

Rejuvenation project for battery energy storage station

Bachmann controller ensures higher efficiency and reliability



▼ In the Schwerin-Lankow battery energy storage station, 18 battery/inverter units store the energy. The power station has now received a new control system. Image: WEMAG / Stephan Rudolph-Kramer

In 2014, Europe's largest (at that time) battery energy storage station (BESS) went online. Since the 2017 extension, the eco-power provider's station has made 10 megawatts of primary balancing energy available and thus is contributing to grid stabilization. It was high time for a rejuvenation project – the battery/inverter units are now controlled by the Bachmann M200 control system. The Smart Power Plant Controller (SPPC) takes over control of the power station.



▼ Idyllically situated on a green meadow: The WEMAG battery energy storage station in Schwerin-Lankow has been completely refurbished and equipped with a new control system. Image: WEMAG / Stephan Rudolph-Kramer

WEMAG (Westmecklenburgische Energieversorgung AG) imposes rigorous requirements on the system technology of its battery energy power station in Schwerin-Lankow. With the objective of being effectively equipped for future technical developments, the utility decided to replace the IT along with its associated infrastructure, as well as the software for control, monitoring, and operation of the battery energy power station. However, the prerequisite was that the station architecture as well as batteries, inverters, transformers, and medium-voltage switchgear, should remain intact to the extent possible. WEMAG commissioned the experts at SCADA-Automation to implement this task. The Brandenburg firm with offices in Berlin specializes in automation technology for battery energy storage.

Future-oriented development

WEMAG's design concepts for the new station control system and control center were quite specific: Namely, in order to establish a uniform basis for all battery systems in the company's portfolio, the SCADA-Automation team should orient their efforts on the solutions they had already developed for the WEMAG battery storage stations (WBS). Controllers from Bachman had already been implemented in these solutions. "Naturally, our experience collaborating with WEMAG in other projects was advantageous for this project. In this case as well, with the Bachmann systems it was also possible to develop a tailored controller solution for the battery energy storage," explains Jens Ramlow, Founder and CEO of SCADA-Automation.

Reliable hardware

Before the retrofit, the power station was operated with a soft PLC system. SCADA-Automation relies on maximum availability and maximum stability for its solutions. Consequently, the former server-heavy control system was changed over to a hardware-based solution. "With the Bachmann products we can build on future-safe and standard-compliant industrial communication technologies. Moreover, the Bachmann products enable straightforward operation. They support a broad temperature

and voltage range. Also note that cooling and software packages that must be maintained can both be dispensed with," is how Jens Ramlow explains the SCADA-Automation approach. It was possible to develop the very lean control system of the battery/inverter units for the Lankow power station on the M200 control system with MX220-CPU. Different activation logics were programmed for three different battery/inverter combinations.

Robust M200 hardware

With its broad spectrum of powerful, industrial Pentium-processor based CPUs and an extensive offering of input/output modules, the M200 system can easily meet custom requirements such as those in this project.

Real-time-capable bus systems enable decentralization of automation without any performance compromises. Designed for the most harsh of environmental conditions, the M200 series guarantees fault-free implementation and can be used without a fan at ambient temperatures ranging from -40 to +70 °C.

A modern system architecture, consistently configured for network capability, enables easy integration into the environment of the controller and station I/O. Real-Time Ethernet permits real-time capable networking of controllers. The fact that all major fieldbus systems are supported enables connection of standardized network components.



▼ The very lean control system of the battery/inverter units for the Lankow power station was developed on the Bachmann M200 control system. Different activation logics were programmed for three different battery/inverter combinations.



Jens Ramlow
Founder and CEO of SCADA-Automation

„The availability offered by Bachmann must be emphasized. When you notify Bachmann of your requirements, the hardware arrives right on time. This level of delivery reliability is simply outstanding.“

Certified plant controller

The Bachmann Smart Power Plant Controller (SPPC) with its EZA controller (which is certified in accordance with VDE-AR-N-4110/4120) takes over control of the power station.

The SPPC is equipped with reliable and proven hardware and certified controller software. More than 7000 systems for energy control have been installed around the world. Over the last ten years these systems have been controlling approximately 86 GW of energy capacity.

User and access management includes a multi-level security concept based on IEC 62443. The SPPC uses hybrid EZA controllers that are suitable for any type of topology, cascading, and communication interfaces. Moreover, the SPPC supports various energy control functions (active and reactive power control, voltage regulation) and offers the most common country-specific grid codes. In other words, the SPPC is prepared for a variety of applications throughout the entire world.

Replacement in running operation

For utility company WEMAG, it was important to keep power station downtime to a minimum. Consequently, SCADA-Automation tested the new battery control system beforehand. Each of the 18 battery/inverter units was tested individually in running operation. With this procedure SCADA-Automation was able to very quickly commission the new control and operating platform of the Schwerin-Lankow battery energy storage station. After just one week the power station was back online – a successful retrofit for all parties involved.



▶ The new battery control system was tested beforehand. Each of the 18 battery/inverter units was tested individually in running operation to keep downtime to a minimum.
Image: WEMAG / Stephan Rudolph-Kramer



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