

WIND ENERGY IN BRAZIL

Wind Power SCADA and turbine control from Bachmann

Targets for renewable energy in Brazil are very ambitious. The plan is to have a total power output of 71 GW by 2023 with a 13 GW share of newly installed wind energy. WEG, which has been active in the automation of energy systems for a long time, has now focused on the wind power market and is the only manufacturer of wind turbines in Brazil.



WEG is a multinational group with 30,000 employees. The company headquarters is located in the federal state of Santa Catarina, Brazil. WEG has subsidiaries in 33 countries. It is the largest Latin American manufacturer of electric motors and one of the world's largest providers of electric and electronic products and systems. Complete turnkey projects have been carried out around the world. The company founded in 1961 has a new focus on the production and installation of wind turbines since 2011 and started serial production in 2013.

www.weg.net

WEG has been active in the wind energy sector since 2011 and has developed a 2.1 MW turbine together with the US company NPS (Northern Power Systems) in 2013. Since then, this turbine has become established on the Brazilian market. A Bachmann M1 control system is used as a stand-alone turbine controller for the wind turbine automation. The turbine has a direct drive and a rotor diameter of 110 meters. It is equipped with a permanent magnet synchronous generator. Due to the directives of the Brazilian government to generate as much added value as possible in Brazil, WEG has a high vertical range of manufacturing.

This means WEG meets the requirements for »local content« with 70% of local production. »WEG is developing a 3.3 MW turbine that will be ready for the market in 2017,« says João

Paulo Gualberto da Silva, director of WEG Wind Power. They are making use of the positive experience with the 2.1 MW turbine and optimizing the new turbine for the Brazilian market. This design will be developed together with NPS in the USA, who have expert knowledge in the field of turbine design and converter tech-

nology. After the successful introduction of the 2.1MW turbine, WEG went in search of a first-class SCADA system. This they also discovered at Bachmann, who suggested their newly generated Wind Power SCADA (WPS).

Faster on the grid

The WPS SCADA system monitors 12 turbines and a central main station for communication with the operating companies. The structuring enables a hierarchical display with views on

national level and park level, down to a detailed display of turbine status and analysis. Based on a standardized data structure according to IEC 61400-25 with an OPC UA interface, all information for the data history is stored on a central SCADA server. This provides the operating company with extensive reports about performance

data, availabilities and statistics. Target and actual values for adjusting active and reactive power are transferred by the integrated main station and exchanged via the DNP3 protocol. Power curves or wind distribution data are available for an in-depth analysis and can be shown as charts or graphical presen-

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Aldo Bravo Vacaflores,
Head of Operation
and Maintenance



▲ WEG wind farm in Rio Grande do Sul

tations. As WPS is based on HTML5, this ensures the integration of a modern basis for web technology. Together with scalable vector graphics, all pages can be shown on mobile devices such as smartphones or tablets.

Joint cooperation

The implementing of the park at the border with Uruguay was assisted by Bachmann engineers. Project manager Aldo Marcelo Bravo Vacaflores and his team did a good job and were also supported by NPS from Vermont, USA. »All compa-

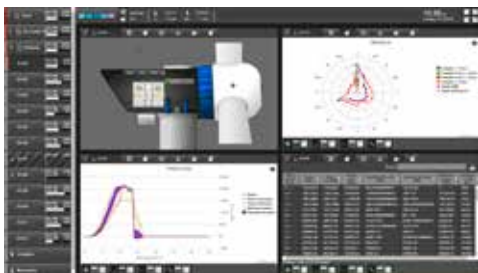
nies involved from USA, Brazil and Germany have put the overall »wind farm« system into operation in a joint effort using modern Internet based tools, that allow implementation across continents. The control systems and software solutions supplied by Bachmann made this success possible,« concludes Aldo Bravo Vacaflores, head of Operation and Maintenance.



▲ WPS country view



▲ WPS park view



▲ WPS statistics



▲ WPS status and band width view



NPS (Northern Power Systems) was formed from the company North Wind, which was founded in 1978. Located in Vermont, USA, they originally produced generators in the kW range and started the successful marketing of their 100 kW turbine with permanent magnet direct drive generators in 1999. From 2009, they provided a basis for the 2.3 MW turbine, which was certified in 2012. Currently, NPS is developing a 3.3 MW turbine together with WEG that is optimized for the Brazilian market. Furthermore, NPS is a technological leader in the field of photovoltaic inverters and micro-grids.

www.northernpower.com