BORG CO₂

Status



2nd November, 2022



Executive Summary

BorgCO2

- Founded to develop an industrial CCUS cluster in Norway in 2018;
- With solid backing by Fredrikstad Municipality, Climit, Norwegian and international partners and led by experienced management with 25+ year experience in waste-to-energy and CCUS;
- With a conservative approach to develop the cluster in 3 subsequent phases, start with small-mid size plant and grow organically to create a fully integrated cluster
- With many innovative features likely to be replicated in similar CCUS initiatives across Europe: Build-own-operate model applied for the first time to capture facilities, first CO2 terminal open to third parties;











Borg is developing a **630 ktpa industrial CCS cluster** – 70% Biogenic CO2 – in the South of Norway with first operation in 2026

Borg will "**build-own-operate**" the capture facilities, transport the CO2, and store it in an offshore subsurface location in the North Sea, being developed by Northern Lights

The Company has received **funding from CLIMIT**, finalized the **Pre-FEED studies** and is supported by **several strategic partners**:



- <u>Phase 1</u>: 120ktpa of CO₂ capacity from two Waste to Energy emitters (FREVAR and Kvitebjørn)
- <u>Phase 2</u>: 180ktpa of CO₂ from additional capture facilities at Norske Skog Saugbrugs and Sarpsborg Avfallsenergi
- <u>Phase 3</u>: 330ktpa of CO_2 from other emitters

Up to 630ktpa of Captured CO2







Øra Industry Area

- Carbon Capture
- Storage
- Shipment

Start capacity 150 to 200k tpy with 2000m3 tanks





Led by experienced management



Tore Lundestad CEO

- 14 years of experience as port Director for Borg Havn
- Several trust position in national and international ports
- Tore has a master degree in civil engineering from NTNU



Pål Mikkelsen Business Developer

- > 20 years of experience from WtE, both as COO and CEO
- Owner of Stormkast Utvikling, providing expertise in WtE, flue-gas cleaning, and CCS development



Jon Hermansen Project Manager

- CEO and owner of Jontec AS, providing expertise in business development, project and innovation management
- Board member of CCUS Norway



Backed by strategic partners

Shareholder	Strategic	% Ownership
Borg Havn IKS	Inter-municipal company with strong connections with the local communities providing port services and logistics	24,3 %
Baker Hughes	Leading energy technology company developing Carbon Capture technologies	20,9 %
Stormkast Utvikling As	Expert in WtE, flue-gas cleaning, business development, and CCS development	7,8 %
Bioform AS	Producer of flue gas treatment components and systems	7,8 %
Norske Skog Saugbrugs AS	Biogenic emitter that will be part Phase 2	7,8 %
Hafslund Oslo Celsio	Supplier of district heating services across Norway that will be part of Phase 1	7,8 %
Acinor AS	Industrial chemical distributor and handling agent	7,8 %
CO ₂ Capsol AS	Norwegian Carbon Capture technology developer	7,8 %
FREVAR KF	Municipality with a Waste to Energy plant that will be part of Phase 1	7,8 %

CAP at Technology Center Mongstad facility

Image provided courtesy of Technology Centre Mongstad

Chilled Ammonia Process

- CAP is a **post-combustion carbon capture technology** based on chemical absorption of CO₂ with an aqueous ammonia solvent
- CAP is applicable to a **wide range of flue gases** (e.g., fossil-based power generation, waste to energy and biomass power generation, hydrogen production through steam methane reforming, cement production, etc.) and can achieve capture rates in excess of 90%
- CAP has been **validated in several test facilities** with a design capacity of up to 100,000 tonnes of captured carbon dioxide per year, treating flue gases generated by oil boilers, coal boilers as well as industrial off-gases
- The technology readiness level of CAP is TRL7 according to the European H2020 scale





Phase 1 – Frevar & Kvitebjørn plants



- On the first phase, Borg CO₂ will capture ~120ktpa from the flue gas emitted by the Waste to Energy plants of FREVAR and Kvitebjørn, located in Fredrikstad
- Borg has submitted a request to Enova to fund 45% of the total Capex and 2 years Opex and intends to submit a grant application to the EU Innovation Fund in early 2023
- The plant will utilize the Chilled Ammonia Process (CAP) technology which has been piloted and tested in several locations worldwide, including Technology Center Mongstad
- The plant is expected to come online in 2026:





Project CO Structure



The Capture Projects will be developed through multiple Special Purpose Vehicles which will:

- Build the Carbon Capture plant;
- **Own** the equipment; and
- **Operated** the plant for the life of the project

The emitters will pay a fee per ton of CO2 captured and share the benefits of CO2 credits

