

TekWorx Control & Energy Optimization System Fine Tunes HVAC Control at Pennsylvania Hospital

St. Luke's Hospital in Bethlehem, PA has more to be proud of than just its ranking as one of the 50 best hospitals for heart care and surgery. A new, highly comprehensive control system has streamlined the hospital's HVAC operations and set the stage for even better automation and efficiency in the future.



PROJECT SNAPSHOT

Facility: St. Luke's Hospital, Bethlehem, PA

Situation: New Cleaver Brooks boilers would provide St. Luke's Hospital with much improved efficiency and lower emissions. However, Steve Rosati, Manager of Facility Systems, thought improved control was the key to optimizing boiler plant performance.

Solution: A new TekWorx Control & Energy Optimization (CEO) System provides more comprehensive boiler plant control and opens the door for improved chiller plant control as future renovations take place.

Comments: "I think the TekWorx organization has a better grasp on the logic that deals with making plant operation decisions."

*Steve Rosati
Manager of Facility Systems*

A new TekWorx Control & Energy Optimization (CEO)

System, installed in October 2005 is currently enhancing operation of a recently updated boiler plant and will soon provide control for the chiller plant as well.

Steve Rosati, Manager of Facility Systems at St. Luke's, decided to investigate TekWorx when the hospital was about to embark on a high efficiency chiller retrofit. He thought a TekWorx control system could optimize the performance of the chiller plant which was being updated with a new McQuay chiller. However, a much needed boiler plant renovation soon took precedence, so Rosati decided to first apply TekWorx technology to the boiler plant.

TekWorx in Action

For years the hospital had been limping along with two very old, very inefficient boilers. In Spring 2005 the hospital received the permit to replace these boilers with three new dual fuel non-condensing 400 horsepower boilers from Cleaver Brooks. The new boilers offered improved efficiency and lower emissions, but Rosati thought there was room for operating and maintenance improvement via enhanced plant control. One option was updating the Cleaver Brooks' standard integrated control on the boilers. However, after some investigation, Rosati decided this option would not meet all his needs.

First, the Cleaver Brooks control did not offer the same broad connectivity to the other hospital control systems that the TekWorx control did. Second, it did not have the base capability to control other non-boiler operations such as pumps and fuel monitoring; expanding its capability to include these tasks would be a long and costly process. Finally, Rosati would still have to purchase a separate chiller plant control.

The hospital relies on a Johnson Controls Metasys system for overall building energy management, but Rosati wanted a control that was especially designed for a central energy plant. Specifically, he wanted a control that could optimize the overall operation of the plant and increase efficiency to such a degree that it would offset its own cost. To keep costs down, Rosati opted to manage and design much of the renovation project himself. As a result, he needed a control supplier with central energy plant expertise, one who could act as a close consultant during the selection and implementation processes.

A visit to two premier high rise apartment buildings in New York City helped convince Mr. Rosati that TekWorx could provide the high degree of control he wanted. One of these buildings, known as the Octagon, is characterized by its eco-friendly, high efficiency design. Both buildings are high end properties with many complexities that would challenge any control manufacturer. After seeing TekWorx in action in both of these buildings, Rosatti was certain he wanted to install a CEO at his own plant.

“When it comes to control systems I’m not sold that easily,” said Rosati. “I think the TekWorx organization has a better grasp on the logic that deals with making plant operation decisions.”

One of the many things Rosati appreciated about TekWorx, was the control’s ability to communicate with a variety of other equipment and protocols. At St. Luke’s the CEO communicates over Modbus to variable speed drives on the boiler feed pumps, the Hays Cleveland draft control system, and a Veeder Root tank monitoring system. It uses the Allen-Bradley Data Highway protocol to communicate with the Cleaver Brooks onboard controls. Finally, the CEO ties in with the existing Johnson Controls Metasys system via the N2 bus. With this seamless communication, Rosati can orchestrate complete boiler plant operation and achieve full optimization for his plant.

TekWorx also enables authorized personnel to remotely monitor and adjust boiler plant operations via the internet, so troubleshooting is much faster and less expensive. His consultants at TekWorx have already used this web accessibility to diagnose various operational issues at the boiler plant, including a sensor calibration problem, without ever having to leave the office.

