

Lusail City (Qatar)

Schneider Electric's solution provides flexibility throughout lifecycle of storm water project



PROJECT AT A GLANCE

Project Type

Storm Water and Reservoir Station

Location

Qatar

Applications

Process Control and Monitoring System

System Components

- Modicon Quantum redundant PAC system
- Unity programming software
- Vijeo Citect SCADA
- Connexium managed switches
- iMCC switchgear panels
- TSXETG3000 gateway
- Gutor UPS

CUSTOMER BENEFITS

- High system reliability and availability
- Integrated solution from single supplier
- Open communication across the system
- Continuous, reliable operation
- Safe mode shut down



An aerial view of the Lusail City development

Lusail City is a new waterfront city under construction in Qatar that is intended to be the biggest domestic real estate development in the country. It covers an area of 35 million square metres (377 million square feet) and is located north of Qatar's capital city of Doha. The vision for the project is to establish a distinctive 21st century iconic city that celebrates the unique cultural and geographical heritage of Qatar and the Gulf Region.

Qatar Kentz was employed as the engineering contractor for the Lusail City storm water pumping station project that consisted of six water pumping stations situated at various locations around the city. Two are storm water pumping stations that will handle storm water and road drainage, two are irrigation pumping stations that will handle treated sewage and two others are reservoir pumping stations.

“For the Lusail city project, we were eager to work with a partner who is able to support us at all stages of the project: from the design specifications to the after-sales maintenance services. Above all, we needed a partner who could stay flexible all along the lifecycle of the project.”

Thomas Cowen, Qatar Kentz

The Challenge

Qatar Kentz was looking for a single supplier that could provide an integrated solution for the design, detailed engineering, supply and site services for PACs, SCADA systems, variable frequency drives (VFDs), Guplor UPS system and LV switchgear panels, all under an extremely tight deadline.

It was also critical to source a solution that would provide 24/7 availability of the system with remote monitoring and control. They required a highly functioning system that was also cost effective.

The Solution

Schneider Electric's was awarded the project because its proposed solution complied with the project's stringent specifications.

Schneider Electric's system included the design, engineering, fabrication, factory testing, inspection integration, testing and supply of PAC local control panels for storm water, irrigation and reservoir pumping stations.

All seven systems have an HMI mounted on the PAC panel along with an engineering work station with Vijeo Citect SCADA software with a 1500 tags.

The engineering work stations and printers, all located in the control room, allow the operator to remotely manage, monitor and command the entire plant through graphical displays.

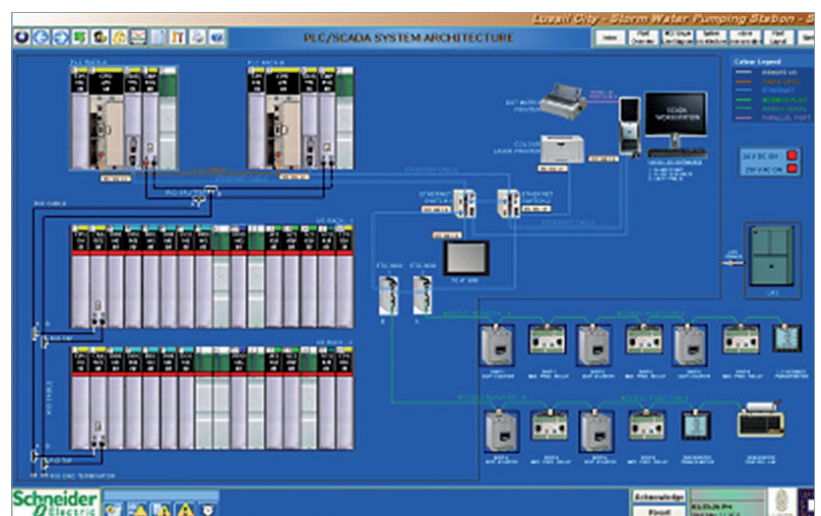
The storm water pumping stations handle storm water and road drainage. Each storm water pumping station has a control system for its facilities. There are also five storm water pumps on

a duty/standby basis. The pumps are controlled and monitored by a PAC in response to the wet well levels as measured by ultrasonic level transmitters.

A Gutor uninterrupted power supply (UPS) system offers a necessary battery backup of eight hours to help ensure trouble-free operation of the PAC unit in the event of a power outage in the PAC section.

The irrigation pumping stations handle treated sewage effluent. Each of these has three irrigation pumps on a duty/assist/standby basis equipped with VFDs.

At the reservoir, there are three feed pumps on a duty/assist/standby basis. Pumps are equipped with VFDs and the speeds are mounted together to ensure that the two running pumps operate at the same speed.



Main architecture

The Benefits

High system reliability and availability through increased robustness

The high availability network architecture increased the robustness and fault tolerance of the system. The Vijeo Citect server is on a redundant Modbus TCP/IP communication with the Hot-standby PACs ensuring continuous operation for the monitoring, controlling and report generation of the system.

Integrated solution from single supplier

Schneider Electric offered a unique advantage that other suppliers could not offer by giving Qatar Kentz a single point of contact for the entire project thereby simplifying and streamlining the entire process.

Open communication across the system

The iMCC switchgear panels consist of IEDs (Intelligent Electronic Devices) such as power metering units, motor protection relays, soft starters and VFDs. All these IEDs communicate with the Quantum Hot-standby PAC through the TSXETG3000 gateway.

Continuous, reliable operation

The power supply for the PAC panels are fed through the Gutor UPS which offers a necessary battery backup of eight hours to help ensure trouble-free operation of the PAC unit in the event of a power outage in the PAC section.

Safe mode shut down

In the event of an unexpected power outage at the pumping stations, it takes 10 minutes for an MOV to close in Safe mode. Provisions have been made to ensure Safe mode shut down of field valves by supplying a separate three-phase Gutor UPS unit with a 10-minute backup facility. This has effectively addressed some of the customer's "pain areas," as well as complying with stringent project specifications.



Artist visions of the completed Lusail City