RNS Number : 7763E
CleanTech Lithium PLC
19 September 2024

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CleanTech Lithium PLC ("CleanTech Lithium" or the "Company")
Low cost technology to be trialed in DLE pilot plant conversion stage,
aiming to lower energy use and CO2 emissions

CleanTech Lithium PLC (AIM:CTL, Frankfurt:T2N, OTCQX:CTLHF), an exploration and development company advancingsustainable lithium projects in Chile, announces it has completeddue diligence on the use of industrial forward osmosis (iFO) as an alternative to using a standard thermal evaporator for eluate concentration in it´s pilot plant conversion stage. iFO provides several benefits to optimise the downstream process to produce battery-grade lithium carbonate.

Highlights:

- CTL has investigated utilising iFO for eluate concentration, the first step in the downstream conversion process, with the method achieving higher water recovery and up to 60% lower energy consumption and CO_2 emissions compared to using conventional thermal evaporators
- iFO also has high efficiency when utilising solar thermal for power supply
- An iFO demonstration unit, provided by Forward Water Technology based in Canada, is preparing for shipment from Toronto to the facilities of Conductive Energy in Chicago, USA
- Conductive Energy will convert the eluate produced from our DLE pilot plant in Copiapó, Chile, using feed brine from Laguna Verde, into battery grade lithium carbonate
- The Company is assessing both iFO and conventional thermal evaporators for the concentration stage for the Laguna Verde PFS, which is currently underway
- An initial volume of 88m^3 of concentrated eluate, equal to approximately one tonne of lithium carbonate equivalent (LCE), is at Conductive Energy´s facility, with transport and commissioning of the iFO unit expected to take approximately two weeks
- This progress continues to make CleanTech Lithium a leader in exploration and development of a DLE-based project in Chile and will provide the ability to produce large test samples of lithium carbonate to potential offtake partners seeking product qualification

Steve Kesler, Executive Chairman and Interim CEO, of CleanTech Lithium PLC, said:
"Our team has undertaken a tremendous amount of work on selecting and optimising the DLE process for the Laguna Verde project, and this has extended to the downstream conversion process where we are working with Conductive Energy. Previous test-work confirmed that a downstream process has been developed that will efficiently produce battery-grade lithium carbonate for the Laguna Verde project at pilot scale, including use of Forward Osmosis which we are investigating as an alternative for eluate concentration. This has the potential to lower energy consumption, CO_2 emissions and both capital and operating costs."

Further Information

CleanTech Lithium has engaged Conductive Energy for the conversion of lithium chloride eluate, produced using feed brine from Laguna Verde at our DLE pilot plant in Copiapó, Chile, into battery-grade lithium carbonate. Four containers of eluate with a total volume of 88m^3 have been received by Conductive Energy at its Chicago, USA, facility with conversion to begin in October 2024. Conductive Energy´s conversion process is shown in Figure 1 which is based on standard industry process steps, other than the trialing of Forward Osmosis in the eluate concentration stage as an alternative to using a relatively more energy intensive thermal evaporator.

