Nordic Energy Day
Industrial Demand and the Nordic Hydrogen Industry
2023
Driving the transition to renewable aviation

Norsk e-Fuel in brief

We turn water and $\text{CO}_2$ into the sustainable fuels of the future to provide for a world without fossil fuels.

- **Unique technology approach** allows for highest efficiencies and circular processes
- **Growing team of experts** backed by >2,000 specialists from partners drives success
- **Access to ideal sites with best conditions** prepares quick production ramp-up
- **Strong partner network** guarantees integration across the whole value chain e.g.:
This is how our solutions works

Using captured CO\(_2\)

Used as a fuel in aviation

Refining to sustainable aviation fuels

Combine with H\(_2\)O to produce a renewable, synthetic crude oil
Cutting emissions of the top 5 most frequently serviced flight routes by 50%

Replicability to scale

With our first **50 m liters plant**, we lay the basis for our easy to replicate blueprint plant. One full-sized **100 m liters** plant will effectively cut the current flight emissions of the top 5 most frequently serviced flight routes within Norway by about **50%**.
We are building on the long industrial tradition of Mosjøen

Norsk e-Fuel’s Alpha plant
Industrial Demand
and the Nordic Hydrogen Industry
H₂ and its derivatives

The X in Power-to-X

- Hydrogen
- Methane
- Diesel
- Petrol
- Jet fuel
- Wax
- Methanol
- Propylene
- Ethylene
- Ammonia

Renewable Power + H₂

Electrolysis + H₂O

Methanation

Fischer-Tropsch Synthesis

Methanol Synthesis

Ammonia Synthesis

ASTM certified
E-Fuels are a necessity for the future

Aviation needs PtX fuels

GHG emission reduction
Gt CO$_2$e (billion tons)

Source: Mission Possible Partners, 2023
Industrial demand for e-fuel production

EU quotas sets increased power demand into law

ReFuelEU Aviation

SAF drop-in target from 2025 and specific min. sub-quota for synthetic fuels (PtX)

FuelEU Maritime

% GHG-reduction target from 2025 and specific min. sub-quota for synthetic fuels (PtX)

* Numbers based on historical trends and sector expectations on total EU aviation growth in fuel consumption. Conservative e-Fuel production efficiency improvements have been factored in.

*Assuming 80% GHG emission reduction for synthetic fuel
**Announced Power-to-X projects in the Nordics**

**Development towards 2030**

* Bubble size reflect the estimated annual energy consumption. Numbers based on Norsk e-Fuel’s market investigation. We make no claim to the completeness and accuracy of the data. Should only be used in an illustrative manner.*
The Nordic region can be Europe’s PtX hub

The opportunities and challenges for a Nordic PtX economy

Key opportunities in the Nordics:
- Legislation (REDII) puts the Nordics in an advantageous position.
- Large electricity surplus and continued growth in renewables
- Good access to other feedstocks needed for PtX
  - Biogenic-CO₂, Land, etc.

Challenges to be addressed:
- Power availability starting to become a bottleneck.
- Supply chains is not mature.
- The right political support for early adopters and offtakers.
Thank you!

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