Baker Hughes

Case study: Peru

HPump horizontal surface pumping system doubled rock capacity per day and reduced the use of fresh water

A mine operator in Peru contacted Baker Hughes to expand a new copper concentrate plant, with the goal of increasing processed raw copper rock capacity and decreasing the use of fresh water required in the process.

Using the **HPump™ horizontal surface pumping system**, Baker Hughes engineers helped the operator increase processed rock capacity from 60,000 metric tons of rocks per day to 120,000 metric tons per day. Net copper production also increased 12.5% within a quarter, and the company achieved record earnings for the year. This is the first use case of a high-flow pump for a high-pressure/high-temperature mining application.

Water needs to be mixed with chemicals to spray down the ore and crushed rock to extract the concentrate. To decrease the amount of fresh water being used from the lake, Baker Hughes' engineers recirculated and recycled the water with the HPump system.

Because of the mine sits at an altitude of 10,662 feet, adjustments needed to be made to provide enough pressure to move the production water to the mine. As a result of the flexibility, power, and design of the HPump system, Baker Hughes reduced the stage count by one and still produced the needed power to push the high flow of water up to the mine.

The process required fewer overall motors, because the HPump system generates more pressure and can push water farther. The HPump system also requires fewer overall lines, because it can push more fluid through a given line. Competitor pumps can run in parallel, but the HPump system can fit better to the target flow, depending on the customer's needs, and provide the flexibility to turn up or back off flow as needed. The HPump system generated less vibration than the typical competitor pump—providing savings on maintenance, spare parts, and cost.

The HPump system helped to double the rock capacity and decrease the use of fresh water, creating a successful new application for high-flow pumps.

Contact Baker Hughes to discuss the solution to your surface pumping challenges.

Challenges

- Reduce the use of freshwater
- Recirculate production water from the reservoir to the top of the mine
- Move high flow of water through 20.2 miles (32.5 km) of pipe
- Move high flow of water from 4,183 feet above sea level (1,275 m over sea level [MOSL]) to 10,662 feet (3,250 MOSL)

Results

- New application of technology introduced to the mining market
- Doubled the capacity of the rocks processed
- Increased new copper production by 12.5%
- Recorded record net sales for the mining operation