

Mining in Peru

The industry is on the march again

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Cover photo: Pucamarca gold mine at dusk (courtesy of Minsur)





Jorge Granda, general manager, AK Drilling International.



Gustavo Gómez Sánchez, general manager, Exsa.



Benedikt Kirchgässler, CEO and founder, CyanoGuard.

Drilling services

Exploration was probably the segment that suffered the most during the crisis because the level of activity was drastically reduced or, in some cases, stopped altogether.

Jorge Granda, general manager of AK Drilling International, a contractor with a fleet of 25 machines in Peru and operations in seven countries, explained that the low volume of work available and high pressure on drilling rates made the downturn a difficult period to adapt to: "During the crisis, the procurement specialists within the mining companies were empowered to take many decisions about which contractors to use. This always happens during the low cycles. Seeing the drilling service as a commodity means that you will only pay attention to the final price, and this is shooting yourself in the foot."

Geotec, another drilling contractor, has seen a positive trend in the market and doubled its sales in 2017. Recent drilling campaigns by the larger mining operators are prompting contractors to invest in automation and new technologies related to safety. Geotec's general manager, Miguel Ángel Arenas, said: "We increasingly see clients ready to pay more for safety and new technology. In Las Bambas, we incorporated seven hands-free rod handlers, so the whole drilling campaign was hands-free. This year we won a contract to introduce intelligent machines for rod handling in underground mining. It is the first hands-free diamond drilling campaign for underground mining in Peru."

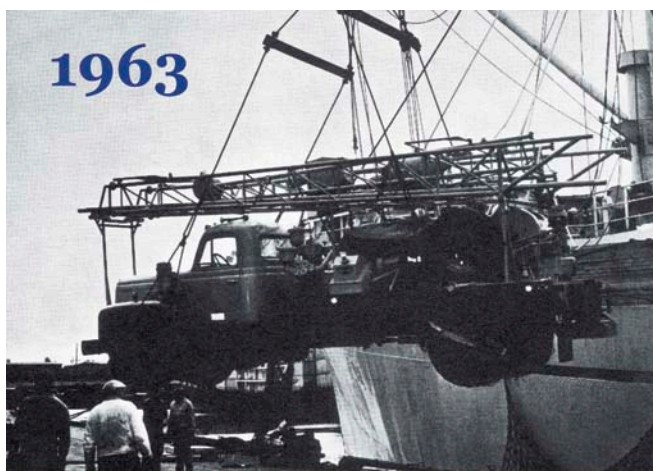
Arenas highlighted that some mining companies are willing to engage in long-term drilling contracts, like the three-year assignment Geotec has at Yanacocha, because they know the drilling rates will increase very soon. Asked about the investment required to incorporate the hands-free rod handlers, he explained: "If you include the training required, a hands-free rod handler for a surface drilling rig can cost US\$450,000, while a brand-new drilling machine costs US\$600,000. Not all clients are willing to pay substantially more for their drilling, but for us this amount needs to be seen as a long-term investment where we are also improving productivity, efficiency, and safety."

Granda of AK Drilling affirmed that the introduction of these new technologies, however, should not be seen as a 'one-size-fits-all': "At AK Drilling we were one of the first contractors to use these technologies for an oil and gas project in Colombia. In the oil and gas industry, you spend months on the platform and each pipe weighs half a ton. In mining exploration, the rods weigh 35 kilograms, and you are on a platform for just a couple of weeks. In mining, you need an agile setup and competitive costs [...] At the end of the day, it is the end user who needs to decide what is best for each particular project."

New blasting technologies

If 2017 could be seen as light at the end of the tunnel for exploration-related companies, the blasting market remained tight with the arrival of new competitors and a continued focus on cost reductions and productivity. For Exsa, one of Peru's main rock fragmentation companies, innovation was instrumental to ensure the company's strong positioning in the open pit segment, where it has a 45% participation. Through the introduction of the Quantex technology, clients obtained cost reductions of 30% in the blasting process and 80% reductions in CO2 emissions, according to Gustavo Gómez Sánchez, the firm's general manager.

Gómez Sánchez highlighted that the second half of 2017 allowed for an increase of work volumes but that the higher price of ammonium nitrate presented some challenges as well. Moving forward, Exsa will continue expanding its scope, offering specialized blasting



In 1963 we entered the Peruvian market with 5 diamond rigs to drill **Michiquillay - Cajamarca**. Today we are the first drilling company to have all hands-free drilling systems:

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Claudia Marchini, country manager, Ixom.



