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# Twiflex Mill Braking System



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An Altra Industrial Motion Company

# Twiflex Mill Braking System

Since 2004 Twiflex Ltd and their USA partner, Hilliard Corporation, have been involved in supplying brake systems for Gearless SAG and Ball mill drives. Their success continues with the current supply of a six-brake system to Metso Minerals Industries Inc. for the Mount Milligan mine in Canada. The scope of supply for this project will include two stations with Twiflex spring-applied VMS-DP brakes plus an electro-hydraulic power pack.

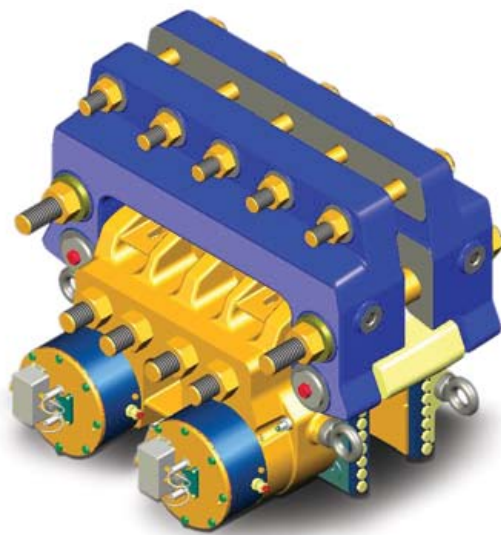
Mount Milligan is located within the Omenica Mining Division in North Central British Columbia, Canada, approximately 155 Km northwest of Prince George. The open pit mining operation will provide mill feed at a nominal rate of 60,000 t/d (21.9 Mt/a). Annual mine production to start in Q1, 2013 is expected to average 81m lb/year copper and 194,000 oz/year gold in concentrates over the 22 year mine life.

Metso has been contracted to supply the primary crusher, SAG mill and two-off ball mills plus other associated plant equipment. The Twiflex system, to provide both static and dynamic braking functions, will be used on the 22 MW SAG mill which measures 12.2m diameter (40 ft.) x 7.31m long (24 ft.). In static operation the braking system is used to hold the mill during liner replacement and general mill maintenance. For dynamic operation the system can operate in two modes; stopping the mill from full speed in an emergency, or giving inching/creeping operations in the event of bearing lubrication problems or power failure. For the first, a controlled application of the brakes is required; and, for the second, the brakes are operated quickly to give accurate stops needed by the mill operator.

The Twiflex VMS-DP brake is a floating brake (+/- 10mm) which has an adjustable clamping force from 735 to 920 kN and is spring applied, hydraulically retracted suitable for disc/flange thicknesses from 117mm to 130mm. The brake can be used on installations with a braking path of at least 7.6m outside diameter (there is no upper limit) and 7m inside diameter. The hydraulic powerpack offers an advanced and versatile brake control as it allows both local and remote operation for inching and creeping duties through a control panel.

The braking system at Mount Milligan will generate up to 30 MNm braking torque acting on a 13.48m mill flange diameter. The VMS-DP calipers weigh 1.85 tons each and are able to deliver 940 kN clamping force. With a full process charge of 1043 tons the braking system is able to stop a mill in less than 2 seconds.

To achieve this the friction material has been chosen specifically for grinding mill installations and provides high performance with excellent wear properties. The material is a blend of carefully selected non-asbestos friction modifying elements held together with a binder to give a friction coefficient of 0.4 at 300°C.



Twiflex VMS-DP Mill Brake

VMS-DP brakes are mounted across the mill flange symmetrically and held in place by two half brackets bolted either side of the pedestal vertical member, meaning the braking force is equally distributed. Each brake has a spring module with two spring applied hydraulically retracted pistons. The module is bolted to a reactive backplate featuring two cast bosses, one either side of the brake assembly. The VMS-DP has a special ‘parked-off’ feature due to the long piston stroke which means the brakes can be installed with zero hydraulic pressure and enables the friction pads to be changed safely and without the need for special tools.

This contract follows the recent installation of Twiflex’ largest ever mill braking system at the Boliden Aitik mine in Northern Sweden. Also supplied to Metso the brakes have been fitted to two of the largest grinding mills commercially available which have replaced five existing mills. The 22.5 MW primary mills with wrap-around motors measure 11.6m (38 ft.) diameter x 13.7m (45 ft.) long and mean the two milling lines now have a capacity of 2025 t/h.

Unlike the Mount Milligan project the Boliden system comprises eight-off VMS-DP calipers which generate nearly 40 MNm braking torque for each mill, acting on a 12.97m mill flange diameter.



One of the two Brake Stations for Boliden Aitik mine shown loading at the UK factory. Each unit, when upright, measures 5.1m high and weighs approximately 15 tons.

## About Altra Industrial Motion

Altra Industrial Motion (NASDAQ:AIMC) is a leading multi-national designer, producer and marketer of a wide range of electromechanical power transmission products. The company brings together strong brands covering over 40 product lines with production facilities in nine countries.

Altra's leading brands include Boston Gear, Warner Electric, TB Wood's, Formsprag Clutch, Wichita Clutch, Industrial Clutch, Ameridrives Couplings, Kilian Manufacturing, Marland Clutch, Nuttall Gear, Stieber Clutch, Twiflex Limited, Bibby Turboflex, Matrix International, Inertia Dynamics, Huco Dynatork, Ameridrives Power Transmission, Delroyd Worm Gear and Warner Linear. For information on any of these technology leaders, visit [www.AltraMotion.com](http://www.AltraMotion.com) or call 815-389-3771.



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