

Data Center/ Mission Critical Modular Utility Solutions

Data center and mission critical facilities require reliable and redundant HVAC solutions. Systecon provides numerous solutions to meet these requirements, including modular chiller plants with waterside economizer; modular pumping systems; industrial PLC-based platform controls which offer the most reliable and redundant controls solution; and Systecon's patented CritiChill® modular evaporative cooling systems.

CritiChill® is a revolutionary innovation in cooling options for the data center/mission critical market. Only available from Systecon, it combines the best aspects of traditional water-cooled and air-cooled chiller plants. It's 30% more efficient than a typical air-cooled chiller plant at full load, and with an adiabatic cooler, the system only uses 20 percent of the water normally required by a traditional cooling tower (and without the harmful chemicals). The result is a complete cooling solution that is highly efficient *and* requires minimal water usage. California Title 24 compliant without water use.

Proven Success

CritiChill® Modular Evaporative Cooling System

Challenges - Original cooling system design with air cooled chillers did not meet local code for efficiency.

Systecon Solutions - CritiChill® reduced KW input by 40% over the basis of design, provides pre-cooling and free cooling sequence, and a closed loop system. Initial cost was higher than original design, but cost analysis showed pay back in less than 3 years and there's a significant reduction in water usage.

Chilled Water System Data

Flow: 4,080 GPM - 4 modules
(Future: 14,960 GPM - 12 modules)

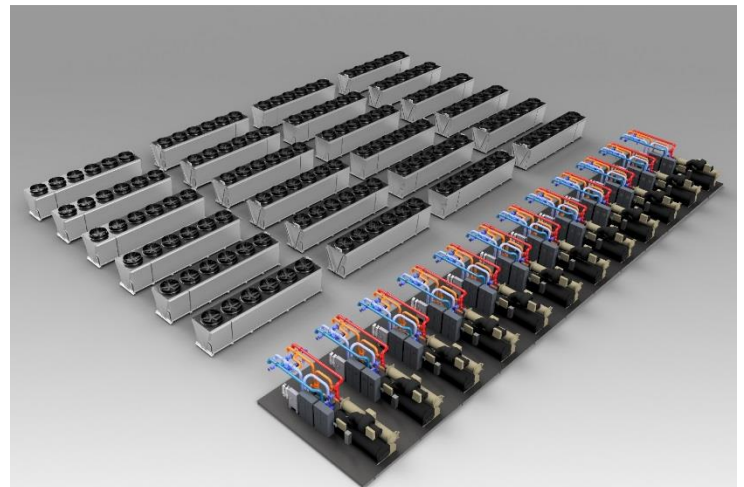
Condenser Water System Data

Flow: 4,050 GPM - 8 coolers
(Future: 14,850 GPM – 24 coolers)

Mechanical - Chillers, VariPrime® pump system, pipe, valves, expansion tanks, adiabatic coolers

Controls - PLC, additional redundant controls

Testing - Factory witness test by Systecon



High Profile Data Center in California
Multi-Phase Build

Outdoor application with enclosure -
designed to meet CA seismic standards,
includes refrigerant monitoring system

Modular Chiller Plant

Challenges – Schedule driven.

Systecon Solutions – Systecon was involved in the project from design to installation. Coordination with the consulting engineer started early in the process and we produced REVIT drawings for submittal coordination. The modular system was factory-built in parallel with construction at the jobsite.

Three modular chiller plant line-ups provided for initial phase; two additional modular chiller plant line-ups in future phase. Modular chiller plants designed for N+1 operation in each phase.

In addition to design & assembly, Systecon supervised the rigging and reassembly, and performed start-up and commissioning of the chiller plant, providing a level of consistency throughout the entire process. (Start-up of chillers, cooling towers and chemical treatment system performed by component mfr.)



**High Profile Data Center in California
Multi-Phase Build**

**Outdoor application with enclosure -
enclosure and cooling tower structure
designed to meet seismic requirements.**

Chilled Water System Data

Flow: 5,400 GPM (Future: 9,000 GPM)
Capacity: 4,500 Tons (Future: 7,500 Tons)
Fluid: Water
Suction Pressure: 55 PSIG
Working Pressure: 120 PSIG
System Design Pressure: 125 PSIG

Cooling Tower Water System Data

Flow: 12,300 GPM (Future: 20,500 GPM)
Capacity: 4,500 Tons (Future: 7,500 Tons)
Fluid: Water
NPSH Available: Per KW, 31.5 ft, 28.4 ft
w/10% Safety Factor
System Design Pressure: 125 PSIG

Mechanical - Chillers, pumps, pipe, plate & frame heat exchanger, chilled water system make-up water, chemical shot feeder, strainers, valves, pressure gauges, thermometers, air separator, basin sweeper filters; chiller refrigerant monitoring system, safety shower station with eyewash, tankless electric water heater and exhaust fan for enclosure; adjacent cooling towers & structure, cooling tower water chemical treatment systems

Electrical - Switchboards rated 1600 amps, junction boxes, circuit breakers

Power Distribution (for each chiller plant line-up)

Voltage: 460 Phase: 3 Hertz: 60
Equipment braced for 65,000 AIC

Controls - VFDs for pump control. Circuit breaker for disconnect. Third party supplied control panels, controls sequencing, programming, control devices, RIB's, and instrumentation required for chiller plant operation. Systecon installed the supplied control panels located inside the chiller plant enclosure.

Testing - Non-Witnessed hydrostatic pressure testing of system piping, validation of all factory wiring, and normal QC check out procedures at Systecon. Equipment bears ETL factory-listing label for the entire packaged assembly. Witnessed Systecon Factory Acceptance Testing (FAT).