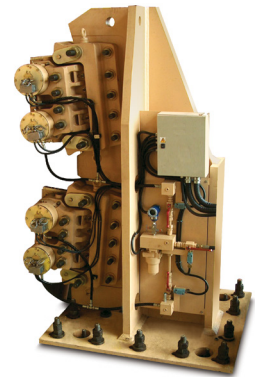


VMSDP Spring-Applied, Hydraulically Released Brakes

WORLD'S LARGEST BALL MILLS



PROBLEM

Heavy-duty brakes were needed for two 8-meter ball mills on South Africa's largest platinum concentrator at Angelo Platinum's Mogalakwena (previously PPRust) mine near Mokopane. The brakes control (stop, hold, position) each ball mill drum which presents a monumental total inertia of 14,195,400 kgm².

SOLUTION

Multiple sets of Twiflex VMSDP modular brakes, providing 737 KN of braking force each, were installed on both mills for a total combined braking force of 4.4 MN on each mill. This braking force allowed the concentrator to expand milling capacity at the mine by 600,000 tons per month, producing an additional 230,000 ounces per year, more than double previous production volume.

While the brakes are able to provide the world's ultimate emergency braking capability in this application, the operator required a soft braking option to avoid equipment damage. To stop the mill between 6 and 10 seconds, the brake pads engage the disc quickly at zero force, with subsequent controlled force to provide the desired stopping time.

The Twiflex system provides both static and dynamic braking functions. In static operation, the system holds the mill for liner replacement and general mill maintenance. In dynamic operation, the system can stop the mill at full speed during an emergency or it can provide controlled stop in inching/creeping mode for bearing lubrication problems or power failures.

HIGHLIGHTS

- Braking force of 4.4 MN or 737 KN per brake
- One-third smaller than caliper brakes – reduced size and cost
- Able to stop a full process charge in a staggering 0.5 seconds
- Hydraulic powerpack offers soft-braking option between 6-10 seconds
- Year-round reliable operation

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