Affinity Medical Center

Affinity Medical Center dramatically improves its ENERGY STAR® rating with Siemens Solutions

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Affinity Medical Center is a community-based, 266 registered bed, acute care hospital in Massillon, Ohio. The current 399,218-square-foot hospital was built in 1955 with additions in 1963, 1979 and 2000. In 2008, Affinity closed a smaller, sister facility known as Doctors Hospital in Stark County and consolidated operations at the Massillon location. In 2007, Affinity became a wholly-owned subsidiary of Community Health Systems, a for-profit and publicly-owned network of more than 130 hospitals. The change in ownership was accompanied by major changes in management at the hospital with new goals and expectations, a renewed vision and a new drive for improving performance.

Client Objectives

In 2009, energy efficiency became a serious concern for Affinity's new owners. The hospital's ENERGY STAR rating was in the bottom five percent of Community Health Systems' portfolio of 130 hospitals. Scott Crescenze, Manager of Engineering at Affinity Medical knew that he could achieve significant improvements in energy efficiency, cost savings and the hospital's ENERGY STAR rating if he could gain the support of the new owners. In 2009, Mr. Crescenze met with the Building Technologies Division of Siemens Industry, Inc. and developed a list of equipment that needed to be reprogrammed and recommissioned. Based on this program, he was able to persuade the new owners to make a significant investment in energy improvements at Affinity with about one third of these funds to be spent working with Siemens. Mr. Crescenze guaranteed corporate that the funds would be recouped within two to three years.

Siemens Solution

Affinity's energy efficiency project began in January 2010 based on a detailed evaluation of the condition and performance of the building equipment and systems. There were no major purchases of equipment such as boilers or chillers, the program focused on optimizing the existing building systems and equipment.

Facility improvement measures implemented by Siemens included recommissioning and reprogramming of the hospital's air handling units which involved the addition of new control points, sensors and drives.

Siemens APOGEE® Building Automation System played a key role in improving the hospital's energy efficiency and ENERGY STAR rating. Tom Potter, Engineering Specialist with Siemens stated, "The control schematics on Affinity's APOGEE system were set up at least 10 years ago. Needless to say, the uses and demands of the building have changed over that time. As part of this project, we basically gave them a completely new control system. Everything has been reprogrammed and there are now more motion sensors and meters. The control system now adjusts to the demands the building faces over the course of the day. The system is better tailored to current usage and the present building's profile." Siemens also added a load shedding program and a new graphical user interface to the APOGEE system which has helped hospital staff make better decisions on a daily basis.

Siemens also reviewed operations and enhanced control for the chilled water and boiler plants. The hospital used to maintain flat setpoints for the chillers and boilers at all times. Sensors were added to these systems to scale back the unnecessary production of steam and chilled water. Setpoints were adjusted for the hospital's three chillers and a new sequencing strategy was developed. The most efficient chiller now runs as the lead chiller with the less efficient chillers staged up as needed.

The boiler plant features four high-pressure steam boilers. Siemens developed a control strategy for the boilers that allows the steam setpoint to modulate based on hospital needs rather than running at a constant setpoint. Before
this program, it was not uncommon for three boilers to be running at full steam at a time. Mr. Crescenze stated, "The big thing was Siemens taking over control of the boilers, controlling the firing rate. We used to just turn them on and they would run on their own to maintain specific pressure. Now the boilers are integrated. Siemens APOGEE Building Automation System is the brains of the operation. It tells the boilers what to do, what pressure to make, when to make it and how soon to stage another boiler, instead of making more pressure all the time. That is where the substantial savings were."

Client Results
Affinity achieved significant results by recommissioning, redesigning and making the most of the building equipment and systems that were already in place. Within just 19 months of starting this project, Affinity’s engineering team was able to exceed everyone’s expectations and pay back the entire investment. Over the 12-month period from October 2010 to September 2011, Affinity’s combined energy savings for gas and electricity averaged 23%. Working with Siemens, Affinity saw steady progress in energy reduction and savings over the course of this project:

- Before this program, Affinity’s gas bill averaged $55,000 to $60,000 a month. The hospital’s gas bill for September 2011 was $17,000.
- In the first quarter of 2011, the hospital’s gas savings averaged 19% and in the second quarter averaged 52% savings over the previous year.
- For electricity, savings for the first quarter 2011 were 15% and the second quarter was 5% over the previous year.
- An unintended benefit of this program was a dramatic reduction in water usage resulting from improved equipment efficiency. In the first nine months of 2011, Affinity decreased water usage by 2.1 million gallons.

Based on Siemens role in raising their ENERGY STAR rating almost 30 points in one year, Affinity has asked Siemens to continue to work with them to achieve their ENERGY STAR label by boosting their score from the current level of 73 to 75. Siemens is currently working with Affinity to install meters on the hospital’s data center and continues to add motion sensors to reduce air conditioning demands. Siemens has also developed options for replacing one of the hospital’s chillers with a new high-efficiency chiller.

“We were not using the full capabilities of our building automation system. We had not thought of using the building automation system to save energy. We had not thought of using the system’s capabilities to automate building equipment and systems to save energy. Now we know that the Siemens building automation system can be used to do almost anything that you want, almost anything that you can dream of.”

Scott Crescenze, Manager of Engineering, Affinity Medical Center