CASE STUDY

Extron Quantum Ultra Drives Wisconsin Operations Center Videowall

Extron

The operators in the Wisconsin Public Services, Electric Operations command center use a videowall to monitor and maintain the state's power grid.

The operations center for Wisconsin Public Services, Electric Operations is a mission-critical facility located in Green Bay. WEC Energy Group's system operators use the space's videowall to monitor and manage the public power grid for the state and its service territories.

CHALLENGES

The existing display system in the operations center was not best suited for the company's current needs. Consisting of individual 33" to 55" monitors, it did not fit well on the curved wall. It could be more powerful, with better image zooming capabilities and content windowing flexibility. Also, system maintenance could be more practical. For example, each monitor had to be individually realigned if one failed and the system was getting more expensive to repair. While the existing display system worked, it could provide better image quality and be more efficient.

"We would only partner with companies that understood our environment, be able to work and relate to our people, and be a phone call away in case of an issue before, during, and once the system was up and deployed; we went with CCCP and Extron."

Steve Liegl
Director of Infrastructure and Operations
WEC Energy Group

The new solution needed to provide the flexibility to show a variety of content on the videowall and the images had to be of the highest quality. Content display had to be reliable and flexible, allowing multiple operators to select from among the wide variety of sources and arrange the content in windows spanning or filling the canvas. During a weather crisis or civic emergency, more than two operators must be able to use the system simultaneously. Because the control room is a mission-critical facility operating 24 hours a day year-round, the new display solution had to be 100% reliable and practical to maintain.

System operators use a curved videowall driven by an Extron Quantum Ultra processor to monitor and manage the public power grid for the state and its service territories. The videowall presents content selected from various video sources, broadcast feeds, and computer-generated graphics and other data in windows of varying sizes and orientations.

Since the operators would have to move to the backup facility while the system was being updated, an expedited schedule was essential. The new system had to be installed, commissioned, and running at full capacity within four weeks or less.

DESIGN SOLUTION

WEC Energy Group brought in Camera Corner Connecting Point (CCCP) to assist with AV system design and deployment. CCCP narrowed the options to three solutions.

Option A — Update the system with newer videowall processing technology but keep the existing 33" to 55" monitors. This would save on cost; however, it wouldn't solve the problems associated with visible display bezels and the difficulty of repairing and replacing displays. This solution was rejected early on as being impractical.

Option B — Install newer energy-efficient commercial videowall displays. While this would solve many of the existing system drawbacks, such as single display alignment, even the latest commercial videowall displays had some visible bezel. They required true seamless visuals. Another disadvantage to this approach is the image quality issues and lack of flexibility to support additional operators would not be solved.

Option C — Upgrade to an entirely new, state-of-the-art LED videowall display system and a high-performance processor.

The design team selected Option C, with a completely new videowall system. CCCP had experience with videowalls, having previously deployed them for various clients and at their corporate offices. Deciding factors for the AV system components included the reputation of the manufacturers and branded products, training available for the operators and support staff, competitive pricing, and post-deployment support.

"It's not necessarily the money associated with efficiency, it's about them being better able to do their job. Also, their job is directly tied to safety, keeping our workers in the field and the customers safe too."

Steve Liegl
Director of Infrastructure and Operations
WEC Energy Group

For control, each operator workstation includes a PC loaded with Extron EMS Express Mobile Software that facilitates content selection and display in customized windows arranged across the videowall.

Ultimate Flexibility with Quantum Ultra

Because of the operations center space and system flexibility needs, wall curvature, and mandated image quality, the best product combination was a Daktronics LED videowall display system driven by an Extron Quantum Ultra videowall processor.

The features, capabilities, and technologies built into the chosen products ensured the system was reliable, provided high quality images, and was easy to deploy and maintain. Integration began as soon as the AV equipment arrived.

