

CASE STUDY: Gas-Fired Absorption Chiller Installation



Background:

Union Central Life, a Cincinnati-based insurance company, retained ThermalTech to provide engineering services for adding a 500 to 800-ton absorption chiller in the central plant as part of a long-term equipment replacement project.

Value-Engineering Analysis and Design:

We performed an analysis to determine the best chiller size based on the load profile, fuel costs, space availability and rigging requirements. A life cycle cost analysis was performed for electric chillers, and various types of thermal storage and absorption chillers. A 500-ton, two-stage, gas-fired chiller proved most cost effective.

This chiller installation, which became operational in October 1991, was one of the first Trane gas-fired absorption chillers in Ohio. We worked closely with the Customer, local and factory representatives of the chiller manufacturer and the mechanical contractor to ensure successful installation.

During design, a problem that had to be solved was getting the chiller from the truck to the pad in the basement. We verified that the chiller could be rigged on its end and lowered through an air shaft to the chiller room.

Benefits to the Customer:

- Additional chilling capacity was obtained at the lowest life-cycle cost.
- Control strategies were set-up to operate the absorption chiller in conjunction with an existing electric chiller to minimize electrical demand charges.
- The cost of expanding the electrical substation was avoided.
- Summer gas consumption was maintained at a high enough level to allow transport gas to be purchased all year, resulting in significant gas cost savings.
- An existing condenser pump was re-used as a chilled-water pump for the new chiller resulting in equipment savings.