TD Industries and utiliVisor Optimize District Energy Plant at Houston Airport

Bush Airport is an international airport in Houston, Texas located 20 miles north of Downtown Houston that serves over 40 million passengers annually. It contains five passenger terminals and a 900,000 square feet of cargo facility. Chilled water is provided to over 50 buildings by a central plant with installed capacity of almost 23,000 tons. The plant is currently operated by TD Industries, a utiliVisor licensee.

TD Industries Operations and Maintenance Division was tasked with reducing the energy costs at Houston Airport’s central chiller plant. The plant operators needed a way to view plant performance on a real time basis in order to successfully reduce costs in a verifiable manner.

Data Acquisition and Monitoring

In order to monitor the energy consumption at the central plant, utiliVisor and TD Industries began the process of reviewing, testing and commissioning new measurement devices. Building this system allowed all energy data from the plant to be displayed live on the internet through a custom designed website for Houston Airport.

Technicians found that a number of sensors and energy meters were malfunctioning which needed to be replaced in order to receive accurate data. The measurements from these devices are routed through multiple existing automation systems which push the data to the web.

The result was that the operating engineers of Houston Airport now have a complete picture of energy consumption at the plant, on one platform, that updates every five minutes. The addition of utility rates has allowed utiliVisor to determine real time cost to operate and the monetization of new operating strategies.

Energy Saving Opportunities

With the web-based plant monitoring system in place TD Industries and utiliVisor engineers have been able to analyze chiller plant performance at varying load conditions. Analysis from the utiliVisor Operations Center has lead to the implementation of no-cost energy conservation measures. The Operations Center recommended:

- Recommissioning sequences on the Hot Gas bypass and inlet guide vanes.
- Reconfiguring water treatment pumping schedule to reduce pumping kW
- Sequencing chilled water pumps based on needed flow thresholds.

The Results

The web based monitoring system was up and running in the fourth quarter of 2010. Energy conservation measures for the first quarter of 2011 showed verified savings of over $200,000. Based on the plant load required during the remaining nine months of the year, utiliVisor projects annual energy savings to eclipse $1,000,000 with a payback on the project of 1.5 years.