

Laughlin Memorial Hospital

Greeneville, Tennessee

November 2017

Performance contracting upgrades exceed expectations; result in first-year savings of more than \$778,800; helped earn ENERGY STAR rating above 90, lower maintenance costs, improve indoor air quality and enhance patient comfort.

Challenge

Laughlin Memorial Hospital's infrastructure was in need of upgrade. Its lighting fixtures were aging and its HVAC equipment, installed over the years by a variety of different vendors, had become inefficient and less reliable, resulting in high utility costs and comfort issues. With outdated pneumatic controls, the maintenance team's only option was to manually adjust systems to accommodate patient and staff needs.

"We're a small hospital struggling with a lot of issues, and we need to save money whenever we can," said Chuck Whitfield, chief executive officer, Laughlin Memorial Hospital. "Energy efficiency was our main objective. It translates into cost savings and offers environmental benefits as an added bonus. To solve our challenges, we wanted to upgrade our infrastructure and ensure that all of our systems were working together."

Solution

Laughlin Memorial Hospital's maintenance director researched vendors and nominated Trane as their upgrade partner due to the company's team approach, project performance and local support. After meeting with the hospital to understand the project needs and scope, Trane suggested the use of a guaranteed energy savings performance contract, which would allow the hospital to use energy savings to fund the efficiency upgrades, eliminating the need for capital expenditures. The project moved forward with Laughlin Memorial Hospital and Trane forming an energy solutions team tasked with identifying energy conservation measures (ECMs) for the hospital.



Founded in 1939 as a small hospital in a converted house, Laughlin Memorial Hospital has grown into a four-building medical complex with a staff dedicated to continuous improvement.

Increasing efficiency and reliability

The energy solutions team took action, beginning with upgrades of equipment and controls in the boiler and chiller plants. New boilers were installed and two Trane water-cooled CenTraVac® centrifugal chillers replaced aging chillers in the hospital. With the industry's highest full- and part- load efficiencies, the CenTraVac chillers are helping the hospital reduce energy use.

Improving ventilation and comfort

Struggling with air handler economizing routines, the previous controls vendor had disabled most of the economizers. Trane retrofitted the existing air handling units with new controls and the economizers were repaired to improve efficiency and increase comfort. Pneumatic reheat coils were upgraded with more than 500 variable air volume (VAV) boxes with direct digital controls to provide reliable, personalized comfort to satisfy the needs of occupants in diverse environments from offices and computer server rooms to radiology departments and operating facilities.

Ensuring optimal operations

A Trane Tracer® Ensemble™ building management system allows the hospital to monitor and control building systems throughout the complex, establish set points for critical areas such as operating rooms, implement scheduling to turn off systems in areas not in use, and receive alarm notifications. "Our technicians have a laptop on their toolbox, and can access the building management system from wherever they are," said Richard Banks, maintenance supervisor, Laughlin Memorial Hospital. "They use the Tracer to control HVAC and lighting systems, diagnose problems, and make adjustments."

Employing analytics for continuous energy management

Using Trane Intelligent Services, Laughlin Memorial Hospital and Trane work together on an ongoing basis, commissioning air handlers, boilers and chiller plant equipment, for continuous year-over-year energy savings improvement. With Building Performance, data is analyzed to uncover hidden information and evaluate trends. Quarterly review meetings with Trane building professionals offer data-driven insights, enable discussion regarding energy usage, and identify action items. "Building Performance identifies anomalies and enables us to quickly take corrective action," said Whitfield. "We use the analytics and analysis by Trane to clearly see where we are consuming the most energy, and determine ways to improve."

Trane Active Monitoring provides 24/7 support to keep critical systems up and running. Trane building professionals analyze alarm notifications and resolve issues quickly, or initiate action to maintain efficiency and performance. A proactive maintenance routine has also been put in place for ongoing systems support. "With the 24/7 monitoring, Trane helps us take care of problems remotely, reducing our need for service calls," said Banks. "That has saved us a lot of money."



Two high-efficiency Trane CenTraVac® centrifugal chillers replaced aging equipment in the hospital's chiller plant to reduce energy use.

Results

Infrastructure upgrades at Laughlin Memorial Hospital have significantly lowered energy and service costs. The project is exceeding expectations, with first-year savings of more than \$778,800, earning the hospital an ENERGY STAR® rating above 90. The hospital has also lowered maintenance costs, and indoor air quality has been improved. "We are now able to maintain a more stable environment for patients and staff," said Whitfield. "It's more comfortable and humidity is balanced, which is important, especially in our operating rooms."

"Serving our patients is what's most important to us and we always look for ways to do that better," added Banks. "Continuous improvement is part of our culture."

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