Ocean GeoLoop

Løsninger for karbonfangst fra fossile og biogene kilder, med tilhørende verdikjeder for bruk og lagring av CO_2

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Chief Operating Officer

WoodWorks konferansen

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Ocean GeoLoop

Agenda

- Ocean Geoloop – et eksempel på regionens attraktivitet og klyngesamhandling i praksis
- Karbonfangst og GeoLoop Carbon Capture
- CCUS - Bruk av CO_2 i sirkulære verdikjeder

PROJECT OCEAN

FEEDSTUFF

ENERGY

ADVANCED MATERIALS

Ocean GeoLoop

Our purpose

Ocean GeoLoop is established to commercialize green, disruptive technologies with a global reach.

- Our solutions are aimed at solving the greatest challenge of our time; a combined climate, environment and resource crisis.
- Based on more than 15 years of research & development together with international partners.
- Copying nature to bypass costly and polluting processes.
- Highly scalable solutions with significant, global potential.

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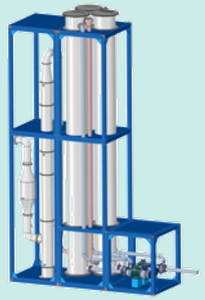
Copying nature to bypass costly and polluting processes

1 Point source carbon capture unit

- Captures CO_2 from a point source emitter and can turn it into a pure, liquid state.
- Can be delivered as a service, allowing the customers to pay per ton of captured CO_2



2 GeoLoop Column unit

- A multi-functional, ocean-based dome-system enabling biomass production, ocean purification and oxygenation

Ocean GeoLoop

Source: The Company

Ocean GeoLoop

Photo: Verdal Industripark

Norske Skog Skogn

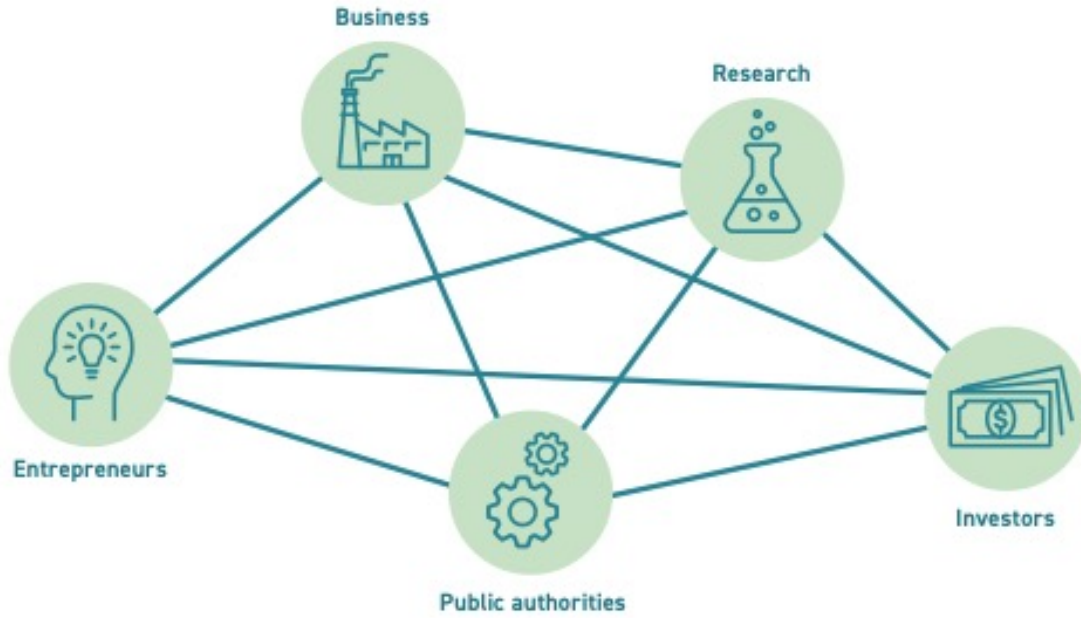
Our main piloting arena

Photo: Norske Skog Skogn AS

How we work

Ocean GeoLoop consciously and actively works in a broad international network - in line with the model illustrated.

- New, industrial partnerships are constantly being established, nationally and internationally. Through a set of pilots, the company has linked up an exciting and growing supplier network
- The company has engaged key personnel from internationally recognized R&D institutions to assist with technology development in various phases
- Through a total of 4 private placements the company has raised approximately NOK 360 million* from national and international investor segments
- The company works actively with and involves authorities, policy makers, clusters and business organizations



* Includes private placement of NOK 101.6 million with Chevron in August 2022

Laboratories

Materials characterisation

Subsurface lab.

