

Success Story: Sheerness Mine

Market Served
Mining



Sheerness Mine anticipates it will reduce maintenance time with Eaton's Floating Housing Brake

Location:

Hanna, Alberta, Canada

Segment:

Mining

Challenge:

Eaton was called on to update Sheerness Mine's original braking system to reduce maintenance costs and improve serviceability.

Solution:

Eaton's Floating House Brake, with an exclusive integrated Tapered Shaft Lock assembly, reduced wear and provided faster and safer maintenance.

Results:

The Floating Housing Brake is expected to reduce downtime during service and will eliminate a lengthy heating and tensioning process associated with motor service.

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"The brake is very robust in design and running optimally – it is serviceable if needed."

*Doug Spies, Maintenance Manager,
Sheerness Mine*

Background

The Sheerness Generating Station, co-owned by TransAlta and ATCO Power, is located northeast of Calgary, Alberta, and is a major employer of residents in the local farming communities surrounding the station. The coal-fired power plant's two generating units produce approximately 5.5 million megawatt-hours of energy annually.

The station relies on Sheerness Mine, a nearby coal mine. A key factor in providing coal for the station is the mine's BE1300 electric dragline excavator, which runs 24 hours per day at a cost of thousands of dollars per hour.

The dragline bucket is operated using hoist and drag cables. Each cable system has a drum, driven through a gearbox by two motors, and each of the four motors uses traditional drum/clamshell braking systems.

Challenges

The Sheerness Mine dragline braking system was antiquated, resulting in regular repair involving four to eight hours of downtime each time.

"Sheerness needed a brake solution that was more robust and serviceable than the existing clamshell brakes," said Doug Spies, maintenance manager, Sheerness Mine.

Looking for a dragline braking solution with extreme durability and little to no service required, Sheerness Mine turned to Eaton.

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Solution

Eaton supplied the Airflex® 138FHB™ Floating Housing Brake (FHB) with Shield and Guard for the brake systems on Sheerness Mine's BE1300 Hoist and Dragline functions. This heavy-duty, air-cooled, spring-applied/pressure-released disc brake is rated for more than 430,000 pounds per inch (lb-in) of torque, with a full 360-degree annular disc that extends friction pad wear life and offers friction pads that can be changed in less than an hour, instead of three hours or more. The "pizza slice" design allows easy access to the friction pads, removing the need for complete teardown to replace a pad.

Featuring Eaton's exclusive Tapered Shaft Lock (TSL) assembly, the brake allows for a faster and safer installation without the need to heat and remove the drum with a hydraulic press. This not only saves time at installation, but also for routine maintenance. Dragline service providers estimate that drum removal is needed every two to three years, requiring heating equipment, a hydraulic press and a full day of labor and downtime. Additionally, by using a TSL, solid rotor and stationary friction material, the wear issues associated with spline and gear designs are removed.

Results

Sheerness Mine's maintenance supervisor and staff are impressed with the 138FHB. "The brake is very robust," said Spies. "It is serviceable if needed and runs well."

The 138FHB's friction pad design not only reduces downtime each time a friction pad needs to be replaced, but reduces the overall number of necessary friction pad replacements. Instead of as many as six times per year, as claimed by a coal mining operation, the 138FHB's friction pad replacement is projected to be required approximately once every five years.

Over time, the 138FHB is expected to significantly reduce frequent maintenance at Sheerness Mine and, by Eaton's calculations, is projected to save more than \$400,000 in downtime costs over five years. Eaton estimates that one 138FHB will pay for itself in three years with the savings provided by the reduced maintenance requirements.



Eaton's Airflex 138 Floating Housing Brakes installed on mines dragline excavator.

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