Enabling IIoT Connection of Wind Turbines

From Time-Consuming On-Site Maintenance to Remote Control and Predictive Maintenance

Client: Wind Turbine Manufacturer

Industry: Green Energy

Region: Global

Challenge:
Manual diagnostics, parameterisation and software updates are time-consuming, error-prone and expensive.

Solution:
Connection of the entire system of wind energy plants to a modern IIoT platform.

Key Benefits:
- Cost reduction
- IIoT connectivity
- CRA conformity
- Predictive Maintenance
- Refactoring

Challenge

Increase Maintenance Efficiency and Security

Wind turbines are widely distributed and sometimes in places that are difficult to access. Nevertheless, they need to be maintained and the control systems require software updates at regular intervals. The possibility of software updates is required by the turbine manufacturers, not least due to the CRA.
With several tens of thousands of our customers' existing systems, diagnostics, parameterisation and software updates were sometimes only possible manually by employees on site. This was extremely time-consuming, error-prone and therefore expensive.

Solution

Connecting the Wind Energy Plants to an IIoT Platform

The implementation of our software update enabled full connection of the wind farms and wind turbines to a modern IIoT platform. By applying modern model-based development methodology, intensive testing in HiL systems allowed us to seamlessly roll out the software in the field, ensuring a high level of reliability.

Results

Remote System Control and Predictive Maintenance

The connection to the IIoT platform now enables our customer to roll out further software updates remotely in the future and to parameterise the systems online, improving operational performance and efficiency. Additionally, continuous collection of process data and predictive maintenance strategies allow our customer to reduce maintenance costs and maximize system availability.