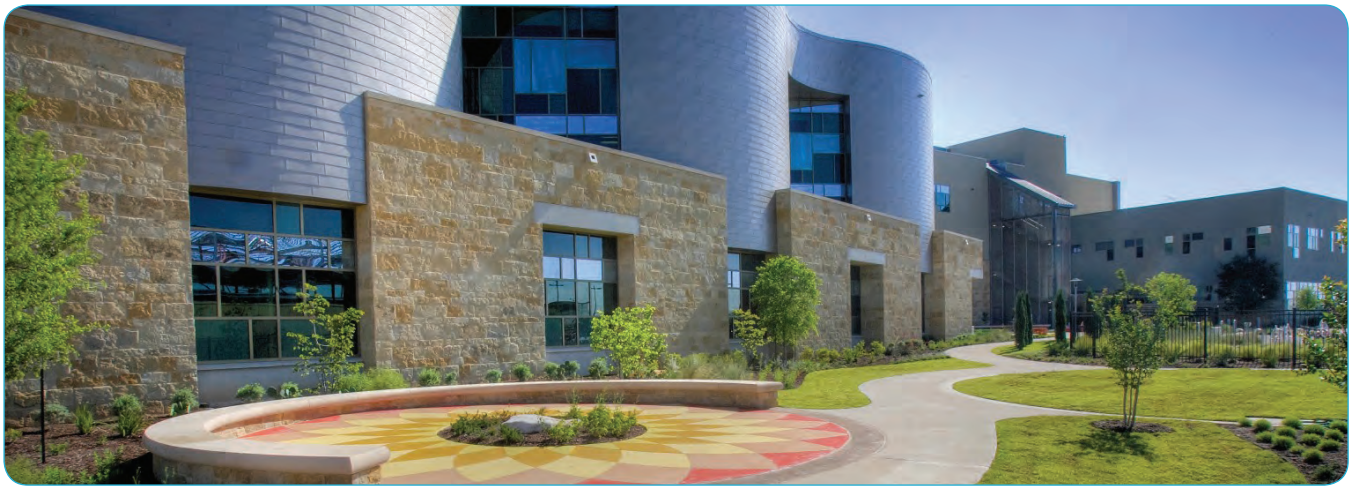
Healthcare



Texas Hospital Achieves Environmental Milestone

Case Study

Temtrol®
a Nortek Air Solutions Brand

FANWALL TECHNOLOGY® Supports World's First LEED®-Platinum Hospital

When Dell Children's Medical Center began the development of its new facility in Austin, Texas, the organization established a compelling vision: ***to heal children without harming the environment.*** That's no easy task for a power-intensive industry like healthcare.

The 500,000 square foot facility that opened in July 2007 achieved its mission through sustainable design, green materials and energy-efficient systems. Air handlers from Temtrol support the organization's green initiatives. In addition, Dell Children's Medical Center recently installed a Temtrol unit with FANWALL TECHNOLOGY that manages critical ventilation in a 6,500-square-foot intra-operative MRI surgical area.

In March 2009, the U.S. Green Building Council recognized Dell Children's Medical Center with LEED®-Platinum certification, the highest of its four achievement levels for Leadership in Energy and Environmental Design. The facility is the world's first LEED-Platinum hospital.

At a Glance

- Temtrol air handler provides ventilation for the 6,500 sq. ft. MRI operating suite of Dell Children's Medical Center.
- The unit meets stringent environmental requirements for a surgical operating room.
- Expansion in October 2009 prompted Dell to install state-of-the-art FANWALL TECHNOLOGY, which saves space without sacrificing performance.
- Unit with four direct-drive fans, each for supply and return, produces 12,000 cfm with 3,000 cfm backup capacity – enough to support the day-to-day air handling of the operating room addition and supply 100% of the area's future needs, all housed in a compact, 31' x 7' x 6' footprint.

Sustainable Design, Efficient Technology Enable Patient Healing

Hospital design utilizes natural lighting and on-site natural gas plant generates electricity and chilled water from waste heat.

Temtrol air handler with FANWALL system with VFD control panel for modulating fan speed.

FANWALL TECHNOLOGY®

CONNECTING CONSTRUCTION TO CARE QUALITY

"The decision to 'build green' started early and encompassed all aspects of the Dell Children's Medical Center project", explains Phil Risner, P.E., Dell Children's senior project manager and mechanical engineer.

