



ElectraMet[®]

Advanced Treatment Technology for Trace Metal Impurity Removal

Creating a Sustainable Operation



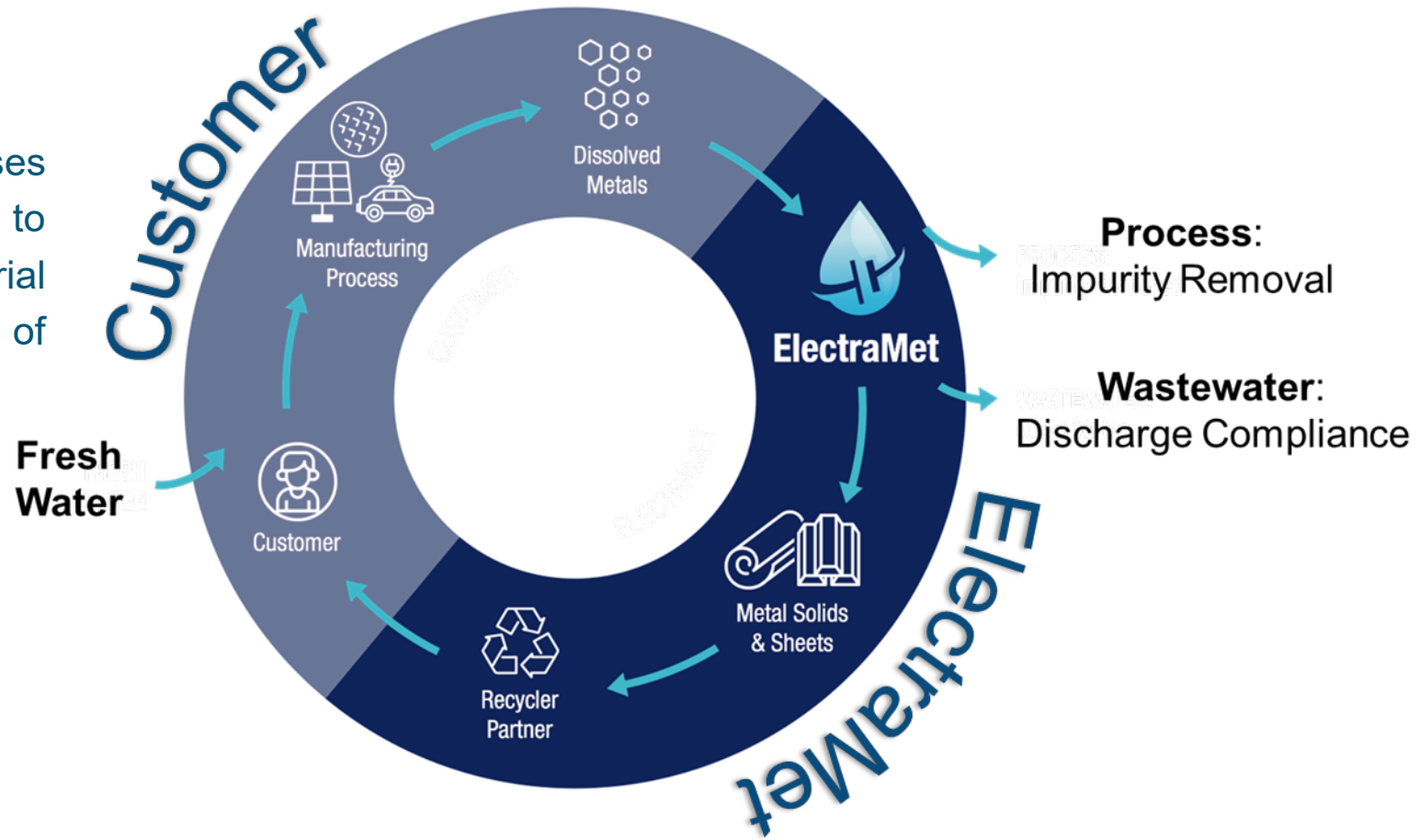
CAMERON LIPPERT, PHD | CO-FOUNDER + CHIEF INNOVATION OFFICER



