SCADA webMI

Part type designation	Part number
Light	
forsiteSCADA® light	00045646-00
forsiteSCADA® light AMT [1]	00045646-70
forsiteSCADA® light RT [2]	00045646-63
Basic	
forsiteSCADA® basic10	00045648-00
forsiteSCADA® basic10 AMT	00045648-10
forsiteSCADA® basic25	00045650-00
forsiteSCADA® basic25 AMT	00045650-70
forsiteSCADA® basic RT	00045648-63
Advanced	
forsiteSCADA® advanced10	00045652-00
forsiteSCADA® advanced10 AMT	00045652-70
forsiteSCADA® advanced25	00045654-00
forsiteSCADA® advanced25 AMT	00045654-70
forsiteSCADA® advanced RT	00045652-63
Premium	
forsiteSCADA® premium10	00045659-10
forsiteSCADA® premium30	00045659-30
forsiteSCADA® premium80	00045659-80
forsiteSCADA® premium AMT	00045659-70
forsiteSCADA® premium RT	00045659-63
Option	
forsiteSCADA® option 1 cascading	00045667-01
forsiteSCADA® option 2 reporting	00045667-02
forsiteSCADA® option 3 redundancy	00045667-03

[1] *AMT = Annual maintenance*

[2] *RT = Runtime license*

forsiteSCADA®

forsiteSCADA® is an innovative SCADA solution for energy management in hybrid power plants. forsiteSCADA®, formerly known as Wind Power SCADA (WPS), represents not only a renaming of an established product, but also a forward-looking development to meet growing demands in the energy sector.

State-of-the-art technologies

forsiteSCADA® continues to be based on atvise® SCADA, which offers users absolute consistency at all levels with pure web technology. This means that visualization can be operated via a standard browser on any PC, tablet, or smartphone. The use of scalable vector graphics (SVG) has created an ergonomically favorable solution for every work application (control center/park/individual plant).

Features

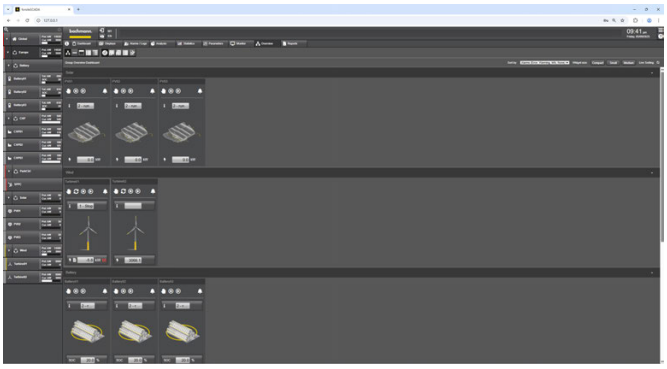
- Industry-specific SCADA system
- Use of standard communication protocols OPC UA and IEC 61400-25 / IEC 61850-7-420
- High scalability, open system
- Live process data on all visualization levels
- Automatic adaptation of the graphic resolution for PC, tablet, or smart phone
- Simple visualization on all mobile operating devices
- Uniform user management for SCADA and energy generator
- Active state / access control
- Dashboards and widgets
- Online/Offline trending
- Online language change
- Alarm and data history
- Availability calculation acc. to IEC 61400-26-1/-3
- Service logbook
- CMS integration according to ISO 10816-21 / VDI 3834 for wind turbines
- Connection to (Bachmann's) CMS ticket system
- Freely configurable reporting – included in *premium*; available as an option for *basic* and *advanced*
- Cascading – available as an option for all product levels
- Redundant design (available as an option for forsiteSCADA® *premium*)

