

# COMPACT AND RELIABLE

GM260 and GMP232 used for integrated wind farm controller

The need for electricity is increasing worldwide. This can be produced sustainably with wind power plants. These require the use of ingenious technologies. The Suzlon Group is one group of companies that has the necessary know-how and has become well-established as the fifth largest manufacturer on the market. Besides relying on Bachmann electronic for its automation, the company does so also for its wind farm controls.

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The Suzlon Group manufactures wind turbines with an output of 600 kW to 6.15 MW. The company has already installed over 15,000 wind turbines with an output of almost 25 GW. It has been relying on the M1 automation system from Bachmann for its plants since 2003. The GM260 and GMP232 grid measuring and monitoring modules are now being used in an integrated farm controller system.

Together with additional information, this enables the plants to be kept on the grid during a grid fault according to the behavior patterns defined in the grid code. In this way, stable operation is ensured. "Previously we had to resort to external measuring and analysis systems. However, with the modules from Bachmann we can cover grid specific functions with the different communication requirements in a single system," engineers Jan Kassner and Jens Thies at Suzlon Energy GmbH clearly describe the benefits. "This also saves costs."



Based on the installed power output, a significant 25 GW, the Suzlon Group is the fifth largest manufacturer of wind turbines in the world. The product portfolio comprises 600 kW plants as well as those with more than 6 MW. Over 13,000 employees work for the company in over 30 countries with headquarters in Pune, India. The headquarters of its R&D division are located in Germany, in Hamburg on the Elbe.

➔ [www.suzlon.com](http://www.suzlon.com)

### Wide range of tasks in a compact bundle

The compact GM260 grid measuring module supplies current and voltage values as well as frequency and power factor values for up to two three-phase branches. For each of the two three-phase systems it also offers 4 quadrant energy metering. The GMP232 grid measuring and protection module integrates monitoring and protection functions in the conventional control tasks of a remote power generator plant. It records the parameters of the wind farm at the grid connection point and analyzes them.

### Well thought-out system

The farm controller system from Suzlon controls up to 200 wind turbines and monitors high voltage nodes with two GMP232 modules and 16 medium voltage nodes with up to eight GM260 modules. The real-time data that the measuring modules reliably supply enable the use of a wide range of monitoring functions. The farm controller monitors up to 16 feeder lines with GMP260 measuring modules for voltage, current and

▼ With almost 25 GW of installed output, Suzlon is one of the largest wind turbine manufacturers in the world.





▲ Modules from Bachmann enable grid specific functions with different communication requirements to be provided in just a single system.

frequency deviations. All data is processed directly in the MC210 processor of the M1. The real-time measuring combined with the programming ability of the M1 enables the creation of tailored monitoring functions for high and medium voltage. Up to two GMP232 modules are installed for monitoring the grid quality in the main lines. These also keep network events and effects such as vector jump and harmonics

in view, and feature a suitable fast log function. The measuring curve data is transmitted in the standard Comtrade format used in the power engineering sector, thus enabling a precise analysis of grid conditions.

#### Direct communication

The DNP3 protocol is often used for the communication between the network operators. This previously required

Modbus IP to be converted in a special module for the DNP3 interface. "Bachmann gives us the possibility in future to integrate the DNP3 server protocol directly in the controller," Jens Thies explains. "This can considerably increase long-term reliability."

#### Successful complete package

Suzlon is highly satisfied with the M1 automation system as well as with the grid monitoring modules. "All grid and communication components are now bundled in just a single system. At the same time, the modular design provides us with maximum flexibility," a delighted Jan Kassner states. He continues: "For the first time we can now implement real-time measuring in the network and have the possibility of adapting the measuring system with software." However, the expert can also identify additional benefits: "The combination of measuring and monitoring tasks directly in the controller system, as well as the standard service and diagnostics interface, are a major benefit for the entire farm controller. Bachmann can meet all the requirements of the wind sector with regard to farm control, both in terms of hardware and software, and as a partner who we can rely on," Jan Kassner sums up.

