Partnering Now
Chemical Manufacturing

METALS REMOVAL FOR ACID RECOVERY

How membrane filtration unlocks the value of contaminated acid streams by separating the acid from the liability

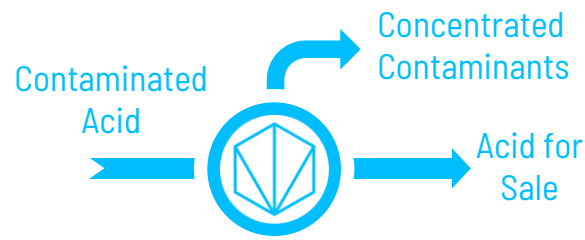
THE SITUATION

Industrial acid streams - sulfuric, phosphoric, and nitric acid - accumulate heavy metal contaminants over their service life, picking up cadmium, lead, iron, nickel, and other metals depending on process and feedstock. The result is an acid stream that retains significant value but cannot be sold at full price due to contaminant loading. Current options - chemical precipitation, costly disposal, or downgraded off-take - either generate their own waste or forfeit the acid's value. Membrane filtration separates the metals from the acid, producing a purified stream for commercial sale and a small-volume concentrate for controlled disposal.

THE PROBLEM

- **Contaminated Acid Cannot Be Sold at Full Value** – Metal contamination downgrades or disqualifies acid from commercial sale, forcing disposal cost or deeply discounted off-take.
- **High-Volume Hazardous Disposal** – When acid cannot be resold, the entire stream requires hazardous waste disposal at significant cost.
- **Sludge-Generating Treatment Alternatives** – Chemical precipitation removes metals but produces sludge requiring its own handling and disposal.

THE SYSTEM



Membrane filtration system separating acid-rich permeate from a concentrated metal-bearing retentate. The purified permeate is suitable for commercial sale to existing customers or the broader market depending on purity achieved. The concentrated retentate represents a dramatically reduced disposal volume, lowering per-unit disposal cost. Designed for continuous operation, integrating with existing acid handling infrastructure.

RESULTS DELIVERED

99% Metals Recovery

85% Clean Acid Recovery

< 1 Validated pH Range

OUR TECHNOLOGY – Powered by ViaForge™ Resilience

Contaminated industrial acid streams combine low pH, oxidizing conditions, and variable metal species that challenge conventional membranes. ViaForge™ membrane technology is validated across strong acid environments - sulfuric, phosphoric, and related streams - providing the chemical resilience needed to operate reliably in contaminated acid service.

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