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
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