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ACID RECOVERY USING RECOFLO ION EXCHANGE

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ABSTRACT

Commercially, Recoflo® technology has been extensively used in the separation of strong mineral acids from dissolved metal salts, the purification, removal and recycle of dissolved metals in the surface finishing industries, and the production of high purity water.

Sulfuric acid is widely used as an electrolyte for the electrorefining and electrowinning of metals. Impurities in this electrolyte are controlled by continuously bleeding solution from the tank house. In addition to the contaminants, these bleed streams contain high levels of sulfuric acid and the metal being recovered. Subsequent treatment of these bleed streams often requires neutralization which generates large volumes of solid waste. Known commercially as the APU®, ion exchange resin is used to sorb sulfuric acid while excluding the metal salts. The purified acid is then removed by washing the resin with water. The process has been extensively used for the recovery of waste pickling acids in the steel industry and anodizing solutions in the aluminum industry. In the mining and metallurgical industries, the process has been successfully evaluated for the separation of excess sulfuric acid from copper electrolytes, the removal of magnesium and manganese contaminants from zinc electrolytes, and nickel and copper from copper electrolytes.

An overview of Recoflo® ion exchange will be discussed. A case study outlining the performance history of a short bed system for sulfuric acid removal followed by a two-stage selective precipitation system producing a nickel carbonate by-product will be presented.

Keywords: Recoflo® ion exchange, APU®, acid recovery, copper electrolyte, absorption resin.