Regal Rexnord

Smart Monitoring and IIoT Technologies Improve Onshore Wind Turbine Uptime

SVENDBORG BRAKES™

A REGAL REXNORD BRAND

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Operators of onshore wind turbines are always looking to maximize power output and profitability

If a non-permanent condition monitoring solution is needed, such as for commissioning or troubleshooting, the Universal Control (UC) Case, developed by leading Regal Rexnord Renewables brand Svendborg Brakes, provides this functionality for wind turbine brakes.

Operators of onshore wind turbines are always looking to maximize power output and profitability. Therefore, any tool that can reduce turbine maintenance requirements and improve reliability is incredibly useful. To deliver these benefits, Regal Rexnord Renewables has employed Industrial Internet of Things (IIoT) technology to provide smart monitoring of onshore wind turbine braking systems, which improves turbine reliability while simultaneously increasing uptime.

Maintenance challenges

The profitability of any onshore wind turbine is directly tied to its ability to generate power. Any unforeseen breakdowns not only incur maintenance costs, but also lost energy output.

Furthermore, maintenance is often challenging. Onshore wind turbines are usually located in remote areas. Key systems such as the brakes are inside the nacelle at the top of the tower, which can be 100 meters high. As a result, equipment is hard to access, and often must be serviced at height. These challenges can increase the time and cost of maintenance, especially in emergency breakdown situations, further compromising power output and profitability. Reducing maintenance requirements and increasing reliability is therefore key for these installations.

The smart approach

To help operators of onshore wind turbines, Regal Rexnord Renewables provides 24/7 smart monitoring solutions that combine IIoT and data mining technologies to improve turbine uptime.

A suite of sensors monitoring the braking system provides data on a variety of parameters such as system pressure, brake pad wear, brake position, brake piston, brake fluid levels and temperature. This data is then uploaded to the cloud, where Big Data analytics is carried out by artificial intelligence (AI) to provide accurate diagnosis on the condition of key components, and crucially, to predict any potential reliability risks well in advance of failure.

Consequently, operators can eliminate unforeseen breakdowns and their costly repercussions. More than that, data insights can inform long-term preventative maintenance strategy, ensuring that specific brake components can be highlighted for repair or replacement at the optimum time. The system even offers a functionality where maintenance tasks can be ordered in terms of time criticality.

The IIoT solution can be installed on any existing or new Svendborg Brakes system for permanent condition monitoring. The hardware required consists of either the in-house developed Svendborg Brakes Gateway or the SOBO iQ® (Soft Braking Option) braking system, both in collaboration with a high security cloud gateway for a secure connection to the cloud.

SOBO iQ® (Soft Braking Option) braking system.

A universal solution

If a non-permanent condition monitoring solution is needed, such as for commissioning or troubleshooting, the Universal Control (UC) Case, developed by leading Regal Rexnord Renewables brand Svendborg Brakes, provides this functionality for wind turbine brakes. Contained in a compact, lightweight case, the UC Case can remotely access data from wind turbines and enable direct online intervention from technicians to aid maintenance work.

Easily operated by a technician with general training, the UC Case uploads data to the Cloud to allow in-depth analysis of the braking system. Importantly for wind turbine operators, the UC Case delivers up to a 90% service cost saving when compared to the expenses of transporting a technician to the installation. Furthermore, it offers a distinct advantage in terms of time, adding further value. The tool is suitable for use on all Svendborg Brakes standard and SOBO (Soft Braking Option) braking systems.

Maximising wind turbine uptime

By combining condition monitoring, IIoT technology and in-depth AI data analysis to provide real-time insights and predictions, Regal Rexnord Renewables delivers the dual benefits of reducing turbine maintenance requirements while eliminating unforeseen breakdowns. For onshore wind turbine operators, this means that turbine uptime and reliability can be improved simultaneously. This not only delivers an increase in profitability due to maximized power generation, but also a maintenance cost advantage.

Maximizing the benefits of green power generation relies on making environmentally friendly technologies such as onshore wind turbines as reliable and profitable as possible. With advances in IIoT technology, operators now have the tools to capitalize, keeping turbines running for longer, all while reducing downtime.

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