DLE test work shows excellent lithium recoveries

Highlights:

- Lithium concentrate has been successfully produced from Upper Rhine Valley geothermal brine during a series of successful bench-scale Direct Lithium Extraction (DLE) tests commissioned by Vulcan.
- Two different, pre-selected DLE adsorbents were tested and in both cases the lithium recovery rate exceeded 90% on first pass.
- The tested DLE adsorbents are of a type already used commercially on lithium brines worldwide, which reduces development risk, in line with Vulcan's strategy of utilising established technologies.
- The demonstrated DLE process will result in much reduced water usage and environmental footprint compared to traditional, evaporative methods used by producers in South America.
- Use of renewable power and heat from geothermal brine would make Vulcan the lowest CO_2-eq. footprint supplier of lithium hydroxide for electric vehicles in the world[1].
- Results will inform Vulcan's Pre-Feasibility Study (PFS) towards achieving the world's first Zero Carbon Lithium™ Project.
- Additional test work, including optimisation of controlling parameters such as pressure and brine chemistry, is on-going.

Vulcan Managing Director, Dr. Francis Wedin, commented: *"We're very pleased with these excellent initial lithium extraction results which are a credit to the expertise of the Vulcan technical team, who were able to quickly identify the best process options for our geothermal brine during the Scoping Study. With process development we are already working on further optimising the performance of the lithium extraction and will continue to do so throughout our feasibility studies. We are successfully proving that geothermal brines in Europe can be both a major source of lithium hydroxide for batteries, as well as providing the renewable energy to power the extraction process. This marks another milestone achieved towards our goal of producing Zero Carbon Lithium™ hydroxide for the European electric vehicle markets.*

[1] https://www.jadecove.com/research/finalfrontier

ASX Release
3 August 2020
ASX: VUL
FRA: 6KO

Highlights

Aiming to be the world's first **Zero Carbon Lithium™** producer.

Large, lithium-rich geothermal brine project, in the Upper Rhine Valley of Germany.

Europe's **largest** JORC-compliant lithium resource.

Located at the heart of the EU Li-ion battery industry.

Fast-track development of project under way towards production.

