The Villages Regional Hospital – Central Energy Plant Expansion

Hill York was selected by Central Florida Health Alliance to work with the consulting engineer as a design assist partner for the expansion of the central energy plant at The Villages Regional Hospital. Based on a successful track record of comparable projects, the hospital group sought to tap Hill York's expertise in achieving optimal plant configuration, lowest lifecycle cost design having the highest efficiency, and high quality construction.

Project Name and Location:

The Villages Central Energy Plant
1451 El Camino Real The Villages, FL 32159

Client/Owner Contact:

Central Florida Health Alliance
David Taylor
System Director of Facilities

Completion Date:

November 2014

Project Scope:

In 2013, The Villages Regional Hospital sought to expand their facilities to meet the needs of the growing community and continue to offer high-level healthcare and service. When completed, a new five-story tower will add operating rooms, treatment rooms, inpatient and surgical beds, a new intensive care unit, and will double the size of the emergency department. With this sizeable expansion to the hospital, the central energy plant needed to be redesigned. Building on a successful partnership with Hill York, including a low-temp operating room project at Leesburg Regional Medical Center, Central Florida Health Alliance secured their services again with a focus on energy efficiency and design assist capabilities.

Hill York's design assist capabilities improve project constructability, serviceability, and ensure maximum cost effectiveness and efficiency throughout the life of the system. The original plans for the plant expansion were published in May of 2013 and Hill York's Energy Solutions team partnered with key Central Florida Health Alliance personnel, including David Taylor, System Director of Facilities; Angel Martinez, Manager of Facilities; and Barry Bolte, Supervisor of Facilities. Working closely with their Central Florida Health Alliance collaborators, Hill York's energy engineers, certified energy managers, and LEED accredited professionals reviewed the plans and identified areas for improvement. First, the overall design and orientation of the plant was reconfigured to decrease materials used and increase access to the equipment for improved serviceability. The team then pinpointed several ways to increase lifecycle savings through equipment selection, water reclamation methods, and the sequence of operations.

Utilizing chilled water, the team immediately advocated the use of high efficiency, magnetic bearing chillers with the ability to efficiently operate at different load conditions. The original plans also called for electric steam generators that were highly efficient, but not cost effective. The energy solutions team generated a fuel cost analysis for an electric vs. natural gas steam generator and found the natural gas model to be more cost effective. Another cost saving measure involved the reclamation of hot water condensate from the sterilizers to decrease waste and increase efficiency. With a central energy plant of five chillers, six boilers, and two steam generators, a detailed and functional sequence of operations was critical to ensure optimal plant efficiency. Utilizing the most efficient equipment more often, and at their top efficiencies, was a key component in the sequence of operations. Working with both the client and consulting engineer, Hill York provided vital consultation to optimize the sequence and maximize the efficiency of the plant.

While the complete benefits and overall cost savings from these recommendations can't be easily quantified, they are virtually limitless. The energy savings alone are projected to save the hospital $2.7 million over the 20-year lifecycle of the systems. Often in a leadership role on taking projects from concept to completion, here Hill York worked solely in a design assistant capacity for Central Florida Health Alliance. The result was no less impactful, adding value and creating a partnership that ultimately produced a highly successful project.