

SHOWCASE PROJECT: TRANSWESTERN: PENNZOIL PLACE

SOLUTION OVERVIEW

Pennzoil Place is a two tower office building of 34 and 36 floors, and includes a large atrium joining the two towers. The building was designed by American architect Phillip Johnson, and was originally constructed in 1973. In 2009, the owner, Metropolis, contracted with Transwestern.

Transwestern worked closely with ownership every step of the way, and was able to demonstrate the success of each measure in turn. Doing so emboldened Metropolis to move forward with additional upgrades to Pennzoil Place.

SECTOR TYPE

Commercial

LOCATION

Houston, Texas

PROJECT SIZE

1.8 Million Square Feet

FINANCIAL OVERVIEW

Project Cost \$11 Million

SOLUTIONS

Transwestern and the building owner, Metropolis, recognized the need to update Pennzoil Place's building systems. The energy efficiency of every system was analyzed, and a solutions strategy was developed. This strategy included rebuilding the cooling tower, installing new chillers, conducting a lighting retrofit, replacing the HVAC system, revamping the alarm system, and retooling the building access system.

Phase I involved rebuilding the cooling tower. The warm humid weather of Houston is a difficult environment for materials of any kind, and when the effects of constant water submersion found in cooling towers is added, the results can be devastating. Assailed by the elements outside and the constant flow of water inside, cooling towers are a prime target for corrosion. The cooling tower was completely rebuilt without shutting down the condenser water system, preserving the comfort of the building occupants during the repairs. Phase I also included an upgrade of the building access system, to include the use of proximity cards on a proprietary system. Rebuilding the cooling tower began in January 2010 and was completed in the second quarter of that year. The building access system is being migrated to an open protocol system that can be monitored both internally and

externally, and was completed late in 2012.

Phase II included the following energy efficiency measures:

- Chillers were replaced by three new Trane 1.550 ton chillers and one 1,500 ton chiller with a variable speed drive, which are some of the most efficient chillers on the market.
- The lighting retrofit involved upgrading to T-8s, T-5s, LEDs and CFLs throughout the building.
- The building control system was replaced for the HVAC system.
- The fire alarm system was replaced with a new, fully addressable system that will expand the fire and life safety coverage of the building with pinpoint accuracy. Three of four capacitor banks for power factor correction were replaced, and four centrifugal domestic water pump systems were replaced with triplex pump systems, providing pinpoint pressure accuracy through direct digital controls and VFDs.

Phase II was conducted between December 2011 and September 2012.

OTHER BENEFITS

Transwestern's approach to Pennzoil Place has led to a higher ENERGY STAR score, and a LEED® for Existing Buildings: Operations and Maintenance v2009 Gold certification in April 2011. Additional benefits include increased tenant comfort, lower operating costs, and increased market prominence.

Further benefits from this showcase project include:

- The capacity to view power consumption in real-time, enabling Transwestern to immediately measure the effectiveness of cost-cutting strategies.
- The ability to trend and view histories of the building access system.
- The enhancement of predictive maintenance capabilities through the building access system.
- Air handling units and chillers now controlled by an optimization algorithm that shaves run times.
- The creation of a custom program for electrical demand response and peak response savings, enabling automated savings strategies based on a schedule, with the capability to adjust settings on the fly.
- A new fiber backbone with broad expansion/enhancement capabilities that leverages existing infrastructure and provides the fastest data communication on the market. This infrastructure will easily accommodate the new access control system, CCTV enhancements, digital signage/tenant directory, as well as a new CISCO wireless IP phone system. It will also allow for building access system troubleshooting and calibrations from any point in the building.

Annual Energy Use

(Source EUI)

Baseline(2009)

267 kBtu/sq. ft.

Actual(2013)

199 kBtu/sq. ft.

Energy Savings

21%

Annual Energy Cost

Baseline(2009)

\$3,332,000

Actual(2013)

\$2,460,000

Cost Savings

\$872,000



Pennzoil Place



A newly installed chiller



Capacitor bank improves power factor



Fulton Vantage boiler at Pennzoil Place