

Ulteig Engineers, Inc. (formerly Affinity Energy) selected VTScada by Trihedral for an advanced SCADA system for the Stadium's new electrical power management system (EPMS) which includes logging, trending, alarms, and alarm notifications hosted on a high-availability virtual machine.

MERCEDES-BENZ STADIUM

Constructed in 2017, the 71,000-seat Mercedes-Benz Stadium is the newest NFL stadium and official home of the Atlanta Falcons and United FC. A tight construction schedule meant the Stadium's electrical power management system was removed from the original building contract. However, once the stadium was completed, they needed an EPMS up and running in just two months.

CHALLENGE

Due to the sophistication of its audio and visual experiences, Mercedes-Benz Stadium houses a small, onsite data center to handle high-power computing and video processing, including the 63,000 sq. ft. 360-degree video board, 2,000 video displays, 90 miles of audio cabling, and thousands of Wi-Fi access points.

"We highly recommend Trihedral (VTScada) to customers looking for a reliable, easy-to-use SCADA system. Their system is top-of-the-line, reliable, and up to date. But my favorite feature? The ease of HMI redundancy. It makes integration a breeze."

Allan Evora, Senior Market Leader at **Ulteig Operations, LLC**

Mercedes-Benz Stadium needed an electrical power management system (EPMS) to ensure computing continuity to control stadium lights and broadcasts during events. Specifically, they needed the EPMS to:

- Monitor the electrical distribution system for malfunctions that could impact the servers and supercomputer.
- Verify A and B-side weekly generator testing.
- Manage connection of new equipment to the electrical distribution to prevent overload if the A or B side is lost.

The EPMS needed to integrate a diverse range of equipment manufacturers, including Kohler generators, ASCO & Kohler ATS, Eaton UPS, E&I/Socomec Busway, and LayerZero PDU and RPPs.

Because the stadium was preparing for an integrated system test (IST) with a fixed date due to several very large upcoming events at the stadium, (including the 2019 Superbowl LIII, College Football 2018 SEC Div I Football Championship game, a Taylor Swift concert, and Ed Sheeran concert) the project needed to be designed, developed, and installed in less than two months.

SOLUTION

In August 2018, Ulteig Engineers, Inc. (an VTScada Advanced-Certified Solutions Provider) was contacted by joint venture general contractor HHRM, based on a recommendation from the engineer who designed the emergency power supply system and specified the EPMS for the Mercedes-Benz Stadium's data center. The engineer had a positive referral from another data center customer, DC BLOX, who had worked with Ulteig Engineers, Inc. on a EPMS in Huntsville, AL.

Within two weeks, Ulteig Engineers, Inc. provided a proposal to the GC and was prepared to execute. The contract was run as a subcontractor through the stadium's electrical contractor Inglett and Stubbs, with whom Ulteig Engineers, Inc. also had past data center experience at QTS. Ulteig Engineers, Inc. began sketching out designs for approval and ordering equipment in September, and by October had finalized the contract with the EC.

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Ulteig Engineers, Inc. proposed VTScada hosted on a high-availability virtual machine that the stadium maintains. The system has full data logging, trending, alarming, and alarm notifications. During an alarm, the system sends email notifications out to the stadium, the electrical contractor, and Ulteig Engineers, Inc. so Ulteig Engineers, Inc. can support the stadium during any problem.

Another one of the key system benefits is managing capacity to ensure the electrical system isn't overloaded if there is an A-side or B-side failure.

In addition to integrating equipment into VTScada, Ulteig Engineers, Inc. also incorporated hyperlinks to equipment that have their own built-in web servers. Not only does this save time but also provides additional diagnostics that allow the owner to root cause equipment problems. For example, after the EPMS system was in place, a summary alarm occurred on the LayerZero PDU. By using both the EPMS trending capabilities and the equipment's built-in web pages, Ulteig Engineers, Inc. was able to isolate the problem and help the electrical contractor fix the fault condition.

From project start to IST, Ulteig Engineers, Inc. conducted weekly project meetings with all suppliers related to the data center to review project status and ensure the project was following the tight timeline.

Ulteig Engineers, Inc. engineers spent one week getting equipment communicating to VTScada, then finished the job remotely via a secure VPN throughout October. Engineers were onsite to finalize any loose ends prior to the IST.

RESULTS

VTScada EPMS application passed system testing with flying colors.

- First, the testers created a complete utility power outage. In this scenario, both A and B side ATS sensed the loss of normal power and signaled the A and B generators to start. Both A and B side UPSs ensured continuity of electric power until the generators were at voltage and frequency. The ATS then transferred from normal source to emergency source, and data center functions operated business as usual. During this process, all the equipment vendors, including Ulteig Engineers, Inc., performed a series of checks to verify their respective systems operated as designed.
- Second, the testers purposely failed the A side normal power to ensure the B side of electrical distribution could support all the critical equipment. While the generator and UPS operated as designed, the EPMS also accurately tracked events and alarms and recorded trends that tracked the loads on the B side of the electrical distribution.
- Lastly, the testers purposely failed the B side to ensure the A side could carry the load as designed.

During the IST, the EPMS system was displayed in the security control room and data center. Testers could view the system in real-time and confirm the sequence of events as they occurred. As tests were conducted, they could witness the equipment responding as designed. Participants were impressed with the amount of system details Ulteig Engineers, Inc. integrated in just two months, and how well organized it was so that even those who did not have in-depth electrical knowledge could follow along.

"It was a great team effort," according to Allan Evora, the owner of Ulteig Engineers, Inc. and project manager for this special project. While Ulteig Engineers, Inc.'s data center EPMS expertise was a significant factor, meeting the project deadline was made possible by the tremendous support Ulteig Engineers, Inc. received from the owner, the consulting engineer, the electrical contractors, and the commissioning agent.

Because the VTScada system is on the stadium's network, it can easily support expansion as the stadium's electrical power and energy needs grow.

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