

ARMSTRONG 

MAHALO TO COMFORT AND SAVINGS

A COMMERCIAL
HVAC INSTALLATION
CASE STUDY

One Waterfront Tower

The One Waterfront Tower chiller plant optimization project qualified for a \$83,568 custom utility rebate and will save an estimated 624,000 kWh or \$170,000 annually.

“It was amazing to watch the consumption graph go down once the IPC unit was switched into full auto. More importantly, the residents could feel the cooler air moving through the towers almost immediately.”

John Horvath
General Manager
OWT

The new chiller plant design and all-variable speed IPC 11550 plant automation system will benefit One Waterfront Tower by reducing electrical consumption, lowering maintenance costs and supporting existing initiatives for sustainable operation.

Background

Completed in 1990, One Waterfront Towers stands out on the waterfront skyline of Honolulu, showcasing the beauty and sophistication originally conceived by Design Architect Boone & Boone. Although the towers and condominium units are spacious and beautifully designed, the HVAC system was less efficient than originally anticipated, and often struggled to maintain comfortable indoor temperatures.

With local utility rates at \$.24 per kWh plus additional demand charges, finding a way to reduce energy consumption has been paramount for the One Waterfront Tower property management group and the building residents. At the time Karl Fujii of Hawaiian Building Maintenance (HBM) approached One Waterfront Tower management with a proposal for chiller plant optimization, the plant was operating at an annualized average of a 1.9kW/Ton.

Benefits

To transform the existing, inefficient chiller plant into an optimized, demand-based plant, Armstrong recommended variable speed primary pumping, variable speed chillers, variable speed condenser water pumps and variable speed cooling tower fans.

Having tried other strategies for improving efficiency, management at One Waterfront Towers agreed to optimize their chilled water air conditioning plant. HBM was engaged to install flow meters, variable frequency drives for the cooling tower fans, two-way control valves on terminal units, and a bypass control valve along with the Armstrong Integrated Plant Control (IPC) demand based control system. The IPC

automated control system uses patented technology to monitor and operate the chiller plant in the most energy-efficient manner possible.

The IPC system provides touchscreen control with a user-friendly icon driven system schematic and downloadable data log. The control screens are also accessible via web interface, for easy remote access. Ease of use and monitoring ability were important to the One Waterfront Tower facility management team and also for the local utility that contributed energy efficiency rebate funding for the retrofit.

The plant automation system is now geared for optimal operation of an all-variable speed plant configuration. The optimization logic seamlessly trades off capacity between all of the HVAC components to maintain the highest efficiency of the entire cooling system. On the strength of the upgraded equipment, the new control technology, and the optimization support & service from HBM, the plant now operates at an annualized average of less than .09Kw/ton and will save an estimated 624,000 kWh or \$170,000 annually.

Hawaii Energy presented a check for \$83,568 to One Waterfront Towers, recognizing their investment in energy efficient cooling equipment, and their commitment to sustainable operating practices.

Tech-facts

- Design Envelope 4300 pumps
- Design Envelope 11550 Integrated Plant Control System

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