Abstract

Honolulu Seawater Air Conditioning, LLC seeks to utilize cold seawater as the primary cooling medium for its seawater air conditioning (SWAC) district cooling project that will provide 20,000 tons of air conditioning for privately and publicly owned buildings in downtown Honolulu. Kai Engineering has been selected to develop a preliminary design of a seawater pipe system and cooling facility to be built on the drainage canal located along the western border of Kaka’ako Waterfront Park. The on-land pumping station will be used to transport seawater via a cold water pipe from a depth of approximately 1,600 feet to an on-land heat exchanger to cool the chilled water distribution system. The design will be capable of supplying more than 65% of the 20,000-ton cooling requirement using cold sea water. The remaining cooling load will be supplied by conventional chillers. Kai Engineering will present a pipeline design, a chiller and heat exchanger plant design, and an economic analysis of multiple scenarios including the use of thermal energy storage (TES).