



CUSTOMER CASE STUDY

Qatar Foundation transforms Education City into a smart city

Qatar Foundation - www.qf.org.qa/education

Industry - Smart city

Challenges

- 12 sq km campus with 45+ buildings including educational, hospital, recreational, industrial and sports facilities
- Diverse makes and models of existing controls across facilities with inconsistency in visualization, trending and reporting interfaces
- Difficult to control and monitor all operations from centralized control rooms

Solution

- Deployed AVEVA™ Operations Control to streamline process visibility and centralized control. Utilizing a high availability architecture design enabling operation from two command centers interconnected throughout all facilities

Results

- Centralized control and independent monitoring and control for over 45 facilities
- Better visibility of information has led to a 5.5% reduction in energy consumption, optimum energy utilization and enabled more reliable operations performance
- Cornerstone for smart city transformation through a unified operation platform
- Streamlined operator training due to standardized design and function

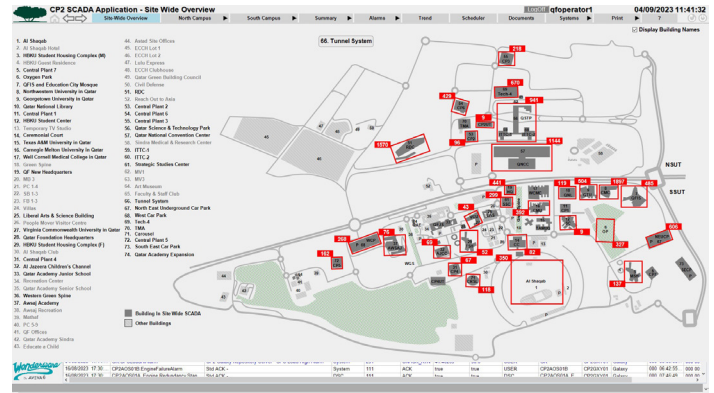
At Education City, a person can attend a class at one of its eight branch universities, then walk to a sport event at the stadium where the 2022 World Cup took place, then amble over to check out a book at Qatar’s largest library (housing one million books)—or, better yet, take the electric tram. But with so many facilities in a 12-sq-km area in a country known for its extreme heat, energy consumption is an ongoing concern.

Qatar Foundation is a nonprofit organization focused on education, science, innovation and community development. It was established in 1995 by His Highness, The Father Emir, Sheikh Hamad Bin Khalifa Al Thani and Her Highness, Sheikha Moza Bint Nasser Al Misnad. Education City is the foundation’s flagship initiative. Because innovation and sustainability are at the core of the nonprofit’s mission, Qatar Foundation wanted to reduce its carbon footprint and transform Education City into a smart city.

The challenge was that every facility in Education City had its own dedicated control system, each using management systems from different vendors with separate workstations. Every individual facility required local monitoring and control, with manual reporting slowing things down even further and introducing opportunities for error. Operators couldn’t adequately discover cooling energy wastages due to improper scheduling and not having energy management in place. Training operators on each system was a monumental task in and of itself. All of this added up to less efficient operations—and Education City wanted to do better.

“AVEVA Operations Platform aligns Education City with our leadership’s vision to transform it into a Digital Smart City, controlled from a centralized command center to attain optimum operability and to provide necessary information for decision making for our prestigious facilities to reduce their carbon footprint and O&M costs.”

Georgios Sichanis
Senior Project Manager, ASTAD

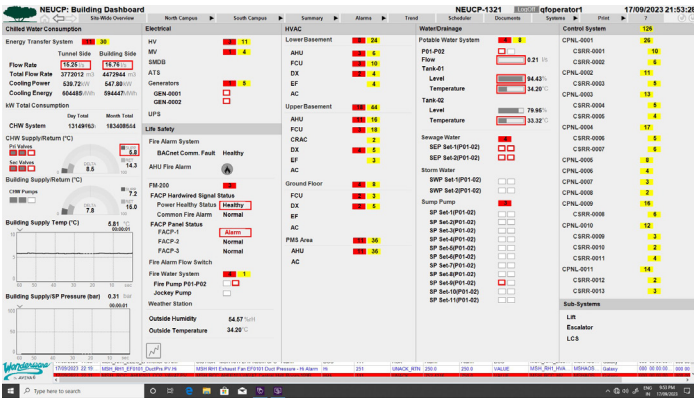


The first level of Education City’s facilities data architecture gives a bird’s-eye view with every building location as well as the total number of alarms corresponding to each building.

