

21 February 2023

Leilac executes non-binding Direct Air Capture MOU for global licence and collaboration agreement with Heirloom

Sydney, Australia | 21 February 2023 – Australian environmental technology company, Calix Limited (ASX: CXL) (“Calix” or “the Company”) announces today that Leilac, Calix’s 93% owned subsidiary focusing on decarbonisation of cement and lime, has signed a Memorandum of Understanding (“MOU”) with Heirloom Carbon Technologies (“Heirloom”), a Direct Air Capture (“DAC”) company focused on proving and scaling technology to permanently remove CO₂ from the atmosphere. The MOU outlines the key terms for a global and binding licence and collaboration agreement for the use of Leilac’s kiln technology in Heirloom’s DAC solution.

The collaborative partnership between Leilac and Heirloom, whose investors include Bill Gates-backed Breakthrough Energy Ventures, as well as existing Leilac shareholder Carbon Direct Capital Management, Ahren Innovation Capital and Microsoft, brings together two leading climate technologies to provide an innovative and highly efficient approach to atmospheric carbon dioxide removal by DAC.

Highlights

- Leilac, a Calix subsidiary, has signed a non-binding MOU outlining the key terms for a perpetual global licence and collaboration agreement for the use of its technology by Heirloom for carbon dioxide removal by DAC.
- Under the terms of the proposed global perpetual licence agreement set out in the MOU, Leilac will receive a royalty based on the value of the CO₂ captured with the technology.
- The royalty will have a floor price set at the greater of US\$3/tonne of CO₂ separated in a Leilac kiln, or 3.5% of the prevailing CO₂ price for lime decarbonisation. A variable royalty rate, based on the prevailing CO₂ price or value less the amortised cost of capital of the Leilac kiln per tonne of CO₂ separated, will apply when above the floor price.
- The MOU also outlines key terms for a collaboration agreement, in which Heirloom will contribute US\$3m towards mutually agreed upon DAC and lime-related research and development activities. Leilac will retain all IP relevant to its technology.
- Carbon dioxide removal in the order of 1-10 billion tonnes per annum is expected¹ to be needed to limit or return global warming to 1.5°C, as committed to in the Paris Agreement.
- Heirloom, whose investors include Bill Gates-backed Breakthrough Energy Ventures, use lime as a low-cost solution to directly capture CO₂ from the atmosphere.
- Leilac’s calcination technology can enable efficient separation and capture of carbon dioxide from limestone and can be renewably powered to produce decarbonised lime.
- Together, Leilac and Heirloom’s complementary, modular technologies provide a pathway to the removal of ambient carbon dioxide at scale.
- Leilac and Heirloom are progressing the finalisation of the binding licence and collaboration agreements, as outlined in the MOU, as soon as possible.

¹ IPCC Special Report on Global Warming of 1.5°C

Heirloom & Leilac's unique approach to DAC

Heirloom's DAC solution harnesses limestone, one of the world's most abundant minerals, to provide a fast and low-cost path to permanent CO₂ removal. With a typical cost of approximately US\$10-\$50/tonne, limestone is inexpensive and easy to source. Combined with highly modular and easy to manufacture facilities, Heirloom's solution is designed to scale quickly to meet the urgency of climate action.

