MIDWEST MEDICAL CENTER CASE STUDY

A medical center located in Springfield, Illinois undertook a major expansion project in 2014 that added 114 new private patient rooms and six new operating rooms to the hospital complex. Extensive renovations to the hospital's perioperative and surgical support areas were also completed.

As is the case with most medical facilities, they requires both year-round cooling and substantial outdoor air ventilation to comply with healthcare standards. Prior to this project, their central chilled water production plant of four 1,200 ton/hour capacity centrifugal water chillers often struggled to meet chilled water demand on a design day.

The hospital's chilled water distribution system was piped in a constant volume primary and variable volume secondary arrangement. Pressure dependent two-way and three-way control valves were used to manage the chilled water flow rate through the hospital's forty-four major air handling units. The temperature difference (or ΔT) of the chilled water system ranged between only 4°F to 5°F on a design day.

FAST FACTS

LOCATION
Springfield, IL

INDUSTRY
Healthcare Organization

SQ. FOOTAGE SERVED
>1M sq. ft.

GOALS MET
Achieve 10% reduction in electrical energy consumption

Despite its extensive scale, the medical center was committed to completing this project without increasing their overall electrical energy consumption. A cross functional "Advancing Care by Design" planning and design team determined if they implemented certain mechanical and control system upgrades, this goal could be achieved.

CASE STUDY

FLOW CONTROL INDUSTRIES, INC.

THE SOLUTION

The planning and design team chose to convert the chilled water production and distribution system to a variable primary flow system without adding additional central plant cooling capacity. The team relied on ASHRAE Guideline 22-2012 (Instrumentation for Monitoring Central Chilled Water Plant Efficiency) for the selection of the required central plant instrumentation. An Automated Logic WebCTRL® building automation system was installed for supervisory control and data acquisition purposes.

DeltaPValve® pressure independent control valves manufactured by Flow Control Industries (FCI) were installed for the air handling unit cooling coils that had either the highest flow rates or were controlled by three-way control valves. All existing balance valves, bypass lines and tertiary cooling coil pumps were removed when the replacement high performance, pressure independent control valves were installed.

Each pressure independent control valve was individually tested and factory calibrated by FCI. The pressure independent control valves are manufactured to permit field verification of their performance.

The foremost reason FCI was selected for this construction project (over other pressure independent control valve manufacturers) was FCI's ΔT performance guarantee. No other manufacturer offered this guarantee.

THE RESULTS

The modifications to the chilled water production and distribution system substantially improved its performance. The pressure independent control valves allowed for significant chilled water system capacity to be recovered. This capacity had been lost by the overflowing or bypassing of the cooling coils. The hospital's chilled water flow rate has been reduced by over 7,000 GPM.

The chilled water production and distribution system now consistently maintains a 10°F to 12°F ΔT. The chilled water demand on a design day can now be satisfied with only three water chillers operating at less than their rated output capacity.

The medical center's electrical energy consumption has fallen 10% on an annual basis when compared to pre-construction project usage. This impressive result exceeded the planning and design team's ambitious electrical energy savings goal. They continue to install pressure independent control valves on the remaining cooling coils that were not included in the original construction project (as funding permits).

FLOW CONTROL
INDUSTRIES, INC.

CASE STUDY

AWARDS

In 2016 The American Hospital Association-McKesson Quest for Quality Prize® was presented to the medical center to honor hospital leadership and innovation in quality improvement and safety. Only one hospital in the United States is awarded this prize annually.

The goals of this award include:

- Raise awareness of the value for hospital-wide commitment to better health and better care at a lower cost that can only be achieved through the relentless pursuit of highly reliable, exceptional quality, safe, patient and family-centered care.
- Reward successful efforts to develop and promote a systems-based approach toward improvements in quality of care.
- Inspire hospitals to be leaders in improving the health of their communities while enhancing outcomes and the experience of care for patients and reducing costs of care.
- Provide models of successful programs and strategies for the hospital field to use in addressing challenging issues, including reducing disparities in care.

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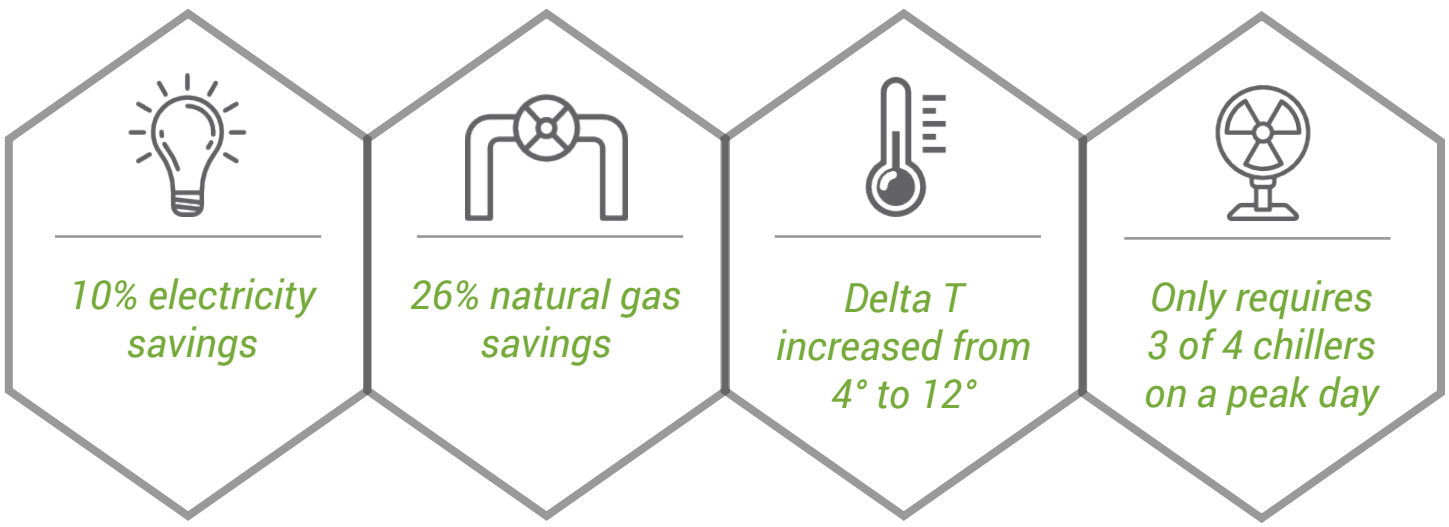
*What sets FCI's DeltaPValves apart from all other pressure independent control valve manufacturers is the **ΔT performance guarantee**. No other manufacturer offers this guarantee.*

- Rich Kern
Environmental Control Solutions, Inc.



About Flow Control Industries, Inc.

Flow Control Industries, Inc. (FCI) is a specialty manufacturer of high-performance pressure independent control valves, delivering energy efficient products and services through a consultative process to increase building value and lower total cost of ownership (TCO).

The DeltaPValve®, FCI's flagship product, was developed by founder and Chairman Paul Skoglund, P.E. over 20 years ago when he realized that more effective valves could revolutionize mechanical system efficiency. As an industry pioneer, Paul was the first to create the patented design, development and application of pressure independent control valves.

Since the release of the first DeltaPValve®, FCI's team of world class engineers has worked to improve its design, efficiency and overall effectiveness. This focus and dedication has propelled the DeltaPValve® to the top of the industry, being the only variable flow hydronic system that GUARANTEES ΔT.

DeltaPValves are used in projects all over the world and are consistently saving customers millions of dollars in first costs, operating costs and deferred capital costs.