YASKAWA

A World of Automation Solutions

HVAC Retrofit Project Saves $228K

The Resort at Squaw Creek, a 405-room conference facility here, lowered annual electricity consumption by over four million kilowatt hours (kwh) as a result of a new control system & other HVAC retrofits.

The direct digital control system and the HVAC measures were installed in two phases at a total cost of $500,000, according to Larry Bullock, Squaw Creek's chief engineer and director of property operations. The funds came from the resort's capital budget, he said.

When the final phase of the project was completed, total utility bill savings equaled $228,258 a year. Rebates of approximately $110,000 were granted under local utility Sierra Pacific Power's Peak Performance Rebate Program, he added. The project is expected to save 4,080,000 kwh per year, reported Bullock, with a winter demand reduction of 617 kilowatts (kw) and a summer demand reduction of 255 kw. Including the rebates, the project should yield an energy-based payback in 1.7 years.

But the improvements will also save the resort approximately $65,000 a year in maintenance costs, Bullock continued. He credited another $80,000 of annual cost savings to the fact that he can now take bids from propane suppliers to meet the resort's gas needs. The additional savings lower the project's payback to approximately one year.

We wanted to find ways to reduce our energy consumption and cut costs," the engineer explained. This new system provided us with everything we were looking for.

Some of the resort's systems were being run 24 hours a day, 365 days a year, commented mechanical engineer Rick Gardner. The new setup uses equipment only when it's needed.

According to Gardner, the new energy management system controls and monitors all of Squaw Creek's electrical and mechanical systems . He selected a Carrier CCN Comfort Network system, which uses a graphical interface for ease of operation. More than 400 points send information through seven field panels, Gardner explained. The networked panels exchange information and send it to a personal computer. Any of Squaw Creek's HVAC systems can be accessed or monitored from the computer.

Squaw Creek's Carrier system controls several new pieces of HVAC equipment. Before the retrofit, the chilled water system consisted of three 150-ton McQuay chillers that ran continuously. Gardner installed a plate-and-frame heat exchanger by APV Crepaco Inc., Rosemont, Ill.; a Series 3000 cooling tower by Baltimore Air Coil Inc., Baltimore; and two 50 horsepower (hp) Yaskawa ac drives.

The chillers only run for three months of the year now, Gardner remarked.

In addition, the resort's ventilation system was converted from constant to variable air volume. It was built around 13 McQuay air handlers, Gardner related, and their motors were replaced with 13 Yaskawa variable frequency drives, ranging from 5 to 20 hp.

We used to get complaints that rooms were too hot, too cold, or that there wasn't enough water pressure, but that doesn't happen anymore, Bullock commented. He estimated that after the retrofit, complaint calls fell from 30 to just three per day.

This was definitely a no lose project for us, Bullock concluded.

The new control system does everything, Bullock commented. It's simple to use and it saves me a lot of man-hours. Bullock stated that the equipment can locate any problem in under five minutes.

The system will indicate whether the problem is with the equipment settings or with a specific piece of equipment, he explained. I know right away what needs to be done.

The retrofit also dealt with the resort's three 9,400 million Btu (MMBtu) boilers by Rite Engineering and Manufacturing Corp., Downey, Calif., which were run continuously to provide domestic hot water. According to Gardner, the use of a dedicated boiler to provide hot water in winter allowed the facility to shut down the other boilers for four months of the year. Towards this end he installed a 3.5 MMBtu boiler by Teledyne Laars, Rochester, N.H.