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CleanTech Lithium PLC ("CleanTech Lithium" or the "Company")
DLE Test-Work Confirms Battery Grade Lithium – 1kg Sample Achieves 99.9% Lithium Carbonate

CleanTech Lithium PLC (AIM:CTL), an exploration and development company, advancing the next generation of sustainable lithium projects in Chile, announces the completion of laboratory scale Direct Lithium Extraction ('DLE') test-work to produce a 1kg sample of lithium carbonate and laboratory analysis of the sample.

Highlights:

- Brine from Laguna Verde was processed by CleanTech Lithium´s process partner, Beyond Lithium, using a DLE process to produce a 1kg sample of battery grade lithium carbonate
- The sample was sent to an independent laboratory in Germany, Dorfner Anzaplan, to test for impurities and the Lithium Carbonate ($Li2CO_3$) grade
- The benchmark for battery grade Lithium is >99.5% Li_2CO_3, and the laboratory testing confirmed the sample had very low impurities with a grade of >99.9% Li_2CO_3
- The DLE process developed by Beyond Lithium is based on using an Alumina based resin to adsorb lithium followed by further processing stages of reverse osmosis, mechanical evaporation, impurity removal and carbonation
- This is a proprietary process for CleanTech Lithium, designed to be scalable, cost effective and to minimise the project´s environmental footprint
- The optimal temperature for the adsorption process is 20^{o}C which is similar to the measured temperature of brine from sampling of the Laguna Verde subsurface brine, potentially reducing project operating costs and environmental footprint
- The next stage is to advance to pilot scale DLE test-work, to further optimise and de-risk the process, which is to be funded from the monies raised at the time of the IPO.

Commenting, Aldo Boitano, Chief Executive Officer, of CleanTech Lithium PLC, said: *"We are very pleased with the results of the laboratory scale DLE testwork producing a high-quality battery grade sample with a Lithium Carbonate grade exceeding 99.9%. This is a proprietary process developed for the Laguna Verde brine, which is designed to be scalable, cost effective and to minimise the projects environmental footprint. We look forward to the next stage of advancing to pilot scale work to further optimise and de-risk the process in line with our mission to produce material quantities of battery grade lithium, with near zero carbon emissions and low environmental impact, offering the EU EV market a green lithium supply solution."*

Further Information

Laboratory Scale DLE Test-Work Completed

CleanTech´s process partner, Beyond Lithium, completed laboratory scale test-work to produce 1kg of battery grade lithium carbonate. CleanTech provided 2,000 litres of brine from the Laguna Verde project, which was delivered to Beyond Lithium´s laboratory in Salta, Argentina. In the process designed for the Laguna Verde project, the feed brine, which is the brine pumped from the project, is processed in five main stages as depicted in Figure 1 below.

The first stage is based on adsorption and elution processes using a selective alumina-based resin to adsorb lithium from the brine. The lithium is then washed from the resin forming an eluate. The second stage is primary concentration using reverse osmosis, and mechanical evaporation. For the laboratory scale test-work, the volume of eluate was not sufficient for the reverse osmosis stage and hence only mechanical evaporation was used. This DLE process increased the lithium concentration from 224ppm Li in the brine to the range of 0.8% Li in the concentrated lithium solution.

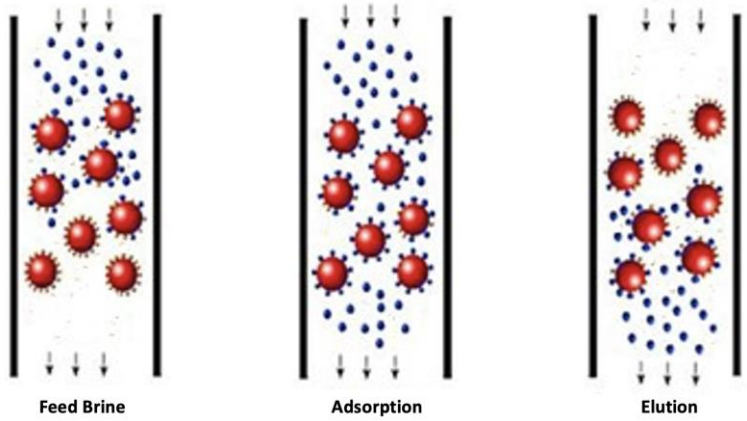
In the fourth stage the concentrated lithium solution is subjected to a process of impurity removal by primary carbonation and ion exchange to remove residual calcium, magnesium, and boron. In the final stage, the purified and concentrated lithium solution feeds carbonation reactors where lithium carbonate crystals are formed. At this stage the final product is formed, filtered, dried, and stored.

