

IloT-driven predictive maintenance finds the needle in the minestack

Bucket wheel excavators (BWEs) need robust and reliable braking systems to withstand the harsh operating and environmental conditions they are exposed to. The right solution helps them handle power cuts while protecting the BWE's components from shock loads. By offering an innovative braking control setup that features Cloud computing and data analytics, Svendborg Brakes supported a premier lignite mining company to slash maintenance costs and downtime.

The mine covers an area of 1'400 km² one of the largest in its region. To extract over 9 million tonnes (9.9 million tons) of brown coal annually, mining companies leverage powerful BWEs, including the 5'700-tonne (6'300-ton) K 2000 model.

To operate close to its theoretical output of 5'500 m³ per hour at all times, the mammoth K 2000 BWE relies on nine travel drives that move the entire machine. These components use Svendborg Brakes' products.

The current setup had been in place for 15 years, operating at peak performance. While the mining company was satisfied with the solution, it was interested in implementing new technologies that could further improve its operations.

The gateway to Mining 4.0

The latest advances in artificial intelligence (AI), Big Data analytics and sensor technology have been enhancing productivity and equipment lifespan by offering accurate and precise predictive maintenance and diagnostic tools. Therefore, Svendborg Brakes suggested its latest Industrial Internet of Things (IloT) solution to minimise downtime and reduce the costs associated with scheduled and

emergency maintenance. The mining company, intrigued by these potential benefits, agreed to upgrade all nine braking systems in the K 2000 travel drives.

The new HPs collect sensor data on a variety of parameters such as system pressure, brake pad wear, position of the brake and its piston, brake fluid levels and temperature, and send them to the Cloud. There, advanced AI-driven data analytics is used to extract meaningful information on the status of the brakes and their components as well as to provide crucial predictions on expected equipment failure.

The results are accessible remotely, from anywhere, via Svendborg Brakes' conditioning monitoring platform. As a result, operators have a clear and comprehensive real-time overview which allows them to identify anomalies as well as finding the sweet spot to conduct scheduled maintenance activities.

In particular, regular inspections can be halved, resulting in substantial decreases in downtime and maintenance costs, without affecting equipment's service life. In fact, the responsive condition monitoring helps to extend the lifespan of key components. Even more, as these activities require travelling to mine's remote areas, the mining business could lower its visits to the site as well as maximise uptime in the event of equipment failure.

Just the beginning

The innovative IIoT solution installed for the K 2000 BWE has been running smoothly and successfully for over six months. Pleased with the results, the mining company has decided to install the system on every new installation from Svendborg Brakes.

Jan Mikyska, Brake System Control Specialist at Svendborg Brakes, comments: "The best outcome from this project has certainly been receiving an extremely positive feedback from one of our most loyal customers. This attests how Svendborg Brakes' IIoT solution is a gamechanger in condition monitoring of

brake systems, particularly for machines operating in harsh environments or in remote locations. We believe that solutions like this will soon become a standard and, in effect, we are receiving several businesses are inquiring about our system for their applications.”

Image Captions:

Image 1: Bucket wheel excavators (BWEs) need robust and reliable braking systems to withstand the harsh operating and environmental conditions they are exposed to.

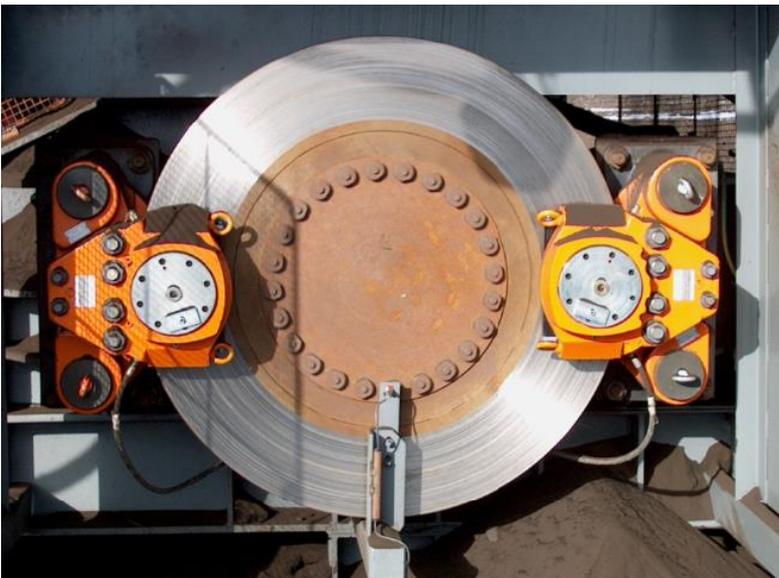


Image 2: Svendborg Brakes suggested its latest Industrial Internet of Things (IIoT) solution to minimise downtime and reduce the costs associated with scheduled and emergency maintenance

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About Svendborg Brakes

Since 1989, Svendborg Brakes has been recognised as a leading global expert in intelligent braking solutions for industrial applications. Extensive application knowledge, innovative design, fast prototyping and exhaustive testing ensure that customers get the most technically advanced, most durable and safest braking systems to meet their specific requirements.

Svendborg Brakes offers a wide range of highly engineered products including hydraulic brakes and power units, thruster brakes, soft braking controls and couplings. Svendborg Brakes braking solutions are hard at work in key markets including renewable energy, mining, hydropower, cranes and oil & gas, mining, and marine & offshore on applications such as wind and tidal turbines, overland conveyors, propulsion systems, deck equipment, hoists, drawworks, elevators & escalators and dam turbines.

Further Information:

www.svendborg-brakes.com

Press contact:

Svendborg Brakes

Britt Lightbody

Marketing Coordinator

Svendborg Brakes ApS, Jernbanevej 9, 5882

Vejstrup, Denmark

Tel.: +45 63 255 477

Fax: +45 62 281 058

britt.lightbody@svendborg-brakes.com

PR agency:

DMA Europa Ltd.

Philip Howe

Europa Building, Arthur Drive, Hoo Farm Industrial

Estate, Kidderminster, Worcestershire, UK

Tel.: +44 (0)1562 751436

Fax: +44 (0)1562 748315

philip@dmaeuropa.com

www.dmaeuropa.com