

Bio-CCUS projects in Finland and beyond

Helsinki - 16th April 2024

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ACCELERATE PLANET POSITIVE

Enabling carbon reduction and removal from industries and energy solutions

DEVOTED TO:
Working together

DEVOTED TO:
Bold innovation

DEVOTED TO:
Doing the right thing

Agenda

Who are ACC and what do we do?

ACC's role in the Bio-CCUS value chain

Reducing execution and delivery risk through modularization

Delivering real world CCUS projects today

Maturing a Bio-CCUS project from Pre-Feasibility to Execution

Challenges to scaling the Bio-CCUS industry today

Aker Carbon Capture | Summarized

Pure play carbon capture company



- **Pure play** carbon capture company delivering ready-to-use plant
- **Certified and validated** market-leading proprietary technology with close to 65 000 operating hours
- Utilizing **best in class HSE** friendly solvents and patented plant technologies

...combining a global team with a strong ambition

10 in 25

Secure contracts to capture **10** million tonnes of CO₂ per annum by **2025**

- Realized by **more than 130 employees**
- Located in **seven different countries**
- Focusing on developing carbon capturing **projects in Europe and US**
- Building upon **more than two decades of carbon capture experience**

...with a strong technology portfolio



JUST CATCH™
Capacity:
40, 100, 400 KTPA



BIG CATCH™
Capacity:
>500 KTPA



OFFSHORE JUST CATCH™
Capacity:
120-260 KTPA

...validated for multiple industries



...delivering large scale projects today



KALUNDBORG CCS
5x Just Catch™ 100
Capacity: 500 KTPA
ØRSTED | MICROSOFT



BREVIK CCS
Big Catch™
Capacity: 400 KTPA
HEIDELBERG MATERIALS



TWENCE CCU
Just Catch™
Capacity: 100 KTPA
TWENCE W2E

...through strong partnerships



Delivering 1 million tonnes of CO₂ Capture Capacity today...



