

Real time copper concentration monitoring increases electro winning process control and recovery: Application at a Chilean Mine.

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ABSTRACT

In today's global copper refining 'process control' and 'operational safety' is of paramount importance. There is increasing importance placed on operational efficiency, use of automation and a quest for real time data for faster decision making by the plant operators.

For a copper electrowinning plants to operate at peak efficiency and with maximum safety one of the important factors is to control copper concentration in the electrolyte that is circulating around the electro-winning tank. If these levels are monitored and provide online signals to a control system they can be used as part of the automatic control circuit to regulate the flow from leaching to stripping and electrowinning and thus maintain required levels of copper concentration.

Nicolaides, an innovative supplier for the industry in their tireless search for need solutions of our customers signed a partnership with MIPAC (Australia) to introduce this technology in Chile.

An important Copper Mine located in Antofagasta has relied on NYM several years ago to address these challenges with the implementation of five online copper concentration monitor. These units are located in strategic positions inside the plant; 3 units for controlling the copper concentration that comes inside the plant from the heap leaching process, one in the first extraction process and the last one controlling electrolyte solution that goes inside the electrowinning tank.

This design provide real-time copper concentration levels to the plant control system so the operators and the plant metallurgist can achieve stable operation and consistent copper in electrolyte concentration whilst ensuring the copper concentration does not fall to low levels.

As a result of implementing these Copper Concentration Monitors the important Copper Mine has proof that can give online and accurate guideline for decision making daily. Moreover have helped to increase efficiency, improved quality of the operation at least in 1% of the recovery and achieve and accuracy of $\pm 5\%$ from online measurements compared with external Laboratory.

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