

Ensuring Reliable Power for Critical Care

Modernizing Abbott Northwestern Hospital's Energy System



The Problem

Abbott Northwestern Hospital was relying on a 1950s-era boiler system to power its healthcare center. Over the years, aging infrastructure led to instability, resulting in brownouts and power outages—posing a serious risk to critical hospital operations and patient safety. In addition to being unreliable, the system was highly inefficient due to its outdated technology.

Recognizing the need for a modern solution, Abbott Northwestern sought a 21st-century system that combines efficiency with the reliability essential for a critical care facility. To ensure the required uptime, the hospital needed a system designed to meet the strict standards of **NFPA 99**.

Today, the Central Utility Plant (CUP) is a modern 70,000-square-foot facility that replaces four plants previously spread across the hospital's campus. This centralized plant houses state-of-the-art technology that is cleaner, more efficient, and more reliable, and delivers steam, chilled water, and electricity to 1.8 million square feet of critical hospital space.

RoviSys

RoviSys was the ideal partner for this Minnesota-based hospital's Central Utilities Plant installation. The Power & Energy division at RoviSys specializes in automation, information, steam, and electricity within district energy and microgrid systems—developing solutions that maximize efficiency, reliability, and availability, precisely what Abbott Northwestern required.

NFPA 99 establishes criteria for the installation, performance, and operation of healthcare facility systems to protect patients, staff, and the public from electrical failures, fires, and other hazards. The project involved installing both electrical systems and standby generators, requiring expert knowledge of these strict guidelines. RoviSys leveraged its expertise to successfully and safely deliver the solution.



The Solution

RoviSys delivered two integrated systems:

- **Normal Power Control System (NPCS)**
- **Essential Power Control System (EPCS)**

These systems control the 13.4 kV power system, turbine, and diesel generators.

- The **NPCS** manages the turbine power level, load shedding, and power-seeking functions to synchronize and connect the turbine to available utilities during an outage.
- The **EPCS** ensures essential power buses remain energized, providing uninterrupted power to the hospital. It automatically starts the three diesel generators during an outage, manages load sharing, and performs generator testing.

The system utilizes a Rockwell Automation ControlLogix PLC and Woodward generator controls with a network control scheme based on IEC 61850 (a substation network protocol) to trip and close breakers and set power levels for generation. Control is handled via a Rockwell Automation FactoryTalk View SE HMI, with automated sequences and full manual backup controls. The EPCS is also designed to withstand a two-failure scenario, ensuring compliance with NFPA 99 requirements.



The Results

Rigorous NFPA 99 mandates and the overall project demands made this the best kind of challenge for RoviSys engineers. Meeting the strict double-fault testing requirements—where every failure scenario was tested alongside a second simultaneous fault—required expert precision and reliability.

Despite these challenges, RoviSys delivered the project on schedule and within budget, contributing to the overall success of the Central Utility Plant project. Abbott Northwestern was highly satisfied with the results, and RoviSys continues to be a trusted partner, supporting the hospital with a current project extending the essential power to a hospital expansion and ensuring the reliability of its critical infrastructure.

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