



YASKAWA

***Hospital
Experiences
11 Mo. Payback on
AC Drive Install***

At University Behavioral Center, a 100-bed psychiatric hospital in Orlando, Fla., complaints about comfort conditions were common: rooms were too cold, patients and employees were uncomfortable, the facility was drafty.

Many of the problems at the six year-old, 6,000 sq. ft facility stemmed from faulty inlet vortex vanes on an air-handler fan that caused the air-handling system to constantly break down. With blades that only partially closed, the system allowed 20 percent of the ventilation air to pass through at all times. The fan ran at a constant speed which made the system inefficient. And in the humid Florida climate, blades and bearings often rusted and failed, which resulted in vane assembly replacement every two to three years at a price of \$3,000 and two days of equipment downtime for each occurrence.

To solve these problems, the vane assembly was removed and Yaskawa variable frequency drives were specified for installation on the air handler. The result: improved comfort and a 221,400 Kw-hour annual reduction in energy consumption.

With its fluctuating load requirements and slightly oversized air-handler, the center provided optimal conditions for a successful installation. For example, during hot Florida springs and summers, cooling equipment usually ran at full capacity. When temperatures cooled off however, not as much air conditioning was needed, but the constant-drive system could not adjust for that.

VFDs, on the other hand, could react to the hospital's changing load— speeding up or slowing down fans when the load increased or decreased. The drives also allowed for slower motor operating speeds, allowing the system to operate more efficiently and reducing equipment wear and tear.

Improved comfort was also directly attributable to the drives. By slowing the fans, designers could make adjustments on the amount of air entering the system—thereby eliminating warm and cold spots. Air became drier and cooler when going across the air handlers. Controlling the return-air fan differently from the supply fan brought the building into a positive air pressure for better humidity control. VFDs on both the supply and return fans kept airflows balanced, improving static-airpressure problems. And better control of the building's sensible and latent loads reduced the amount of air re-heat needed, which also reduced the amount of time gas boilers operated.

These improvements provided an 11-month payback on the \$15,000 invested in the VFDs.

Future plans

The first drives installed at the behavioral center have been operating without problems, and more have since been installed on a second and third airhandler.

Eventually, pumping equipment at the hospital also will have VFDs, and with the money saved on all of these operations, the facility manager is hoping for funding from the corporate office for additional efficiency upgrades including: installation of a desuperheater that will scavenge waste heat off reciprocating chillers to feed to the boilers; and upgrade of the building automation system.