

31 May 2022

## **PILOT PROGRAM UPDATE - ZEOTECH ACHIEVES CONTINUOUS CLOSED-LOOP CIRCUIT WITH LITHIUM PROCESS BY-PRODUCT**

Emerging mineral processing technology company, Zeotech Limited (ASX: ZEO, "Zeotech" or "the Company") is pleased to advise that it has achieved a successful continuous closed-loop circuit, utilising lithium process by-product feedstock (leached spodumene) to produce pure Linde Type A manufactured zeolite. This demonstration of the Company's dual-feed pilot is a significant milestone in the program with both leached spodumene and kaolin feedstock options being processed through the circuit.

The achievement of multiple closed-looped circuit runs utilising lithium process by-product provides important validation of the Company's proprietary flowsheet and will allow personnel from The University of Queensland ("UQ") and the Company to commence project planning for The Trailblazer University Program ("Trailblazer"), which includes industry partner, Covalent Lithium Pty Limited ("Covalent")<sup>1</sup>.

### Highlights

- Pilot program successfully completed its first locked cycle closed-loop circuit trials with continuously fed reactor trains, utilising leached spodumene (lithium process by-product) feedstock to produce pure Linde Type A manufactured zeolite product.
- Over 80 optimisation batch tests and 25 continuous tests completed on individual process steps, involving leaching, filtration, and precipitation were undertaken on lithium process by-product samples received in December 2021.
- Piloting has produced over 3 kgs of pure Linde Type A manufactured zeolite from lithium process by-product.
- Validation of the closed-loop circuit with continuously fed reactors and three solution recycles, utilising lithium process by-product, accelerates commencement of Trailblazer project planning.
- Successful completion under the conditions of Zeotech's proprietary flowsheet represents a major step in accelerating Trailblazer planning, with the project's objective of constructing and commissioning a large-scale demonstration plant.

The University of Queensland's School of Chemical Engineering, Associated Professor James Vaughan commented:

*"Our focus during 2022 has been on leached spodumene and we are extremely pleased with the progress and results achieved, especially having successfully demonstrated the closed-loop circuit with continuously fed reactors, resulting in process performance consistent with batch reactor studies."*

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<sup>1</sup> ASX release 22/04/2022 "University Trailblazer Partnership for ZEO Lithium Cleantech"

*"The process validation accelerates planning for our exciting Trailblazer project, aimed at developing a large-scale demonstration plant, and offers confidence on the journey to commercialisation for Zeotech's proprietary mineral processing technology to deliver an innovative cleantech solution to the lithium refinery industry."*

Zeotech, Head of Projects Dr. John Vogrin added:

*"The potential for our technology to become a circular economy enabler in the lithium refinery value-chain is exciting and the Trailblazer win sets a path towards commercialisation."*

*"The pilot program has confirmed our proprietary flowsheet is capable of delivering a continuous circuit utilising lithium process by-product to produce pure Type A zeolite, rewarding the team for their dedication and commitment throughout the first half of 2022."*

## Progress to Date

### Lithium Process By-product

Since receiving (new) leached spodumene samples in December 2021, UQ researchers have completed over 80 optimisation batch tests and 25 continuous tests completed on individual process steps, involving leaching, filtration/decanting, and precipitation. The pilot has produced over 3 kgs of pure Linde Type A manufactured zeolite product (image 2.) utilising lithium process by-product as feedstock (image 1.).



Image 1. lithium process by-product.  
Courtesy of Dr. John Vogrin, Zeotech.

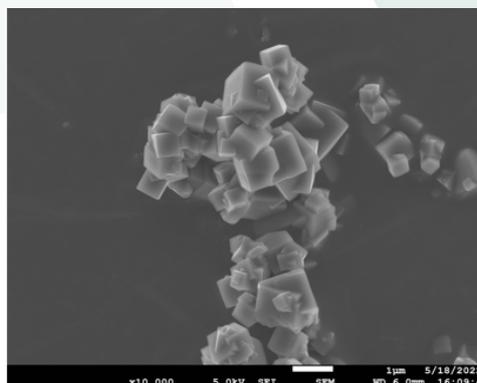


Image 2. Linde type A zeolite produced during piloting.  
Courtesy of Dr. Hong (Marco) Peng, UQ Chem Eng.

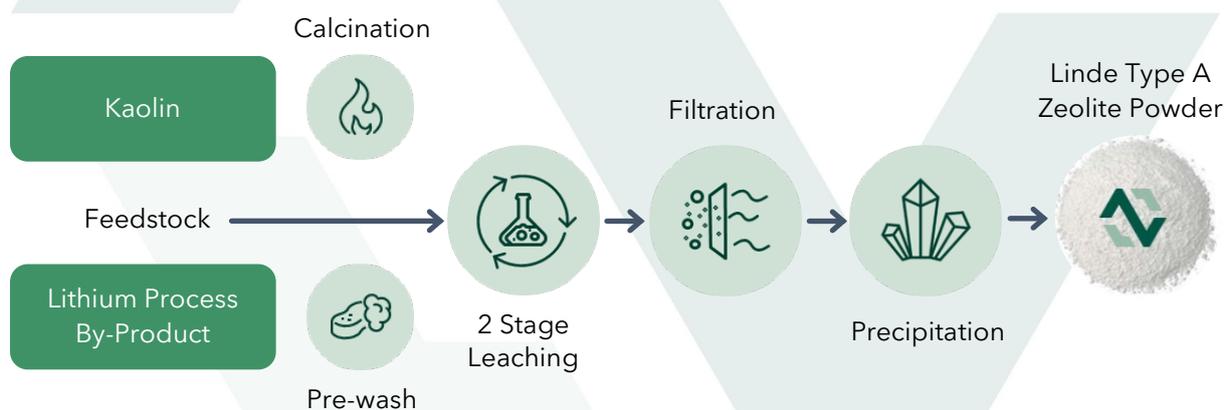
The pilot program's focus on lithium process by-product delivered an excellent outcome, highlighted by the Company being named as an industry partner in the successful Resources Technology and Critical Minerals Processing Trailblazer Program, led by Curtin University<sup>2</sup> in April 2022.

The Trailblazer project will accelerate the commercialisation of Zeotech's proprietary cleantech innovation for lithium process by-product in collaboration with project partners, UQ and Covalent. The Trailblazer grant program provides Federal Government funding to select universities to boost prioritised research and development and drive commercialisation outcomes with industry partners.

## Next Steps

The completion of a successful continuous closed-loop circuit under the conditions of Zeotech's proprietary flowsheet represents a major step in accelerating Trailblazer planning, with the project's objective of constructing and commissioning a large-scale demonstration plant.

Focus on the Company's dual-feed pilot program will remain on lithium process by-product until end of June 2022, in conjunction with commencement of Trailblazer project planning. Attention will then return to kaolin feedstock in early July 2022, following a successful continuous closed-loop circuit utilising Toondoon kaolin feedstock in November 2021.<sup>3</sup>



(above) Simplified flowsheet representation of Zeotech's novel and proprietary process.

This announcement has been approved by the Board.

- End -

<sup>2</sup> <https://news.curtin.edu.au/media-releases/curtin-blazes-a-trail-for-resources-research-commercialisation/>

<sup>3</sup> ASX release 30/11/2021 "Pilot Program Update - First Continuous Closed-Loop Circuit"

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## About Zeotech

Zeotech Limited (ASX: ZEO) is a team of dedicated people, working together to build a future focused company, leveraging proprietary technology for the low-cost production of advanced materials 'manufactured zeolites' to deliver solutions aimed at addressing sustainability challenges.

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