

One America Plaza San Diego, California

CHILLER CONTROL

The retrofit of the two 1,000-ton Trane chillers with ABB 1,000 HP Variable Frequency Drives at this 34-story, one-million-square-foot office tower is yielding thousands of dollars in energy savings annually - and optimizing the control and operation of the building's HVAC system. Installed in the Summer of 2000, just as energy was being deregulated in California, the payback calculation of 2.5 years for the VFDs decreased to 1.5 years within the first nine months of operation, and continues to decrease rapidly as energy prices in the state soar.

Built in 1991, and overlooking the waterfront from the downtown business district, the 506-feet-tall Class A building (owned by Shimizu America Corporation) is 98% occupied and was planned as part of a two-tower facility connected to a 12-story hotel. Full lighting retrofits (to electronic ballasts), window filming, the addition of VFDs to the cooling fan towers, and the addition of LEDs to all exit signs had already saved \$500k in energy costs annually, before the retrofit of the ABB VFDs.

Benefits of the ABB Drives installation include:

- **Demand Side Management**
Compressors are operated at the speed needed for the capacity required. The VFD-controlled 1,000-ton chillers, which retain full functionality of all systems, can be slowed to operate at 350 tons. One America Plaza operates each chiller (in alternating, one-week stints) at 800 tons in summer and 500 to 600 tons in winter.
- **Saved Energy Costs**
With energy costs doubling from 9 to 18 cents per Kilowatt hour in just the first four months of 2001, One America Plaza now can control its energy consumption and maintain comfort for the building's occupants. Soft drive starts also minimize any chance of demand charges.
- **Effortless Operation**
Completely unobtrusive, the ABB drives and chillers continue to be operated by the existing (Trane Summit) building management controls.
- **Minimized Mechanical Wear**
Slow ramp-up compressor motor starts decrease the heat load on windings and extend bearing life. This, in turn, saves wear and tear on the chiller.

"On this kind of project, your savings are there," notes Paul Wolf, chief engineer of One America Plaza, "it would be a very good project for any building."