Currently, TekWorx is controlling

complete boiler plant operations including:

- Control of boiler feed water and condensate pumps for greater energy optimization.
- Boiler sequencing control, which is now more carefully aligned with system demand.
- A variety of fuel metering and verification processes that allow for seamless changeover from oil to gas when conditions dictate. This includes metering the consumption of oil and gas, activation of a low fuel alarm, and verification of fuel availability, fuel temperature, operation of fuel pumps, etc.
- All other alarming and reporting functions associated with the boiler plant operation.
- Full communication with the Hospital’s Johnson Controls Metasys, and connection to the hospital’s IT network.

Better Future Control

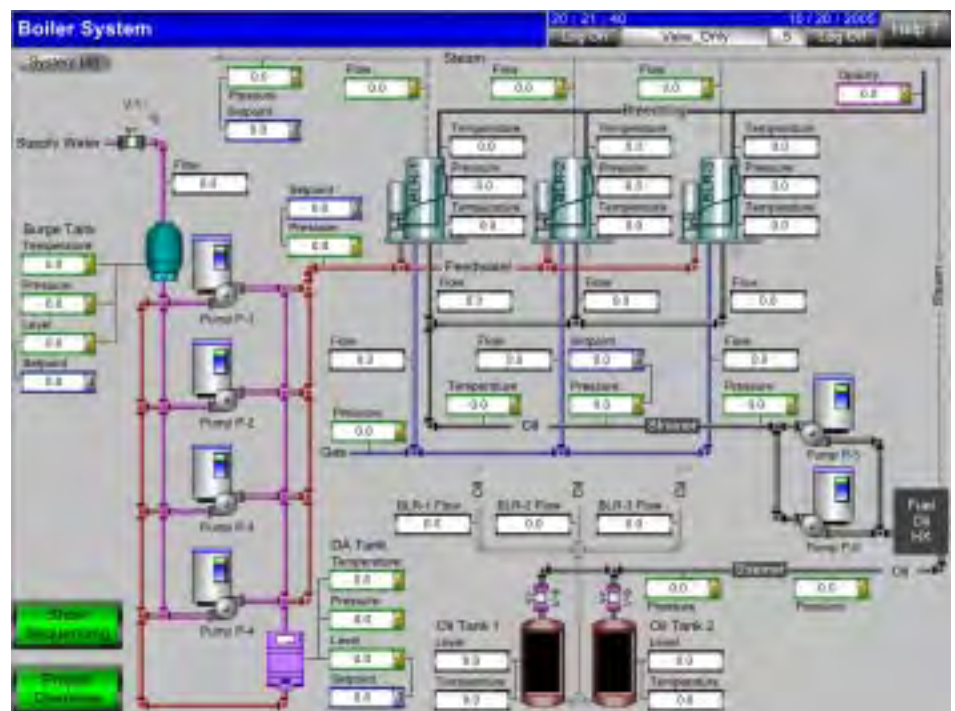
With TekWorx as its HVAC foundation control, St. Luke’s can look forward to improved control in the future. When

the chiller plant update is complete in March 2006, TekWorx will provide full optimization of both the chiller and boiler plants, as well as improve maintenance and troubleshooting through its remote monitoring capability.

Based on current control performance, Rosati is optimistic about the impact TekWorx will have on the overall HVAC operation.

“This system not only helps reduce our boiler fuel consumption, it saves a lot of electrical cost by reducing the amount of horsepower we are using,” said Mr. Rosati, adding that prior to the TekWorx implementation, his boiler feed pumps used to always run at full capacity. Now, their operation is maintained at a much more reasonable and efficient level.

“It’s actually a very smart way for a hospital to embark on any major HVAC plant renovation,” remarked Mike Flaherty, President of TekWorx. “It leaves the door open for enhanced control and efficiency as new equipment is implemented.”



TekWorx CEO screen shows an overview of St. Luke’s boiler plant. This system can be monitored and adjusted remotely via the internet.