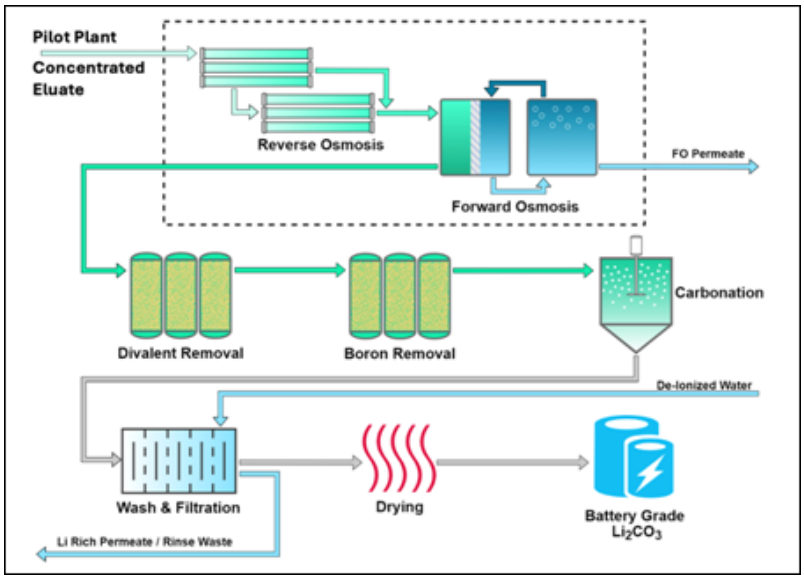


Figure 1: Conductive Energy Conversion Process

As due diligence in investigating alternative technologies capable of improving process performance, iFO was trialed in process test-work on a 200L sample of eluate undertaken at Conductive Energy´s facilities in Q2 2024. The full results of this test-work, which produced a sample of battery grade lithium with a purity of 99.75% lithium carbonate, was reported to the market on July 22, 2024. Results of the iFO stage of the test work achieved very good performance supporting the replacement of a thermal evaporator in concentrating eluate, with the key parameters and results provided in Table 1:

Parameter	**Unit**	**Concentrated Eluate**	**R/O Concentrate**	**iFO Concentrate**
Lithium (Li)	mg/L	2,194	5,700	18,000
Total Dissolve Solids (TDS)	mg/L	19,260	62,000	190,000
Laboratory		ALS Chile	Lambton.Scientific	Lambton.Scientific
Volume	L	215.5	66.3	13.9
Reduction in Volume	%		69.3%	94%

Table 1: Results from concentration of Laguna Verde eluate through R/O followed by iFO

A concentration of 18,000mg/L Li was set as the target concentration during iFO testing, representative of a typical lithium concentration used in the carbonation conversion process. Based on the Laguna Verde eluate, iFO can concentrate lithium up to 50,000 mg/L Li. Total water recovery of 94% was achieved during the eluate concentration, with the remaining 6% recycled or returned in the process. The DLE adsorbent used to produce

the concentrated eluate achieved very high impurity rejection rates, except for boron, as previously reported (RNS July 22, 2024).

iFO testing was optimised for boron removal resulting in a 55% reduction based on weight. The achieved boron reduction is significant enabling improved process efficiency and product quality, while reducing energy consumption and operating costs associated with removal of boron using Ion Exchange (IX), which is the last process step prior to carbonation. In the Laguna Verde PFS currently underway, recovering this boron as a saleable by-product is being investigated.

Other benefits of iFO use include a 60% reduction in energy consumption compared to conventional thermal evaporators, and up to 80% if operated using a renewable energy source such as solar thermal as depicted in Figure 2 below. iFO´s low energy use when compared to thermal evaporation enables CO_2 emission reduction by up to 60%, underscoring the sustainability benefits of this innovative technology.

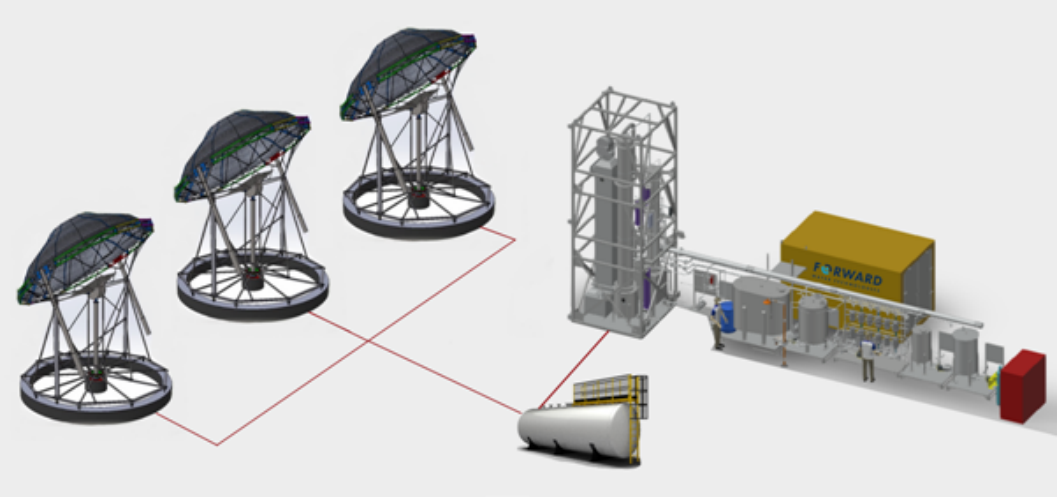


Figure 2: Depiction of commercial scale iFO plant with solar thermal power supply

