



YASKAWA

Energy Savings of \$200K, 1.6 Mo Payback

Standard Microsystems Corp. completed a retrofit of eight variable frequency drives at its 45,000-square-foot wafer fabrication facility that is expected to result in energy savings of \$200,000 a year.

The project was completed at a cost of approximately \$74,850. Under its Dollars and Sense Rebate program, local utility Long Island Lighting Co. provided Standard with incentives totalling almost \$48,500, states John Petitt, manager of corporate facilities.

The drives will yield demand savings of 200 kilowatts and reduce annual electricity consumption by almost 1,750,000 kilowatt hours. The rebates reduced the project cost to about \$26,350, resulted in an expected payback of just 1.6 months.

"Energy management is one of my main responsibilities," Petitt commented. "I'm always rethinking the design of systems to make them more efficient. Since we need to move large volumes of air, motors and drives are a major energy allocation here. A project like this offered a big opportunity for savings."

The drives were installed by Standard's Bill McWilliams, project designer, and Tom Dombrowski. The two worked weekends and off-hours to accommodate the facility's production schedule.

"Our company manufactures computer networking components," Petitt explained. "We have people working in clean rooms, working around the clock seven days a week, 365 days a year, so it was very difficult to get the retrofits done."

Petitt chose Yaskawa variable frequency drives. Five drives, each rated at 75 horsepower (HP), were installed on 50,000-cubic foot-per-minute air handlers by Pace Co., Portland, Ore. The air handlers serve the building's cleanroom facilities.

Another Pace makeup air handler, rated at 35,000 cubic-feet-per-minute, was equipped with a 60-HP drive to help counteract exhaust fumes, Petitt added. A 25,000-cubic-foot-per-minute air handler supplies the building's variable-air-volume system. He installed a 40-HP drive to improve its efficiency.

Finally, a 15-HP drive was added to a 7,000-cubic-foot-per minute process air handler. According to Petitt, because of load changes, the unit is now oversized. The new variable-speed drive will run it at the correct speed to handle the current load, he noted.

"Besides the difficulties experienced during installation, there were some interesting aspects to this project," Petitt related. "Although the air handler units are all roof-mounted, the project was designed so that all of the drives could be programmed from a single location. They were all installed in a small service alley. This will also allow maintenance to access the drive without a hassle."

Another unusual aspect of the retrofit is that the 75 and 15-HP drives are being used as adjustable-pitch sheaves. They are adjusted to produce the desired airflow and maximum efficiency, and are then locked in to a single speed.

"Excess capacity wastes money, and vortex or other system-static pressure control offers only a fraction of the savings that a variable frequency drive does," explained Petitt. "We're now able to run at peak efficiency, even as long-term shifts occur in our air flow requirements."