Multiphase flow, Tiller

CO_2-laboratory, Tiller

Nanotechnology

Solar cells

Metal Production

Advanced membranes

Material technology

Mass spectrometry

Biotechnology

We are collaborative

Selected partners

Norske Skog

Shareholder and OGL´s main piloting partner. **Collaboration agreement**

SINTEF

Reputed research partner with a wide range of specialists within OGL´s core areas. **R&D and commercialization**

YARA
Knowledge grows

World's leading crop nutrition company and a provider of environmental and agricultural solutions. **LOI**

Government of Iceland

Established a working group to reduce atmospheric CO2 and produce biomass. **LOI**

Chevron

Shareholder and complementary industry partner. **MoU**

TUNICELL

Delivers the enabling technology powering Ocean GeoLoop´s solutions. **Enabling supplier**

ENERGI Teknikk

Component and sub-system supply. **Enabling supplier**

Carbon Circle is a carbon removal and energy EPC specialist. **EPC**

NORÐURÁL

Has an ambition to be the world´s first carbon neutral aluminum producer. **MoU**

FRANZEFOSS MINERALS

An innovative and motivated partner dedicated to find sustainable CO2 solutions. **LOI**

CARBON RECYCLING INTERNATIONAL

An e-methanol pioneer with more than a decade of operational experience. **LOI**

INRIGO

Ocean GeoLoop

A leading provider of sustainable, tailormade and scalable systems. **EPC**

Current challenges with carbon capture

- High cost
- Energy cost and availability
- Integration costs for emitters at existing plants
- HSE concerns
- Robustness of solutions
- Non-existing or immature CCUS value chains

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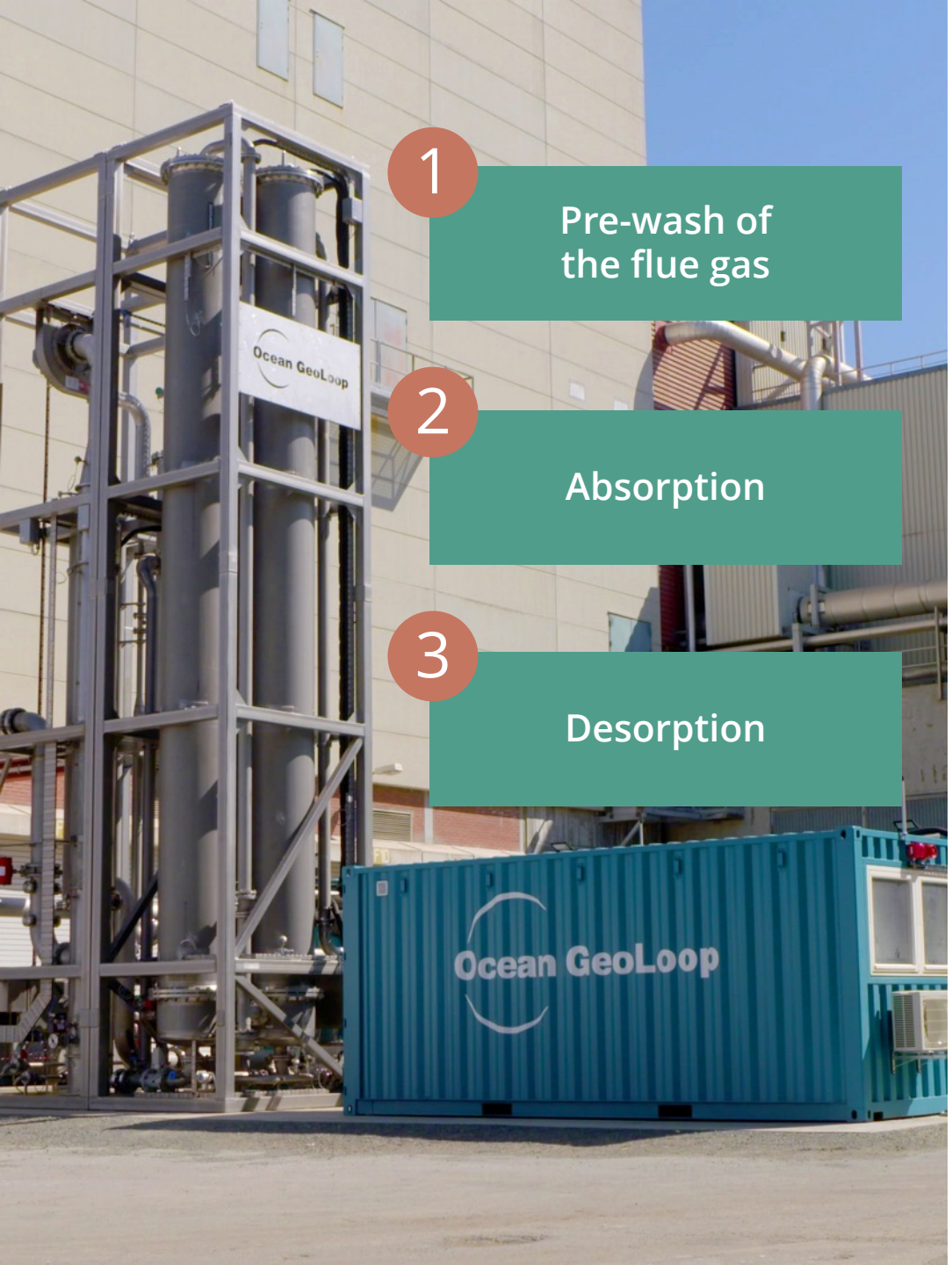

