



CASE STUDY

Essex County College—Newark, NJ

Issue: Unreliable HVAC system was energy consuming and required obsolete refrigerant

Solution: (2) 400-ton gas engine-driven TECOCHILL chillers, a Daikin 760-ton, water cooled, centrifugal, electric chiller with heat recovery, and later a Daikin 760-ton magnetic bearing chiller

Higher Efficiency for Higher Learning

Energy savings and reliability improvements made this upgrade a no-brainer

Studies show that comfort goes hand-in-hand with an ideal learning environment. Productivity, error rates, attendance levels and even effective teaching are all linked to the air quality of the environment in an educational facility.

It's no wonder Essex County College (ECC) in Newark, New Jersey sought help from D&B Engineering to replace their two unreliable 760-ton centrifugal electric chillers. The college accommodates just under 12,000 students making a reliable HVAC system a necessity. With D&B's assistance, ECC chose to upgrade one unit with a Daikin 760-ton, water-cooled centrifugal electric chiller with heat recovery. The other original unit was to be replaced with two TECOCHILL 400-ton water-cooled, gas engine-driven chillers as seen in the photo below.



ECC was looking for the most 1) efficient, 2) reliable, and 3) economical HVAC solution. The Daikin water-cooled, electric centrifugal chiller was chosen to meet each of their goals. The centrifugal chiller has a flexible design, sustainability and efficiency.

Daikin's centrifugal chillers exhibit world-class unloading capability without hot gas bypass. This feature is key to its efficiency and ability to conserve energy and save money. "The owners of ECC are very progressive and forward-thinking, carefully considering life cycle cost," stated Jeff Barat, a partner at D&B Engineering.

The fundamental reason for switching from conventional electric chillers to the chosen TECOCHILL gas engine-driven chillers was to cutback operating cost. It is estimated that choosing gas over electric can cut chiller operating costs by as much as 60% due to the avoidance of electric demand charges and utilities' "time-of-day" rates.

"Gas air conditioning is much cheaper when there is a simultaneous need for hot water. Hot water is recovered from the jacket on the natural gas powered engine," Barat explained.

Gary Patel, Essex County College's physical plant engineer administrator, was skeptical about the selection of gas chillers due to their reputation for high noise level. Patel, however, was pleasantly surprised by the TECOCHILL units, which are well insulated, minimizing the noise. In addition, the units all utilize R-134a refrigerant—an environmentally friendly alternative. The old units utilized R-11 refrigerant, which not only is detrimental to the environment, but is no longer being manufactured.

After such a successful experience with D&B, the institution was eager to upgrade

their last existing 760-ton chiller. Daikin's 500-ton WME magnetic bearing centrifugal chiller was the chosen replacement. Magnetic bearing technology omits the need for oil, mechanical seals, wear surfaces and gears, making this chiller an ideal choice. Without oil requirements, there is no risk of contamination by efficiency-robbing oil buildup. D&B Engineering and ECC also chose this particular unit for its reputation for reliability and prolonged machine life.



The chiller upgrades have been running successfully ever since job completion. In addition to saving money on their energy bills, Essex County College has made great strides toward providing an ideal learning environment for its student, faculty and staff population.

For more information on D&B Engineering, TECOCHILL and Daikin chillers, please visit us at www.dbnj.com.