FARRIS ENGINEERING

## Alegent Health Midlands Central Utility Plant Upgrades Phase 1
## Omaha, Nebraska

**Project Cost**
N/A

**Completion Date**
2009

**Client Reference**
Alegent Health Midlands
Community Hospital

Farris Engineering provided mechanical, electrical, plumbing and fire protection engineering services for upgrades to the Central Energy Plant at Midlands Hospital. Professional services include equipment pre-purchase packages for two (2) 480 ton centrifugal chillers, chilled and condenser water circulating pumps, new cooling tower system, steam boiler modifications, fuel system upgrades, refrigerant monitoring and ventilation system, three (3) 1 MW 4160 V emergency diesel engine powered electrical generators. Emergency power system serves the Central Utility Plant and Hospital with ability to export power to the utility grid. The project also included medium voltage 5 kV and 15 kV paralleling switchgear and transformers as required to support critical hospital electrical loads and space heating and cooling equipment as required to maintain temperature control for the complex. The Central Energy Plant houses emergency generators, steam and chilled water production equipment, and ancillary support equipment of the primary energy systems to the healthcare campus.

Significant characteristics of the project included:

- Maintaining plant operations throughout the mechanical system change out and installation of the new electrical service and emergency power generation equipment.
- Plant upgrades to support energy management as well as blending of the facility modifications with the surrounding campus buildings due to its proximity to the hospital and medical office building. The design is required to be sensitive to aesthetic, sound and emissions issues associated with the Central Energy Plant.
- Accommodation of chiller capacity at 36°F delivery temperature with space for a fourth chiller.
- Auxiliary equipment, including variable primary flow for chiller operation, pumping systems, chemical feed systems, controls, plant ventilation systems, refrigerant handling, refrigerant monitoring and exhaust systems, and supporting electrical power supply systems and emergency power generation.
- Electrical generation equipment capable of providing power to support the Hospital emergency and critical power requirements and generation and distribution of chilled water with allowance for future expansion with seamless integration of electrical generation equipment.
- Emergency generation equipment has the ability to import or export power or to operate in parallel with the utility.
- Instrumentation and controls necessary for operation and monitoring of the plant, including the ability of the control systems to communicate with the main campus and plant energy management systems.