CASE STUDY

ensuring environmental integrity

Reduced Energy Consumption at Indiana University's Methodist Hospital

Background

Methodist Hospital at Indiana University Health, in downtown Indianapolis, is the premier hospital in the region, as well as a nationally recognized organ transplant center, the largest neuroscience critical care unit in the country, and one of the largest critical care departments nationally.

Methodist Hospital, Indianapolis

With new air handling units and a retrofit using Phoenix Controls in 20 operating rooms, the hospital is projected to reduce its energy consumption by one million kilowatt hours a year, resulting in a $60,000 annual cost savings.

The Situation

The 660,000-square-foot IUH Methodist Hospital was built in the early 1980s as part of a 2.2-million-square-foot academic medical campus. After more than 30 years of heavy use, the constant-volume HVAC system was showing its age, and 20 of the 28 operating rooms were experiencing issues maintaining the proper humidity and temperature ranges. The goal was to achieve 64 degrees and 55 percent relative humidity, while also reducing energy consumption.

The problem is that it's more complicated to retrofit an older building than it is to build a new one. Ductwork designed for the HVAC systems of the past do not always accommodate today's monitoring and control requirements. But operating rooms in one of the busiest hospitals in Indianapolis cannot go offline for an extended period of time, so rebuilding the ductwork was not an option.

The Solution

Methodist Hospital had been using Phoenix Controls airflow controls in its labs for decades, but they were skeptical about employing the same technology in a patient-care setting. That's where Phoenix Controls Theris® controllers and Accel® II valves came in. Theris valve controllers are designed specifically for healthcare applications, where infection control is a paramount concern.

"They had the Phoenix lab valves for probably 20 years," says Damon Greeley, founder and president of Global Health Systems Inc., who works under contract as the owner's technical representative. "Theris was more suited for this application."

It was the perfect solution for a number of reasons. Theris controllers are available in constant volume (CV) and variable air volume (VAV) solutions, so readily able to accommodate the Methodist Hospital's desire to switch to VAV controls and achieve better temperature and humidity control.

Because this was a retrofit, they had to work within the existing ductwork, and, unlike other airflow devices (like blade dampers) that use sensors, Phoenix Controls valves don't require the long expanses of straight ductwork more commonly found in new construction. That point was critical, because the ductwork at Methodist takes so many twists and turns, it's "like a bowl of spaghetti," says Greeley.

"That's one of the advantages of Phoenix," says Greeley. "We didn't have to adjust ductwork. It just went in quicker and easier."

Theris valve controllers in particular are characterized at the factory for each unique installation, eliminating the need for time-consuming field calibration and rebalancing on site. Each operating room was off-line for only three or four days.

The operating rooms were also outfitted with infrared and ultrasonic occupancy sensors to reduce airflow when they are not in use, which is a significant energy saver.

"The offset remains the same, which is the nice thing about Phoenix Controls," says Greeley. "It maintains the pressure. Other products don't react as quickly. The Theris valves react in 15-20 seconds—we've timed it—versus the two minutes or more that other systems take to stabilize."

Once the controls are up and running, they do not require cleaning and rebalancing in order to maintain their accuracy. There are no flow sensors to maintain. The Theris controller modulates both the supply and exhaust valves from a single device, and uses a simple mechanical regulator to compensate for changes in static pressure, ensuring accurate flow control at all times. They also continue to work even in the event of a power failure.

The Result

Retrofitting the operating rooms was the first of a two-phase project. The second phase involves replacing the air-handlers, and until that is completed, it's difficult to realize the full benefit of the Phoenix Controls valves. But Methodist Hospital's utility company granted it a $60,000 incentive based on a third-party review of the plan, so Greeley fully expects to save $60,000 a year in energy costs by reducing consumption by more than one million kilowatt hours.

Methodist Hospital is so pleased with the performance of the Theris valves that they have set the standard for future renovations. "We are seeing repeatable results when they recertify, and some of these rooms have been recertified three times since they've been installed," says Greeley. "We haven't had to do any maintenance on them; we trust that they do what they say they're doing, and we don't always have that reliability with every product. We've convinced the staff that in any future ORs we want to have the same Phoenix product."

If You're Planning a Healthcare Project, Consider This:

Today's healthcare facility requires precision controlled flexible spaces to serve the needs of patients, healthcare providers, staff, and support personnel. Phoenix Controls Vantage integrated solutions provide configurable systems and components with repeatable accuracy and stringent environmental control at the room, floor, or building level.

The Vantage airflow control solution can be implemented standalone, or integrated to a building management system, or both.

Pressure independent venturi valves with Theris controllers are the foundation for healthcare applications. These controllers are engineered for healthcare applications with infection control, energy savings, and reduced maintenance in mind. Pressurization and climate control, on-demand isolation, and pandemic conversion are all configurable to each facility's needs.

A suite of front end displays provide customized monitoring and actionable data to all levels of end users and facility administrators. At the room level, this results in shorter response times and increased staff efficiency. At the building level, system views created for specific managerial needs to strongly support facility goals for safety, energy efficiency, and cost control.

The View monitors critical environmental information like temperature, humidity, or air change rate. As a nurse's station or local operator display, it is an integral component in the Vantage healthcare solution.