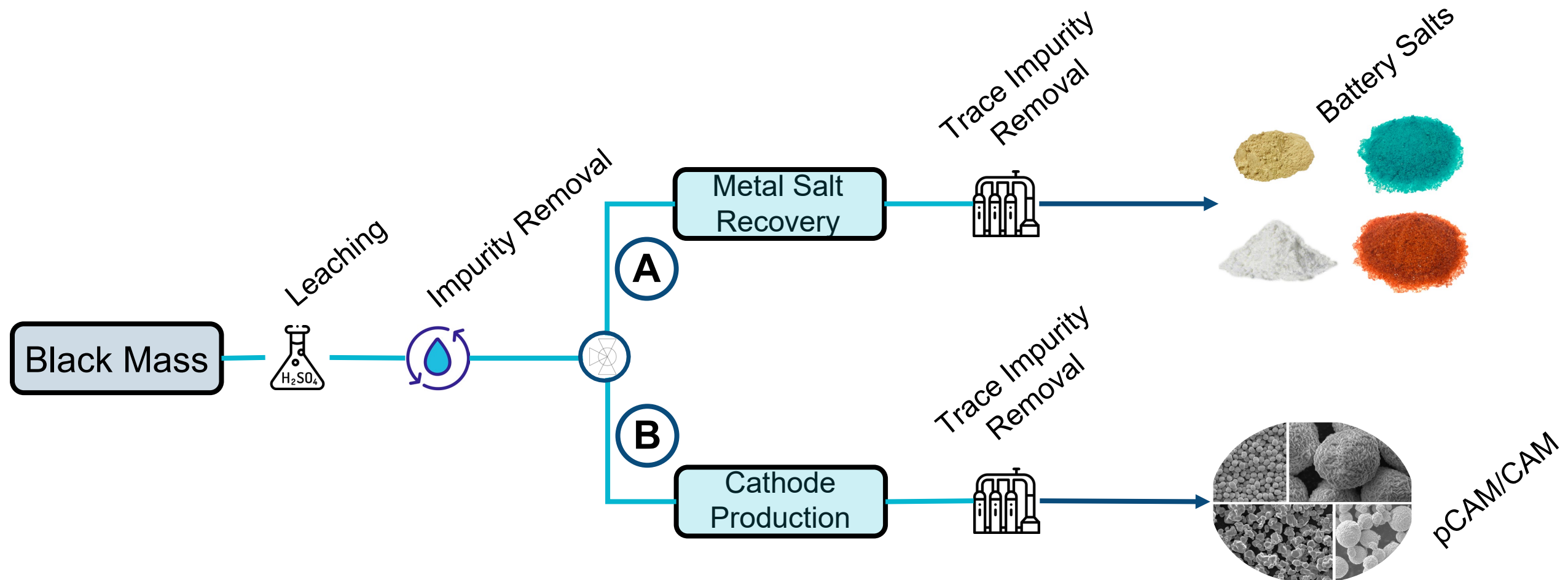
ElectraMet Enables a Circular Economy

A Circular Economy

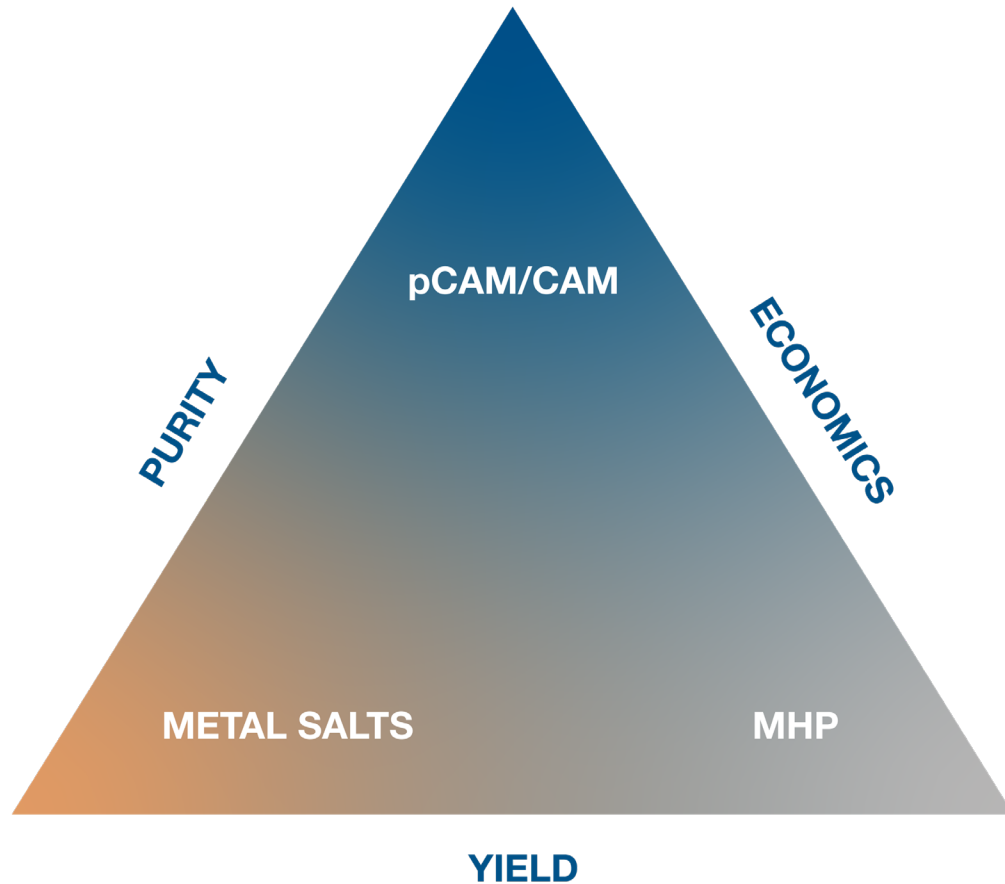
ElectraMet is a sustainable solution that uses electrochemistry (chemical and solvent free) to remove and recover dissolved metals from industrial streams. We enable circularity through re-entry of used metals back into the economy.



General Hydrometallurgical Process Options



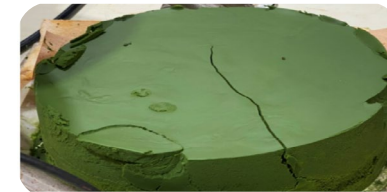
Key Factors for a Successful Recycling Operation



Black Mass:

50% - 60% LME

Up to 72% for high purity



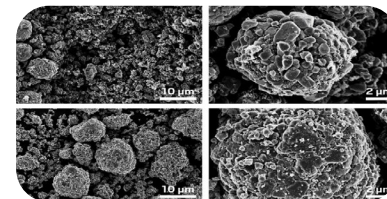
MHP:

55% - 70% LME



Metal Salts:

