EXPANSION

READY

After overhaul of cooling system, Gettysburg Hospital eyes future

By John Vastyan

Civil War-era physicians and nurses could only have dreamed of the contemporary health care facility—WellSpan Gettysburg Hospital—that now stands within sight of the Gettysburg National Military Park. Construction began about 60 years after the epic battle and today is a nationally recognized acute care community hospital.

Joe Lehigh, a 27-year member of the hospital's engineering team, says the most recent changes to the facility were made chiefly to improve facility operations. "The key need was to modernize mechanical systems that would assure reliability of critical patient care. High on the list was cooling equipment. We needed unerring dependability of critical patient care."

Cooling towers were at the top of the short list.

Lehigh says the WellSpan engineering team worked in concert with Baltimore-based consulting engineers, Leach Wallace Associates, and Manchester, Pennsylvania-based James Craft & Son Inc.—the full service, non-union, 150-person plumbing and mechanical contracting firm's MCAA membership dates back to 1969.

"Replacement of the towers was a five-year effort," explained Lehigh.

The old cooling towers, with 900 tons of cooling capacity, were nearing their serviceable end. But finally, a new motivation emerged propelling an effort to replace the cooling towers: a longer-range expectation of the hospital's expansion.

Design solution

One challenge became the key obstacle in a physical sense. The existing cooling towers were constrained on all sides by brick walls; this defined the footprint—immovably.

The WellSpan Gettysburg Hospital engineering staff worked with multiple manufacturers, including EVAPCO, to review turnkey replacement solutions for the failing evaporative coolers.

WellSpan engineering managers deployed their design experts and engineer of record, Leach Wallace. Together, they formulated a plan to replace the failing equipment in the same footprint and provide additional capacity for N+1 redundancy.

Installation day efficiency can be credited to the forward-thinking design team and installers that made sure the piping to the roof was already in place for a further expansion of the facility.

The firmly-defined space for the evaporative coolers, and the need for 1,200 tons of evaporative cooling equipment, negated all but one manufacturer—EVAPCO.

Kurt Juergensen, mechanical engineer at Leach Wallace, says the existing cooling towers were connected to three, 300-ton centrifugal chillers. "Clearly, the new coolers would need to meet their need for evaporative cooling and also have the additional capacity for a new, 300-ton chiller needed for the hospital's anticipated expansion."

Evaporative solution

Specified for the hospital were two EVAPCO AT induced-draft, counterflow cooling towers. With the smallest footprint in the industry for coolers of their size, the towers are rated for 2,063 max gpm, each with two modular, 300-ton (six million BTU) cells, for a total of 1,200 tons or 14,400,00 million BTUs of evaporative cooling capacity.

Each AT cooling tower provides external access to fully-enclosed motors and belts. Attached to the motors is the company's heavy-duty Power-Band drive system with aluminum alloy sheaves and pillow block bearings that provide a minimum guaranteed life of 75,000 hours and an aluminum alloy, statically-balanced, VFD-controlled, 25 HP fan.

The Gettysburg cooling towers also have galvanized steel access ladders and platforms, ideal for service and maintenance work and easy access to fan motors and water distribution components.

"With Evapco, the ease of service and maintenance is a big improvement over our previous system," Lehigh says. "Before, we had to crawl into our old units to maintain them. Now, everything's available from the exterior."

Installation day efficiency can be credited to the forward-thinking design team and installers that made sure the piping to the roof was already in place for a further expansion of the facility, including an additional tower cell, adding 300 tons of additional cooling capacity.

Each tower is paired with a VFD, dialed-in for optimal, N+1 operation. On a given day, the facility may need only 900 tons, but they have a full cell for redundancy and peak efficiency operation assurance of the entire system by modulating-down the fans speeds.

By allowing the controls to lower set-points based on outside conditions, the mechanical equipment operates more energy efficient. Also, tower fan speeds are programmed to assure limited and equal wear. Reduced RPMs means less wear on motors, belts and bearings.

"Sometimes life-saving work goes on every day in any of the floors above us. Yet, down here—and, now, out on the rooftop—are the new and improved systems that make it all possible."

– Joe Lehigh, WellSpan Gettysburg Hospital

Mechanical systems

In the bowels of the hospital, just one floor below the grade level entry, are the chillers and water treatment equipment, and the pump stations that circulate fluids to and from all of the connected equipment.

Included are three 945 gpm Taco base-mounted cooling tower condenser pumps, and three 756 gpm base mounted pumps to govern constant flow of chilled water to and from hospital's 22 air handling units, from 10 to 120 tons in size.

It's here that Lehigh wears an expression of hard-won satisfaction. "Important, sometimes life-saving work goes on every day in any of the floors above us," he says. "Yet, down here—and, now, out on the rooftop—are the new and improved systems that make it all possible. A lot of planning, and a lot of work, and the right systems all came together. Now we know that our ultimate mandate—no down-time—is as close to a full guarantee as we can make it." **HC**

John Vastyan, a frequent contributor to *Commercial Construction & Renovation*, is the president of Common Ground, Uncommon Communications, a content firm specializing in marketing communications and business-to-business PR that serves the broad construction industry. He can be reached out cground@ptd.net.