nhe

Applied Process Technology

Selective Recovery of Copper fom Acid Mine Drainage (AMD)

The Lancy approach is to recover the value of the Cu by selectively removing it from the AMD producing a valuable saleable high purity Cu cathode. Other metals and minerals can be recovered if economical.

Acid mine drainage (AMD) or acid rock drainage occurs naturally within some environments as part of the rock weathering process, but is exacerbated by large scale earth disturbances found with copper mining or exhausted heap leach operations.

After being exposed to air and water, oxidation of the metal sulphides within the rock structure generate acidity. Colonies of bacteria greatly accelerate the decomposition of the metal ions generating a waste stream containing dissolved iron, copper, aluminium and zinc in an acid background with a pH range of 1 to 3, and flow rates between 100 - 1000 m3/h.

Copper (Cu) concentrations can vary from a few mg/l up 1000 mg/l of dissolved Cu.

In most cases AMD streams are neutralised before being released to the environment, resulting in a metal precipitate that eventually builds up as sludge in a tailings pond. Sludge is dewatered producing a waste requiring hazardous landfill disposal.

The electrowinning process recovers acid required for ion exchange regeneration and subsequent Cu recovery. Fresh acid usage is is reduced by more than 85%, offering an efficient alternative to other copper recovery techniques.

Process optimisation is supported by the Lancy pilot program. The survey data determines performance criteria and confirms chemical categories for treatment,combined with with an economic analysis for the recovery of copper andother valuable waste products.

The Lancy ion exchange process selectively recovers Cu in a fully automated process, followed by precipitation steps. The residual, less valuable, metals can still be disposed or recovered with additional physical chemical processes. The regenerant from the ion exchange process contains the recovered Cu which is directly harvested within the high performance electrowinning process.

lancy technology

- Fast payback
- Automated process
- Selective recovery of a range of metals and minerals
- End-to-end solution provided: from design to installation

Contact us

+44 (0)24 7625 3099

info@nhe.uk.com

A Norman Hay Company NORMANHAY PLC

www.nhe.uk.com