

A Canadian CCU company is looking for partnerships in the heavy industries, particularly the cement and concrete sectors to help them reduce CO2 emissions and utilize local waste with their novel technology to create superior cement products

## Summary

Profile type	Company's country	POD reference
<b>Business request</b>	<b>Canada</b>	<b>BRCA20230405015</b>
Profile status	Type of partnership	Targeted countries
<b>PUBLISHED</b>	<b>Commercial agreement</b>	<b>• United Kingdom</b> <b>• Germany</b>
Contact Person	Term of validity	Last update
<a href="#">Rita Elste - Tomsone</a>	<b>5 Apr 2023</b> <b>4 Apr 2024</b>	<b>5 Apr 2023</b>

## General Information

### Short summary

A Canadian carbon capture company is seeking to apply their novel technology platform. They enable hard-to-decarbonize industry to transform local industrial by-products and natural materials into superior additives. Our client's first massive market is concrete. Their patented technology reduces the carbon footprint of cement, sequesters carbon, and improves concrete performance. Our client is looking to establish a commercial agreement with a partner from the UK or Germany.

### Full description

A world-leading CarbonTech company headquartered in Calgary, Alberta, Canada, is working towards becoming the most impactful carbon utilization company this decade. Our client is a NRG COSIA Carbon XPRIZE X-Factor winner and a Solar Impulse Efficient Label recipient. They have scaled their technology to sequester carbon emissions into cheap solid feedstocks by over 10 million times since conception in fall 2014, have established MOUs with 4 of the 10 largest cement companies in the world, and commercially demonstrated the highest CO2 emission reductions in concrete for a CarbonTech company through its pilot plant at the Alberta Carbon Conversion Technology Center (ACCTC).

Our client is a rapidly growing company that currently employs 22 staff in Canada, UK, and USA. The team's prior

experience with upscaling and integrating their technology with high emissions heavy industries makes them uniquely positioned to become a global leader in CCU. The company's team members have been included in the Canadian Federal Government's working group on decarbonizing cement/concrete based upon expertise in activating SCM and permanently sequestering CO<sub>2</sub> into materials.

The current growth plan requires CUT to demonstrate that their technology can be integrated into cement and ready-mix concrete plants cost-effectively and seamlessly across the world, and also be tailored to fit the local supply chains. To this end, running a multitude of projects across the world with different pricing dynamics, and locally available feedstocks, is critical. Our client's portfolio of projects currently includes projects in Alberta, Ontario, the UK, and California, all of which will begin work in 2023. These projects would create a sufficiently large sample size to demonstrate the company's core technology's versatility and global relevance for the more than 3,300 cement plants in operation today.

Our client is looking for heavy industries that want to reduce CO<sub>2</sub> emissions and its waste streams to create a new product. Ideally, they are looking for a large company based in either in the UK or Germany with existing facilities and a flue gas stream with whom they can establish a commercial agreement.

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#### Advantages and innovations

Our client's proven technology can be directly integrated into a cement plant. Using a low-energy carbon utilization process, they chemically bind low-purity point-source CO<sub>2</sub> emissions with inorganic waste materials to create cement replacements—allowing them to “upcycle” various industrial by-products such as quarry fines, steel slag, fly ash, crushed glass and others to create a circular economy solution. This versatility with the local wastes encourages resilient supply chains and revitalizes local economies. Additionally, the process and infrastructure required to integrate this technology are generally the same across different feedstocks, making this an easily replicable business model.

The company has developed a patented CCU process that uses carbon mineralization to directly sequester point source CO<sub>2</sub> emissions (4%–20% by mass) into various low-value solid feedstocks to create superior SCMs. Its proprietary Mechanically Activated Chemical Exfoliation (MACE) process is a single-step, low-energy exfoliation process that requires minimal intervention of catalysts and operates at ambient temperature and low pressure. This disruptive technology can be integrated into a cement plant's flue stack and material handling systems elegantly, reducing emissions while producing an alternative SCM to displace the carbon intensive limestone-calcining process. This novel technology has improved concrete durability by up to 60% and strength by up to 70%.

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#### Technical specification or expertise sought

Our client is seeking site demonstrations for heavy industries to decarbonize and upcycle waste streams for superior products. Cement and Concrete industries are the primary target, with steel mills and plastics secondary markets. They are also looking to partner with R&D institutions and universities to expand their R&D for testing feedstock materials for suitability for CO<sub>2</sub> sequestration.

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#### Stage of development

**Available for demonstration**

#### Sustainable Development goals

- **Goal 7: Affordable and Clean Energy**
- **Goal 13: Climate Action**
- **Goal 11: Sustainable Cities and Communities**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 12: Responsible Consumption and Production**

IPR Status

**IPR granted**

## Partner Sought

Expected role of the partner

Our client is looking for heavy industries that want to reduce CO2 emissions and its waste streams to create a new product. Ideally, they are looking for a large company based either in the UK or Germany with existing facilities and a flue gas stream.

They would also be looking at R&D institutions and universities who are open to the idea of working with a private company to better understand what feedstocks (ideally for cement) can be used to sequester CO2 for supplementary cementitious materials (SCMs) to comply with European concrete baselines for use in industry and construction. One of the key aspects to this partnership is to be committed to be working with our client in a truly collaborative arrangement.

Type of partnership

**Commercial agreement**

Type and size of the partner

- **Big company**
- **R&D Institution**
- **University**

## Dissemination

Technology keywords

- **04009 - Carbon capture and energy**
- **004006003 - Process optimisation, waste heat utilisation**

Targeted countries

- **United Kingdom**
- **Germany**

Market keywords

- **08001021 - Other speciality chemicals**
- **08001017 - Industrial chemicals**

Sector groups involved

- **Construction**
- **Energy-Intensive Industries**