> 90% LME or 30% Premium

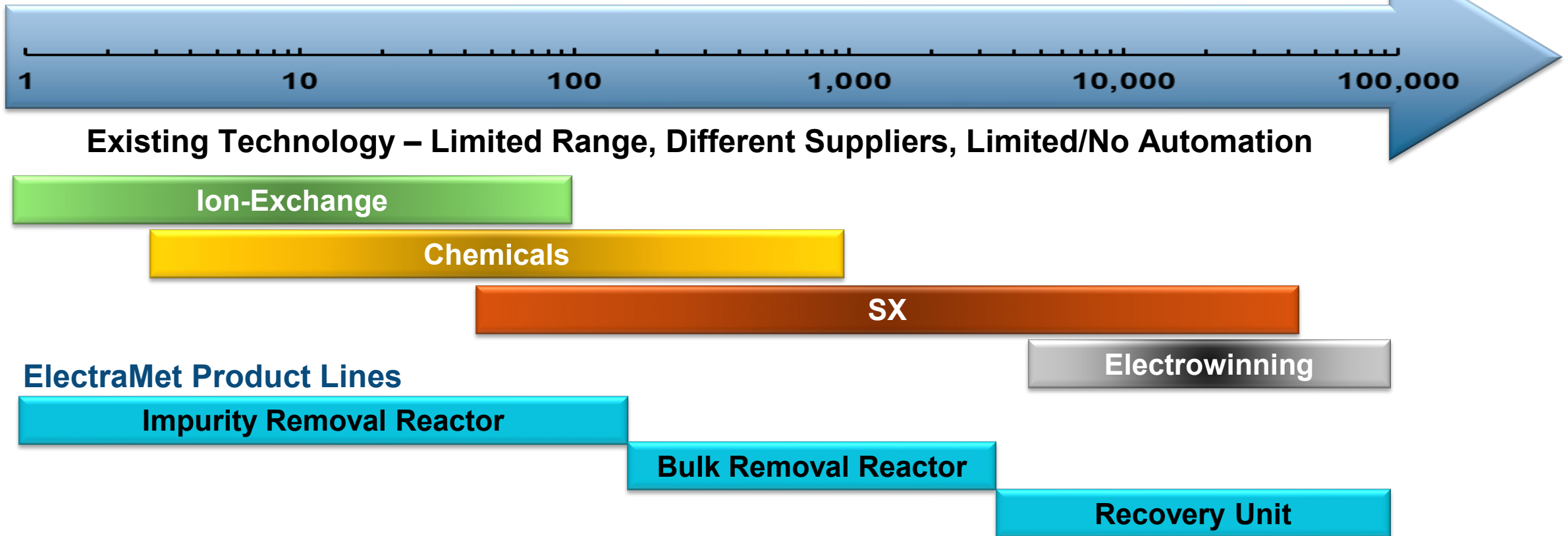


pCAM/CAM:

10x (~\$55/kg)

