ALBERTA INNOVATES

CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

CARBON CAPTURE UTILIZATION AND STORAGE & HYDROGEN - CARBON CAPTURE AND STORAGE

FUNDING DETAILS

Lithium Hydroxide Minipilot Production from Alberta's Lithium-Bearing Oilfield Brines

With growing demand for lithium-ion batteries and concerns about the adequacy of lithium supplies, lithium production from unconventional resources such as low-grade petrobrines has become an economically attractive venture. The presence of sub-100 ppm Li in Western Canada oilfield brines has been known for more than two decades; however, the complexity of oilfield brine chemistry and relatively low concentrations of Li have hampered its commercial production. Recion has developed a process to extract, concentrate, purify, and produce LiOH from such brines that promises to enable nascent lithium mining companies in Canada to generate high-value lithium products. A successful commercialization of this process will both contribute to the diversification of the Canadian mining sector and aid in positioning western Canada as one of strongholds of Li production in North America.

RECIPIENT:
Recion Technologies Inc.

PARTNERS:
Alberta Innovates

TOTAL BUDGET:
$483,000

AI FUNDING:
$198,000

PROJECT DATES:
FEB 2021 – MAR 2023

PROJECT TRL:
Start: 4
End: 7

APPLICATION

A successful commercialization of this process promises to enable nascent lithium mining companies in Canada to generate high-value lithium products. In addition, oil and gas operators who produce Li bearing waters in Alberta could leverage this technology. Recion's technology has been efficient in brines, including hydraulic fracturing flowback and produced waters, with Li concentrations as low as 25 ppm. This may open new market opportunities in addition to the Li found in oilfield brines.

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PROJECT GOALS

- Developing the process from bench to lab pilot and economics assessment.
- Producing a lithium concentrate and investigating the economics of LiOH generation.

BENEFITS TO ALBERTA

- A new value-added product from oilfield brines, i.e., lithium, using existing oil and gas infrastructure, and will contribute to the diversification of Alberta's oil and gas sector.
- The lithium products will be used in Lithium Ion Batteries (LIB), contributing to Alberta's cleantech sector and supporting the expansion of the renewable energy sector through off-grid electricity storage.
- Domestic production of raw materials for LIB will also accelerate the growth of electric vehicles and lower their production cost; therefore, it will catalyze the adoption of EVs by the public, resulting in lower GHG emissions in Alberta in the long term.
- Job creation through development and commercialization of the process.

2 Patents

1-3 Project Jobs

30 Future Jobs

CURRENT STATUS

JUL 2022

Both benchtop and lap pilot units are fully operational. The former has a nominal brine processing capacity of 5-10 L/day and the latter has a nominal capacity of 500 L/day. The units have been tested on a variety of brines including oilfield, geothermal, and South American brines.