



Fact sheet

Belt conveyors – the better way

Reap operating cost savings and efficiencies in the handling of bulk materials with electric belt conveyors, a cost effective and reliable alternative to diesel haulage trucks.

The inherent advantages of belt conveyors have made them one of the most widely used methods for transporting bulk materials in the industrial, commercial and agricultural sectors.

They continue to improve and adapt and, as their underlying technology advances, become ever more capable of handling complex and customized applications. Now, conveyors are available in a variety of shapes, sizes and materials, all made to fit the product

they are moving and the space they are moving in.

- Belt conveyors move large quantities of material over long, roadless distances at a fast speed
- They have a wide range of applications where drive technologies vary from low, single digit kilowatts (kW) to several thousand kilowatts
- They run cross-country, up steep inclines from underground or open pit mines, to and from

storage areas, to processing operations and to load-out devices or end use points

- They move materials as either portable or fixed belt conveyor units
- Lower operating costs, safety, reliability, versatility and an almost unlimited range of capacities are amongst the many advantages of using electric belt conveyors instead of alternative transportation methods such as diesel haulage trucks.

The right choice

Choosing the most appropriate belt conveyor for your specific product and operation is crucial:

- The type of material the belt is made of is vital to the success of its application;
- Having the wrong belt can however significantly affect throughput, downtime and safety.

The most appropriate belt depends on you knowing your product and “how it will convey” – please consider:

- The size, weight and distribution of your product
- The material the product is made of
- How the product will be loaded onto the belt conveyor (i.e. will there be impact loading?)
- The speed at which the product will be conveyed
- Whether the product’s orientation will change
- Whether the product will travel on an incline and / or decline

- The environment in which the conveyor will operate (hot or cold, wet or dry, inside or outside, corrosive or non-corrosive)

Once you have chosen the appropriate type of belt, also consider the specifications of how the belt should be cleaned and maintained, replaced or modified, and the costs associated with these measures.

Case study

Coal from Zibulo Colliery in Kriel is processed at the Phola Processing Plant in Ogies, an Anglo Coal and BHP Billiton joint venture operation in Mpumalanga Province. With an installed capacity of 3 000kW and belt speed of 4.71 meters per second, the Zibulo overland conveyor connects the colliery to the processing plant.

- At Zibulo Colliery, coal is brought to the surface by an incline conveyor and discharged

into a 6 000 tonne buffer silo.

- From the buffer silo, coal is fed into a crushing and screening circuit by a second conveyor.
- The material is then accelerated to a predetermined speed with an acceleration conveyor and transferred to the Zibulo overland conveyor.

This configuration allows the overland conveyor to operate at optimal efficiency and convey coal to the

Phola Processing Plant almost 16 km away. The longest single flight overland conveyor in Africa, and one of the longest in the world, was successfully commissioned on 2 December 2009. It will continue to add significant value to the Zibulo Colliery operation for many years into the future.

In 2010, the South African Institute for Steel Construction awarded the project commendation for the exceptional use of steel.

The Serra Sul iron mine at Carajas in the Amazonian state of Pará, a property of Brazilian mining conglomerate Vale, is replacing in-mine trucks with 37 kilometres of conveyor belts.


The intervention, which also includes construction of a second railway line through the Amazon to the Ponta da Madeira port in Maranhao, will allow the company to reduce transportation costs from mine to port by up to \$15 per tonne, halving their current operating costs.


Vale project director Jamil Sebe confirmed that the conveyor belts, which will be used across the Serra Sul mine, are expected to reduce fuel consumption by an estimated 77%, while decreasing emissions by the equivalent of 75 000 small cars.


Carajas, considered to be one of the world’s largest iron-ore complexes, has reserves of 7.38 billion tonnes, which is sufficient to supply China for a ten-year period.

Credit: Bloomberg



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