Finding the Right Tool for the Job

Metal Concentrations in Water



Existing Technology – Limited Range, Different Suppliers, Limited/No Automation

Ion-Exchange

Chemicals

SX

Electrowinning

ElectraMet Product Lines

Impurity Removal Reactor

Bulk Removal Reactor

Recovery Unit

*Bars are estimated ideal concentration ranges to yield best economics

ElectraMet is Selective for Target Impurity w/ No Yield Loss



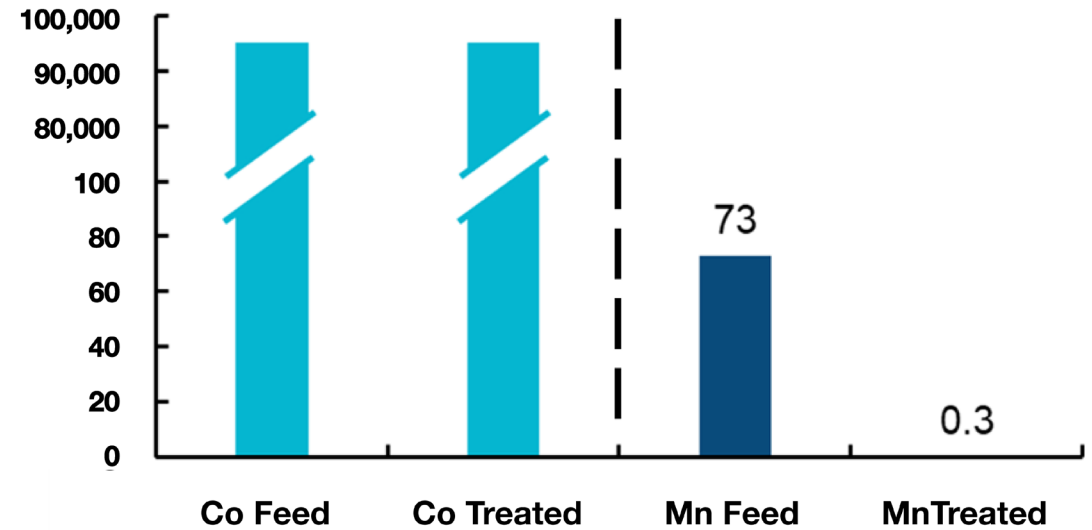
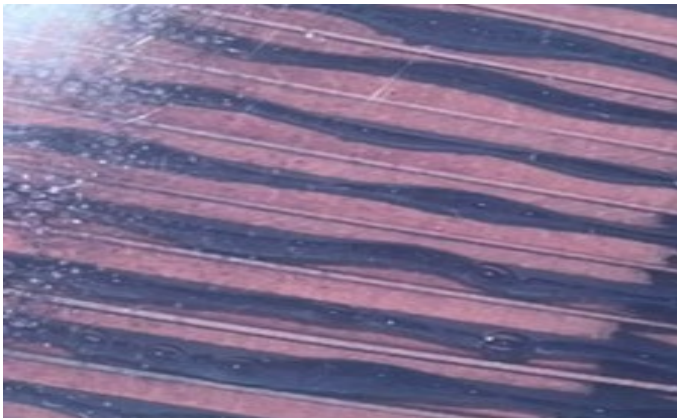
Trace Cu Impurity Removal

- Near 100% Cu selectivity to sub ppm levels
- Single pass operation for process relevance
- > 95% Current Efficiency



Trace Mn Impurity Removal

- 100% Mn selectivity vs Co to sub ppm levels
- Single pass operation for process relevance
- Recover Mn as MnO₂ powder

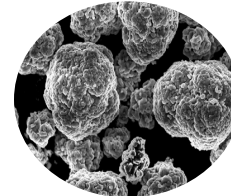
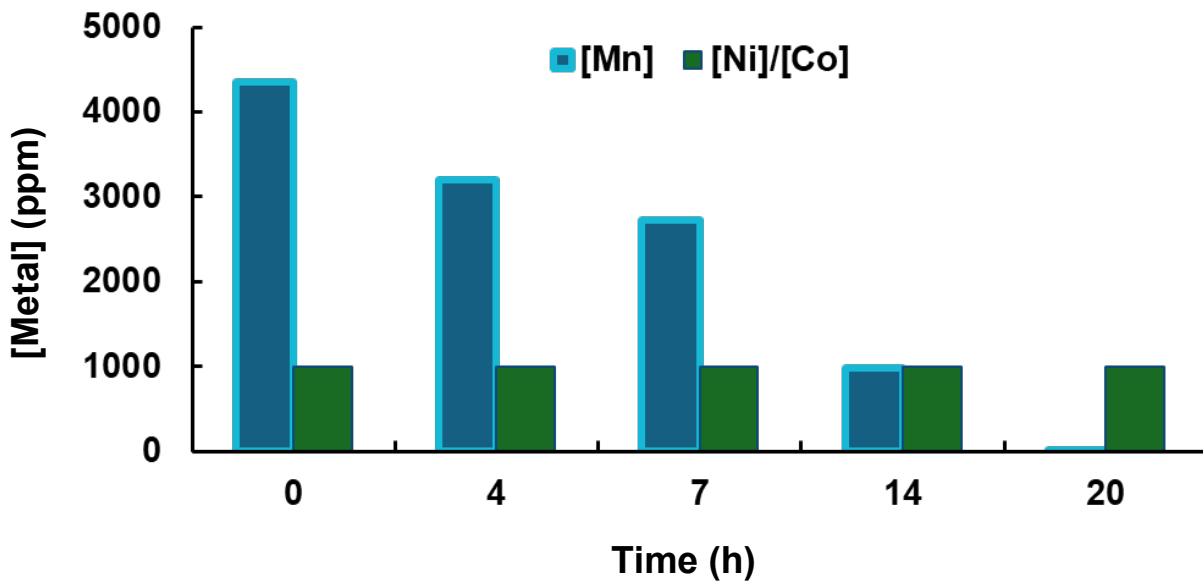


