OpreX™ Measurement

Powered by Wind

Accurate Data, Reliability,
and Scalability.

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Dependable Power

Wind power has moved dynastic boats down the Nile River, helped to channel irrigation water to crops, and even ground ancient Persian grains. Today's uses have evolved with wind farms across the world. Harnessing today's wind energy efficiently requires accurate data, reliability, and scalability.

Renewable assets are developing at an increasing pace. As the industry moves to meet various renewable energy goals and carbon reductions globally, these additions often result in mixed asset portfolios that has its own set of management challenges.

Asset owners need solutions which easily integrate existing and new assets while providing integrated data platforms from which to view and operate them. In addition, asset owners require solutions which are technology agnostic and can dynamically grow with their business; solutions which reduce complexity and costs while maximizing revenue and reliability are the new standard.

Yokogawa has developed a suite of solutions meeting this complex matrix of needs while solving for both regional challenges and global issues.

"13.4 GW of new capacity added and $20 billion invested in 2021."

- U.S. Department of Energy

"Wind power came in 2nd as a source of U.S. electric-power capacity additions in 2021"

- U.S. Department of Energy

Renewable Energy Data and Intelligence – REDI

Yokogawa's REDI is the renewable industry's first comprehensive "sensor-to-enterprise" solution.

Share

Share information via advanced analytics, KPI dashboards, and other tools with all company personnel, anytime, anywhere

Integrate

Integrate with native analytics, AI/ML, IIoT technologies, CMMS, asset management platforms, and enterprise IT systems

Standardize

Standardized control and integration platform minimizes total cost of ownership throughout the asset portfolio

Unlock

Unlock quality data to capture the greatest value from the plant assets

Simplify

Standard user interface simplifies training, optimizes work processes, and empowers managers

Open

OEM agnostic solution integrates with any PLC, DCS, or SCADA system

Onboard

Onboard assets quickly and efficiently using native tools

Shave Time/Costs

Minimize Time to Value (TtV) and O&M expenses

Scale

Scalability simplifies integration of new assets and technologies

“Midwest and Southwest states have led the U.S. in growth of wind energy over the past 10 years. Texas dominated wind energy growth, producing a quarter of the wind power in the country and growing from 30,548 GWh in 2011 to 92,989 GWh in 2020.”

- S&P Global Market Intelligence

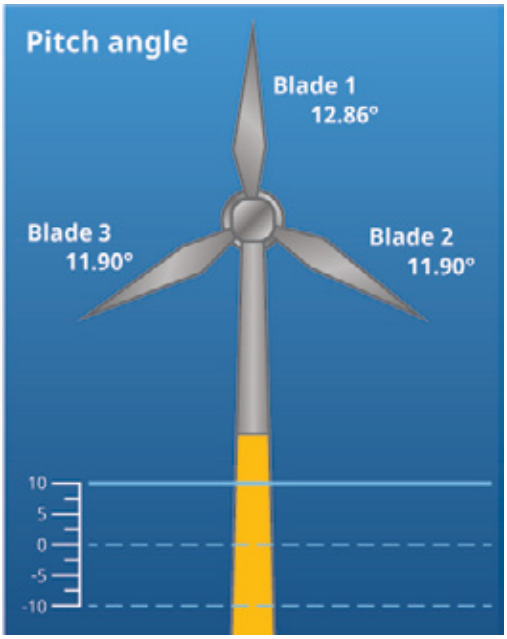
Yokogawa provides a variety of measurement and control technologies that help to ensure a stable power supply by making operations more efficient and by enabling remote and centralized monitoring of multiple wind power generation systems.

Challenges & Solutions

Maintaining a stable supply of power to the grid even when varying wind conditions cause fluctuations in the amount of generated power. Yokogawa supplies an integrated power monitoring and control system and a battery control system that tracks how much power is being generated and manages the charging and discharging of the battery system to ensure a stable supply of power to the grid at all times.

Offshore Wind Capabilities

Offshore wind turbines face a higher risk of accidents compared to onshore ones. Yokogawa is able to offer early-detection solutions so that countermeasure can be taken before the accident escalates to a serious level.



Water Level Sensing

Abnormally high ocean waves can cause significant damage to wind turbine operations. Yokogawa's wind turbine control system comes with a fully integrated level sensor and ensures suitable operations to avoid serious damage to the turbines.

External Monitoring

Wind turbines are often located in or near the sea, making it difficult for field cameras to survive in such harsh conditions. Yokogawa's CCTV FIELDEYE II is corrosion-resistant and offers 360° viewing. External monitoring enables detection of abnormalities.

Heat Detection

Using fiber optic temperature sensing technology, Yokogawa's DTSX pinpoints heat sources such as electrical fires in power cables. It provides 24/7/365 monitoring along the entire length of the cable.

Energy Management System

The Energy Management System (EMS) provides integrated operation and revenue maximization for renewable energy generation facility operators by providing energy balancing and scheduling between various forms of renewable energy (wind, solar), conventional generation (thermal, hydro), energy storage systems (batteries, pumped hydro, flywheels), and dispatch instructions from the market operator.

By integrating various data such as weather forecasts, power storage and electricity tariffs, the EMS provides automated predictions of power demand and calculates the optimum power generation and supply schedule, including the optimized use of battery energy storage. While the EMS is intended to manage energy, it can also be integrated with Yokogawa's Computerized Maintenance Management System to avoid system failure caused by malfunction or deterioration of mechanical devices.

Battery Energy Storage System

To ensure the stable supply of power to the grid even when there is a dip in power generation, many renewable energy farms use a battery energy storage system (BESS) as a backup power supply. Yokogawa's network-based control system plays a key role in smoothing out the supply of this power to the grid. The following key functions of BESS monitoring and control help you to achieve stable and profit-maximized operation.

Operations
Using the power generation scheduling system, operators can access the weekly operation plan data they need to draw up an operation plan for the next day. At their stations, operators can view graphic displays showing the power sales target, power generation plan and battery charge-discharge plan.

Energy Monitoring
Operators can view data on total power output for the entire facility, battery charge status, and transformer operation status.

Battery Monitoring
The charge-discharge rate, charge status and operation status of each battery are displayed.

Bridging The Data to Insights Gap With CI Server

Yokogawa Collaborative Information Server (CI Server) allows immediate improvement to production efficiency through DX (digital transformation) and reduction of operational maintenance while building a digital transformation framework allowing you to achieve next level profitability in operations.

Data-driven optimization

Wind farm sites can contain multiple assets, each with their own array of equipment and devices, utilizing various systems to carry out management and operations tasks according to their respective functionality. CI Server brings all the data together in one place unlocking critical process data required to achieve data-driven optimization.

ABOUT YOKOGAWA

Yokogawa provides advanced technologies and services in the areas of measurement, control, and information to customers across a broad range of industries, including energy, chemicals, materials, pharmaceuticals, food, and water. Yokogawa addresses customer issues regarding increasingly complex production, operations management, and the optimization of assets, energy, and the supply chain with digitally enabled smart manufacturing, enabling the transition to autonomous operations. For learn more visit:

www.yokogawa.com/us

YOKOGAWA

Co-innovating tomorrow™

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