

CASE STUDY: CASE STUDY: Turnkey Utility Plant Expansion



Rigging 1,200 Ton Chiller



Rigging 800 HP Firetube Boiler

Background:

St. Elizabeth Medical Center South Unit, Edgewood, Kentucky, wanted to increase the plant cooling capacity from 2,800 tons to 4,000 tons and double the heating hot water and steam generation capacity to support hospital expansion. They also wanted to improve system reliability and energy efficiency. ThermalTech was retained for utility master plan development, MEP design engineering and turnkey construction management.

Value-Engineering Analysis and Design:

We conducted a detailed utility analysis of the facility and identified the following upgrades/improvements:

- 1,200-ton chiller
- Three 600 ton cooling towers
- 800-HP steam boiler
- Steam converter for heating hot water
- Digital controls
- 20,000 Gallon fuel oil tank addition

Benefits to the Customer:

- Entire project completed on schedule and under budget
- Work completed while maintaining operation of all critical energy systems-all tie-ins performed on weekend night during mild weather in less than 10 hours
- Followed cooling plant master plan we developed before 2002 chiller replacement, set up systems to allow easier future expansion
- All equipment was arranged to fit into existing plant
- Pre-Purchased major equipment based on life-cycle cost
- New chiller has integral free cooling-cooling which can be provided without compressor operation when condenser water is cold (without a separate heat exchanger)
- Provided vertical in-line pumps to save floor space and piping costs
- Solved hydraulic problem that plagued existing cooling towers
- Made special bus tap to allow existing switchgear to be re-used for chiller
- Provided back-up boiler feedwater supply from domestic hot water system for greater reliability
- Negotiated with State Fire Marshall to allow second 20,000 gallon fuel oil tank for fuel back-up
- Specified and arranged for major equipment prepurchase
- Hired and managed contractors freeing up time for Owner to concentrate on building expansion