Corporate Directory

Managing Director
Dr Francis Wedin

Chairman
Gavin Rezos

Executive Director
Dr Horst Kreuter

Non-Executive Director
Ranya Alkadamani

Non-Executive Director
Dr Katharina Gerber

CFO-Company Secretary
Robert Ierace

Fast Facts
Issued Capital: 67,557,851
Market Cap (@44c): $30m

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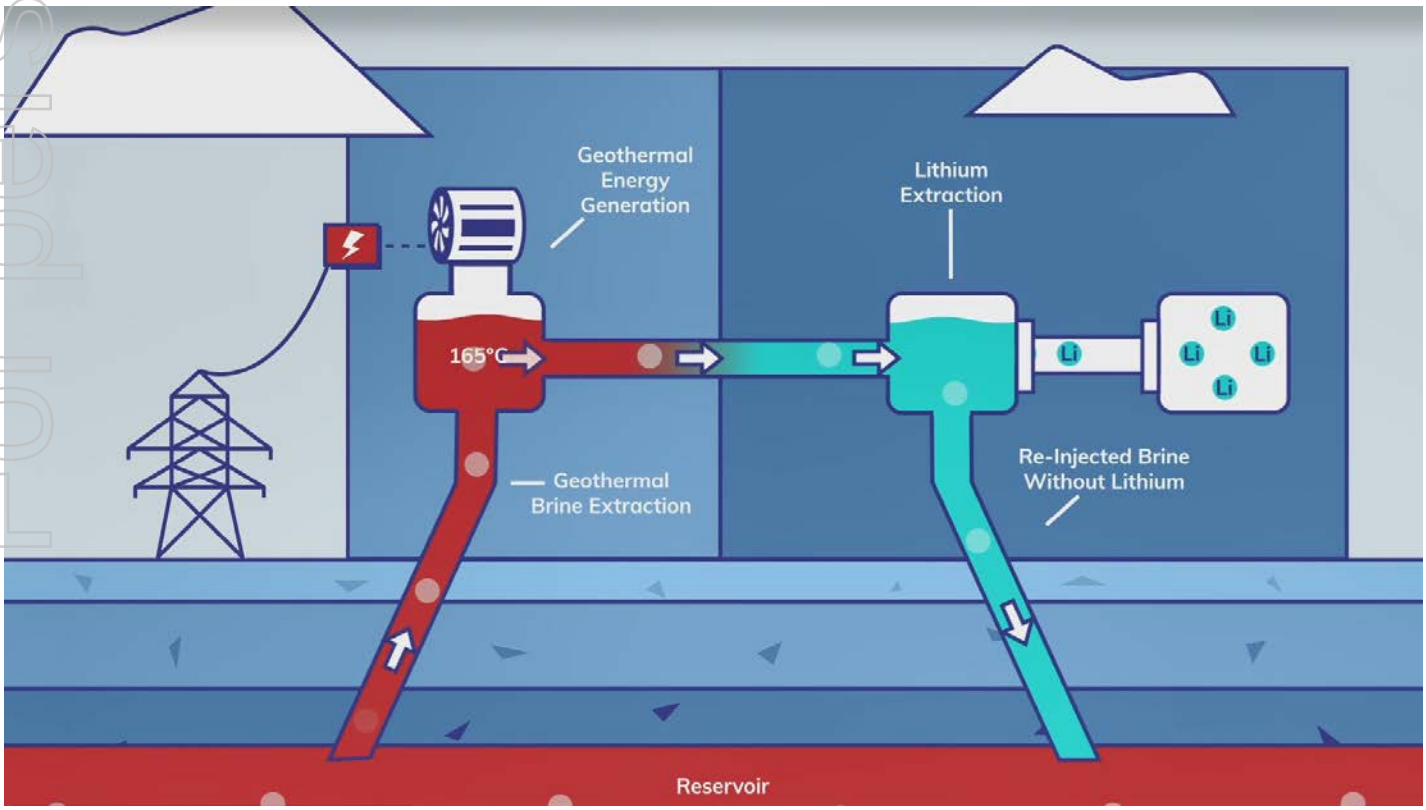
Recent activities by the Company:

- Appointment of expert engineers to the Zero Carbon Lithium™ team.
- EU-backed investment agreement into the Vulcan Zero Carbon Lithium™ Project.
- $4.8m institutional and ESG investor equity placement.
- Securing EU backing for the Vulcan Zero Carbon Lithium™ Project.
- Presentation to European Commission and European Investment Bank Vice-Presidents.
- Appointment of German lithium chemistry & geothermal lithium expert Dr. Katharina Gerber.
- Appointment of strategic communications expert Ranya Alkadamani to the Vulcan Board.
- Agreement to acquire 3D seismic package to accelerate project development. Commencement of lithium test work for Pre-Feasibility Study. Completion of positive Scoping Study.

About Vulcan

Vulcan Energy Resources is aiming to become the world's first Zero Carbon Lithium™ producer, by producing a battery-quality lithium hydroxide chemical product with net zero carbon footprint from its combined geothermal and lithium resource, which is Europe's largest lithium resource, in the Upper Rhine Valley of Germany. Vulcan will use its unique Zero Carbon Lithium™ process to produce both renewable geothermal energy, and lithium hydroxide, from the same deep brine source. In doing so, it will fix lithium's current problems for the EU market: a very high carbon and water footprint of production, and total reliance on imports, mostly from China. Vulcan aims to supply the lithium-ion battery and electric vehicle market in Europe, which is the fastest growing in the world. Vulcan has a resource which can satisfy Europe's needs for the electric vehicle transition, from a zero-carbon source, for many years to come.



Vulcan is pleased to announce that it has successfully completed initial bench-scale test work on Upper Rhine Valley geothermal brine, using adsorbent-type direct lithium extraction (DLE) technological approaches. Vulcan was able to quickly identify and test the best DLE technology options for the Upper Rhine Valley brine by leveraging the experiences of its in-house team and external consultants, who have worked on multiple geothermal lithium projects with numerous DLE technologies.

