

ES

Engineered Systems

A **bnp** PUBLICATION
media
Vol. 29 No. 11 NOVEMBER 2012
www.esmagazine.com

HEALTH CARE
ISSUE

MODULAR

CENTRAL PLANTS

Their engineering strategy looks a little different, so brush up on the art of modular plant success.

INSIDE ▶▶

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Middle-aged New Jersey mall attracts business with complete efficiency makeover

Municipal Square is a five-story commercial office building in West Orange, NJ. The building has more than 100,000 sq ft of office space, occupied by 35 tenants including law firms, architects, accountants, and other professional service businesses.

Built just before the energy crisis of the mid-1970s, Municipal Square was built without energy efficiency in mind. Single-glazed windows, inadequate insulation, and inefficient electricity-based building systems made the building ripe for performance improvement, and made owners eager to reduce the \$300,000 annual electricity bill.

When the building owners began looking for ways to save on the more than \$3/sq ft annual energy costs, they consulted their utility company. There they learned about a New Jersey state “pay for performance” program that offers grants for buildings owners who can demonstrate at least a 15% energy savings through building systems improvements.

After investigating companies that might have the technical capabilities to achieve that type of energy savings while following the program requirements of the State of New Jersey, the building owners turned to the experts at Trane.

ON THE PATH TO HIGH PERFORMANCE

Trane worked hand-in-hand with Drill Construction Co., Inc., the building’s construction management company, to improve energy efficiency and overall building performance.

The pay-for-performance program encouraged building owners to look at the whole building to consider all the elements that impact energy use, including the building systems and controls, as well as construction of the building, windows, and lighting.

Trane used its energy analyzer program to benchmark the building’s performance and identify improvements that would significantly impact performance and energy use — and it learned that the building was using an excessive amount of energy compared to a typical building of the same size.

Trane worked with Drill Construction and building owners to do a complete overhaul of the existing HVAC system, installing new rooftop units and switching from a two zone, constant volume system to a system that used 26 VAV boxes in six zones to improve energy efficiency and tenant comfort throughout the building.

Trane completed the replacement of the rooftop units over two weekends to ensure that there were no disruptions to building tenants during business hours. The building remained occupied throughout the entire upgrade process.

ACTIVE MONITORING AND BUILDING PERFORMANCE

Trane installed a BAS to control the building’s HVAC and lighting systems. Because long-term building performance was the primary motivator for the improvements, building owners also took advantage of Trane Intelligent Services (TIS) and the ongoing monitoring of building performance.



A BAS upgrade helped reduce this mall’s energy consumption by more than 30%.

By installing a TIS communications module, the engineers at the Trane central monitoring station can compare real-time building performance with anticipated performance based upon the designs of the system and identify anything that is not performing to standard. TIS Active Monitoring sends building operators alerts if there is an alarm or problem developing, while the TIS Building Performance offering provides building operators the addition of real time performance analysis and recommended system adjustments.

With TIS Building Performance, Trane actively monitors the systems at Municipal Square and provides feedback to the building superintendent about electricity usage, the development of hot spots or cold spots, and the ongoing performance of specific components of the building’s system. Building operators are notified immediately if anything out of the ordinary occurs, helping them address problems early and maximize energy savings.

THE PROOF IS IN THE RESULTS

The system has been online for six months, and so far the utility bills show a reduction in electricity costs of over 30% — well above the 15% required by the pay-for-performance program. However, Trane and Municipal Square agree that additional savings can be achieved, and together they are trying to reach an impressive 40% energy savings goal.

The reduced energy consumption makes Municipal Square more attractive, helping the owners to keep existing tenants happy and giving them an edge as they seek to attract new tenants in a competitive real estate market. **HPB**