



HEALTHCARE SOLUTIONS

CLEVELAND CLINIC FLORIDA Weston, Florida

- Improved Patient Comfort
- Greater Energy Efficiency
- Reduced HVAC Installation and Operating Costs



Cleveland Clinic Florida used a design/build construction process.

Systems Installed

- Three 600-ton high-efficiency Trane CenTraVac™ centrifugal chillers
- Trane Climate Changer™ air handlers
- Trane Tracer Summit™ building automation system

About Cleveland Clinic Florida

Cleveland Clinic Florida is a full-service 150-bed hospital that is functionally and physically connected with a state-of-the-art clinic which houses a medical staff with more than 115 physicians practicing in more than 35 medical specialties. The facility includes a 24-hour emergency department, open heart surgery facility and many other services. Cleveland Clinic provides clinical care, research and educational programs.

Challenge

Intended as a plan and spec project, when initial cost estimates came in significantly over budget, Cleveland Clinic Florida moved to a design/build approach and established a team to reduce both design and construction costs without sacrificing building quality or functionality. Open communications between team members was emphasized. HKS Architects, a national firm headquartered in Dallas, Texas, designed the facility, using their extensive experience in health care facilities. The construction manager was Centex Rogers, headquartered in Nashville.

Solution

Southeast Mechanical Contractors, Hollywood, Florida, was made a team member due to their reputation for designing highly efficient building mechanical systems. To reduce costs the physical plant was built as a grade-level wing attached to the hospital using a "top-down" process. As each floor was finished it was sealed off and work moved to the next level. This eliminated materials and workers moving through finished spaces, reducing cleanup and material handling. Southeast Mechanical's Bill Catron said, "The top down approach works well, but doing plumbing work top-down is a challenge. In some cases we needed to work on finished floors."

The HVAC plan centered on a chilled-water/hot-water system with high-efficiency chillers, central station air handlers and constant volume air distribution with full reheat capability. Catron says chilled water systems are most efficient for managing indoor humidity and meeting year-round cooling needs. "It was always planned as a chilled water project, but we had to find ways to reduce cost without sacrificing capacity and control." Southeast Mechanical recommended a high-efficiency chiller plant with low-temperature chilled water and supply air. This reduced piping, valves, ducting and air handler costs as these components could be downsized. The plan first called for two 950-ton chillers, but Southeast Mechanical recommended installing three 600-ton chillers instead. Catron said, "This gives much more flexibility and the chillers can be optimized for best efficiency for more hours of the year. There also the added reliability of a third chiller."

Bill Bower, vice president of Southeast Mechanical Contractors, says that one way to dramatically reduce costs without sacrificing efficiency and reliability was the low temperature chilled water design. Another solution was the Tracer Summit building automation system to optimize chiller and cooling tower operation for best efficiency and manage the ventilation, tempering and distribution, and many other building functions including boilers and emergency smoke exhaust.



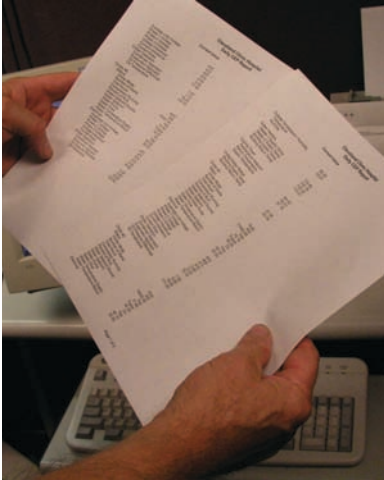
Cleveland Clinic Florida is equipped with Trane Climate Changer™ air handlers for efficient, quiet air distribution throughout the hospital and clinic.

The Tracer Summit system also communicates with the fire alarm system. Additional cost savings were realized by placing cooling towers on the roof, minimizing piping and reducing pumping costs.

Results

Construction was finished on time and steps taken to reduce initial costs were successful. The Tracer Summit™ system provides additional cost savings since all Trane equipment uses factory-installed controls designed to work with the control system, eliminating control interfaces. Southeast Mechanical's Joey Manteiga says, "The open protocol aspect of this system allows the owner flexibility in installing other systems in the future."

Southeast Mechanical worked with South Florida Trane to install the control system. David Fernandez, South Florida Trane sales engineer, points out the importance of Southeast Mechanical experience in building comfort systems and finding ways to reduce construction and operating costs and the value of the Tracer Summit system relative to service capabilities. Trane is currently providing HVAC maintenance services at Cleveland Clinic Florida. Fernandez says, "The system provides information that allows us to perform timely preventive maintenance rather than repairing failed equipment. It's hard to over-emphasize the value of the Tracer Summit system status reports." The hospital facilities group has learned to use the Tracer Summit system to maximize facility efficiency and are pleased with the building control system performance, demonstrating the efficiency possible using new HVAC systems designs and control systems, intelligently applied, to meet customer needs.



The Trane Tracer Summit™ building automation system not only controls the HVAC system for optimum efficiency while delivering patient and staff comfort, it generates reports documenting system performance, operating trends and energy use.



The Trane CenTraVac™ chillers at Cleveland Clinic Florida consume only .48 kW of electricity per ton of cooling capacity at full load.

"This facility was driven by strict construction cost control. Nonetheless, it is a highly functional and attractive building."

Technical Details

Three 600-ton Trane Model CVHF CenTraVac™ centrifugal chillers produce 42-degree F chilled water at 2.0 GPM per ton flow rate. Chilled water is delivered to Trane Climate Changer™ air handlers located in the hospital penthouse. Boilers provide reheat for the air handlers which mix in treated ventilation air and supply constant volume air terminal boxes throughout the building. Trane chillers and air handlers are equipped with factory-installed, factory-tested controls designed to work with the Tracer Summit™ building automation system for faster, less expensive installation, startup and commissioning.

Three Baltimore AirCoil cooling towers provide 95-85 degree condenser cooling. The cooling towers are equipped with variable frequency drives for optimum efficiency at varying cooling load and ambient conditions. Southeast Mechanical also installed external chilled water pipe stubs to allow fast, easy connection of temporary chillers to the building HVAC system in the event of planned maintenance or a failure of the hospital chillers. "This is a small expense that can avoid real headaches later," said Nelson Ulloa, a Trane sales engineer. This step was typical of the thoughtful approach that southeast Mechanical and Trane took during the design phase to reduce first cost and operating costs.

For more on Trane solutions, visit us at: www.trane.com

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