



PROJECT PROFILE

Safe renewable energy storage with Plant SCADA

STANTON BATTERY ENERGY STORAGE SYSTEM

Customer Background

In 2020, Wellhead and the direct contract holders and operators in the energy sector sought to build a state-of-the-art energy storage facility in Stanton, CA. The project is now known as the Stanton Battery Energy Storage System (SBES), one of Southern California's most extensive energy facilities stabilizing and building the resilience of the grid.

SBES allows residents of Stanton and adjacent cities to divest from fossil fuels. By capturing and storing excess electricity from renewable sources, the power grid can meet high energy demands even on days that the sun doesn't shine, or the wind doesn't blow. SBES, powered by Samsung Li-Ion batteries, stores 275.2 MWh of energy with zero emissions and can run autonomously to distribute this power to 65,000 homes through the night. To generate 275.2 MWh from a natural gas plant could easily result in over 120 metric tons of CO2 emissions. Over the course of a year, that totals over 40,000 metric tons of CO2 emissions.

Project Background

Wellhead, the project developers aimed to integrate the energy management system (EMS) data into their existing Plant SCADA system for more flexibility in control and to consolidate all data into the Historian. They also needed a more streamlined workflow that could handle the extensive data and alarms generated by the system while ensuring reliable communication with the EMS. Enterprise Automation was brought on to develop this new Plant SCADA system to communicate directly with the EMS for reading data and alarms.

Project Manager



**Matt
Avila**

Project Technical Lead



**Jake
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Key Insights:

- Implemented AVEVA Plant SCADA system controlling 15,540 battery modules.
- Streamlined operations, integrating EMS functionality for cleaner energy solutions in Stanton

Key Technologies:

- AVEVA Plant SCADA
- Modbus Communications
- Allen-Bradley ControlLogix L82 Series PLC
- AVEVA Historian
- EMS (Energy Management System)
- Samsung Lithium Ion Batteries

EA Solutions

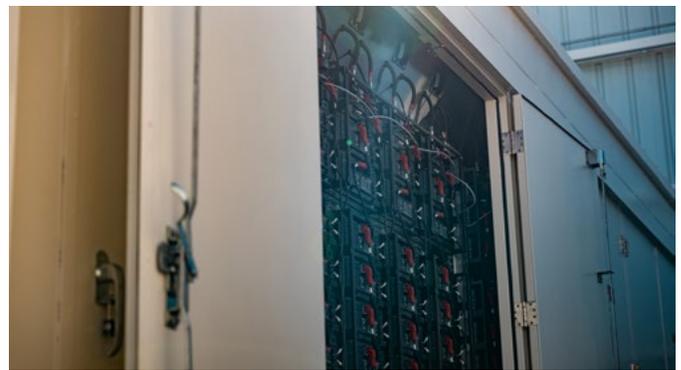
Enterprise Automation (EA) developed a new Plant SCADA system that would effectively communicate with the EMS and enable SBES to direct energy to charge or discharge from batteries in mere milliseconds.

To that end, EA designed a safe and robust Plant SCADA system capable of controlling over 15,540 battery modules across 28 containers, each equipped with fire suppression and redundant HVAC systems. This system included over 200,000 tags and 120,000 alarms that constantly monitor for slight temperature increases or other warning signs. EA also deployed an AVEVA Historian instance to manage the historization of over 60,000 tags.

Given the large scale of the project, EA implemented a publish-subscribe communication protocol. This allowed data to be transmitted only upon changes rather than through constant polling. This approach minimized network congestion and improved system responsiveness.

The computerized dispatch system streamlined Wellhead's operations for optimized energy distribution and management. The Allen-Bradley ControlLogix L82 series PLC facilitated robust control logic through Modbus communications with the Energy Vault EMS. The PLC processed commands from SCADA to the EMS and interfaced with California Independent Systems Operators (CAISO) and Southern California Edison for automated dispatch. EA used redundant OPCUA clients to communicate to the EMS for all read-only data.

Collaborating directly with Wellhead and Energy Vault (contractor for the EMS), EA successfully integrated the core EMS functionality into Plant SCADA for a seamless and consistent workflow for Wellhead operations. This effort not only contributed to the operational efficiency of the SBES project, but also played a pivotal role in advancing Southern California's energy landscape toward cleaner and more innovative solutions.



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