As a result of iFO performance during testing, CTL requested Conductive Energy to replace the thermal evaporator with iFO during the downstream conversion process for the next stage of conversion test-work, in which additional iFO operating information can be obtained such as energy requirements. A iFO demonstration unit with the capacity to process 35 m^3/day of concentrated eluate will be supplied by Forward Water Technologies, which is shown in Figure 3 below, when final commissioning was underway. The unit is now ready for shipment from Toronto, Canada, and is expected to arrive at the Conductive Energy facility in Chicago, USA, in approximately one week. A further one week of on site commissioning is planned before the eluate conversion process will commence.



Figure 3:iFO demonstration unit with capacity to process 35 m^3/day of eluate in final commissioning

Competent Persons

The following professional acts as qualified person, as defined in the AIM Note for Mining, Oil and Gas Companies (June 2009) and JORC Code (2012):

Marcelo Bravo: Chemical Engineer (Universidad Católica del Norte), has a Master's Degree in Engineering Sciences major in Mineral Processing, Universidad de Antofagasta. He currently works as a Senior Process Consulting Engineer at the Ad-Infinitum company. Mr Bravo has relevant experience in researching and developing potassium, lithium carbonate, and solar evapo-concentration design processes in Chile, Argentina, and Bolivia. Mr Bravo, who has reviewed and approved the information contained in the chapters relevant to his expertise contained in this announcement, is registered with No. 412 in the public registry of Competent Persons in Mining Resources and Reserves per the Law of Persons Competent and its Regulations in force in Chile. Mr Bravo has sufficient experience relevant to the metallurgical tests and the type of subsequent processing of the extracted brines under consideration and to the activity being carried out to qualify as a competent person, as defined in the JORC Code. Mr Bravo consents to the inclusion in the press release of the matters based on his information in the form and context in which it appears.

The information communicated within this announcement is deemed to constitute inside information as stipulated under the Market Abuse Regulations (EU) No 596/2014 which is part of UK law by virtue of the European Union (Withdrawal) Act 2018. Upon publication of this announcement, this inside information is now considered to be in the public domain. The person who arranged for the release of this announcement on behalf of the Company was Gordon Stein, Director and CFO.

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Notes

CleanTech Lithium (AIM:CTL, Frankfurt:T2N, OTCQX:CTLHF) is an exploration and development company advancing sustainable lithium projects in Chile for the clean energy transition. Committed to net-zero, CleanTech Lithium's mission is to produce material quantities of sustainable battery grade lithium products using Direct Lithium Extraction technology powered by renewable energy. The Company plans to be a leading supplier of 'green' lithium to the EV and battery manufacturing market.

CleanTech Lithium has two key lithium projects in Chile, Laguna Verde and Viento Andino, and hold licences in Llamara and Salar de Atacama, located in the lithium triangle, a leading centre for battery grade lithium production. The two major projects: Laguna Verde and Viento Andino are situated within basins controlled by the Company, which affords significant potential development and operational advantages. All four projects have direct access to existing infrastructure and renewable power.

CleanTech Lithium is committed to using renewable power for processing and reducing the environmental impact of its lithium production by utilising Direct Lithium Extraction with reinjection of spent brine. Direct Lithium Extraction is a transformative technology which removes lithium from brine, with higher recoveries than conventional extraction processes. The method offers short development lead times with no extensive site construction or evaporation pond development so there is minimal water depletion from the aquifer. www.ctlithium.com

****ENDS****

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