Lithium chloride (LiCl) concentrates were produced from real geothermal brine that was supplied at ambient pressure from Vulcan's area of focus in the Upper Rhine Valley. Materials and techniques used during the extraction process are similar to those already used in other commercial and near-commercial lithium brine projects. The produced LiCl concentrate is an industry standard precursor used for conversion into battery-quality lithium hydroxide using conventional, off the shelf processes. This initial test work campaign was performed on the 10L scale and showed >90% lithium recovery. This is an important first step to demonstrate that LiCl can be extracted from the geothermal brine without the need to evaporate the water, or remove the calcium, sodium, or large quantities of other salts. This is required in evaporative processes in South America, which creates major waste streams, and also may disturb freshwater aquifers connected to brine aquifers if brine is not reinjected. The Upper Rhine Valley brine is a unique geothermal brine which contains both high grades of lithium and lower impurities compared to other lithium-rich geothermal brines.

The concentration of LiCl concentrate produced from geothermal brine will be further increased using reverse osmosis and mechanical evaporation. The power and heat needed for these processes will come from renewable geothermal energy which Vulcan will co-produce alongside lithium chemicals. Different, industry-standard downstream process flowsheets are then available to produce battery-grade lithium hydroxide, with a focus on carbon-neutral processing and minimal environmental and physical footprints.

Results from this test work will be used in Vulcan's Pre-Feasibility Study. The results will also be used, in tandem with acquisition and interpretation of exploration data, towards upgrading confidence categories of Vulcan's JORC lithium resource. Vulcan has the largest lithium-brine resource in Europe, at 13.95 Mt contained LCE at 2 of 6 licences, of which 13.2 Mt LCE is currently in the Inferred category on its 100%-owned Ortenau license (see Vulcan News Release, 20 January 2020).

Further control of brine chemistry and optimization of operational parameters will be carried out, both at bench-scale, and in a "live" pilot study which will include controlling parameters such as pressure and brine chemistry. In doing so, Vulcan will ensure that the needs of the geothermal plant (avoiding formation of scales) and the lithium plant (optimising lithium recovery) are properly balanced during the development scale-up.

Vulcan is advancing its projects in the Upper Rhine Valley of Germany with the aim to become the world's first producer of a premium battery-quality, net Zero Carbon Lithium™ hydroxide product, by simultaneously producing lithium hydroxide and renewable, geothermal energy from the same geothermal brine sourced from its project area and using its proprietary flowsheets. Vulcan's lithium hydroxide is well poised to supply the growing lithium battery market in Europe, linked predominantly to the electric vehicle (EV) market. Although Europe is the fastest growing centre for EV battery production in the world, there is no local supply of battery quality lithium chemicals. 80% of current supply of lithium hydroxide comes from China and has a high carbon footprint.

Zero Carbon Lithium™

For and on behalf of the Board

Robert Ierace

Chief Financial Officer - Company Secretary

For further information visit www.v-er.com

Disclaimer

Some of the statements appearing in this announcement may be in the nature of forward-looking statements. You should be aware that such statements are only predictions and are subject to inherent risks and uncertainties. Those risks and uncertainties include factors and risks specific to the industries in which Vulcan operates and proposes to operate as well as general economic conditions, prevailing exchange rates and interest rates and conditions in the financial markets, among other things. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement. No forward-looking statement is a guarantee or representation as to future performance or any other future matters, which will be influenced by a number of factors and subject to various uncertainties and contingencies, many of which will be outside Vulcan's control.

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Competent Person Statement:

The information in this report that relates to Mineral Resources for the Vulcan Geothermal-Lithium Project is extracted from the ASX announcements "maiden JORC (2012) Mineral Resource Estimate for its Ortenau licence" and "Maiden Indicated Resource Insheim Vulcan Zero Carbon Lithium" released on the 4th of December 2019 and 20th of January 2020, and the information in this report that relates to Vulcan's Scoping Study is extracted from the ASX announcement "Positive Scoping Study" released on the 21st of February 2020, which are available on www.v-er.com. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.

Chemical Engineer's Statement:

The information in this News Release that relates to chemical engineering and processing is based on information compiled and/or reviewed by Mr. Alexander Grant. Mr. Grant is a chemical engineer with a MS degree in Chemical Engineering from Northwestern University. Mr. Grant has sufficient experience which is relevant to brine chemistry and processing. Mr. Grant is employed on a 50%-time basis by Vulcan.