile radius. The facility has expanded exponentially since it first opened its doors in 1938. Over the years, the hospital has undergone numerous renovations and moved multiple times to meet the needs of the growing practice and the local community.

In 2013, the facility's heating and domestic hot water systems were operating at an inefficient level. The

more efficient equipment available for an energy retrofit. The PCI team and Knowles Smith of Associated Equipment Sales shared examples of successful installations that saved similar facilities a significant amount on energy costs, along with calculations for the estimated payback the hospital could expect with an upgrade of its heating and domestic hot water systems. The hospital management team evaluated the proposal and chose to move forward with the installation of a new Lochinvar system.

**PROJECT:**

HOLTON COMMUNITY HOSPITAL

**LOCATION:** HOLTON, KS

**LOCHINVAR PRODUCTS INSTALLED:**

- 3 – KNIGHT XL BOILERS (KBN501)
- 2 – SQUIRE INDIRECT WATER HEATERS (SIT119)
- 1 – BUFFER TANK 119 GALLON

**SERVICE CONTRACTOR:**

PCI MECHANICAL SERVICES  
TOPEKA, KS



**MANUFACTURERS' REPRESENTATIVE:**

ASSOCIATED EQUIPMENT SALES  
LENEXA, KS



*Hospital mechanical room before*

hospital's service contractor, Topeka-based PCI Mechanical Services, had extensive experience with Lochinvar® equipment. Charlie Griffin and Mark Law of PCI Mechanical Services made the facility operators aware of the far



The two existing atmospheric cast iron boilers and three gas-fired water heaters had been in place since the current facility was constructed nearly 20 years ago.

Based on the boiler plate outputs and firing rates of the existing boilers and domestic water heaters at design conditions and outputs, three KNIGHT® XL Heating Boilers

with inputs of 500,000 Btu/hr (KBN501), two 119-gallon Squire® Indirect Water Heaters (SIT1119) and a 119-gallon buffer tank were selected.

PCI Mechanical Services handled the removal of the existing equipment and the installation of the new system without disruption of service. Law noted, “The installation was very quick and easy – the SMART SYSTEM™ operating control on the KNIGHT XL Boiler really simplifies setup and this job was no exception.” On one of the KNIGHT XL Heating Boilers, a Grundfos MAGNA3 variable-speed circulator pump was installed. The KNIGHT Boiler controls the speed of the pump using its built-in SMART SYSTEM control. When the boiler modulates down, the pump slows down to keep a constant temperature rise across the heat exchanger at all times. Reducing the RPMs of the pump reduces the power consumed tremendously.



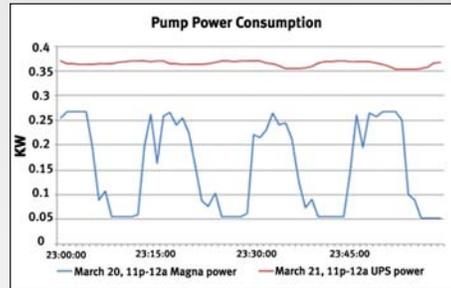
A power study was conducted by placing monitoring equipment on both the master boiler and the member boiler not dedicated to domestic water. The master boiler had the MAGNA3 40-80F variable speed circulator pump, while the member boiler used the UPS43-100F constant speed circulator pump.

For analysis, the team compared two similar days, March 20 and 21, at a time when only the two monitored boilers would be running. At this time domestic water use would be unlikely, reducing the chance that the third boiler would fire and affect the measured values.



*Hospital mechanical room after*

Below is a graphical representation of the power consumed by the constant speed circulator as compared to the variable speed circulator when they were each the lead.



The modulation of the pump speed results in significant energy savings, which is shown in the pump power consumption chart. The MAGNA3 reaches a maximum power usage of 270W but slows to a minimum of just over 50W, while the UPS runs at a continuous 365W. Over this hour, the MAGNA3 averages 156Wh.

Modulating the speed of the boiler pump allows for optimal control by the boiler to lower electricity usage by reducing the speed of the pump. With Lochinvar's SMART SYSTEM control, the boiler will adjust the flow rate through its heat exchanger to control the delta T through the boiler as well as the system median temperature. This allows for a constant delta T across the boiler, resulting in enhanced building comfort, increased heat transfer and electricity savings.

In January 2014, Holton Community Hospital spent a total of \$1,207.31 on its combined gas and energy consumption. In comparison, the hospital's energy and gas bills for January 2013 had been \$2,805.41 - more than twice as much.

“We could not be more pleased with our new Lochinvar system. This state of the art equipment far exceeds our expectations at providing heating and domestic hot water to our 37,000 plus square-foot facility, not to mention the remarkable energy savings,” said Stephen McCaleb, facility maintenance specialist for Holton Hospital. “The complete new system resides in the footprint of the two old atmospheric boilers, and with the removal of the three water heaters, we were pleased to have the additional space in the mechanical room.”

For more information, visit [www.Lochinvar.com](http://www.Lochinvar.com).

## ABOUT LOCHINVAR

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