



**Dome-Tech, Inc.**  
A UTC Power Company

**Project Scope:**

Chiller Plant Expansion and  
Thermal Energy Storage Project  
Commissioning Services

**Facility Description:**

Higher Education Facility

**Completion Date:**

February 2006

# Case Study

## Private University

Northeastern United States

Due to the ongoing new construction and expansion of the University campus, the existing central chiller plant capacity at the time was expected to be exceeded in the near term. In response, a new chiller plant and thermal energy storage (TES) tank was installed.

The new chiller plant's purpose was to provide thermal storage capability (40,000 ton-hr) and additional cooling capacity for the University. Dome-Tech, Inc. was retained to commission the new chilled water plant and thermal storage system.

The TES tank consists of approximately 2.6 million gallons of a So-Cool/water solution. The tank is charged at night (with 34 degree So-Cool) by two electric centrifugal chillers in a series arrangement. The chillers are rated for 2,700 tons and 2,300 tons. The TES water or So-Cool solution is then used to chill the campus chilled water through plate and frame heat exchangers (four in total) during the day. The TES System is comprised of two main loops – hot and cold. A condenser water loop operates completely separately from the main chiller plant and the condensers are arranged for parallel operation.

The installation, functional, and performance testing was designed to verify and document that the installed equipment met the design criteria and guarantees. The commissioning process identified 97 deficiencies/issues during the design, construction, and startup of the new chiller plant. The most notable identified and resolved issues concerned chiller performance and capacity, as capacity was limited due to incorrect current limiter operation. Other issues identified revealed less than design performance and/or efficiency for the: TES chiller pumps, TES system pumps, condenser water pumps, and plate and frame heat exchangers. In addition, Dome-Tech identified insufficient condenser water flow that was due to pump sizing issues.

Dome-Tech has been additionally retained to perform commissioning services for the University's new Chemistry Building and Neuroscience Building.