

Mining & Metals



SAMCO

Separation from the ordinary

PROJECT BRIEF

Rare Earth Mine Recycles Brine Stream for Acid and Caustic Production with SAMCO's Innovative Multi-Stage Brine Conditioning System

PROJECT OVERVIEW

When a rare earth mine in North America sought to improve efficiency by recovering brine for acid and caustic production, it turned to SAMCO for a brine conditioning circuit to handle its complex blend of contaminants.

OBJECTIVE

Remove heavy metals and hardness from complex hydrometallurgical brine stream for downstream electrochemical production operations.

- Reduce calcium to 20 ppb
- Reduce magnesium to 20 ppb

SCOPE OF SERVICE

SAMCO delivered a turnkey brine conditioning system with comprehensive process design and engineering, system fabrication, controls integration, commissioning, startup training and support.

CHALLENGES

- Stringent purity requirements for acid and caustic production
- Highly complex contaminant stream
- Limited operator availability

SOLUTION

SAMCO delivered a high capacity brine recovery system consisting of four integrated ion exchange (IX) circuits. To efficiently manage the brine stream's complex contaminants, the solution utilized paired IX columns in lead-lag configuration for each of four brine processing stages, including primary softening, polishing softening, and heavy metals removal, along with a single IX column for TOC removal. SAMCO performed construction and installation of the prepackaged system to deliver a fast-track turnkey solution. To minimize operational demands, the system included programmable logic controllers (PLC) with remote telemetry capabilities, enabling automated system monitoring.

TECHNOLOGY

Project deliverables and equipment included:

- 600 GPM IX pressure vessels
- Pipe rack assemblies
- Effluent and influent pumps
- PLC controls

OVERVIEW

Industry

Mining & Metals

Location

North America

Objective

Remove metals & hardness from complex brine streams

Solution

600 GPM Ion Exchange Brine Conditioning System

Looking to remove hardness and heavy metals from your brine stream? Is purity an issue? Contact us today at www.SamcoTech.com • askengineers@samcotech.com • (716) 743 9000