Application Report

ABEL HM

ABEL Pump for the transfer of thickener concentrates

Background information

Our customer is a Latin American mining company active in copper mining. Even on an international level, the company is a large copper producer.

The company cares for its environment, given that it also represents its main source of resources and revenues. Consequently, business development is carried out with a strong sense of community and care for the environment. All efforts are concentrated on the optimization of process efficiency and on maintaining or reducing associated costs at the same time.

The media

A mineral product is generated from the underflow from the thickener with a solid content ranging between 58% and 72% by weight. This slurry constitutes an abrasive material which is difficult to handle and to pump.

Due to these properties, the equipment used for transferring these materials acquires a high level of wear, unexpected downtimes, unscheduled maintenance etc.. These are costs that the mining industry cannot accept.

Taking these circumstances into account, the best solutions possible have been analysed to fulfil this critical task.

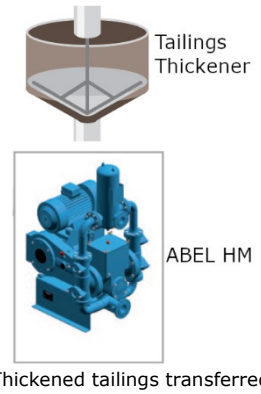
The application

In this context, it is essential to study and identify the most suitable equipment to satisfy the requirement of the application in terms of availability, efficiency and operating expenses.

Copper Tailings

Originally, 2 centrifugal pumps were installed in an unconventional way to perform the required task. Centrifugal pumps are designed for specific conditions which generally never occur given that the operating flow and the solid content of the materials being transferred vary during operation due to pressure fluctuations in other phases of the process. In such circumstances, this type of technology sees its performance dramatically reduced, which directly impacts the pumps' output, causes product recirculation and frequent downtime of the related production line.

Under such circumstances, our customer was obliged to look for a solution that would immediately tackle the challenges and resolve the problems of this specific application.



Thickened tailings transferred with an ABEL HM pump

The solution

When it comes to mining applications, the equipment installed must guarantee a high degree of reliability and availability, it must also be suited to being operated in challenging conditions and during long periods without interruptions.

ABEL HM pumps: 70 m3/h and 6 bar pressure

ABEL HM hydraulic diaphragm pumps in very challenging work conditions.

The equipment installed uses piston-diaphragm pump technology and therefore it can be operated for 1 year under the described conditions without requiring any preventive or corrective maintenance.

Main characteristics

Performance range: up to 100 m^3/h and up to 10,0 MPa

Advantages

- Transfer of media with a solid content of up to 75%
- Extra-large suction valves for a high degree of volumetric efficiency.
- Pre-formed diaphragm which improves pumping efficiency, durability and availability of the equipment.
- Constant operating flow, independent from the discharge pressure, which is mainly influenced by fluctuations of solid contents.
- Strokes per minute are low and ensure a low mechanic wear

Thanks to these properties and design, the pumping equipment offers a long useful life and satisfies the requirements and the needs of the mining industry perfectly.

High solid content slurry (75%): not a problem for ABEL HM pumps

The pressure ranges handled by the pumps of the HM series provide for an optimum process design. HM pumps contribute to the success of the mining plant with significantly lower pumping costs thanks to the very low maintenance required, lower electric energy consumptions and high levels of availability.

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