

Sydney Opera House



Surrounded by water on three sides, at what is known as Bennelong Point, stands one of the most magnificent buildings on one of the world's most beautiful harbors. The Sydney Opera House, originally designed by the Danish architect Jørn Utzon, is meant to look like a giant sailing ship.

Since its opening in 1973, the Sydney Opera House has become the busiest performing arts center internationally. In an average year, the Sydney Opera House presents theater, musicals, opera, dance, ballet, and every form of music from symphony concerts to jazz, as well

Case Study Summary

Benefits

- Significant energy consumption savings in central energy plant
- Facility monitoring and management made central on nine PC workstations

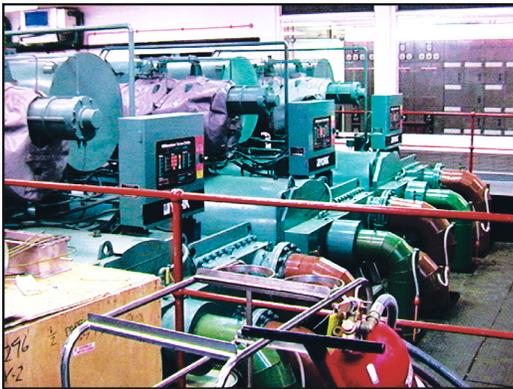
Challenges

- Management and control over nearly 1,000 rooms of varying types and sizes
- Power supply required for facility equivalent to that required for a town of 25,000

Solutions

- Teletrol controls system connected to existing WAN with over 10,000 physical I/O points
- Panorama GUI software allows for central facility management and monitoring
- Ensemble software used for configuration, programming, monitoring, and control of HVAC, lighting, and other facility equipment

as exhibitions and films. It averages around 3,000 events each year with audiences totaling up to two million. In addition, approximately 200,000 people take a guided tour of the complex each year. Even today, many visitors are surprised to find that the Sydney Opera House is really a complex of theaters and halls all linked together beneath its famous shells.



Two of many mechanical rooms at the Sydney Opera House

There are nearly 1000 rooms in the Opera House, including the five main auditoria. These rooms include a Reception Hall, five rehearsal studios, four restaurants, six theater bars, an extensive foyer, lounge areas, sixty dressing rooms and suites, a library, an artists' lounge and canteen known as the "Green Room", administrative offices and extensive plant and machinery areas. The building covers about 4.5 acres of its 5.5 acre site and has approximately 11 acres of usable floor space. The power supply, equivalent to the needs of

a town of 25,000 people, is regulated by 120 distribution boards. Twenty-six air conditioning plant rooms move more than one million cubic feet of air per minute through twelve miles of ducting.

In order to better manage energy consumption in this considerable facility, a Teletrol controls system was installed in the early 1990's. A combination of sixty-three Integrator 186 and 486 controllers were connected to the Opera House wide area network with over 10,000 physical I/O points, and includes over forty air handlers utilizing electro/pneumatic controls and a chilled water plant that uses a sea water, heat-exchanger cooling system for the chillers. To manage and

monitor the entire facility, the Opera House uses nine PC workstations running Panorama graphical user interface software. Teletrol's Ensemble software interface is used to configure, program, monitor and control the ventilation, heating and air conditioning systems, lighting systems, and various other equipment and systems in the Opera House.

Since September 2000, Trilogy Maintenance Solutions of Silverwater, Australia, has been working with the Opera House to improve the system. By interfacing

the existing Teletrol system with Veris power meters using a third party open systems port, and by using a variable speed secondary pumping system, Trilogy was able to help provide the Opera House with significant energy consumption savings in the central energy plant.

Trilogy is currently implementing a new, improved graphical user interface that will use the latest features of the Panorama software. Future plans are certainly down the road with the recent announcement by the Premier and Minister for the Arts, Bob Carr, that an additional allocation of \$45 million for major venue improvements at the Sydney Opera House has been granted for 2003. Jørn Utzon of Utzon Design Principles will be personally involved in the future project.

"As time passes and needs change, it is natural to modify the building to suit the needs of the day. The changes, however, should be such that the original character of the building is maintained," says Jørn Utzon, original architect of the Sydney Opera House.



Teletrol Systems Inc.
286 Commercial Street
Manchester, NH 03101
Phone: 603.645.6061
Fax: 603.645.6174
www.teletrol.com