

Altra Industrial Motion

Warner Electric

Boston Gear

TB Wood's

Formsprag Clutch

Wichita Clutch

Marland Clutch

Industrial Clutch

Nuttall Gear

Warner Linear

Delroyd Worm Gear

Stieber Clutch

Ameridrives Couplings

Inertia Dynamics

Matrix International

Huco Dynatork

Bibby Transmissions

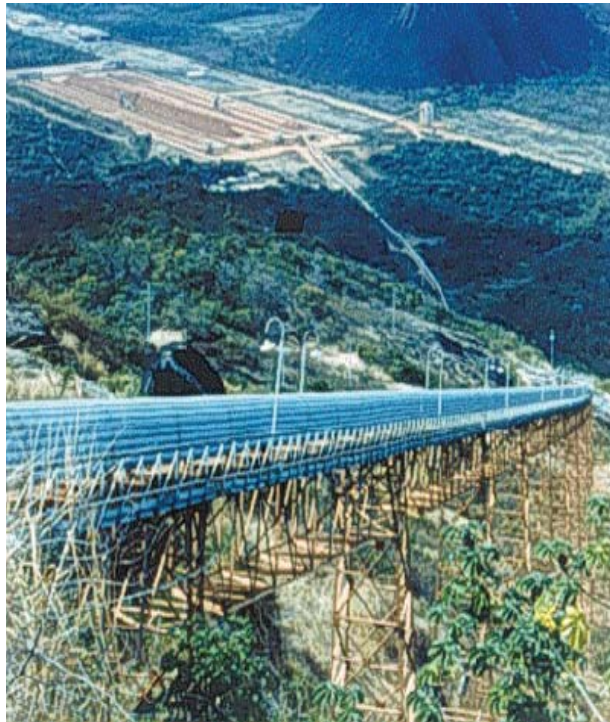
Bauer Gear Motor

Twiflex Limited

Kilian Manufacturing

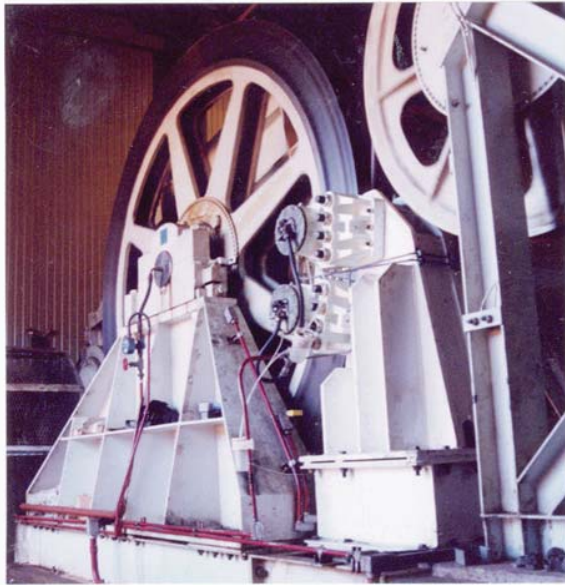
Ameridrives Power
Transmission

Braking for Venezuela's Longest Conveyor



 **Twiflex**[®]
Limited
An Altra Industrial Motion Company

Braking for Venezuela's Longest Conveyor



2500 KW DRIVE INSTALLED WITH 4 OFF TWIFLEX VMS CALIPERS

Snaking its way down a 500 meter high mountain Venezuela's longest conveyor smoothly carries 1600 tons of bauxite every hour to stockpiles or rail wagons before transporting it 50 miles north west to the Orinoco River.

On arrival it is transferred to barges for the start of a two day journey down river to Porto Ordaz where it is converted to alumina before being fed to the hungry smelters dominating this area of Bolivar State.



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Transporting an annual total of 4,800,000 tons down an 18 degree incline requires expertise in sophisticated conveyor and control systems; therefore it was not surprising that Svedala's cable belt division was awarded the contract for designing, supplying and commissioning a suitable scheme.

Safety is of vital importance when considering large downhill conveyors, and the Svedala Engineers needed to work closely with experts in the field of industrial disc brake technology.

Twiflex is internationally recognized as a leader in this field and was well able to offer a brake that integrated perfectly with the re-regenerative system that can feed 1.6 MW of free power to the mains.

In normal operation the disc brakes are only used during the final stages of braking when they are applied to lock the conveyor in its parked position. However in the event of a power failure and no regenerative braking, they are required to stop and hold a fully loaded belt.

In order to achieve this the disc brakes are not only fitted to the first motion shaft of a cable belt 63 to 1 ratio gearbox, but are also mounted directly on the faces of two 4 meter diameter koepe wheels which drive the 50 mm diameter cables supporting the belt.

In this application as well as being fail safe, both sets of brakes can independently stop and hold a fully loaded belt. Twiflex specializes in this type of failsafe system which is achieved by a nest of powerful springs applying force to compress brake pads against a disc.

To release the brakes the springs are compressed by hydraulic pressure which is supplied by an independent power pack. Duplicate solenoid valves are employed in the system which, when energized, retain oil within the brake calipers at a pressure of 160 bar. In the event of a power failure, or when brake application is required, the solenoids de-energize opening and closing valves to discharge oil and allow the spring force to apply the brakes.

Two Twiflex GMRSH calipers are employed on each of the 1250 kW driving motor shafts, while four VMS type calipers act directly on the faces of the koepe wheels. The total brake package is adjusted and set to provide 2000 kNm of braking torque to the drive cables.

With a multi-million dollar investment at stake, the mine operators are relieved that their lifeline from the mountain is protected by some of today's most sophisticated conveyor braking technology.