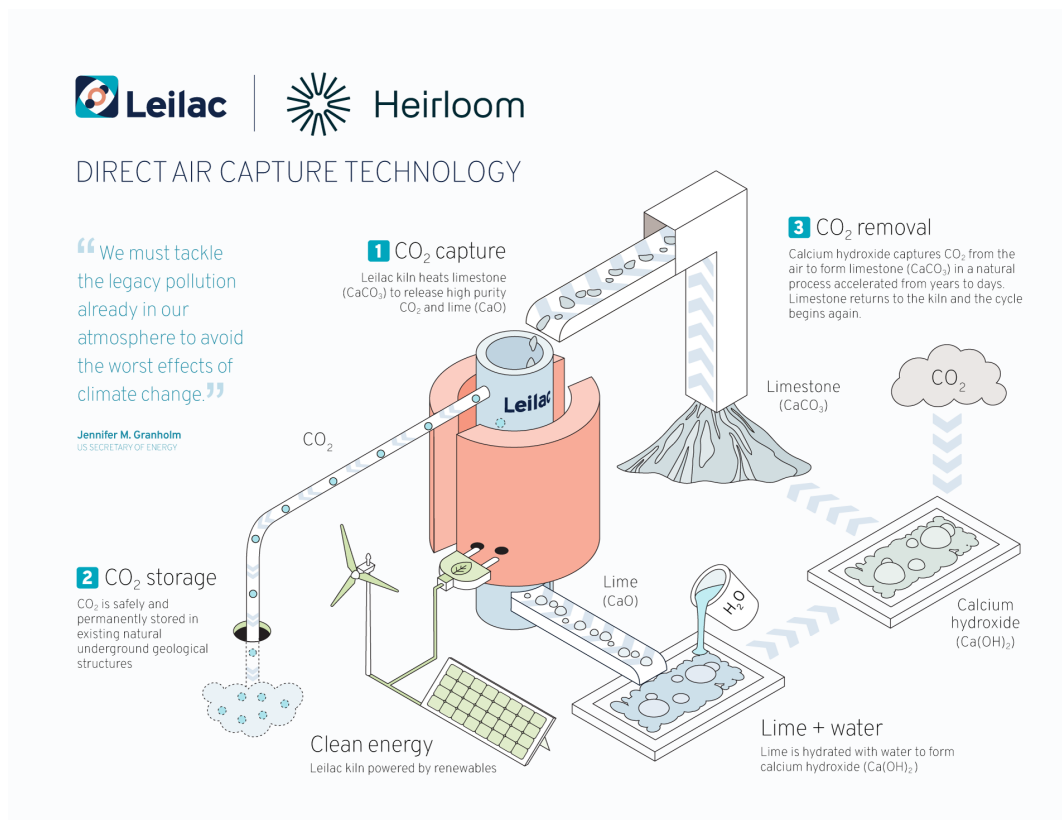
Leilac's renewably powered calcination technology is being developed to efficiently separate and capture carbon dioxide from limestone to produce decarbonised lime. With the ability to utilise renewable energy to heat the reaction, and no additional chemicals or processes required to separate and capture carbon dioxide, Leilac is targeting the most efficient solution for the capture of CO₂ from limestone.

Heirloom's DAC technology uses lime in a novel carbonation process to directly capture CO₂ from the air and form limestone. This process accelerates the natural binding of CO₂ and lime from a period of years to three days.

After binding and removing CO₂ from the air, the reformed limestone is fed back into the renewably powered Leilac kiln, where the CO₂ is separated and captured, and the cycle begins again.

The CO₂ removed from the air will be mineralised, where it is bound to rocks or other materials, or injected underground into existing natural geological structures, where it remains safely and permanently stored.

The integrated Heirloom and Leilac DAC solution will be 100% renewably powered to deliver the maximum net reduction of atmospheric carbon dioxide.



Caption: Heirloom's Direct Air Capture process powered by Leilac's renewably powered electric kiln.

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The licence agreement

Under the terms of the proposed global perpetual licence agreement set out in the MOU, Leilac will receive a royalty based on the value of the CO₂ captured with the technology. The royalty will:

- i. Have a floor price set at the greater of US\$3/tonne of CO₂ separated in a Leilac kiln, or 3.5% of the prevailing CO₂ price for lime decarbonisation; and
- ii. Have a variable price based upon the total volume of CO₂ capture capacity installed and the prevailing CO₂ price or value, less the amortised cost of capital of the Leilac kiln per tonne of CO₂ separated.

It is expected that the floor price will be the initial royalty rate. As the technology application develops in scale and maturity, the costs of deployment are expected to fall correspondingly and cause the variable price to become the prevailing future royalty rate. As part of a collaboration agreement also contemplated by the MOU, Heirloom will contribute US\$3m towards mutually agreed upon DAC and lime related research and development activities. Leilac will retain all IP relevant to its technology.

Why Direct Air Capture?

Industrial decarbonisation is vital to achieving net zero emissions by 2050 and avoiding the most catastrophic effects of climate change. However, urgently decarbonising our industries will not be enough to achieve global climate goals. The excess carbon dioxide already in the atmosphere must also be mitigated.

The Intergovernmental Panel on Climate Change projects that carbon dioxide removal in the order of 1-10 billion tonnes of CO₂ per year could mitigate residual emissions and, in most scenarios, achieve net negative emissions to return global warming to 1.5°C, following a peak.²

Modular, scalable and low-cost DAC technology, paired with geological carbon storage, can offer a path to removing ambient CO₂ at the gigatonne scale.

New application of Leilac's core cement and lime decarbonisation technology

Leilac's decarbonisation technology was developed for, and in partnership with, the cement and lime industries. It is being developed to provide an efficient solution for the separation and abatement of unavoidable process emissions released in the production of cement and lime and is designed to be powered by renewable energy sources and clean alternative fuels.

