

ONSHORE WIND TURBINES

GREEN ALTERNATIVE FRICTION MATERIAL REDUCES IMPACT OF BRAKE DUST

Onshore wind turbines rely on yaw brakes to face into the wind and generate power efficiently. New Green Alternative friction material from Svendborg Brakes, a leading brand of Regal Rexnord Corporation, offers turbine operators the opportunity to reduce the impact of dust from wind turbine yaw brakes.

THE PROBLEMS OF BRAKE DUST

The efficiency of an onshore wind turbine relies on it being able to turn to face its blades to the wind. This orientation ensures that the turbine operates efficiently, providing optimal power generation and profitability for operators.

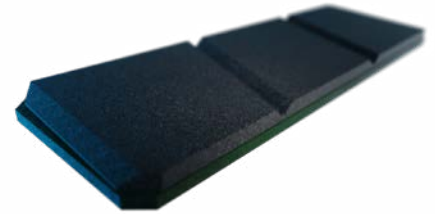
Yaw brake systems in the nacelle ensure the yawing is done in a controlled way and hold the turbine in the required position so it can maintain this high power production efficiency. Some turbines require up to twenty yaw brakes to operate effectively. However, this constant usage of braking application at a relative low pressure during yawing and with a high pressure during still stand, produces dust as the brake pad friction material wears down when rubbing against the disc.

Unfortunately, brake dust from onshore wind turbines has historically presented multiple risks. First of all, dust can contaminate the local environment. This can adversely affect local wildlife, livestock and plant life - damaging the green credentials of wind turbines. Furthermore, the dust also presents a risk to maintenance personnel working on the turbine, as they can come into contact with large concentrations during brake inspections and repairs.

THE WIND SECTOR CATCHES UP

Brake dust has long been an area of focus for the automotive industry, with OEMs committed to utilising less harmful substances in brake friction materials to reduce environmental impact. It is from this knowledge that Svendborg Brakes has taken inspiration, developing a new brake friction material in-house that greatly reduces the environmental impact of brake dust.

Svendborg Brakes' Green Alternative yaw brake friction material sets a new standard for wind turbines. It complies with restriction of use of hazardous substances (REACH) standards which are followed by the automotive industry.



HIGHLIGHTS

- Friction material must take into account environmental and political implications in addition to providing safety for personnel and longevity for yaw brakes
- Reducing noise and friction wear (dust) is critical for optimal braking performance
- Shape, size, surface area, and contact points need to be specifically designed for better braking force, heat dissipation, and wear uniformity
- REACH legislation must be followed to restrict the use of harmful materials
- Svendborg Brakes yaw brake friction material (Green Pads) meets and exceeds these requirements



SVENDBORG BRAKES™

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Asbestos-free, the material contains less than 0.1% mercury (Hg), less than 0.1% chromium 6+ (Cr6+), less than 0.1% lead (Pb) and less than 0.01% cadmium (Cd). Elements such as nickel (Ni) are not used as they can trigger allergies. Antimony (Sb) is also not utilised due to car industry standards, which also is the case for omitting copper (Cu). Additionally, some states in US have a 2025 copper limit of only 0.5% for brake pads in cars. All these restrictions have already been taken into account by the Green Alternative from Svendborg Brakes. To further compound these benefits, it produces inherently less dust than traditional friction materials. Another feature is a natural resistance to corrosion.

In addition to innovative materials, Svendborg Brakes pads have other customisations. Cut off corners allow for brake pads to be replaced more easily during maintenance, while a slot and chamfer ensures reduced glazing and noise levels in operation. Visual and electrical wear indicators are also available to signal when pads approach the end of their service life.

IMPROVED ENVIRONMENTAL CREDENTIALS

By utilising its extensive expertise in wind turbine yaw braking systems and taking inspiration from other industries, Svendborg Brakes has ensured that the wind sector is no longer lagging behind in terms of environmentally friendly braking technology.

For onshore installations, this helps to protect local flora and fauna, reducing environmental impact. Additionally, maintenance personnel are further protected from the debilitating effects of brake dust while working on turbines. With Green Alternative yaw brake friction material, the environmental benefits of wind turbines are further enhanced.

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