

21st Century Tower, Dubai

Tridium integrates controls on the world's tallest apartment block

Standing 53 storeys and 269 metres high, the architecturally striking 21st Century Tower in Dubai is the latest prestigious project to feature a web-serving building services control solution from Tridium, the open framework specialist.

The installation of Tridium's NIAGARA Framework™ by Dubai-based Pacific Controls, the UAE's leading systems' integrator, has ensured rapid, comprehensive and successful integration of the tower's complex range of building services equipment. Services designed to operate on independent BACNET, LONWORKS® and Modbus control bus networks, are now all connected in a single, open, interoperable and remotely accessible web-based control environment without the need for any gateways, complex programming or expensive BMS supervisors.

Located on the Sheik Zayed Road, the 21st Century Tower is an elegant structure, shaped to depict an expression of two birds in flight. It contains 300 three-bedroom and 100 two-bedroom apartments offering over 71,000m² of luxury living space. Over 1800 locally controlled fan coil units, fed with chilled water via a variable flow system, provide the essential comfort cooling. Air handling, pump, power, fire detection, security and other services are distributed in Basement, Mezzanine, 9th Floor, 30th Floor and 53rd Floor plant rooms throughout the building. Directly behind the 21st Century Tower is the building's adjoining nine storey car park which is also home to its five huge 525 ton water-cooled chillers, cooling towers, additional pumps and electrical substations.

Thanks to Tridium's NIAGARA Framework™, the complex array of multi-vendor control sub-systems installed on the project, comprising in total over 4,000 control points, have been integrated onto one network by Pacific Controls. The five centrifugal Carrier chillers and the building's Simplex fire alarm system are both controlled by devices using the BACNET protocol whilst the 15 Honeywell HVAC controller outstations, ASTI access control system and CEAG emergency lighting control system operate on LONWORKS®. Schneider Electric power monitoring units and FG Wilson generators working on the Modbus communication protocol have also been integrated, along with a Vicon CCTV system using TCP/IP protocol. The NIAGARA Framework™ talks to each controller using its native protocol and respective network in one common, distributed and genuinely open environment, irrespective of controller type and manufacturer, and without the need for special gateways.

The NIAGARA Framework™ also provides control system

Continued overleaf

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The Tridium Solution

The project

- The world's tallest apartment block at 53 storeys and 269m high.
- 300 three-bedroom and 100 two-bedroom apartments offer over 71,000m² of luxury living space.
- Over 1800 locally controlled fan coil units, fed with chilled water via a variable flow system, provide comfort cooling.
- Air handling, pump, power, fire detection, security and other services are distributed in Basement, Mezzanine, 9th Floor, 30th Floor and 53rd Floor plant rooms throughout the building.
- Adjoining nine storey car park is home to five huge 525 ton water-cooled chillers, cooling towers, additional pumps and electrical substations.

The requirement

- Rapid, comprehensive and successful integration of the tower's complex range of building services equipment.

Tridium provides

- Market-leading NIAGARA Framework™ as the system architecture.
- NIAGARA Framework™ embedded within four JACE 512 series controllers.
- Web-based remote access to the control system for engineering, monitoring and supervision.

The results

- Services designed to operate on independent BACNET, LONWORKS® and Modbus control bus networks, are now all connected in a single, open, interoperable and remotely accessible web-based control environment.
- Graphical information is served up as HTML pages to ensure that supervisory actions can easily take place through any secure-access internet connection.
- Impressive degree of sub-system interoperability.

Conclusion

- Thanks to Tridium's NIAGARA Framework™, all building services are easily accessible through a web-based control system architecture.
- Complete freedom of equipment specification through the main driver of "best in breed" selection not controls protocol compatibility.

“ No gateways,
expensive
programming or
BMS supervisors
are required ”

Powered by
niagara
FRAMEWORK™

Case Study

“ The promised integration of sub-systems has actually delivered ”

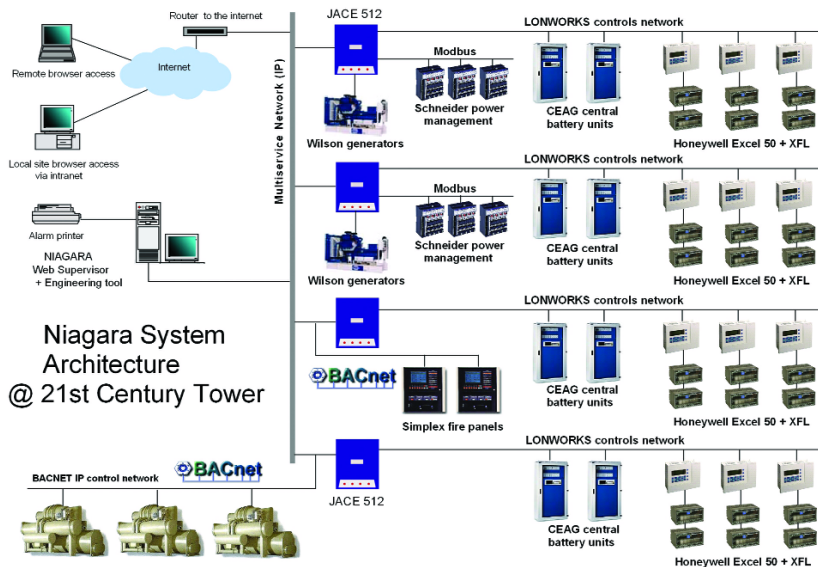
access via any standard web browser. Graphical information is served up as HTML pages to ensure that supervisory actions can easily take place through any secure access internet connection. These include data viewing, collection, trend logging and archiving, centralised operation and adjustment of sub-systems, and equipment maintenance, fault-finding, alarm handling and time scheduling. No separate BMS supervisor software is required. The degree of sub-system interoperability is impressive. For example, in the event of fire detection, the control system will automatically monitor a pre-programmed shutdown of various plant and equipment as well as interlocking with the activation of the building's emergency lighting system. The Tridium approach, which supports multiple open field bus protocols, has ensured complete freedom of equipment specification through best in breed selection rather than being driven by the issue of controls protocol compatibility.

“The project consultants, W S Atkins, are delighted with how the controls aspect of the job has worked, claiming it to be one of those very rare occasions when the promised integration of sub-systems has actually delivered” says Nigel MacKenzie, Business Development Manager at Pacific Controls.

The NIAGARA Framework™ is embedded with four Tridium JACE 512 control units installed at different points throughout the 21st Century Tower. Because the control system can be engineered via a

web-browser, it was able to support multiple access and parallel binding locations. This capability proved especially useful to Pacific's engineers who were able to configure the system remotely via laptop, when the main front end PC in the 9th Floor control room on site was unavailable through time constraints, access difficulties or conflict from other trades working on site at the same time.

The Client at 21st Century Tower was The Al Rostamani Group. Consultants were W S Atkins (UK) Overseas and Mechanical & Electrical Services Contractors were the Emirates Trading Agency. Pacific Controls can be reached on www.pacificcontrols.net and email systems@pacificcontrols.net.



“ The Tridium solution has provided us with a fully open, web-based system architecture which is easy to access and control ”

About Tridium

Tridium is a US based company with their European headquarters in West Sussex.

Tridium has established key strategic alliances with leading corporations in the energy services, building automation and data management industries.

Tridium markets its products to a wide range of controls manufacturers, HVAC equipment manufacturers, and a network of Tridium Systems Integrators.

Additional information about Tridium is available at www.tridium.com

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