Leilac's technology is proven at pilot scale, including through its pilot plant, Leilac-1, and three smaller electric units. In operation since 2019, Leilac-1 has a capture capacity of 25,000 tonnes of CO₂ per year and is currently the largest carbon capture installation for cement in the world, outside of China. Leilac-2, a demonstration plant that will be retrofitted to Heidelberg Materials' operation plant in Hannover, Germany with a capture capacity of 100,000 tonnes of CO₂ per year is due to open in 2024.

Heirloom will apply the same core Leilac kiln technology and chemical process for DAC of legacy CO₂ emissions in the atmosphere. The partnership will also further accelerate development of Leilac's decarbonisation solutions for industrial emissions in cement and lime, helping to pave the way for full scale industrial electrification and CO₂ abatement.

Calix Managing Director and CEO, Phil Hodgson said:

“Calix welcomes the partnership between Leilac and Heirloom. Heirloom is a sophisticated and innovative Direct Air Capture company, and their partnership with Leilac represents a new application

² [IPCC Special Report on Global Warming of 1.5°C](#)

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of Calix's core platform technology to address the global challenge of excess atmospheric CO₂ levels.

"The licence and collaboration agreement outlined in the MOU is the latest example of Calix's commercialisation strategy, designed to deliver the greatest positive impact at the greatest speed."

Leilac CEO, Daniel Rennie said:

"Leilac is delighted to announce our partnership with Heirloom. Leilac and Heirloom are on a shared mission to help address global CO₂ emissions. Together, our technologies can deliver an efficient and scalable approach to directly removing excess carbon dioxide from our atmosphere.

"The collaborative and cooperative approach outlined in this agreement aims to accelerate the learning, synergies and steps to scaling that are needed to achieve our global climate ambitions and commitments."

Heirloom CEO, Shashank Samala said:

"We're incredibly excited about incorporating Leilac's world-leading electric kiln technology into our Direct Air Capture facilities because it will accelerate our efforts to capture 1 billion tons of CO₂ from the atmosphere by 2035 owing to its highly modular and energy-efficient design."

Investor webinar

Calix will host an investor webinar with Managing Director and CEO, Phil Hodgson and Chief Financial Officer, Darren Charles at 11.00 am AEDT today, 21 February 2023 to discuss the 1H23 results.

Register for the investor webinar at the link:

https://us02web.zoom.us/webinar/register/WN_zY3qWwv_ReqKfj9ssf8meA

After registering, you will receive a confirmation email containing information about joining the webinar.

Investors can submit live questions during the webinar and are also invited to send questions prior to the webinar to simon@nwrcommunications.com.au.

-ENDS-

This announcement has been authorised for release to the ASX by:

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About Calix

Calix Limited (ASX: CXL) is an environmental technology company solving global challenges in industrial decarbonisation and sustainability, including CO₂ mitigation, sustainable processing,

advanced batteries, biotechnology and water treatment.

Calix's patented core technology platform delivers efficient indirect heating of raw materials to enable electrification of industries, efficient capture of unavoidable emissions, and green industrial processing solutions. Its flash heating approach can also produce unique nanoporous materials with enhanced chemical and/or bio-activity.

Leveraging its core technology platform and a global network of research and development collaborations, Calix is urgently developing multiple environmental businesses that deliver positive global impact. Because there's only one Earth, and it's already ours.

Mars is for quitters.

Website: <https://www.calix.global/>
LinkedIn: <https://www.linkedin.com/company/calix-limited/>
Twitter: @CalixLimited
YouTube: [CalixLimited](#)

About Leilac

Leilac is the collaborative technology partner accelerating a just transition to net zero by providing the most compelling decarbonisation solution for global cement and lime.

Leilac's technology is being developed to efficiently separate unavoidable carbon emissions ready for use or storage, without additional chemicals or processes. It is designed to be scalable, retrofittable, energy agnostic and electrification ready, providing flexible and economical pathways to carbon free cement and lime.

Operating across Europe, the Americas and Asia Pacific, Leilac has imagined the future for sustainable cement and lime. And we're creating it. Today.

More information: www.leilac.com

About Heirloom

Heirloom builds low-cost Direct Air Capture technology that will permanently remove CO₂ at a billion-ton scale. Our technology rapidly accelerates the natural ability of minerals to absorb CO₂ from the air from a timespan of years to days. Heirloom has the only operating Direct Air Capture facility in North America, and its customers are the world's biggest buyers of carbon removal including Microsoft, Stripe, Klarna, Shopify and more. Heirloom is funded by Bill Gates' Breakthrough Energy Ventures, Carbon Direct Capital, Ahren Innovation Capital, Prelude Capital, Lowercarbon Capital and others.

See how our technology works [here](#).

For more information:

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