forsiteSCADA®

Process connection / Communication	
Protocols	OPC Unified Architecture (UA), data access (DA) and alarms and conditions (AC), IEC 61850-7-420 and IEC 61400-25
Physical connection	Ethernet
Parallel operation	Yes, multiple clients in different technology (PC, tablet, smartphone)
Redundancy (optional)	Available for forsiteSCADA® *premium*, enables redundant operation of the forsiteSCADA® system
Cascading (optional)	Available for all product levels; a superimposed forsiteSCADA® system that establishes connections to other forsiteSCADA® systems and can display correlated data
Project development	
Development environment	forsiteSCADA®, atvise® builder, WTT configurator (SolutionCenter plug-in)
Functionality	
Language switching	Yes
Data historization	Data is recorded on the controller via WTT and historized in a database; for third-party controllers via atvise® SCADA
Alarm/event log	Recorded on the controller and SCADA server; for third-party controllers via atvise® SCADA
Trending (event-trigger)	Data recorded on controller via WTT and historized in a database
Wind rose / Powercurve	Yes, for wind turbines
Phase diagram / state of charge	Yes, for e.g. CHP units and storage facilities
Dashboards/Widgets	User-specific configuration of overview pages (dashboards) for display and operation with turbine and park data
User management	Consistent synchronized administration on SCADA and controller
Access security	User-specific access control and logging/archiving of the accesses to controller
Export function	Excel, CSV, PDF and clipboard
Online live trend	View for each generation plant as well as park-wide
Reporting	Freely configurable reports (direct and planned) that can be managed via the SCADA user interface and per user (already included in forsiteSCADA® *premium*, optional for forsiteSCADA® *basic* and *advanced*)
Visualization	
Browser	HTML5 visualization (Chrome/Firefox/IE/Safari) with SVG graphics (Scalable Vector Graphics)

Communication standards

forsiteSCADA® implements communication standards such as OPC Unified Architecture (OPC UA) and IEC energy protocols. The OPC UA interface conveniently integrates live process data and alarms. Data can be historicized via this interface in SCADA or as high-precision and fine-grained logging directly on the plant controller. The use of data structures according to IEC 61850-7-420 (decentralized energy generators) and IEC 61400-25 (wind turbines) standardizes the process variables and thus offers a simple, consistent, and comparable solution.

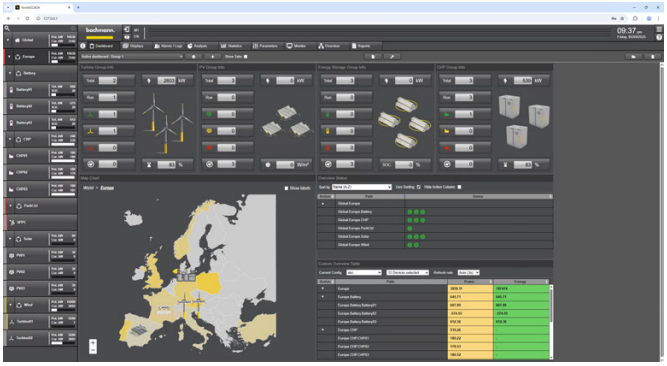


forsiteSCADA® - wind farm view "Graphic"

Scalability

In every product configuration, forsiteSCADA® maps all relevant levels: From the global view of the regions and wind farms to the individual turbine. Specific information is displayed for each level, which provides the user with an overview at any time. If detailed information is required, the user can quickly and easily switch to the respective level. The number of levels is freely configurable so that both smaller units and large energy parks can be clearly laid out and displayed. Numerous displays of the most important key figures for energy generators, parks, and the entire generation plant are already included.

Thanks to its various product levels, forsiteSCADA® can be tailored to the size and requirements of the visualization system. forsiteSCADA® *light* runs on a standard PC and offers the monitoring capabilities energy producers need. If multiple forsiteSCADA® systems are to be visualized at a higher level and their data correlated, an additional system with the familiar interface can optionally be deployed in a cascading configuration for every product level of forsiteSCADA®.



forsiteSCADA® - group dashboard view

Dashboards and widgets

In the area of selection and presentation of data, the users of SCADA systems pursue different interests. For example, it is important for the service to keep an eye on the status of the generation plant and its condition (alarms/events), while for the operator, production data and yield are the most important factors. In forsiteSCADA®, all process data for a plant can be freely configured by the user on widgets (display containers). These individually compiled data displays can then be freely placed on a dashboard page. The settings are saved for each user and automatically loaded the next time they log in. This allows each user to customize their personal views in forsiteSCADA® according to their interests and use cases. This option is available from product level forsiteSCADA® *basic*.

forsiteSCADA® - device dashboard view

SCADA functions

forsiteSCADA® offers functionalities that are already familiar from atvise® SCADA, such as alarm handling, data historization, trending and support of multiple languages. The user management is transparent and easy to use. A single login is all it takes to directly access the controller of an energy generator or component. To prevent unauthorized access, Bachmann's well-known security standards of the controller are used in transmission (SSL) and user management (groups/levels).