Miners keep incorporating new solutions for higher efficiency. Photo courtesy of Minsur.

services for construction and non-production activities, and leveraging its brand-new initiation systems plant in Peru: "This is the only new plant built in the region for more than 20 years, so the gap in technology is vast. We will reduce our environmental footprint, as the plant will not use lead and is far more efficient. We are specializing in non-electric detonators, detonating cords, boosters, shock tubes, PETN and we are in the process of manufacturing end products as well," he said.

Innovation is also a key pillar for global blasting players like Maxam and Orica. Orica participates in Peru's mining industry through both blasting solutions and the provision of cyanide for gold mines. The company is introducing a wireless detonation system called Webgen that consists of a wireless primer and supporting equipment. Webgen is already being used in underground mines in Canada and Australia, and it should be tested in Peru this year. Gustavo Costa, general manager of Orica in Peru, provided more details: "As there is no need for wiring, Webgen allows our customer to have fewer people exposed to risks and for less time. Moreover, we are capable of significantly reducing the blasting time cycle [...] For example, in mines that usually have thunderstorms, the wireless process will allow work to carry on for longer and will reduce the stoppage time."

Finally, Spanish-based multinational Maxam is targeting growth in Peru through its Rioflex hydrogel technology, already in operation in Chile's large open-pit mining segment. According to Maxam's general manager in Peru, José Luis Alonso, the Rioflex technology offers 25% more energy than equivalent emulsion blends through a wider range of available densities.

Asked about how much the final price weighs on mining companies' tenders for blasting solutions, Alonso said: "In Peru we see that our customers are requesting value-added propositions to optimize the total cost of their operations beyond the cost of drill and blast. This holistic view is what has enabled us to be successful around the world, and we see the industry in Peru moving towards this more sophisticated and smarter approach."

Cyanide control

Peru's mining industry uses large amounts of cyanide, which is one of the main cost drivers for gold producers. In this context, making sure companies use the right amount is key from both an efficiency and from an environmental perspective. CyanoGuard, a Swiss company with a new technology for instant cyanide detection, has entered the Peruvian market with the idea of changing the way mining operators manage their cyanide usage. "If you do not use enough cyanide you lose gold, but if you use too much you incur in high costs to eliminate the excess cyanide, on top of what you already paid for cyanide you did not need," explained Benedikt Kirchgässler, CEO of CyanoGuard,

who also affirmed that the cyanide elimination costs can be three times as high as the price of cyanide.

CyanoGuard offers a solution that allows cyanide detection in just 90 seconds, foregoing the need to take a sample to a laboratory, while all the information compiled can be sent to the cloud in real time. Mathias Cherbuin, CTO of CyanoGuard, provided more details: "Our solution provides mobile lab-grade cyanide measurements stored in the CyanoChain blockchain. This is easily integrated in already existing process management software and aims to become the gold standard for cyanide monitoring in the 21st century."

With modern mine closure plans becoming more common in the years to come, and with an increasing push for more transparency in environmental monitoring, the company expects to achieve significant growth in the precious metals industry in the years to come.

Chemical supplies

Quimtia, a chemicals provider, has seen specialties increasingly overshadowing the more traditional business of commodity trades, where the company provides copper sulfate, sodium cyanide and activated carbon.

It was on the environmental front that Quimtia started its diversification: "Due to the numerous gold and silver mines that have to deal with cyanide contamination in discharge streams, there was a strong opportunity to implement related solutions in the Peruvian market," said Eduardo Galdo, sales manager of mining at Quimtia. Today, advanced oxidation technology, like the hydrogen peroxide used for cyanide destruction, contributes to 30% of Quimtia's business, while other niche products used to improve recoveries in both leaching and flotation processes already make up 20% of revenue.

Ixom, a company created from the divestment of Orica's chemicals division in 2015, is also increasingly focusing on regular supply relationships for mining clients rather than spot commodity trades. The company's mining business grew by 30% last year, triggered by contracts in water treatment and flotation with large copper producers.

Claudia Marchini, country manager of Ixom, declared: "Our chemicals business was mainly based on commodities, which allowed us to start relationships with large customers and increase our volumes in the past. After that, the fall of copper and other mineral prices represented an opportunity for us to offer specialty chemicals for mineral processing."

Ixom develops emulsifiers for explosives and has a plant in Chile where it produces flotation agents. Marchini gave more details: "We have specific products and applications to improve productivity in oxides or sulfides of copper, zinc, lead and precious metals. In copper concentration, we develop customized collectors according to each specific ore mineralogy," she concluded.