

Hafslund Oslo Celsio CCS project

Energy from waste with negative emissions

World's first full-scale CCS project on Waste-to-Energy from 2026

- Part of **Longship** CCS project; permanent geological storage below seabed
- 400 000 tons CO₂ /year, 90% CO₂ capture
- CCS on Waste-to-Energy provides 50 % CDR
- Studies completed 2015-2021
- Demonstrates truck transport of CO₂ to port
- Successful testing on real flue gas 2018, new test period with modified amine Fall 2021
- Technology supplier Shell with full-scale experience, EPC contractor TechnipEnergies



Celsio med nye eiere



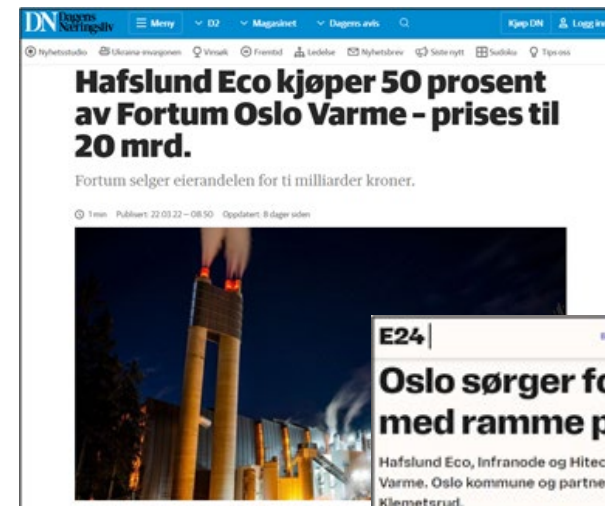
Hafslund
Eco
(60 %)

HITECVISION
(20 %)



Infranode
(20 %)

- Aksjekjøpsavtale signert **22. mars 2022**
- Fullført **19. mai 2022**
- Selskapet blir sterkere knyttet til Oslo kommune og utvikling av byens egne energisystemer
- **CCS-finansiering sikret med spleiselag**



De vil satse milliarder på å kjøle ned folk i Oslo

De nye eierne av Fortum Oslo Varme har planer som går langt utover fangst av CO₂. De lover å investere nær 10 milliarder kroner i både fjernvarme og fjernkjøling i Oslo de neste årene.



CCS project financing

- **Total Project cost 910 Mill EUR**
 - CAPEX 550 Mill EUR
 - OPEX 350 Mill EUR for 10 years operation
- **State support 300 Mill EUR**
 - +10 year support period for operations;
Payment per ton CO2 delivered at port (= ETS price)
 - +10 years transport and storage service
- **City of Oslo direct investment in preference shares of 210 Mill EUR**
- **Remaining funding 390 Mill EUR by Celsio**



Parliament of Norway
Acc: Stortinget.no



Oslo City Hall



Celsio plant



Challenges and main risks

- 1) Organization – necessary with more resources and different organisation structure than anticipated
- 2) Area demand
 - a) Logistics
 - b) Rig areas
 - c) Temporary solutions for parking, admin etc.
- 3) Final location at Port of Oslo
- 4) Civil works, infrastructure and plans for building and operations simultaneously
- 1) Local power demand and timeline for new transformer station



Potential future revenues

- **Avoided costs (fossil part of emissions)**

1. Carbon removal (CDR) certificates
2. Net Zero Plastic certificates
3. Increased gate fee for carbon neutral waste services
4. Improved standing for district heating
5. CCS business development



Første sprengning

24. august
2022

Foto: True Stories

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Thank you

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