CUSTOMER CASE STUDY

AVEVA™ System Platform ensures sustainable operations, patient comfort, and energy efficiency for New Hospital of Orléans

New Hospital of Orléans
Industry - City and facilities management

Goals

- Establish a business management system (BMS) that provides comprehensive control of the hospital's infrastructure operations.
- Allow optimal functioning of technical installations and enable fault detection with alarming capabilities.
- Successfully meet environmental requirements.
- Reduce the hospital's operational and management costs, while meeting environmental targets.

Challenges

- Guaranteeing a maximum response time of five seconds at any point of the site.
- Enabling all hospital equipment to communicate via a multiprotocol solution.
- Creating an ergonomic solution that is easy to use.

Results

- Teams can access information in real time and manage approximately 1,500 hospital alarm points and 10,000 technical points.
- The optimization of energy and maintenance operations have resulted in reduced costs.
- Availability of traceable information and reporting enables more efficient management of the system's 80,000 datapoints.
- Improved response time allows staff to address incidents within a five-second window.

Solutions

- AVEVA System Platform
- AVEVA™ InTouch HMI
- AVEVA™ Historian

Built with the single objective of providing cutting-edge medical care to residents of the Loiret region of France, the New Hospital of Orléans (NHO) opened its doors to the public in October 2015. With its 1,300 beds and state-of-the-art equipment and processes, NHO is the first public health center in the north central region of France to offer state-of-the-art medical care.

The team designing the new hospital campus aspired to improve the comfort and quality of care for patients and to adapt to the evolution of medicine by offering the latest in medical technical and logistical tools. A significant focus of these comprehensive goals is to monitor the hospital's daily energy consumption and assess its related environmental impact on the region.

"This is a digital transformation not only of our equipment but also of our business completely."

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans

To achieve these energy management goals, the hospital follows the strict guidelines defined by the Haute Qualité Environmentale (HQE) certification standard, which is based on the principles of sustainable development for green building construction in France. Controlled by the Paris-based Association pour la Haute Qualité Environmentale (ASSOHQE), the standard includes a wide range of sustainable objectives, which includes minimizing the building's overall energy use.

To optimize the technical and environmental performance of hospital operations, the hospital's management team required a building management system (BMS) that offered a broad supervisory control capability featuring the ability to run all technical equipment on a day-to-day basis. System integrator Eiffage Energie was selected for the project based on its sustainability focus and plan for a comprehensive implementation of supervisory and control software from AVEVA.

"Energy consumption monitoring was a primary objective during the planning of the hospital's construction. A study was made before work began to find innovative solutions with a high-energy yield."

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans

Real-time energy consumption monitoring

The project was developed in stages to ensure that a comprehensive BMS was developed to successfully achieve the hospital's energy usage and operational objectives. These included the optimal functioning of the hospital campus' technical infrastructure such as the HVAC, lighting, and plumbing systems. Management of the location's electrical power would be accomplished using a separate application. The BMS is designed to effectively manage and anticipate faults, optimize corrective maintenance, ensure successful monitoring of energy consumption, and provide effective alarm feedback.

"During the planning stage, we refined the functional analysis of the project to guide the choice of the software solution."

Tarik Rejraji
Business manager, Eiffage Energy

A real-time open, scalable supervisory control system

Several challenges had to be addressed before a supervisory control system could be implemented by the team. The first was to guarantee that in any area of the NHO the response time would be within a five second window, or as close as possible. The data captured had to include both information and commands that specifically addressed issues being reported on. Another challenge was the need to use a common software platform to connect all the equipment, regardless of brand or type.

To achieve this, the team had to select a network architecture and a control/command toolset that were capable of responding in real time and sufficiently robust to handle 80,000 data points. The team selected the AVEVA System Platform.

"It was necessary for the system to optimise development time while also being functional, ergonomic, and compatible with the various elements of the network. Our selection of AVEVA System Platform was based on the advantages it offered as an open and scalable architecture specifically designed for supervision applications. It also is able to collect large quantities of data, as well as integrate functions and programs used by other IT processes."

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans

AVEVA System Platform provides a comprehensive, standardized software platform that links the hospital's departments and various locations. Serving as an industrial operating system, AVEVA System Platform offers common services such as visualization, configuration, deployment, communication, security, data connectivity, data storage and management, and people collaboration among all locations and employees.