Figure 1: DLE Process Stages

The alumina-based resin, which acts as the sorbent in the process, selectively captures lithium ions from the brine as it passes through a columnar bed. A depiction of the selective adsorption unit in operation is provided in Figure 2. At the start of the operation cycle, the fresh brine enters the selective adsorption columns. The sorbent represented by the red spheres is capable of selectively extracting lithium, represented by the blue spheres.

Lithium ions (accompanied by chloride) are captured by the sorbent until the saturation point of the adsorbent bed. At the saturation point, the desorption cycle begins with elution water used to remove the lithium adsorbed on the sorbent, restoring its original composition, and obtaining an elution solution concentrated in lithium.

Figure 2. Feed Brine, Adsorption and Elution Diagram



The sorbent designed by Beyond Lithium for the Laguna Verde laboratory scale test-work achieved a high selectivity in lithium recovery and a low concentration of impurities. The eluate brine had a 97.5% reduction in magnesium, a key impurity to remove at the adsorption and elution stage, which is considered by Beyond Lithium to be a very positive result at this stage of the test-work.

The process work produced a 1kg sample of Li_2CO_3 which was sent to an independent laboratory in Germany, Dorfner Anzaplan, for analysis of impurities and validation of the Li_2CO_3 grade, which is presented in Table 1. The results confirm very low levels of impurities and validates the sample as battery grade lithium measuring 99.9% Li_2CO_3, exceeding the benchmark for battery grade lithium of 99.5% Li_2CO_3.

Table 1: Analysis of 1kg Sample of Lithium from Laboratory Scale Test-work

Parameter	Unit	Measurement
Moisture	%	< 0,1
HCl	%	0.016
Cl	mg/kg	46
SO4	mg/kg	130
Na	mg/kg	621
K	mg/kg	25
Ca	mg/kg	57
Mg	mg/kg	30
Fe	mg/kg	2
Ni	mg/kg	< 1
Cu	mg/kg	< 1
Pb	mg/kg	< 1
Al	mg/kg	6.6
Cr	mg/kg	< 1
Zn	mg/kg	< 1
Li_2CO_3	**%**	**>99.9**

CleanTech Lithium and Beyond Lithium will advance to the next stage of DLE test-work which is pilot scale production with the aim of producing 10 tonnes of battery grade lithium per month. Pilot scale test-work will focus on optimising the process. This will include reverse osmosis to concentrate the eluate and working with KMX Technologies, the leader in membrane distillation, which has strong potential to replace the mechanical evaporator stage of the process resulting in maximizing water retention. The planning of pilot scale test-work is currently advancing and will be funded from the monies raised at the time of the IPO.

In the DLE process, heating of brine is a significant component of a project´s energy consumption and operating costs. Beyond Lithium confirmed the optimal temperature for brine to be processed with the sorbent designed for the Laguna Verde DLE process is 20^{o}C. The temperature of sub-surface brine at Laguna Verde has been systematically measured as part of the recently completed resource drill program. Measurements have indicated a strong geothermal influence on the sub-surface brine with temperatures in a very similar range to the optimal DLE process temperature. The Company will further evaluate the significance of this, particularly on the potential to reduce energy consumption and therefore operating costs and the project's environmental footprint, as feasibility studies continue to progress.

Competent Person

The information in this release relates to brine assays reports and are based on information compiled by Marcelo Bravo Veas. Mr Bravo is a Chemical Engineer and managing partner of Ad-Infinitum Spa. with over 25 years of working experience and he is a Member of the Chilean Mining Commission (register 0412) and has sufficient experience which is relevant to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Bravo consents to the inclusion of his name in the matters based on the information in the form and context in which it appears.

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Notes

CleanTech Lithium (AIM:CTL) is an exploration and development company, advancing the next generation of sustainable lithium projects in Chile. The Company's mission is to produce material quantities of battery grade lithium with near zero carbon emissions and low environmental impact, offering the EU EV market a green lithium supply solution.

CleanTech Lithium has two prospective lithium projects - Laguna Verde and Francisco Basin projects located in the lithium triangle, the world's centre for battery grade lithium production. They are situated within basins entirely controlled by the Company, which affords significant potential development and operational advantages. The projects have direct access to excellent 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. Direct Lithium Extraction is a transformative technology which only removes lithium from brine, with higher recoveries and purities. The method offers short development lead times, low upfront capex, with no extensive site construction and no evaporation pond development so there is no water depletion from the aquifer or harm to the local environment.

Beyond Lithium is a company devoted to providing solutions for projects in the Lithium sector. The Company is focused on process engineering in all stages of Lithium project developments, from brine extraction to the finished products - battery grade Lithium Carbonate and Lithium Hydroxide. Beyond Lithium offers solutions and improvements to both conventional and alternative processes (selective adsorption, ionic exchange, solvent extraction) as well as evaluating new processes for managing solutions with Lithium content. Formed by professionals with vast experience in lithium operations, processes, and project development.

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