MINING

Belt conveyor systems portfolio

Reliable operation under toughest conditions

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Conveying is critical to all mining operations. To haul maximum loads over long distances under the toughest conditions you require expert solutions. More than 700 kilometers of belt conveyor systems operating worldwide are testimony to our expertise in this field. We help you meet the challenges of long distances in extreme environments and transportation conditions as well as ever increasing belt loads.

The ABB gearless conveyor drive (GCD) combines all our know-how in conveyor drive solutions to match the highest demands for minimum wear, maximum efficiency and controllability.

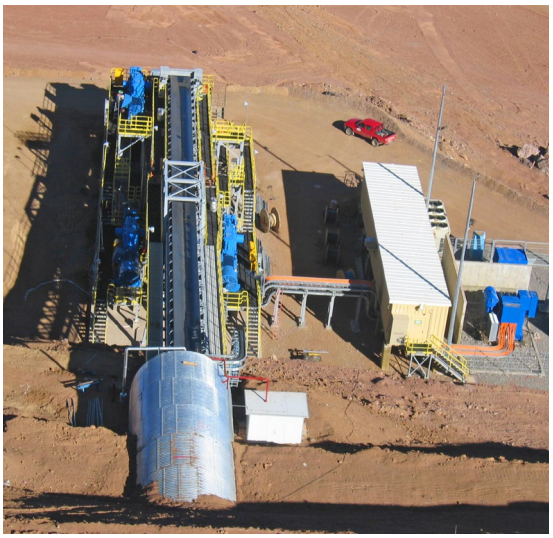
Competence in conveyor systems
Since the early sixties, ABB engineering solutions have served to improve electrical control, automation and drive units for large-scale conveyors, such as the 13 kilometer overland belt conveyor at the high-altitude copper mine in Collahuasi, Chile with downhill conveyor design and electric power regeneration.

Selection of the right instrumentation, automation and electrical equipment directly impacts performance, flexibility of operation, efficiency, reliability and overall life cycle costs of any conveyor system.

ABB's vast experience in the field allowed to develop a comprehensive portfolio of conveyor solutions featuring integrated systems for a variety of conveyors and their respective geometric configurations within the mining industry:

- Conveyor drive systems
- Conveyor interlocking, automation and production optimization solutions
- Conveyor material tracking solutions
- Conveyor instrumentation
- Containerized drive and control systems
- Conveyor scanning solutions
- Solutions to increase energy efficiency and reduce your carbon footprint

— 01 Overland belt conveyor at copper mine in Collahuasi, Chile



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02 Containerized solutions for all climate conditions

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03 Conventional geared conveyor drive

Complex conveyor systems
Designing a control system for a range of successive conveyor belts (flights) with highest availability, calls for exceptional knowhow. Especially, if you factor in starting sequences, mass flow separations, ascent and descent angles, bulk weight and -distribution, fluctuating operational conditions, emergency and repair modes and various other critical aspects into the design. We combine state-of-the-art simulation techniques with cutting-edge drive and motor technology – like frequency converter driven AC motors – providing you with solutions that fulfill the highest expectations for maximized energy efficiency and minimal wear.

Conveyor drive systems
- Variable-speed drives (medium and low voltage)
- MCCP* drive load sharing software
- Mining drives and motors
- Resistor starters (binary, electronic)
- Simulations
- Gearless conveyor drives (medium and high power)

Conveyor interlocking, automation and production optimization
In normal operation your conveyor system will run in an interlocked mode via central control. This ensures that your conveyor system starts with each individual flight being coordinated with the conveyor belt next to it. The idea is to control the effects of both belt slip detection and operation at torque or load limit on the interlocking behavior of the conveyor belts.

Variable-speed drives allow operation at any speed. This helps to maintain a constant filling level of the material being transported on the conveyor belts so as to match upstream volumes and other relevant process requirements. Additional effects are energy savings while also extending the lifecycle of your applications.

Conveyor material tracking
Material tracking is vital to both material quality and conveyor load tracking as it provides input data for stockyard management and optimum conveyor load control.

Instrumentation
The instrumentation comprises all sensors, switches and actuators vital to protecting the mechanics as well as the costly belts of your conveyor system. Important features include tramp metal detection, belt misalignment detection, slip detection and control, belt wear monitoring, belt rip and splice damage detection and chute overfilling prevention.

Containerized solutions for all climate conditions
Electrical systems such as power distribution, drives, switchgears, control systems and auxiliary components all require proper protection from the harsh conditions common to any mining environment. Dust, shock, vibration, extreme temperatures and high altitudes necessitate a containerized E-house, fully air-conditioned and dust sealed.

Conveyor supervision
Remote access to the conveyor control system is crucial for keeping maintenance costs low, reducing process downtime and using “pro-active” service. Conveyor supervision combines conventional conveyor monitoring with asset monitoring for failure prediction and reduced stress loads on your conveyor belt system by providing important alarm functions for the operator or control system.

*MCCP – mining conveyor control program

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