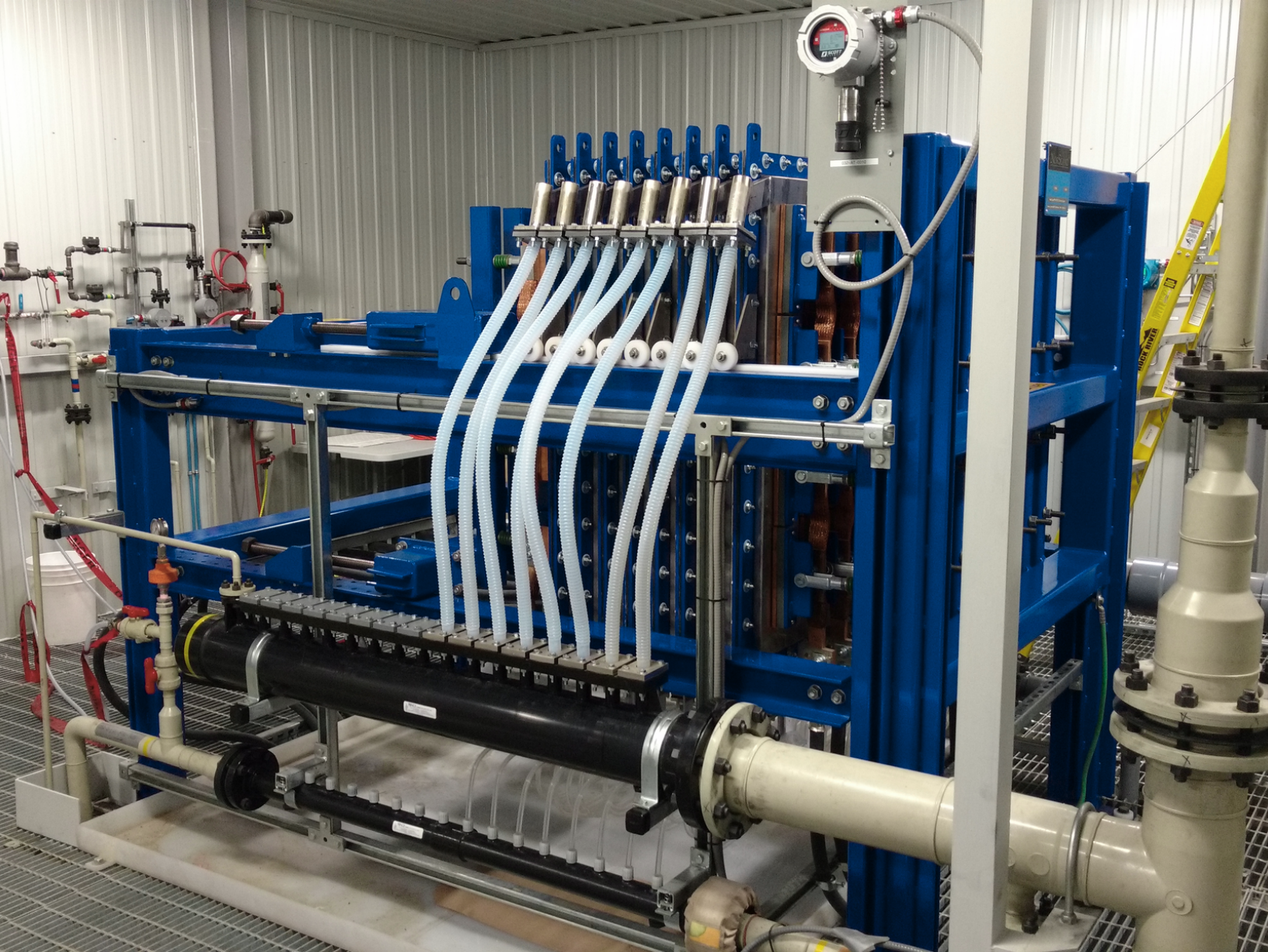
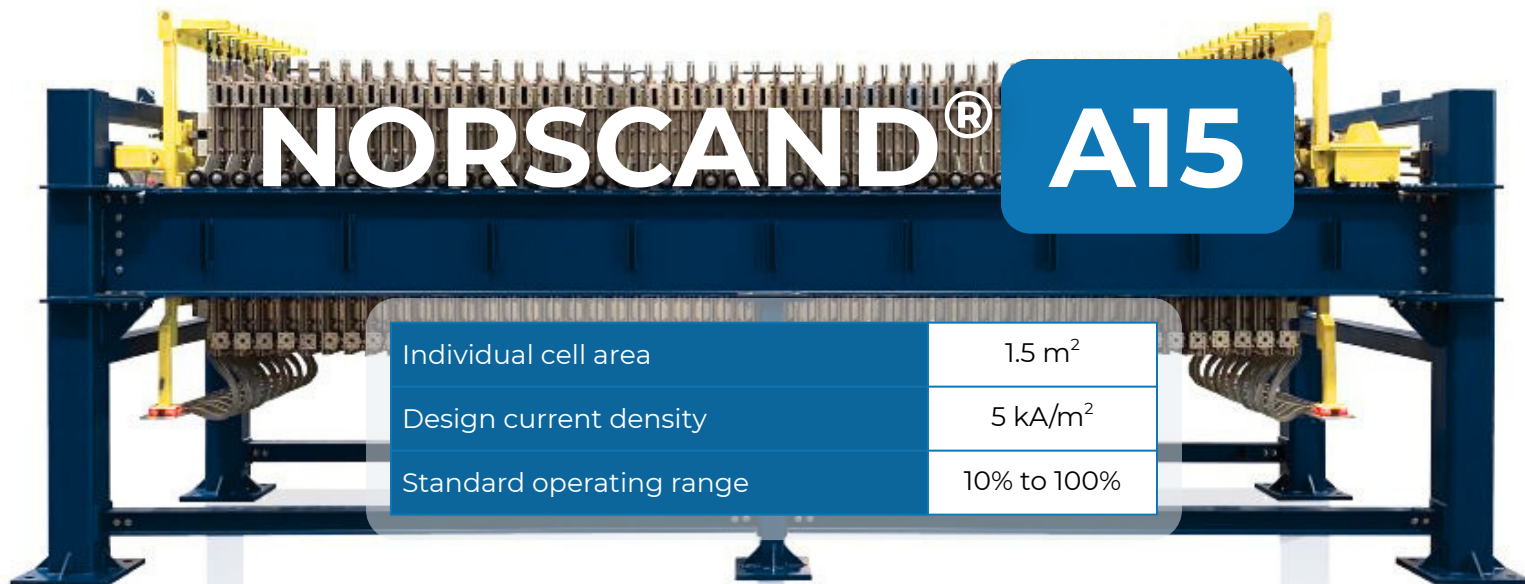