Carbon capture

Our carbon capture process in brief.

The GeoLoop carbon capture process is based on the capture of CO_2 in a liquid absorbent.

1) Flue gas is pretreated to eliminate acidic components and other pollutants that may affect the capture process.

2) The pre-treated gas proceeds to an absorption step drawing the CO_2 out from the remaining flue gas.

3) The liquid absorbent and CO_2 is separated in the desorption step allowing the collection of the CO_2 as a product.

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Features – currently being industrially verified

Our technologies

GeoLoop Carbon Capture

Our point source carbon capture unit captures CO_2 from a point source emitter and can turn it into pure, liquid state. The key features of the technology which are demonstrated at the carbon capture pilot plant at Norske Skog Skogn are:

- Clean and green
- End of pipe solution
- Universal absorption technology
- Highly stable and safe operations
- Fully autonomous operations
- Low and flexible footprint
- Lower capex and operating costs

Co-funded by Innovation Norway

Innovasjon Norge

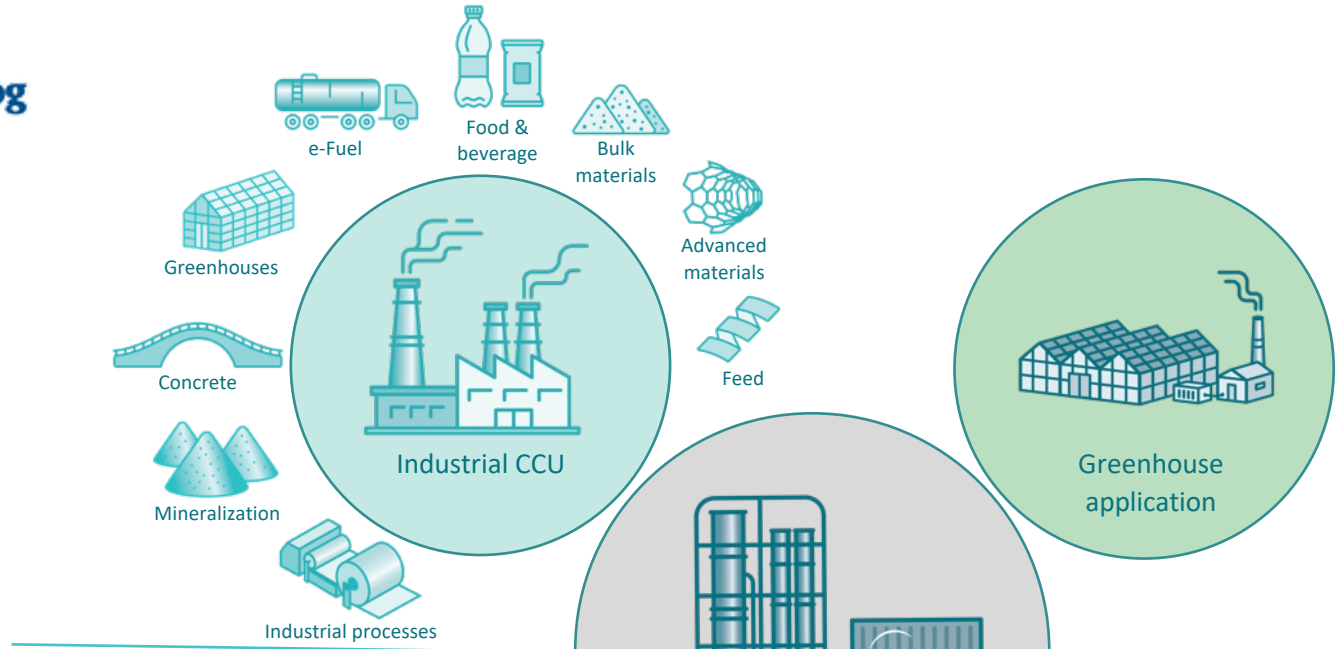
Our customer approach

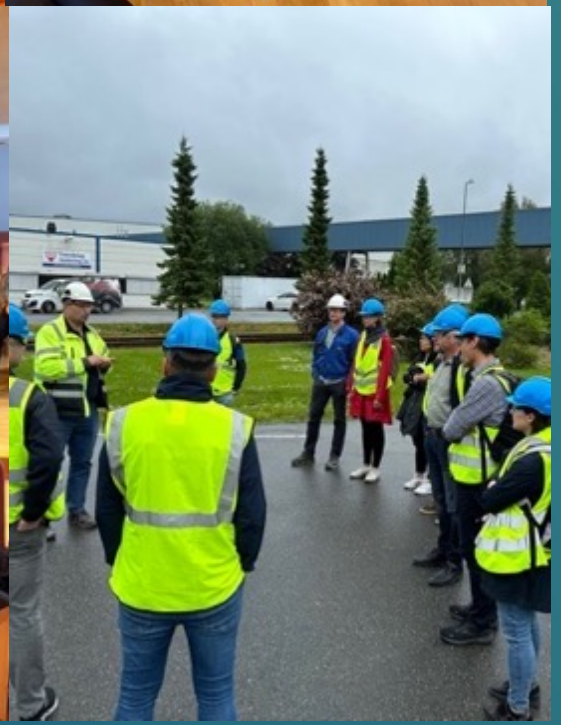
Fruitful collaborations with several leading industry companies.

In order for carbon capture to become a measure that has a significant global effect, there are several barriers that the industry addresses such as: High cost, energy availability, integration costs at existing plants, HSE concerns, robustness of solutions, and non-existing or immature CCUS value chains. These barriers motivate Ocean GeoLoop and the staff´s effort in developing customized and competitive solutions for carbon capture.