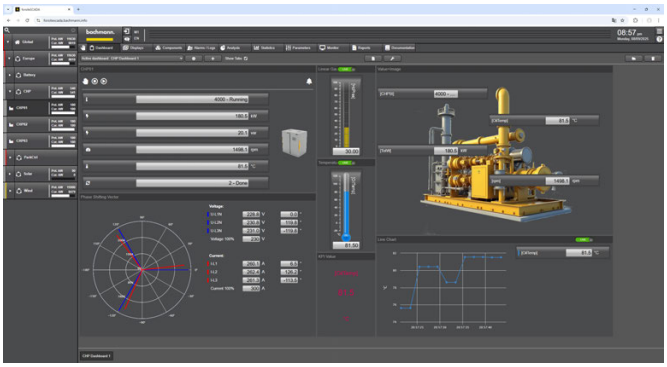
An additional active state function ensures that multiple users do not have concurrent write access to the system. The active state can be requested in forsiteSCADA® and the actual access status and the logged-in user are clearly displayed.

If the energy generation unit is equipped with a Bachmann control system, data history, alarms, events, and trending are recorded by the controller and consistently forwarded to forsiteSCADA®. This ensures comprehensive analysis of both the average values and the raw data. If the connection to the SCADA server is interrupted, no data is lost, as it is first stored locally on the controller. When reconnecting, the data is synchronized with the SCADA server and historized on the turbine with the time stamp of its occurrence.

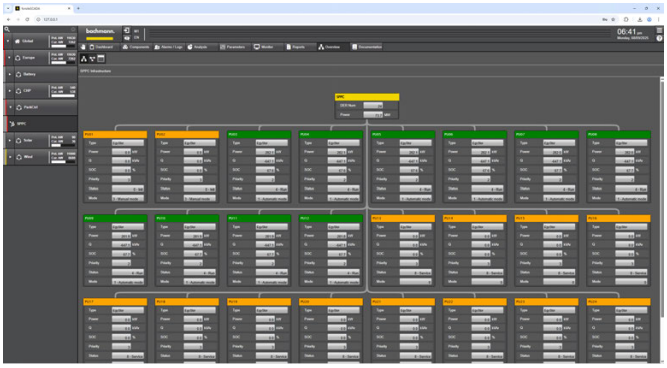
On the data level, the forsiteSCADA® is subject to the Bachmann product „Wind Turbine Template“ (WTT), which provides the functions cited above on the controller. The WTT supports mapping for the data models IEC 61850-7-420 (decentralized energy generators in general) and IEC 61400-25 (wind turbines).

forsiteSCADA® offers extensive analysis options for the recorded data (graphical and tabular data functions). Prepared analysis elements – tailored to the respective energy generator – help the user directly and without effort. An online trend component enables read-out and comparison of live process data as a trend diagram or table. The values can be displayed across all plants and parks and can also be historized. The configuration can be executed online in forsiteSCADA® at any time. As an initial aid, the most prevalent process values of a wind turbine are pre-configured and can be reached via a selection box.

forsiteSCADA® - detailed view of the turbine



forsiteSCADA® - detailed view of a CHP

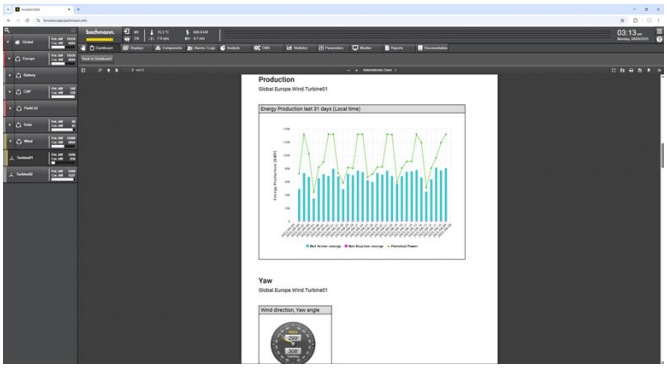


forsiteSCADA® - overview "SPPC Infrastructure"

Reporting

forsiteSCADA® offers the possibility of creating reports. These are managed via the dashboard configurations. The user can either create an ad hoc report from the currently active dashboard or store an automatic report for a specified period via a configuration menu.

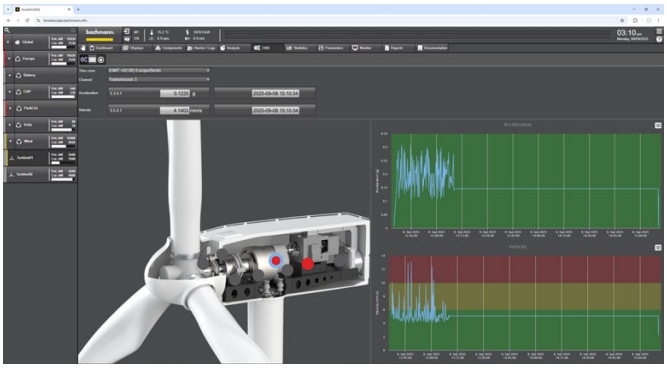
The content of the report includes the content of the dashboard stored in the configuration. This means that customer-specific requirements are also taken into account when creating reports in the forsiteSCADA®. This feature is available as an option for the forsiteSCADA® *basic* and *advanced* product levels and is already included in *premium*.