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NORSCAND[®] A15 COMMERCIAL ELECTROLYSER

FOR LITHIUM SULPHATE ELECTROLYSIS



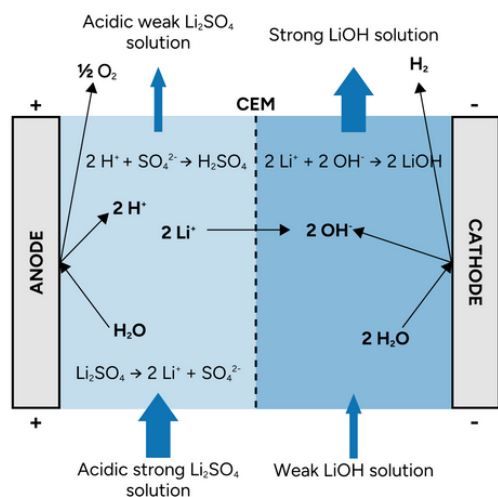
NORSCAND® is a registered trademark in the Canadian Intellectual Property Office and the United States Patent and Trademark Office.

A Proven Path to Sustainable Lithium

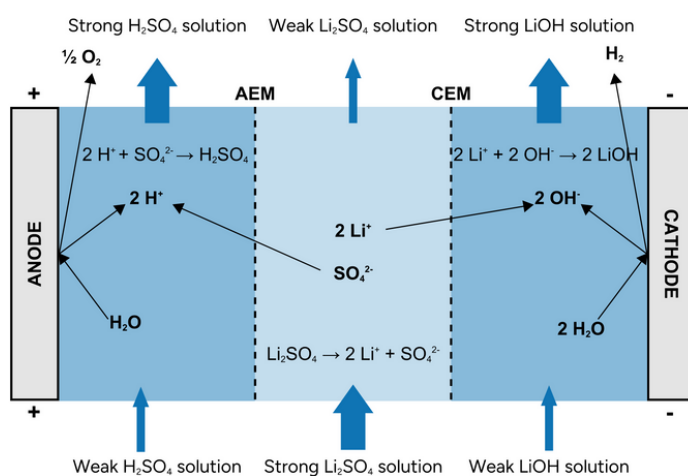
The NORSCAND® electrolyser converts a lithium sulphate solution into lithium hydroxide and sulphuric acid through an electrochemical process. Water is electrochemically reduced at the cathode and oxidized at the anode, producing hydroxide ions and protons, which then combine with the ions from the salt solution to form lithium hydroxide and acid.

In the two-compartment design, a cation exchange membrane separates the anode and cathode chambers. This design is ideal for processes that can handle a mixed lithium sulphate-sulphuric acid stream, with downstream crystallization used to separate the two components if needed.

For applications requiring higher purity acid, a three-compartment configuration can be applied. This is particularly suitable for industries that require high-purity acid for upstream use or resale.