ElectraMet is Selective for Target Impurity w/ No Yield Loss



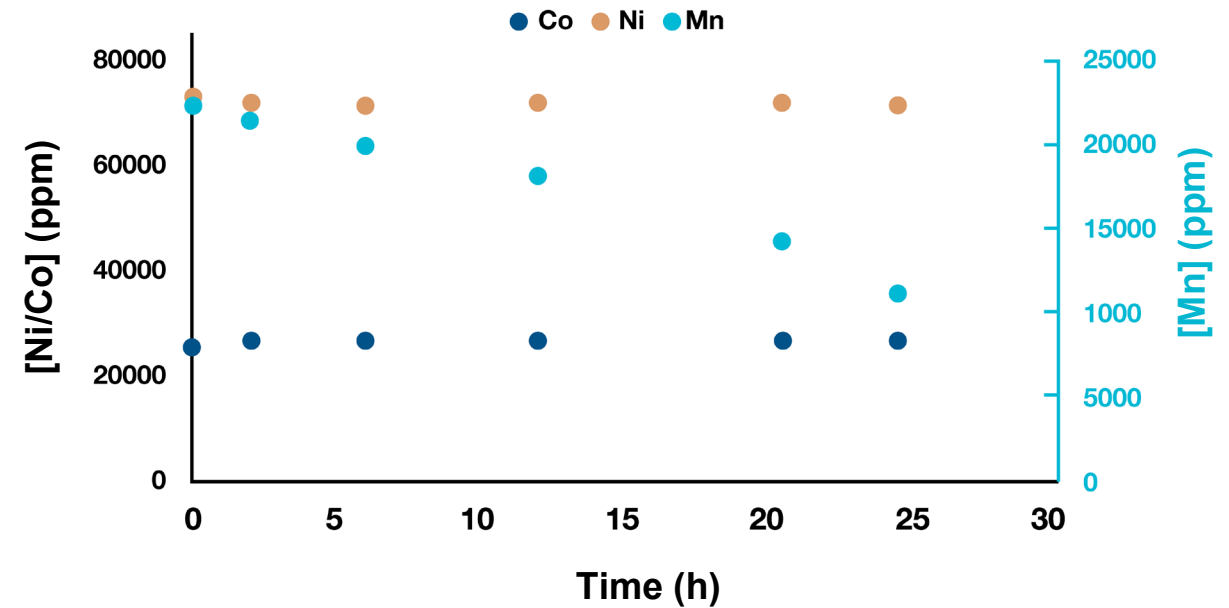
Ni/Co Yield Recovery – Mn SX

- 100% Mn selectivity to < 1 ppm
- Increase Ni/Co yields



NMC Ratio Adjustment

- 100% Mn selective & easy to tune
- Easily upgrade/tune NMC chemistry



ElectraMet Advanced Automation & Process Control = ElectraLink

Integrated/Remote Monitoring



- Reduced labor requirements
- Simple controls
- Tie into existing BMS/DCS/SCADA systems

Actionable Intelligence



- Real-time display
- AI supported diagnostics & analytics
- Increased plant uptime

