

Mantos Blancos Mining Upgrades Leach Pad Monitoring and Reduces Costs with Honeywell's Wireless Solution



“Honeywell’s innovative wireless technology has given us a durable, dependable state-of-the-art solution that can stand up to the harsh conditions of daily work in our mine complexes. After years of being at the mercy of inadequate, unreliable, short-duration technology, Honeywell has delivered a solid alternative that endures and delivers--despite some of the toughest environmental conditions around.”

Hernán Loaisa, Mantos Blancos Mining

Benefits

Mantos Blancos Mining needed a new monitoring application that could deliver consistent, accurate data despite operating in the harsh conditions of its copper mine near Antofagasto, Chile. This situation led to permanent modifications to its leach pile operation.

Through a wireless solution made possible by Honeywell and solution provider Trumatic S.A., a leader in the implementation of wide-ranging automation projects, the Mantos Blancos plant has gained the following benefits:

- Data collection that is vastly improved, more timely and more accurate
- Freedom from the constraints and high costs of a wired solution
- Improved system life expectancy and reliability of monitoring devices
- Flexible, open architect design that permits easy network expansion
- Ease of operation
- The ability to react quicker according to the results of improved data collection
- Reduced system maintenance
- Improved safety of those monitoring the instruments



Mantos Blanco Mining improves leach pad monitoring with Trumatic and Honeywell wireless solution

Background

Mantos Blancos Mining, a Chilean subsidiary of Anglo American Corp., is a global leader in mining and natural resources. The company, which prides itself on its commitment to operating in a profitable, sustainable and responsible way, offers a diversified portfolio of products that provides many of the essential parts of modern life.

The Mantos Blancos operation is an open pit copper mining complex located in the Atacama Desert, about 45 kilometers northeast of the port city of Antofagasta. The site has both a copper concentration plant as well as a hydrometallurgical operation. The hydrometallurgical operation treats the copper oxide ore by leaching in stacked piles with sulfuric acid that is then treated by solvent extraction and electrowinning to produce

high quality copper cathode. The leaching operations consist of two dynamic (on-off) permanent leach pads, each with 7 subdivisions (modules) that are instrumented to monitor and control the leaching operation. One of the leach pads is located 2km (1.2 miles) from the control room.

Challenges

For years, Mantos Blancos Mining has faced severe technological challenges stemming from the harsh and difficult physical and environmental conditions present in the mining locations where it constantly must monitor and measure flows and pressures. As a result, there have always been intermittent errors in the information received by the management and staff.

The tough environment in the mines wreaks havoc on the stability and performance of the monitoring instrumentation. In addition, the occasional cable cut adversely affects operations. Adding more severity on the situation is the electrical grounding around the leach pads, which results in poor quality signals compared to the signal characteristics found at typical industrial sites.

As a result, Mantos Blancos must continuously modify each leach pile as part of the mining processing, such that each leach pad must be moved every seven months. During the process of reloading the ore, all equipment and instruments must be relocated. In studying the harsh environment, Mantos Blancos has discovered over the years that quick and easy replacement of the instrumentation is vital to keeping operations running smoothly and accurately. It has been common that two instruments per application require changing approximately every three years. Not only does this mean there are serious costs involved, but the change-out can be disruptive to the smooth operation required in the mines.

In searching for a new alternative that would deliver consistent and accurate instrumental readings, Mantos Blancos recalled that Trumatic and Honeywell Chile had demonstrated the expertise to deliver consistent in-field data in harsh environments as found in copper mining.

Solution

To assist in bringing this aggressive solution to fruition, Mantos Blancos arranged for assistance from Trumatic S.A. Based in Santiago, Chile, the 30-year-old consultancy played an integral role in the systems planning and design as well as implementation.

In working with Honeywell, it became clear that the market leader's wireless solution was well positioned for remedying Mantos Blancos' ailing communications needs. Honeywell has shown proven expertise in industrial wireless solutions that reduce costs, and improve safety, reliability and efficiency.

Trumatic S.A. and Honeywell worked to provide a state-of-the-art leach pad monitoring solution that would deliver despite the harsh surroundings of its deployment.

Honeywell's line of XYR 5000 transmitters, were perfect for Mantos Blancos because they offer corrosion, gauge pressure, differential pressure, high-level analog input and temperature transmitters. At the same time, Mantos Blancos was impressed that the open, standards-based universal mesh network would allow the company to take advantage of new applications as they become available.

With a wireless solution, Mantos Blancos no longer needs to be concerned about the corrosive and difficult environment, quite a statement considering that for decades all mines have existed with constant problems surrounding leach piles instrumentation.

For Mantos Blancos, the implementation is configured with wireless temperature and pressure sensors to monitor and improve the efficiency of the copper mining process. Pressure sensors enable personnel to measure air filtration system performance and schedule maintenance only as needed. The result has been more efficient operation and maintenance with downtime drastically reduced.

"We have such faith in the capability and durability of this solution that we expect within a few years that this type of solution will be utilized at all mining operations in Chile and soon will be exported around the world," said Manuel Aedo of Trumatic.

Each leach pile has been divided into seven separate modules, and each pile is aligned with a dedicated, closed-circuit wireless transmitter. Each module sends its corresponding information to the control room via wireless system.

"With wireless technology, the information at my fingertips in my control room is 100 percent real-time," said Hernán Loaisa of Mantos Blancos. "The time needed to access the data is 1.5 seconds. In the future thanks to Honeywell's leading-edge wireless technology, we should gain even faster displays of even more information."

Not only has Honeywell's wireless solution made possible huge operational gains for Mantos Blancos, the "no wires" approach immediately came through as a budget extender too. "The money saved in not needing to wire this new system enabled us to pay for two additional projects," continued Loaisa. "The solution integrated seamlessly into our existing operations system so we truly need only one wireless network to support our entire operation." As communications between the system and the radio is bi-directional, information now can be sent to from the control room. The interface in the control room then is able to measure everything at once.

"Imagine the massive amounts of cable we needed to run previously from each instrument to reach the control room," said Loaisa. "Then when something went wrong, we had to send technicians into the mine to check the instruments personally, which exposed them to corrosive and acid environments. We faced this problem with each leach pile."

For the next phase of its implementation, Mantos Blancos is looking into adding wireless control capability to its existing system. Concluded Loaisa, "Our first phase is set up as a monitoring system and while this is sufficient for our needs today, due to the rousing success we have achieved so far, we are excited to work with Honeywell again to upgrade to additional capabilities."

More Information

For more information on Honeywell's OneWireless Solution or any of Honeywell's Automation Products, Services, or Solutions, visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

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