These services allowed the hospital to build a single, unified plant model that logically represents its processes, physical equipment, industrial systems, and even legacy systems, making the design and maintenance of these systems more efficient and flexible with less risk. The plant model also acts as a digital twin of operations, giving essential context to power plant data, greatly assisting with diagnostics and troubleshooting, as well as providing valuable system documentation throughout the system lifecycle.

"Compared to a traditional BMS solution, only the AVEVA industrial supervisory software could guarantee the reliability of sharing and exchanging data between hospital departments. System Platform has the advantage of being open and scalable for supervisory applications, as well as providing a powerful data acquisition capability for collecting and storing large quantities of data."

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans

Highly intuitive visualization capability

AVEVA InTouch HMI, an open and extendable supervisory HMI and SCADA solution, enables the rapid creation of standardized, reusable visualization applications for deployment across an entire enterprise. Edge software with InTouch HMI delivers business value in engineering simplicity, operational agility, and real-time performance. This helps drive maximum performance, lowers costs, and provides additional security and reduces risk to support the hospital's critical operations infrastructure.

Navigation is ergonomic and user-friendly thanks to a synoptic screen created by the InTouch HMI application, with a second screen for the visualization of alarms. Each BMS position in every building can visualize the equipment in each of the hospital's six locations, allowing operators to quickly access critical information.

The development team also installed InTouch for Terminal Services software, which extends the capabilities of InTouch HMI by enabling users to deploy the InTouch HMI in terminal server systems. The software provides familiar development and runtime environments, as well as easy access to HMI applications from several different software platforms and devices. This increased visibility into the hospital's real-time processes can lead to more intelligent process operations decisions.

"The objects developed for the enterprise system using AVEVA InTouch HMI makes it possible to integrate functions and programs developed for other IT tools. With real-time visibility into the hospital's processes, AVEVA Edge enables operators to easily zoom into an area to localize a piece of equipment or identify a fault. In addition, the screens use the same color-coding systems that coincide with the different healthcare buildings, which helps the user find their way easily within the system."

Tarik Rejraji
Business Manager, Eiffage Energy

The keys to patient care: Real-time data and consistent power

With the hospital's various departments located in different areas of the campus, AVEVA Historian provides aggregated data that enables operators to compare the performance of multiple departments and make informed decisions on improvements, with quicker incident responses. The data is securely collected from the hospital's remote campus installations and archived in AVEVA Historian. With AVEVA Historian, data is easily retrieved and securely delivered to desktop or mobile devices, enabling operators to analyze processes anywhere at any time.

AVEVA Historian provides unparalleled scalability offering up to 500,000 tags with enhanced data retrieval throughput. Combining advanced data storage and compression techniques with an industry-standard query interface, Historian provides open access to all process, alarm, and event data. It also enables faster, more informed decisions, while keeping hospital team members up-to-date on operational performance.

"Our AVEVA solution includes hundreds of remote nodes that must function independent of one another, but at times also work together. AVEVA software enables this functionality."

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans

Another area of development was the Technical Management of Electricity (GTE), which was deployed separately for security reasons. A hospital needs a guaranteed uninterrupted level of electricity to avoid any power loss that would affect vital medical equipment. For this reason, it has its own separate fiber optics connectivity. Placed under the control of a GTE, five electric generators provide 10mW of backup power when necessary. The GTE also manages the entire electrical network with a redundant double power supply loop with two transformers installed at each high-voltage substation.

"With a wide range of sophisticated medical equipment and advanced intensive care units, it is vital that the NHO have a reliable onsite backup power source. At the first sign of a power loss, the GTE backup system is activated in a record time of five minutes, while the primary electrical systems restart nearly instantly."

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans

Success for the future: Innovative technology paired with partnerships

The successful implementation and operation of the new technology platform is the result of the strong partnership between the hospital, Eiffage and Dalkia, the energy services company that provides onsite management and maintenance services for the hospitals. Since the implementation of AVEVA System Platform, NHO can access detailed graphs with all recorded data, which enables the technical team to analyze any problem quickly with guaranteed optimal response times.

"The system will evolve and be optimized over time, but it is already an indispensable aide to the operation of the NHO, especially in terms of energy management, traceability of care activities, and risk management. We are now able to successfully manage approximately 1,500 hospital alarm points and 10,000 technical points with the help of AVEVA software."

–

Philippe Chapuis
Maintenance and operations manager, New Hospital of Orléans