"There's a definite connection between a healthy environment and improved patient outcomes," he states. "Our vision with this new facility was to create a truly 'green' hospital, to set new standards for our industry."

From its location to its components, the hospital raises the bar for sustainable design and energy efficiency. The Dell Children's facility sits on the site of the former Austin Mueller Airport, a brownfield that was painstakingly recycled and reclaimed as part of the green build process.

WELCOMING CHILDREN AND FAMILIES

Unlike traditional healthcare facilities that tower many stories surrounded by concrete, Dell Children's occupies a modest low-rise layout, with wings set up like a pinwheel. Preferential parking is reserved for carpools and hybrid vehicles. Several garden areas feature prominently, including a rooftop green area with a penthouse structure to conceal the new Temtrol® FANWALL air handler. The entire design creates a less intimidating approach for the young patients that Dell Children's serves.

Dell Children's features a variety of high-tech and green solutions, including high-efficiency fluorescent lights equipped with motion sensors, high albedo roof to reduce the effects of the urban "heat island," and finishes and floorings that are low in volatile organic compounds (VOCs).

Natural light penetrates more than 80% of the building's interior. A clean-burning natural gas plant on the hospital grounds generates electricity and uses waste heat to produce chilled water and steam for the entire site and surrounding area.

IDEAS TO IMPLEMENTATION

When it came to air conditioning and ventilation, Nortek Air Solutions Representative, Rusty Vaughn of Texas AirSystems, assisted Dell with the initial design and implementation of the facility's air handling system in 2007, and returned in 2009 to install FANWALL TECHNOLOGY®. The Texas AirSystems team at both Dallas and Austin locations worked in conjunction with CCRD Partners of Dallas, the lead engineering firm, and Risner's team at Dell to meet their air quality and efficiency objectives.

"It was critical to us to create an optimal facility that not only supported quality care, but also enhanced our surroundings," Risner explains.

"…healthcare facilities use nearly twice as much energy per square foot as office buildings…"

Hospitals are notorious for high-capacity energy usage. According to the U.S. Green Building Council, healthcare facilities use nearly twice as much energy per square foot as office buildings, accounting for over $3 billion annually just in electricity costs.

With its current system, however, Dell Children's saves enough energy every day to heat and cool approximately 30 average-sized Austin homes.

FANWALL SUPPORTS PROJECT GOALS

Less than two years after initial construction, Dell kicked off an expansion which added two operating rooms and space for significant new medical equipment. The 6,500-square-foot wing opened in October 2009. This time, CCRD Partners recommended the air handlers with FANWALL® arrays from Temtrol.

"We've used Temtrol units from Texas AirSystems for almost 20 years, and it's always been a positive relationship. We use Temtrol for all the hospitals we do across the United States," states Dave Meers III, P.E., of CCRD Partners.

"Had I known more about FANWALL in 2007, I would have put one in the original operating room," he adds. "It's got numerous advantages."

FANWALL TECHNOLOGY's compact design is energy-efficient and quiet, and completely reengineers how air moves. Unlike traditional air handlers that are comprised of one or two large fans, the air handler with a FANWALL array delivers airflow and meets redundancy requirements through smaller, manageable fan arrays that fit constrained areas.

The new air handler with FANWALL measures 31' x 7' x 6' and is comprised of four direct-drive fans capable of 12,000 cfm and an additional 3,000 cfm of backup.

"If you're looking for redundancy, reliability and a great acoustic result all rolled into one, that's a FANWALL system every time."

"With FANWALL, which is really a series of direct-drive fan assemblies, you can reduce the system effect and overall unit lengths," explains Vaughn. "That allows you to reduce the physical area consumed by the unit, without sacrificing performance."

FOUR FANS ACHIEVE 100% OF FUTURE CAPACITY

"Chief considerations for the Dell Children's project – and for many healthcare facilities – were adequate redundancy for the operating rooms, acoustical performance and capacity for future expansion," explains Meers.

"With a traditional unit, to achieve 100% redundancy requires a really big box," he says. "With FANWALL TECHNOLOGY, because you're using direct drive fans, you only need 25% of the size as a backup, and that takes a much smaller footprint."

The new Dell Children's installation serves an intra-operative MRI operating room and a diagnostic MRI room, with additional "shell" space for future needs. The current project requires approximately 9,000 cfm, enabling the hospital to easily expand without the expense of adding or replacing its air handlers.