TWENCE CCU

Waste-to-Energy, Netherlands

Just Catch™ 100

Capacity: 100,000 TPA



BREVIK CCS

Cement plant, Norway

Big Catch™

Capacity: 400,000 TPA



ØRSTED CCS

Power stations, Denmark

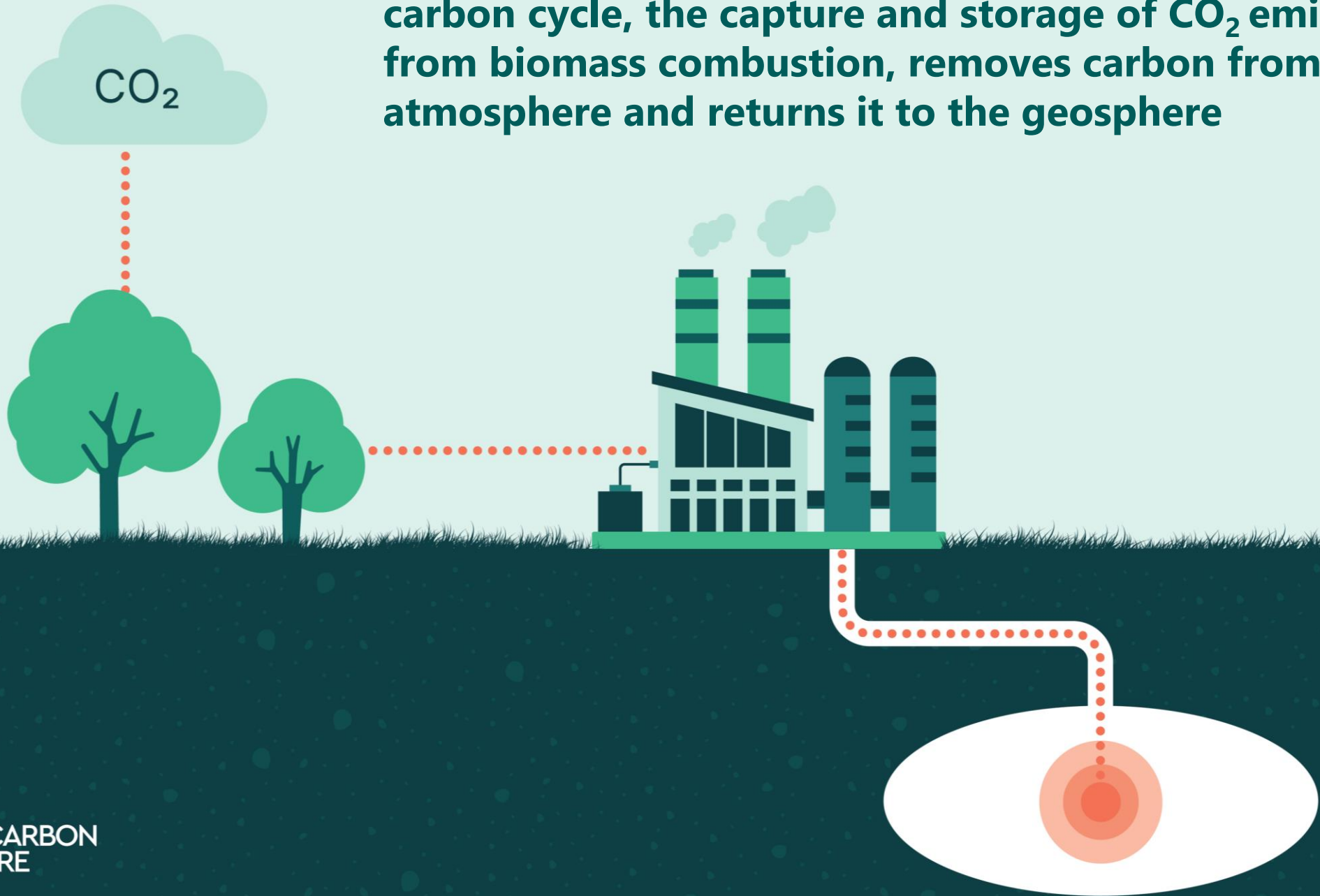
5 x Just Catch™ 100

Capacity: 500,000 TPA

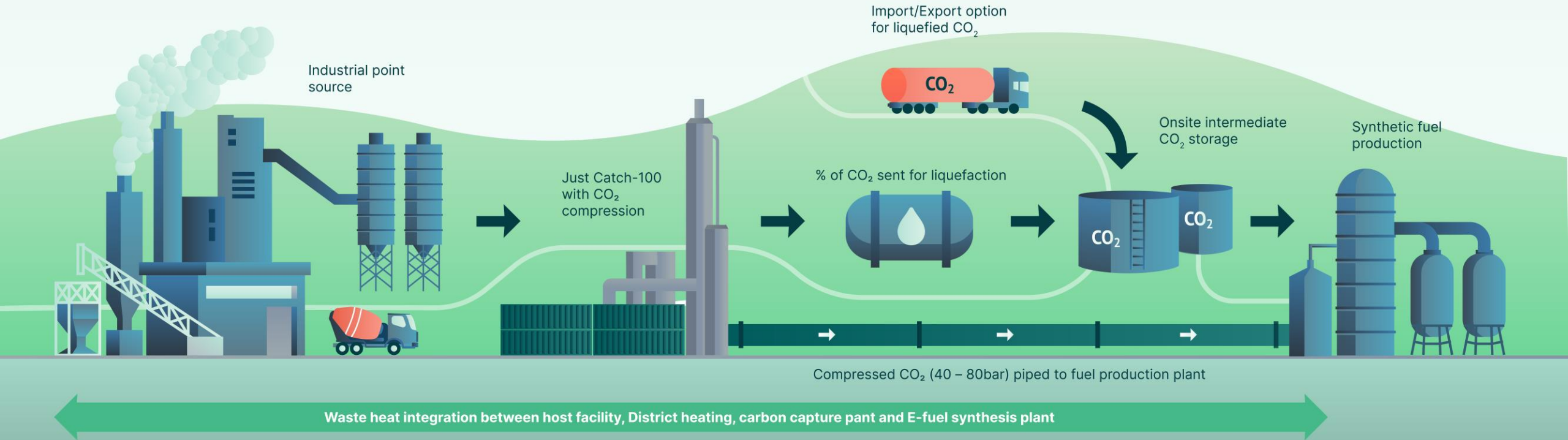
**Learn more on the
KLIMPO podcast**



As carbon from sustainable biomass is part of the natural carbon cycle, the capture and storage of CO₂ emitted from biomass combustion, removes carbon from the atmosphere and returns it to the geosphere



CO₂ capture solutions for PtX



Aker Carbon Capture's product portfolio



Just Test

Capacity: 1.5 kTPA

- Complete carbon capture plant in pilot scale
- Available for test campaigns
- Easily transportable to site



Just Catch™ 40

Capacity: 40 kTPA

- Delivery time: <22 months
- Footprint: ~13 x 23m
- Ideal for PtX
- Up to three units in parallel



Just Catch™ 100

Capacity: 100 kTPA

- Delivery time: <24 months
- Footprint: ~19 x 24m
- Up to three units in parallel
- Our most popular model



Just Catch™ 400

Capacity: 400 kTPA

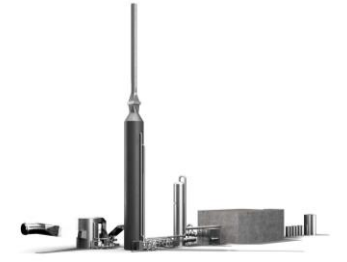
- Delivery time: ~24 to 30 months
- Footprint: ~30 x 55m
- Up to three units in parallel



Just Catch Offshore™

Capacity: 120 – 360 kTPA

- Delivery time: ~22 to 24 months
- Footprint made for FPSO applications



Big Catch™

Capacity: > 400 kTPA

- Delivery time ~36 months
- Footprint: Varies as per selected capacity and shape of available land

**Mobile and modular
test plant**

Modular, cost-efficient carbon capture plants

**Mature solution for
offshore use**

**Customized to any
emission size**



**Field-proven
product based on real-life projects**

ACC Just Catch™

Incorporating best of Brevik CCS and Twence CCU

Based on the experience from 15 years of technology and solvent development

Fast and predictable delivery

2 sizes (100/400 ktpa) – Can be run in parallel trains

Standard equipment used

Minimum engineering required

Reduced construction work on site

Easy transport, installation and hook-up

Compact layout



WASTE TO ENERGY TWENCE CCU

Hengelo,
Netherlands

- Capturing 100,000 TPA CO₂
- First of a kind modular carbon capture project on track
- Containers received and installed on the same day
- CO₂ will boost local greenhouse production

