NORAM Electrolysis Systems, Inc. (NESI)

Delivering *social license* through *sustainability* in lithium refining.

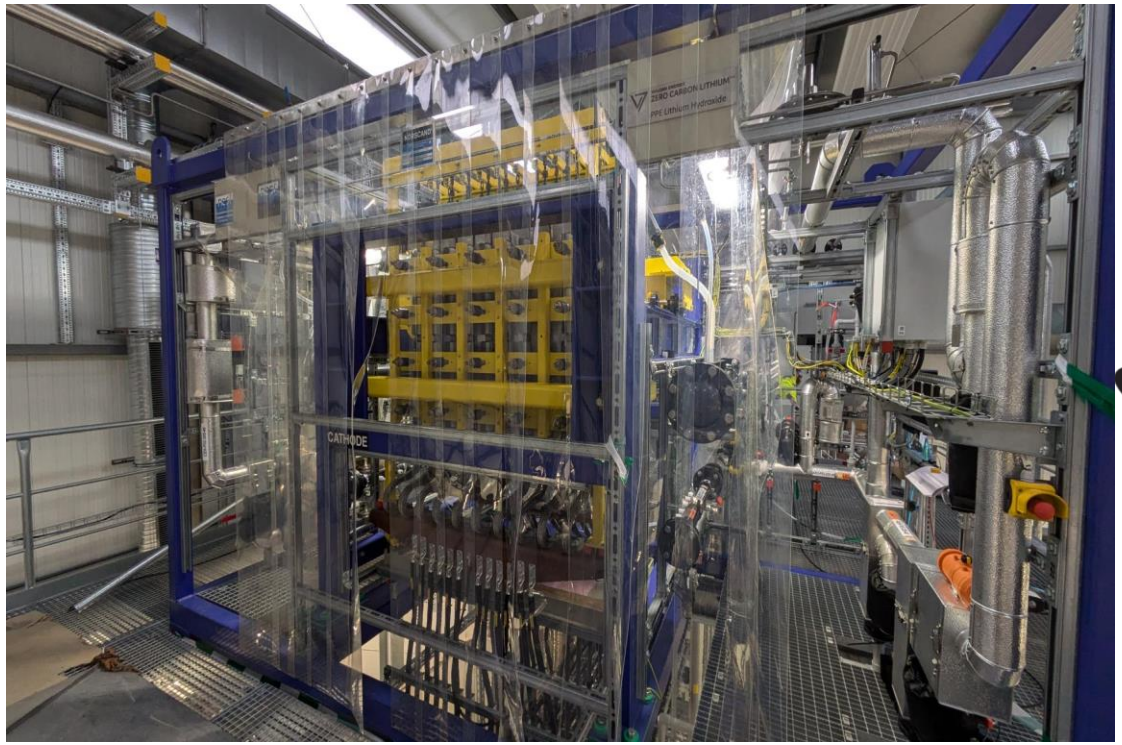
Presented by Brent Lyon, P.Eng., Director of Business Development

About NESI

- Established in 1988, our parent company NORAM offers decades of industrial-scale electrolysis experience in the chlor-alkali sector.
- NORAM has done work in 40 countries, NESI has done work in ten countries NORAM has 280 employees in total, including 50 at NESI. NESI is the fastest growing division of NORAM.
- Between NESI and our BC Research division, we have eight doctorates on hand.
- After decades of electrolysis R&D and scale-up of over 20 novel processes, it became clear that it was necessary to break out the company out as a stand-alone entity, focused on lithium and lithium waste.
- Our work on lithium salt electrolysis began in 2006, and our work on novel electrolytic processes started in 1999.
- NESI was recently granted $4.5-million in funding from NRCan.

NESI's Solution

- We use ***electrolysis*** to force the non-spontaneous chemical reactions required to convert lithium found in nature into a form that can be used in batteries.
- By adding electricity instead of tonnes of concentrated chemicals, we greatly reduce the amount of waste produced.
- Less waste typically aligns with a greatly reduced carbon footprint.
- While this is new technology, NORAM and NESI together have decades of industrial electrochemistry experience and billions of dollars of equipment delivered, greatly de-risking projects.



Key Advantages to Electrolysis for LiOH

LiOH produced through electrolysis has superior purity (most impurity concentrations are less than *one-tenth* of typical battery-grade products), extending battery lifetime.

Brines are directly converted to LiOH without the addition of other chemicals, lowering associated operational costs and scope 2 carbon emissions.

Waste streams are substantially reduced compared to the conventional carbonate/lime flowsheet. Byproduct streams produced can be converted to products which can be sold or used in upstream processes.

Using renewable energy, the electrolytic conversion of lithium brines to lithium hydroxide can lead to a greener future for the production and recycling of lithium-ion batteries.

Partnership Goals

Helping critical mineral project developers meet environmental and social license goals

- Ideal partners:
  - Lithium producers looking to improve the environmental footprint of existing facilities.
  - Lithium project developers in need of a clean process and a proven technology partner to acquire the permits and social license required to advance their projects.
  - Governments looking to identify technologies that can foster domestic critical mineral supply chains without compromising environmental standards.
  - Spodumene hard rock, recycling/black mass and various brine feedstocks (geothermal, salar, oilfield, bromine field) can all be accommodated by our technology.
- Lithium salt electrolysis is at a TRL of 8-9, so a collaborative partnership would be required.
- NORAM and NESI have been developing and delivering new technologies for over 30 years.

THANK YOU

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