



GATEWAY CLOSES THE GAP



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Energy Management

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The Perscheid Ost wind park is located in the German Rhineland-Palatinate region, around 30 kilometers south of Koblenz. The integration of new Nordex turbines into the Westnetz distribution network in early 2025 required adjustments to the telecontrol protocol. Project developer BayWa r.e. Wind GmbH needed a solution. Enter Bachmann.



The wind park comprises three Nordex N163 turbines, each one 164 meters tall and with a rated output of 5.7 MW. The park will generate approximately 48,000 MWh of renewable electricity annually, supplying around 16,000 households. However, during commissioning, it became apparent that the turbine control system could not provide confirmation following a control command, which was required by the grid operator. Westnetz demands a two-stage response to any command to switch off a circuit breaker, as well as specific error messages if a circuit breaker has not switched off, or has been switched off without an explicit request.

Precise solution

The Nordex power plant controller's telecontrol technology was unable to provide these error messages, so BayWa r.e. needed a solution for its new wind turbines. BayWa r.e. found what it needed at Bachmann. Working closely with Bachmann's R&D department at the company headquarters in Feldkirch, as well as with the applications department in Rheinbach, Germany, BayWa r.e. could quickly implement the Westnetz requirements. Now nothing stood in the way of commissioning. "This solution has another advantage: we don't need a higher-level park controller," confirms Tomas Adler, Grid Engineer at BayWa r.e. Solar Projects GmbH.

Remote control for advanced users

The software solution has been enhanced by adding reverse direction functionality to the IEC 60870-5-104 protocol. With the Bachmann solution, the data interface is completely separate from the operational management logic – another advantage. "This allows logic and data models to be maintained independently," explains Alexander Braun, application engineer at Bachmann's Rheinbach site. The converter was implemented on an MX213 CPU, which works as a gateway. It acts as an interface between the Nordex control system and the Westnetz tele-control unit. For future projects, plans are in place to use a MX215 CPU, which has three independent Ethernet ports. "This means we can save on an additional gateway for VPN communication with the head office, configure the system remotely, and speed up commissioning even more," Adler explains.

WHAT IS A GATEWAY?

A gateway is an interface connecting different networks or systems to enable the exchange of data between them. It translates protocols, and filters and forwards information, acting like an interpreter between two languages.

In wind energy, for instance, gateways connect turbine controllers with central park controllers or SCADA systems. In photovoltaic, hydropower, and battery storage systems, gateways serve as a bridge between generation units, energy management systems, and grid operators. In industrial environments, they connect machine controls with higher-level control systems or cloud services. In the maritime sector, they integrate onboard systems with port and fleet management solutions.

To be effective, gateway-enabled controllers must support open, standardized communication protocols, ensure high data security, and offer sufficient computing power to process data streams in real time.

Using a Bachmann M200 controller as a gateway allows seamless system integration and secure operation, even in heterogeneous environments. This system offers a standard server interface according to IEC 60870-5-104.

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