forsiteSCADA® - report view

Condition monitoring acc. to ISO 10816-21 (VDI 3834) and ticket system

The integration of Bachmann CMS is implemented in forsiteSCADA® acc. to ISO 10816-21 (VDI 3834). An overview page alerts the user when a lasting exceeding of the characteristic ISO values has occurred. In addition, a trend is displayed that graphically shows the latest measured values. In addition to the proven CMS remote service, this component provides a helpful indication for the user. Furthermore, the user is informed in forsiteSCADA® if there are CMS tickets for the system (from the weblog). These tickets are displayed in tabular form. When a ticket is selected, preconfigured data from the turbine from the database is automatically displayed in a diagram. This data configuration can be easily extended by the user.

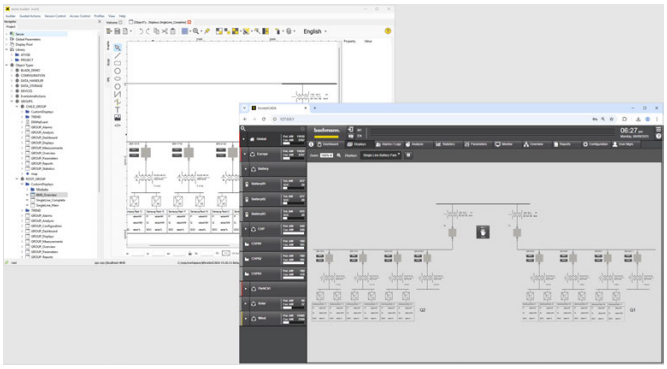


forsiteSCADA® - CMS acc. to ISO 10816-21 (VDI 3834)

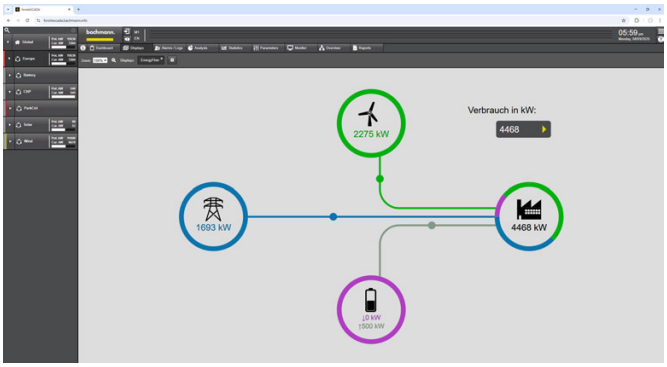
Project development

forsiteSCADA® *light* and *basic* are available to users preconfigured, and the system is integrated via visualization. forsiteSCADA® *premium* can also be configured for the corresponding topology via visualization. In addition, users of this product level have full access to the atvise® builder development tool. ForsiteSCADA® *advanced* offers a special feature: like *light* and *basic*, this product level is fully preconfigured and ready to use, but can be supplemented with custom displays created in atvise® builder.

Thanks to the IEC data interface, all types of energy generators can be displayed clearly and uniformly, and their data (e.g., yield) can be compared with each other. The "responsive web design" of atvise® SCADA ensures that the forsiteSCADA® project only needs to be created once and that the resolution automatically adapts to tablets or smartphones.



forsiteSCADA® - user-defined displays



forsiteSCADA® - user-defined displays with animation

Connection to external systems

Via the standardized OPC UA interface it is possible to integrate external controller systems that are based on the IEC 61400-25 data model. Third-party systems that do not support the above standards can be integrated via a gateway (Bachmann controller) that includes the basis for the forsiteSCADA® functions. The standardized fieldbus protocols of the controller (PROFINET, PROFIBUS, CANBus, DNP3, etc.) as well as energy protocols (IEC 60870-103/-104/IEC 61850 – each as client and server) are available here; on the basis of these protocols the process data of the energy generator or component can then be decoupled. Customized, proprietary solutions can also be implemented on the gateway in order to use forsiteSCADA® in full scope.

If there is a need to decouple the historical data from forsiteSCADA® into a higher-level system, forsiteSCADA® provides a suitable interface.

forsiteSCADA® - user specific view

forsiteSCADA® - wind farm view tablet/smartphone