



Improvements in Belt Feeder Performance



Delivered in modules for easy transport and quick installation on site

Delkor's specialised Iron Ore (IO) belt feeder, Max-Feed, demonstrates the potential to increase throughput, without compromising on filter cake moisture requirements and with no additional ancillary equipment required.



The application of the belt feeder on existing belt filters at a major iron ore site in Australia has shown strong improvements in belt filter performance. Together with Delkor test work, this has demonstrated the potential to significantly reduce the number or size of filters, resulting in lower capital, transportation, installation and operating costs, as well as a reduction in necessary spares, overall maintenance and equipment footprint.

Retrofitting

After retrofitting five belt filters, supplied by another manufacturer, at the site in Australia with these specialised IO belt feeders, significant improvements were noted, both in throughput (66% increase) and consistency of filter cake properties. Among other things, the throughput has increased from 300 to 500m³/h.

In addition, the difference in cake thickness across the belt width was reduced from more than 10 to less than 5mm. Also, the moisture content remained constant over the entire width of the belt and the filter cake was dewatered at the edges to the same extent as the rest of the cake.

Extensive test work

The belt feeder performance was confirmed through extensive test work by Delkor, which showed that a minimum filtration rate of 3 500kg/m²/h can be achieved with a 134m² filter compared with 2 500kg/m²/h being achieved presently, while reaching a cake moisture target of 12 % and below.

This equates to a 40% increase in throughput, or the requirement for ten 134m² horizontal belt filters (HBFs) compared with the twelve required with competing technologies.

Advanced features

This significantly improved performance is the result of advanced features incorporated into the Max-Feed that overcome some of the challenges of existing feeders. Some of these include a feeder design which is optimised for the process flow pattern with maximised slurry distribution across the width of the belt through 3D CFD modelling, which minimises inconsistency in feed flow patterns and vacuum short circuiting.



Before the old cake consistency feeder was installed.

In addition, the adjustable weir system, which provides a wider operational flow range and better handling of flow conditions, prevents fluctuation or surging of slurry flow. Furthermore, the adjustable spigot nozzle and distribution screens, designed to handle larger throughput and scalability, overcome the limited throughput of conventional feeders.

Lastly, the front and rear sloped feeding system also provides optimal feeder performance at high throughput rates.



The dramatically improved cake consistency as a result of installing the feeder.

Modules

Other features of Max-Feed include the enhanced wear protection, particularly beneficial given the abrasive nature of iron ore, while consumable components, such as the spigot nozzle and screen, are also used in order to reduce maintenance downtime.

In addition, the IO feeder is delivered in modules for easy and quick installation on site (within two days per feeder unit).

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