GBR CONNECT SERIES

CHILE MINING

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Can you introduce TAKRAF and describe the company's global footprint and focus?

TAKRAF is focused on mining, bulk material handling and solid-liquid separation equipment and systems, and we operate in 15 countries. In the Americas, we have offices in Canada, US, Mexico, Brazil, Peru and Chile. Our headquarters are in Leipzig, Germany, which is where the company's technological center for management systems is located. We also have large technical center in India that service the Group's subsidiaries around the world. But it is important to mention that all TAKRAF offices have engineering experts to support our customers close to their operations and project teams.

We are focused on tailoring technology and equipment to our customer's needs rather than developing products to introduce them to the market. Collaboration between the client and the OEM is an important aspect of TAKRAF's work, with the final objective of reducing investment costs and reducing operating costs. Automation is another focus area, and we are introducing artificial intelligence to ensure safer and more optimized operations. Automated systems allow for much faster and precise responses.

Can you highlight a case study example of TAKRAF's work with a mining company in Chile?

Codelco's Chuquicamata underground mine is one of the standout projects we have worked on. A project of this size and complexity requires a lot of work to lower operating costs and reach the deposit. We installed a high-power, high-capacity conveyor belt system, introducing gearless drive technology. We installed two inclined belts covering a distance of 7 km with a capacity of 20MW) each consisting of four 5 MW gearless motors, that overcome the roughly 1 km vertical elevation to the surface. We also installed a 6 km overland conveyor with a capacity of 15 MW. We chose gearless technology because of its energy efficiency - CO2 emissions are reduced by ~66% as compared to diesel truck engines for the same copper production volume - and low operational costs, as they require much less maintenance. To manage all this, our belt technology partner also developed a new, ST10000 tension range belt to transport the material under such an extreme conveying solution. Since you cannot make a 6 km long belt, you have to do it in parts and splice the joints. In the case of Chuquicamata, this project achieves a number of world firsts boasting the highest conveyor drive power of 58 MW and the strongest resistance belt in the world.

Can you explain how bulk material handling or processing facilities can improve the environmental aspects of a mining operation?

All aspects of sustainability are important, but I am going to start with two that are simple where material handling systems play a key role – noise reduction and dust contamination. Conveyors are equipment that removes dust contamination, in contrast to trucks, for example.

The other aspect is that conveyor belts use electrical energy, which can be obtained from renewable sources, whereas most traditional forms of transportation use fuels, which generate carbon emissions.

How do TAKRAF's stockpiling and loading/unloading of saleable material services help companies overcome supply chain and logistics complications?

Within TAKRAF's product portfolio we have systems and equipment that allow stockpiles to be stored in large quantities. For example, in Brazil we transport a type of ground sugar cane used as fuel for energy generation plants, not just ore. Also, within TAKRAF, we have ship-loaders that specialize in large tonnage and high-tech vessel loading and unloading. As example of this, we were chosen to supply key material handling equipment (wagon unloading station and ship loader) for a bulk terminal expansion project in Canada.

What is your outlook for the mining equipment opportunities in Chile in the years ahead?

With the high level of uncertainty that exists, it is difficult to have a concrete answer. However, one thing that is certain is that as humanity continues to grow, water, food, metals and minerals have to be produced. Production of minerals will also increase due to electromobility, and Chile will play a significant role in this transition as a major global producer of copper and lithium. Our Group also sees a lot of opportunity to implement high-tech solutions that will enable this production, particularly in underground settings, which require innovation to become economic, safe and efficient. Lastly, limiting our impact on the environment by adopting more sustainable technologies

such as IPCC, DST and the re-use of process water through dewatering and our DELKOR processing equipment bodes well for the future.