Centralized control and better visibility means energy saved

As the first part of Education City’s smart city initiative, it built a unified facilities data architecture using AVEVA Operations Control for 45 of its facilities. Controlled from two centralized locations, operators can now access, visualize and standardize operational data without needing separate workstations and people to monitor each facility. Additional tools such as automatic scheduling, automated reports, plus streamlined training simulations, have saved Education City time, money and—most important in its journey to become a smart, sustainable city—energy.

With AVEVA™ InTouch HMI, Education City operators can see into five layers of operations, from a bird’s-eye view to detailed KPIs for specific equipment. Operators can look at an overview of disparate systems in a facility such as energy transfer, chilled water, electrical, HVAC, water drainage, or the status of pumps, or get even more specific data about a single pump or electrical system, and quickly make decisions about maintenance or optimization. This gives operators better visibility and makes it easier to drill through the status of equipment quickly and prioritize maintenance activities. With AVEVA™ InTouch Access Anywhere, operators don’t have to be physically present to do this work. They can remotely see and diagnose problems before they get out of hand.



The building dashboard shows equipment KPIs for the entire facility

Achieving more while using less

In addition to better visualization and remote access to crucial operations data, AVEVA™ Reports for Operations helps streamline and standardize custom automated reports and work orders. Using this reporting tool, operators can leverage the archives from other solutions and applications and integrate data into one user-friendly environment, making it easy to create and generate automated reports.

Using AVEVA scheduling tools, operators manage the lighting, heating and other sub systems in a building using time- or condition-based rules. The advantage of this scheduler is that operators can set different temperatures for different times—for example, reducing cooling during hours when a building or room remains unoccupied—or event conditions, such as equipment downtime or weather.

In addition to these reporting and scheduling tools, the integration of AVEVA Operations Control with other applications has led to even more increased operational efficiency. The ability of AVEVA Operations Control to integrate with Computer Aided Facility Management (CAFM) enables facility managers to plan, execute and monitor all activities involved in reactive and planned preventive maintenance, asset management and operational facility services.

The new system has also made training operators quicker and more efficient. Operators are given in-depth knowledge on SCADA philosophies, design principles, architecture, communication, navigation, alarm management, scheduling, reports, trend analysis and CAFM integration. They get hands-on experience with process simulation.

And because the new system is standards based in design and function, operators can now operate any of the facilities. Recorded trainings are made available for new operators to streamline onboarding without additional in-person training.

All of this contributes to Education City’s sustainability goals of achieving more while using less.

Real-time diagnostics catch costly water leaks

Reduction of water consumption is one of the sustainability goals of Education City. In a pilot application, Education City implemented water meter management using AVEVA tools so that operators can see the cubic meter flow per hour in daily meter status reports.

In one example, a remote operator received an alert on his cell phone about the high flow in a particular water meter, a sure sign of a leak, and, within an hour, the leak was fixed. Before, operators would have to wait until the next morning, when they would discover a big pool of water and have to scramble after the fact. Now they avoided wasting energy and cooling water—very costly in a hot country such as Qatar.

Real-time diagnostics of all operating systems and equipment have led to higher reliability of equipment and lower operating costs in general. Education City’s electrical consumption has been considerably reduced. Chiller plant efficiency has improved, from an average of 0.91 KW/TR down to 0.86 KW/TR, leading to a 5.5% cost reduction to Qatar Foundation.



Entire CP6 building dashboard showing key parameters of CHW production, chilled water flow, condenser pumps, primary pumps, secondary pumps, tertiary pumps, cooling towers and chiller



Digital transformation of the enterprise

The implementation of a unified operation platform is the cornerstone for the transformation of Education City into a smart city. It has reduced its carbon footprint using remote monitoring of equipment, streamlined training, and advanced visualization and diagnostics, leading to more operational efficiency and optimum energy consumption.

With the help of AVEVA Operations Control, Education City created two state-of-the-art central command centers that monitor and control over 45 facilities, and they're not stopping there. With this scalable platform, Education City plans on a digital transformation of its entire enterprise by 2025.

For more information,
[watch the full presentation here.](#)