"We have four fans, but we only need to run three at any time," Meers says. "The advantage of multiple fans is that unlike bigger units, the FANWALL array can be sized for 100% of future capacity. We handle hospital projects all over the country, and that's a common need."

FANWALL's quiet acoustical performance also supports the sensitive medical technology to be housed in the new wing, which can be disrupted by intensive vibrations.

"The FANWALL is quiet – hardly noticeable," adds Risner.

Outside view of Dell Garden

2x2 FANWALL array for supply and return fans reduces unit footprint

Outside bench puzzle pieces at Dell

FANWALL DESIGN YIELDS MANY ADVANTAGES

Another benefit of the air handler with a FANWALL® array is reduced maintenance. Because it is comprised of an array of direct-drive assemblies, FANWALL eliminates moving parts commonly prone to repair, such as, external fan shaft bearings and wear items like belts and pulleys.

"If you're looking for redundancy, reliability and a great acoustic result all rolled into one, that's a FANWALL system every time," says Vaughn.

Adds Meers, "The air handler with FANWALL on this project is a fairly small unit, but it's got all the 'bells and whistles': redundancy capacity, air side economizers, HEPA filtering, and UV lights in the coil section to reduce airborne bacteria. What's really amazing is that it's all packaged in a less than 35-foot-long unit."

"With its current system, Dell Children's saves enough energy every day to heat and cool approximately 30 average-sized Austin homes."

With the unit up-and-running for almost a year, Risner is satisfied with its performance. Though Dell Children's has no immediate expansion plans, Risner says "we will definitely consider and probably specify FANWALL units" on future builds.

2009 EARTH DAY CELEBRATION RECOGNIZES USGBC SITE

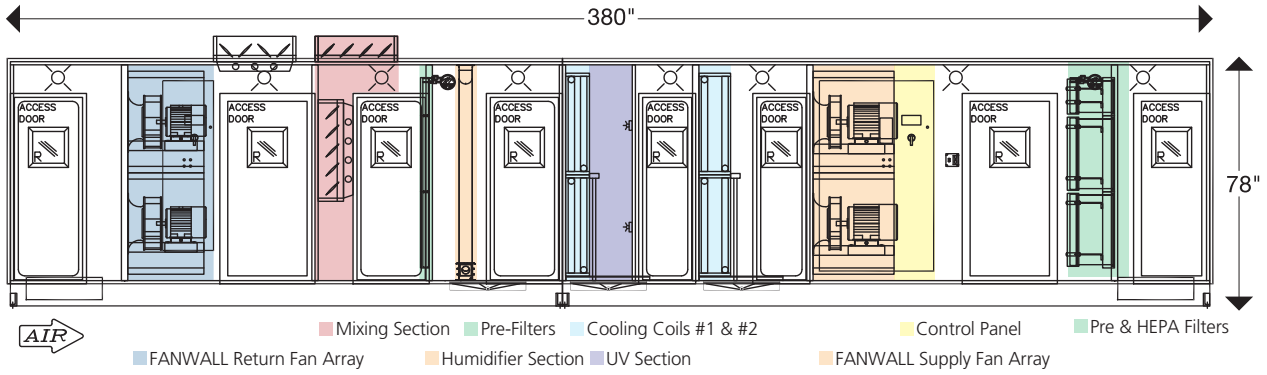
Achieving LEED®-Platinum certification from the U.S. Green Building Council caps a tremendous success for all involved with the Dell Children's Medical Center project, and demonstrates the potential for new construction to "build green" around the world.

"Early on, we set our sights on LEED-Platinum and measured every decision against its potential environmental impact," states Risner.

To achieve its LEED certification, Dell Children's Medical Center was measured on five areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

"Everyone at Temtrol, Texas AirSystems and the Nortek Air Solutions is grateful and pleased to be part of the team that created and delivered this solution," states Vaughn. "It's a credit to Dell Children's Medical Center and the CCRD staff, who pulled the key players together to work for the best solution for a given application."

"It's a great fit for the facility and the environment," he adds.



Elevation view of a Temtrol ITF air handler delivering 12,000 cfm @ 5.6" TSP using a FANWALL array for both return and supply fans.

Temtrol is a brand of Nortek Air Solutions, LLC which is a subsidiary of Nortek, Inc., a global diversified company whose many market leading brands deliver broad capabilities and a wide array of innovative, technology-driven products and solutions for lifestyle improvements at home and at work.

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