Boardwalk Renovation Includes Energy- Saving System

By JOHN McNICHOLAS
Sentinel Staff Writer

A unique energy-saving heating and cooling system is one of the main features in the $7 million renovation and remodeling project nearing completion at the Boardwalk.

A 40 percent savings in energy costs, or about $40,000 to $50,000 a year, is anticipated as a result of the system, which collects and stores waste heat generated by refrigeration units in the project's new kitchens.

Construction began last June to upgrade and expand the Cocoanut Grove's kitchen facilities and interior.

A dozen shops have been built below the Grove, and bar upstairs has been remodeled in Victorian style. In addition a new convention-banquet room and a Sun Room which seats 500 persons has been built in the project scheduled to be entirely completed July 25.

The Sun Room features a moveable glass roof which may be opened when the weather permits.

There are three new kitchens tied into the new heating and cooling system: Marini's candy kitchen, the Sea Beach Grille fast food operation downstairs, and a kitchen upstairs capable of serving 2,500 people.

For every unit of cooling the kitchens' cold storage units produce, they generate two units of heat, according to Dexter Crosby, the project engineer from List Engineering Co. in Monterey.

Instead of being cooled by air, and a waste of this heat, the appliances are cooled by water. The heated water then is stored, and the heat or the hot water itself is reused.

There are three 3,000-gallon tanks for water storage in the new 20,000-square-foot basement.

The 55-degree water from the Santa Cruz city system is stored in one tank. As it warms, it is automatically pumped into a second tank, and the first is replenished with the cooler water. When the temperature in the second tank rises to 75 degrees, the water is pumped to the third tank, where the water temperature is 95 degrees.

As hot or cool water is needed, it is pumped out of the appropriate tank into the heating or cooling system, or into one of the two 500-gallon hot water heaters.

Heating the 95-degree water to 145 degrees for use in the taps will save 44 to 56 percent of the energy it would take to raise the 55-degree water to that temperature.

The system uses "reversible cycle heat pumps," which can either heat or cool a room by using the water stored in the tanks.

Warm or cool water is cycled from the storage tanks. In the cooling mode, the pumps transfer heat from the room to the water. In the heating mode, they transfer the heat from the water to the room. The water then returns to the appropriate tank.

The system is controlled by two Honeywell W7020E load control computers with "time of day" and "duty cycling" capabilities.

The system is turned on shortly before people are scheduled to arrive at the Grove, and shut down shortly before they leave.

The duty cycling turns the whole system off for a specified amount of time during each hour. Turning off the system for eight minutes per hour won't raise or lower the room temperature appreciably, and is expected to save 12 percent in energy costs per day.

In addition, Crosby said it was discovered after the Sun Room was completed that the brown tile floor acts as a 4,500 square-foot solar collector, heating the water pipes underneath it.

"The Seaside Company didn't want to get into a solar system, but they did anyway," said Crosby. "It just happened that we could use it, with a minor additional cost."

Currently, seven of the reversible cycle pumps are being used. An additional 32 will be installed during the second phase of construction, which will include new office space, large conference rooms, a new special purpose room and a new miniature golf course. The second phase of the construction is expected to begin in a year or two.

The entire heating and cooling system cost approximately $600,000, according to Crosby, compared to $520,000 to $550,000 for a conventional system.