November 2021

SIGNED CONTRACT

April 2023

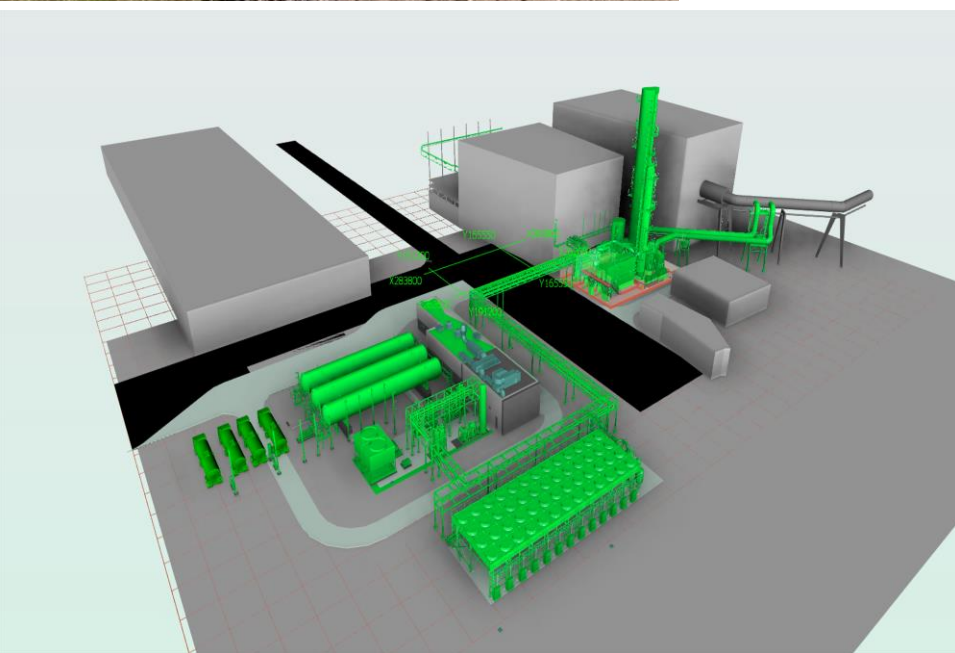
ALL COLUMNS AND JUST
CATCH™ CONTAINERS
INSTALLED ON SITE

End 2023

PLANNED
DELIVERY

What can be achieved in a year?

Follow Twence on LinkedIn



NORCEM HEIDELBERG MATERIALS BREVIK CCS

Norway

- 400,000 TPA CO₂ capture and liquefaction plant
- Major equipment installed onsite, incl. all nine Waste Heat Recovery Units, Flue Gas Fan and Direct Compact Cooler
- Creating local employment and strong partnerships
- CO₂ transport by ship to permanent storage as part of Northern Lights




What can Aker Carbon Capture do for you?





Note that for Just Catch solutions, the (Pre-)Feed steps are typically not required, saving costs and time.

Key challenges to scaling the Bio-CCUS industry

 CO₂ capture is just one part of the value chain, significant part of the project risk and costs resides with T&S


 Cross value chain cooperation and alignment is critical to build CO₂ logistics infrastructure


 Project specific factors influencing the business case - **Location, Location, Location!**

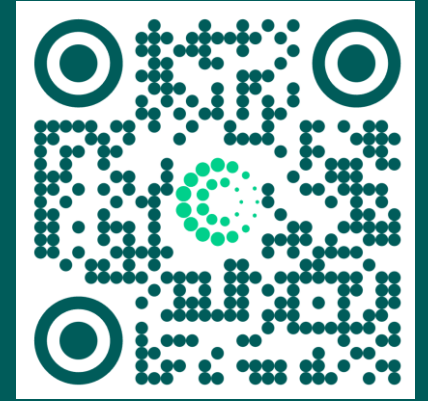
 But also, scale, utilities and steam price/availability, impact of CCS on existing operations

 Financing requirements: Need for lump sum fixed price contracts which is pushing CAPEX ↑

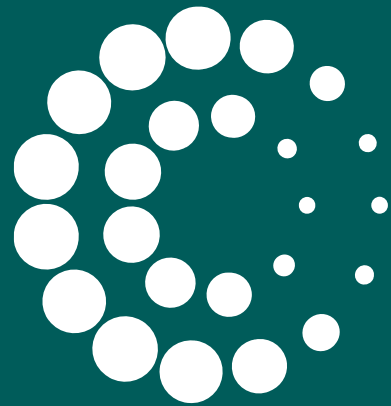
 Enabling regulatory environment, alignment around MRV methods and standards

 State support initiatives that allow stacking of VCM revenues, engagement by multiple buyers even for small volumes of CDR driven by commitment to long term decarbonization goals (SBTI linked or otherwise)

 Bio-CCUS provides a critical tool to contribute towards global decarbonization goals – There is a significant market emerging for biogenic CO₂ for both utilization and CDR– Supplying that market requires action today



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AKER CARBON
CAPTURE

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