Marland Clutch
Altra Industrial Motion

Application Profile

Product

Marland BC-Model Backstops

Application

1.4 Mile Overland Mine Conveyor

Highlights

- Highest reliability
- Full torque load testing performed
- Self-lubricated, sealed oil chamber
- 20-year, 24/7/365 service life
- Global product support

Marland Clutch has supplied numerous BC-Model Backstops for a 1.4 mile long belt conveyor system in a remote mine in western Australia to prevent uncontrolled runback of the conveyor in the event of an unplanned power outage or mechanical failure in the drive. The 70.9-inch wide conveyor is driven by two 2,800 kW (3,750 HP) motors to handle 8,000 MTPH of ore. The system runs at a belt speed of 4.5 meters per second (885 feet per minute), with a head shaft speed of 53 RPM, up a 15-degree incline.

The specification required a guaranteed backstopping holding torque of 975,600 Nm (720,000 lb.ft.). Designed to operate in an environment of airborne grit in temperatures that reach 115-degrees F, the backstops feature a grease labryrinth seal that prevents dust from attacking internal oil lip seals that could wear and leak if infiltrated.

Unlike electrical or pneumatic clutches and brakes, these ramp-and-roller style backstops are completely mechanical and automatically engage upon reverse rotation; thus providing the highest reliability at a lower installed cost.

Marland successfully performed full torque load testing at 508,000 Nm (375,000 lb.ft.) on its BC-375MA model, as well as standard freewheel testing at maximum rated speeds, checking both temperature and vibration. Marland also successfully tested its largest backstops required by this installation – the BC-720MA model – using a 50-ton hydraulic jack to apply a torque load of more than 975,600 Nm (720,00 lb.ft.).

All backstops weighing up to 4,500 kg (10,000 lbs.) each were shipped via ocean freight and delivered to the worksite ahead of schedule.

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