

Alcoa Howmet Chiller and Process Water Design

Wichita Falls, TX

Construction Completion: 2014
Tri-Tech Services: Mechanical Engineering
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Project Description

The project included design of Primary/Secondary chilled water and condenser water systems. In an effort to reduce operating cost, minimize down time, reduce water usage, and reduce equipment, Tri-Tech provided design for a central chilled water plant which consolidated chillers and cooling towers which previously served multiple points of use in the facility. The new central plant serves the HVAC loads and 45-degree process water loops for two production buildings. The cooling towers serve the chillers and, via plate-and-frame heat exchangers, the 85-degree process water loops for both buildings.

Consolidation of the chilled and condenser water loops from the two buildings will provide higher efficiency operations, as the large chillers operate at a lower electrical usage per ton of cooling. Additionally, redundancy is provided to the system as two of the three new chillers can serve the largest anticipated load, along with a backup heat exchanger for the 85-degree process water loops.

Completion of the project will allow for removal of two chillers and a cooling tower due to the new central plant. An additional existing cooling tower is being relocated to the central plant as well.

The control system will incorporate the chillers into a single plant. The system will determine what the load is, based on the water flow and temperature, and will enable the pumps, chillers, and cooling towers to offset the load at the lowest possible power consumption.