Since 2020, Ocean GeoLoop has experienced great interest in the company's solutions for carbon capture. In this chapter we give a brief introduction to some industry partners with whom we work to develop commercial studies and activities. These are companies with an open innovation culture that work in broad partnerships to find solutions. This is completely in line with how we work in Ocean GeoLoop.

Roadmap to market





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CarbonProof!

CARBON PROOF

Grønn plattform-initiativet Carbon Proof

Visjonen og planene til CarbonProof

Hovedmålet er å implementere og **demonstrere integrert karbonhåndtering gjennom industriell symbiose i Midt-Norge**, maksimere utnyttelsen av karbonrike sidestrømmer via innovative CCU-teknologier med fokus på fôringredienser og byggematerialer. Dette oppnås ved følgende sekundære mål:

1.
Optimalisere og **demonstrere CO_2-fangstteknologi fra forbrenning av biomasse og mineralproduksjon** for å gi råstoff til mineralisering og gassfermentering.

2.
Utvikle og **optimalisere mineralisering av fanget CO_2 i papirfabrikkens** flyveaske (PPFA) og kalkovnstøv (LKD) fra produksjon av brentkalk.

3.
Utvikle **effektiv bioteknologiske prosesser for produksjon av fôringredienser fra fanget CO_2**, med utnyttelse av N og P fra rester fra biogassproduksjon.

4.
Utføre **oppskalering av CCU-teknologier og utføre case-studier som demonstrerer anvendeligheten av industrielle CO_2-baserte fôr- og byggematerialer**.

5.
Vurdere drivere og barrierer for industriell symbiose og utføre dyptgående TEA, LCA og sLCA, som grunnlag for tilpasning og replikering i andre industriklynger i Norge og utover.

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FRANZEFOSS MINERALS
ecopro ecologic bioproducts
Felleskjøpet
OVER HALLA BETONGBYGG
civac
Ocean GeoLoop
Norske Skog
NOAH
BIOKRAFT
SKRETTING a Nutreco company
GRANDE Entreprenør
Chevron
VEIDEKKE

Ocean GeoLoop

Takk for oppmerksomheten

Lykke til videre WoodWorks!

Vil du vite mer? https://oceangeoloop.com/wp-content/uploads/2023/09/ocean_geoloop_half_year_report_2023.pdf