Wind Power SCADA
SCADA system for modern wind farm control.
### Scalability
The use of HTML5 and SVG based pure web technology ensures perfect display on all browser-enabled visualization devices – without the need for manual adjustment or plugins. The openness of the system enables the user to make enhancements or modifications on their own.

### Flexible Use
Shorter engineering, test and commissioning times thanks to object-oriented structures and ready-to-use library components.

### OPC-UA and IEC 61400-25
Standard communication protocols provide the transparency to energy suppliers and other systems which can be monitored via the infrastructure.

### Detailed Analysis
The comparison of live data from different farms and turbines makes it possible to carry out an ad-hoc analysis. It also provides a range of different analysis types such as power curve, wind distribution, energy meters and switch counters in the form of graphs and/or tables.

### History
Long-term data retention and compression, as well as the complete logging of user accesses and events, enable extensive and comprehensive analysis, since all events can be interlinked according to user requirements.

### Integration
The ISO-VDI 3834 compliant condition monitoring solution (CMS) from Bachmann Monitoring, as well as the grid measurement modules of the Bachmann portfolio are fully integrated in Wind Power SCADA.
Bachmann’s Wind Power SCADA offers an easy-to-use engineering tool for wind farm projects. Maximum flexibility and openness ensure rapid implementation, good maintainability and the possibility to expand the installation efficiently. The comprehensive representation of process values according to the IEC 61400-25 interface not only simplifies internal communication but also provides external operators and energy companies with uniform access to the specific characteristic values.
Complete overview at any time
The development of Bachmann’s open, flexible and future-oriented Wind Power SCADA system (WPS) was based on its many years of experience and knowledge acquired in the wind power sector. Using pure web technology as a basis, a wide range of different terminal devices can be used for running the SCADA system – a browser is all that’s needed to access extensive and detailed information on the entire fleet.

Faster engineering to the target
The Wind Power SCADA (WPS) sector-specific system solution is a perfect addition to Bachmann’s WindTurbineTemplate (WTT) turbine controller software, which provides the most important components, analyses and functions for the operational control of a wind turbine. WTT is based on the data structures of the IEC 61400-25 standard and depicts all process values using the standard compliant data area. This enables standard compliant components created in WPS to be instantiated as objects from the prepared libraries. The process data connection is therefore already completed and the turbine can be visualized with its components by simply using drag and drop to add the instance. This considerable reduction in development effort through the use of library components helps you to achieve your goal faster and more economically.

Field-proven technology for all areas
WPS is based on the generic atvise SCADA product from Certec, a company belonging to the Bachmann Group. Thanks to its multi-client server architecture, atvise SCADA provides the ideal basis for Wind Power SCADA. Multi-lingual functionality as well as device and operating system independence complete the portfolio for keeping wind power in view from anywhere in the world. PCs, tablets or smartphones can access a Wind Power SCADA server simultaneously. The required information is scaled automatically and shown correctly on the target device.
Safe operation – made easy
Bachmann WPS covers a wide range of operating levels – from the control center to the farm management system, right through to the individual turbine. Secure access to the turbine is ensured by means of location-dependent priorities and configurable, user-specific access permissions. A throughout logging of all activities at the turbine, as well as commands and parameter changes made via the WPS SCADA system, enables full traceability for maintenance in the event of a fault. An extensive reporting system completes the traceability required for plant operations and yield.

Standard communication via the OPC UA connection to external devices and controller systems
Using OPC UA as the communication protocol allows external devices or subsystems, such as weather or grid stations, to connect directly to the Wind Power SCADA system, provided the devices also support the IEC 16400-25 compliant structures. If this is not the case, a gateway allows several other protocols such as the energy protocols for example DNP3 in accordance with IEC 60870-103/-104, IEC 61850 or fieldbus protocols, such as Profinet, Proibus, CANBus etc., to be connected and the relevant data to be shown in WPS.

Responsive web design
The use of the latest web technologies provides the basis for maximum scalability. HTML5 and scalable vector graphics (SVG) make it possible to display on virtually any browser-enabled terminal device – without the need for additional plugins. The visualization is adjusted automatically to the display device to ensure ergonomic operation even on mobile devices such as tablet PCs or cell phones.
Hierarchical views in a tree or graphic display, as well as coordinate based positioning (Geo map) enable fast navigation. Furthermore, the individually configurable split screen mode provides a greater overview. A detailed view of the turbine based on IEC 61400-25 components supplies.

Important data such as status, power, generated energy, as well as meteorological data is clearly displayed and is made available everywhere, for the entire fleet, for each farm or for each turbine. If other characteristic values or functions are required, these can be modified easily online via the atvise builder development tool, as the customer has access to the entire project according to the authorization levels set.

WPS offers online and offline trending, thus allowing the user to observe and evaluate live values of different turbines and wind farms in a graph. Event triggered snapshots can also be analyzed. All data and values are recorded with maximum precision and depict events on the controller at the precise time.

The IEC interface defines the sending of commands to the controller and thus to the turbine. WPS thus sends commands to the appropriate turbine, taking the access rights and the handling of the active status into account. This prevents several clients from making write accesses to the controller at the same time. This mechanism also allows any changes to be made to parameters as well as alarm acknowledgments.
EVALUATING

The acquisition of power curves as well as wind distribution and availability values is just as much part of a modern SCADA system as the graphical or tabular display of energy and status meters. All tabular data can be exported as PDF, CSV or XLS files and thus made available for other analysis tools. WPS furthermore offers a reporting function which can be adapted to individual requirements.

INFORMING

WPS integrates the Bachmann CMS according to ISO VDI 3834. This classification according to fault frequency provides useful information and can be traced with a trend diagram. It is used to provide information for the service personnel and is a useful addition to the professional CMS Remote Service. Bachmann's grid measurement modules, which are used both directly on the turbine as well as in the wind farm (wind farm control system), can likewise be displayed and fully operated in WPS.

PRESENTING

Slideshows of power characteristics, wind farm overviews, wind efficiency and availability characteristics are becoming increasingly more important for use in presentations or image campaigns. The presentation mode in WPS makes it possible to automatically show the most important definable pages and characteristics, thus saving time consuming additional effort.

CONFIGURING

Besides the customized (further) development of the WPS project using atvise builder, an online configurator also makes it possible to add, remove or edit turbine instances in the project. The user management can likewise be operated by WPS administrators from the online project.