

Real Time Copper Concentration Monitoring for an Electro Winning Plant

Camila Bustamante¹, Cesar Ojeda² and Darren Hill³,

1. Oxide Metallurgic, Mantos Copper, Antofagasta, Chile
2. Industrial Department, Nicolaides Industrial, Santiago, Chile
3. Business Development, MIPAC, Brisbane, Australia

ABSTRACT

In today's global copper refining 'process control' and 'operational safety' are 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 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 concentration levels are monitored and online signals to a control system are provided, 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.

Mantos Copper has relied on Nicolaides Industrial S.A several years ago to address these challenges of monitoring the concentration levels with the implementation of five online copper concentration monitors. These units are in strategic positions inside the plant; three units are used 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 the electrolyte solution that goes inside the electrowinning tank.

This monitor provides real-time copper concentration levels information 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.

The implementation of the copper concentration monitoring technology at Mantos Copper has proven be successful by providing online and accurate information and guidelines for decision making. Moreover, it has helped to increase efficiency, improved quality of the operation at least in 1% of the recovery and achieve an accuracy of $\pm 5\%$ from online measurements compared with results provided by an external Laboratory.