2 compartment Li_2SO_4 Electrolysis Schematic



3 compartment Li_2SO_4 Electrolysis Schematic

NORSCAND[®] PLATFORM

Where Innovation Meets Sustainable Lithium Production

Lithium production from hard rock (e.g. spodumene)

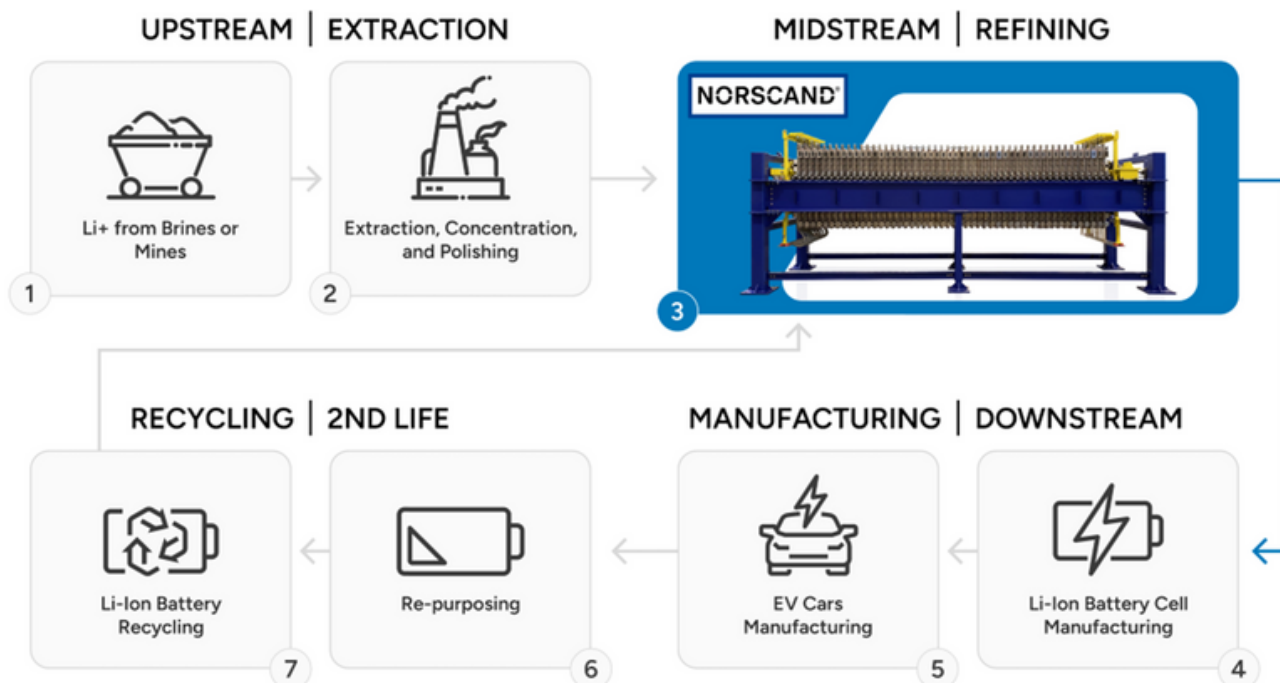
Electrolysis can replace direct causticization or addition of soda ash in lithium production from spodumene. This eliminates the need and expense of caustic or soda ash, prevents the generation of sodium sulphate waste and generates a valuable sulphuric acid byproduct.

Lithium-ion battery recycling (black mass dissolution)

When lithium ion batteries are recycled, a lithium sulphate product is formed when the black mass solution is leached with a strong sulphuric acid solution. This lithium sulphate can be upcycled to lithium hydroxide using electrolysis for resale in the battery market. The sulphuric acid byproduct from our process can then be used in the leaching step, creating an efficient circular process.

Lithium production with solvent extraction

Electrolysis can be integrated downstream of a lithium solvent extraction step to convert the lithium sulphate generated into lithium hydroxide. The sulphuric acid generated in the cell is then used in the stripping stage of the solvent extraction process.



The NESI Advantage

High Performance

- High purity product
- Lower CAPEX and OPEX
- Low voltage, high current efficiency

Sustainable

- Reduced reagent cost and transport
- Reduced/eliminated waste streams

Scalable

- Engineered turnkey systems
- Flexible and scalable single element design
- Modular electrolyzers

Reliable and Scalable

- Proven industrial validation
- Comprehensive engineering and pretreatment support



WE ARE HERE TO HELP

Integrating NESI's technology to your advantage

With decades of experience in both electrochemistry and globally delivering industrial process plants, NESI has the ability to successfully deliver our lithium salt splitting process as well as the knowledge to optimize it for your unique project and feedstocks. Our team of engineers and project delivery experts are available to help you explore the financial, environmental, and permitting benefits of using the NORSCAND® A15 electrolyser for your lithium refining project.

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