**UNRIVALED
PROCESS
CONTROL**



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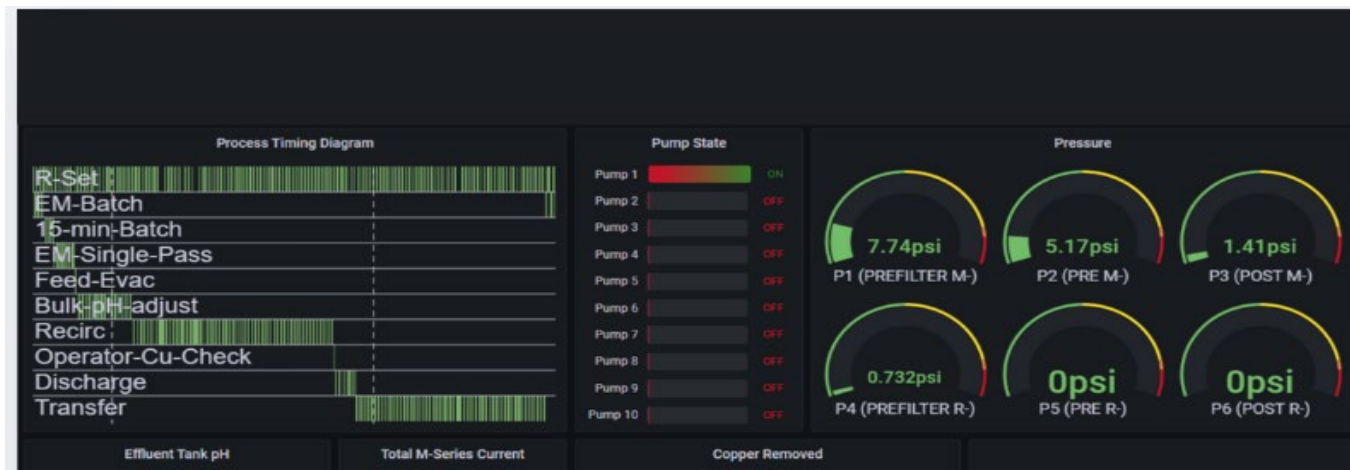


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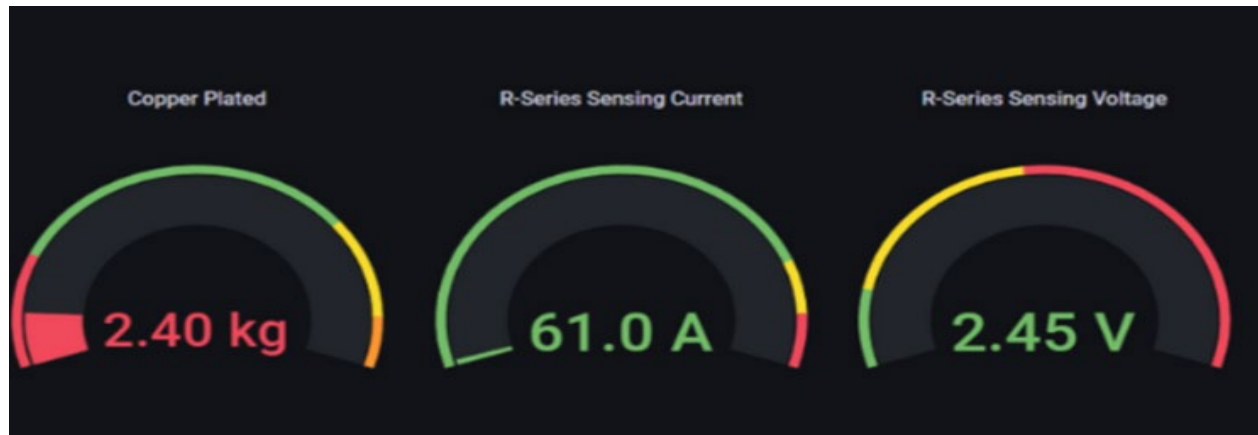


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Commercial-Scale Impurity Removal - Single Pass Operation



Power:
0.3 – 0.8 kWh/m³



Footprint:
4.5ft D x 17ft L x 7ft H



Thank You |

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ElectraMet™