



Case Study:

RETRACTABLE LOW PROFILE FEEDER (LPF) FOR FILTER PRESS APPLICATION



Location:
Mauritania, Africa

Operation Type:
Copper

Equipment Solution:
Filter Press Discharger

Year:
2013

Scope of Project

Transmin was awarded the contract to design, supply and manufacture a Low Profile Feeder (LPF) for a Mauritania Project which would form part of conveyor system to deliver magnetite filter cake from the filter press hopper to either load containers that are truck mounted or to a stockpile conveyor.

The client requested that the LPF be designed with retractable wheels a huge benefit which will make the access to the filter plates and general maintenance, easier and more efficient.

Project Outcome

Designed and built at Transmin's workshop in Malaga, it took the Transmin team 24 weeks to fully assemble and factory test the LPF before getting shipped to Mauritania.

Designed using 1.8m wide belt and with D4 chain, the LPF offered less spillage, a reduction in capital expenditure and no mis-tracking due to the use of the Track Chain drive, saving in operational downtime.

The LPF is designed to handle magnetite concentrate filter cake, with a bulk density of 2,800kg/m³ and containing approximately 7% moisture.

To accomodate variations in material density LPF is a volumetric feeder so the speed of the feeder is to be adjusted via the variable voltage variable frequency (VVVF) drive which will ensure a consistent feed rate. The LPF is designed to be able to vary the feed rate between 250t/h and 1,250t/h driven by a 75kW gearmotor.

The LPF was designed to be capable of fully automatic or unmanned control and including changing between the two operating positions; taking the filter cake material to the containers mounted on trucks or delivering the cake to a stockpile.

The feed into the truck-mounted containers was controlled via a hydraulically-actuated clam shell gate. This allowed the filter cake material load in the container to be evenly dispersed and trimmed. When the LPF is operated in the feed direction it is operating in batch mode.

The feed onto the stockpile from the LPF was via a transition chute and then onto the stockpile feed conveyor. When the LPF is operated in the feed direction it is operating in continuous flow mode.



Benefits

The benefits of using the LPF:

► Lowest profile

The lowest possible profile available in a high capacity feeder, typically no more than 1.0m from belt top surface to underside of footplates.

► Chains

Twin strand heavy duty sealed and lubricated (SALT) chain is used. Master link connections or endless configurations can be used, coupled with hydraulic tensioning if required.

► Cross Slats

The cross slats support the belt, carry the loads, is securely bolted to the chains at both ends.

► Belting and Joint

The belt is securely bolted to the cross slats and ensures a smooth surface. The belt joint can be a conventional vulcanised type or special mechanical design developed for the LPF™.

► Heavy Duty Belting

Heavy duty mining specification belting is used with highly abrasion resistant covers. Special steel mesh belting is also available. Both edges of the belt have flexible sidewalls of either the 'Flexiwall' style or smooth faced edging strips.

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