Unlike the old AV system, the Quantum Ultra videowall processor allows multiple operators to control the videowall at the same time. Since there was no more hard limit of two operators, this new system supported an enhanced and critical capability to safeguard people and equipment during events such as lightning storms. The control room provides four operator workstations, two at the front with dual monitor outputs to the videowall and two workstations at the back that each have a single output. The installation facilitates rapid customization of the videowall's displayed content by each operator as a situation evolves.

Some factors for choosing the Quantum Ultra processor were scaling quality, a 400 Gbps HyperLane® video bus, and a modular architecture that allowed enough inputs for the number of sources. The processor upscales and downscales source content without impacting image quality or detail. The video bus easily accommodates the demands of the many high-resolution sources while maintaining their full refresh rate. DTP® Series transmitters and receivers provide signal extension of video resolutions up to 4K.

The control room operators are impressed with the clarity of the video content and graphical data.

The system includes eight wall presets. In addition to the default window arrangement for daily activities, an operator can select from among seven windowing presets to facilitate power grid monitoring during different types of events. An operator can also configure it to a personal custom arrangement. While there is no managerial workstation, a supervisory login enables them to easily reset window configuration from any workstation.

Easy Videowall Control with Extron EMS

One operator works their assigned shift using the front-left or front-right workstation. Two to four operators are called in if there is an event. Each operator has the ability to select from among video and camera sources, broadcast feeds, and computer-generated graphics and data, as well as content accessed by another staff member. A standard videowall layout includes display of six connections from the main computer, one feed from a broadcast receiver, and an output from the workstation computer and/or a connected device. Additional content is also available that can be sent to the videowall. Another feature that the operators find beneficial is output overlay, which enables identifying text such as source names and classification levels to be placed on one or more windows or the selected content.

The workstation PCs are loaded with Extron EMS Express Mobile Software, which facilitates videowall content selection and arrangement. They can arrange the content in resizable windows and apply optional borders in selectable colors to best suit the situation. When an emergency arises, this software also enables on-the-fly modifications to the window layout and source presentation without needing custom programming.

“After experiencing the enhanced flexibility and image quality of the new videowall, the operators find the control room 100% usable.”

Steve Liegl
Director of Infrastructure and Operations
WEC Energy Group

Whether working a standard shift or coordinating responsibilities during a challenging situation, each operator uses EMS to select high-quality schematics, weather data, station security feeds, news alerts, and more. They view the content in their preferred layout without needing help from IT or waiting for another operator to give them space on the videowall.

"With Extron's Quantum Ultra driving the Daktronics displays, the operators readily adopted the new videowall system, jumping right in and taking over. Wisconsin's power grid control room installation is a true testament to the right design and the right products delivering the goods."

Mike Mader, CTS
Senior Account Manager
CCCP

RESULTS

Installed and commissioned in just two weeks, the videowall system was up and running in time for the start of the storm season that coincides with Memorial Day weekend. The operators were completely comfortable using the new videowall, recalling presets, selecting content, and arranging the sources in custom windows within hours of being walked through the process.

WEC Energy Group administrative and control room personnel are pleased with their upgraded operations center and the functionality, flexibility, and reliability of the new videowall system. All were impressed with the clarity of the video and graphical images, especially when scaling the electrical grid and remote facility schematics. The videowall driven by the Quantum Ultra processor reliably delivers the information that the operators need to maintain the power grid day to day and through the incidents and storms that may hit their home state of Wisconsin.

EXTRON EQUIPMENT - PARTIAL LIST

Model	Description
Quantum Ultra 610	Ultra-High Bandwidth 4K Videowall Processor with HyperLane® Bus
Quantum IN4HDMI	Four-channel HDMI Input Cards
Quantum OUT4HDMI	Four-channel HDMI Output Cards
DTP T DP 4K 230	DTP Transmitters for DisplayPort
DTP HDMI 4K 230 Rx	DTP Receivers for HDMI
EMS Express Mobile Software - Quantum Ultra	Multi-platform Control Application for Videowall Processors

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