Role for e-Fuels in EU transport?

Industry perspective on future developments

12.01.2018  Nils Aldag, Managing Director / Founder, Sunfire GmbH
e-Fuels - Renewable energy for transport

Renewable Hydrogen ($H_2$)
Conversion of water into hydrogen and oxygen

Renewable Electricity Only!
Wind and solar costs
$<$ 5 € Cent/kWh
@ ~4.000 full-load hours

Carbon Capturing
$CO_2$ extracted from unavoidable sources or the atmosphere

e-Crude, e-Hydrogen

Ready-to-Use
Direct effect on existing EU fleet
Suitable for hard-to-electrify sectors
No-regret measure as e-Fuels can be delivered to all forms of transport and are needed in any 2030-2050 scenario

e-Diesel, e-Gasoline, e-Methanol, etc.
Europe - Global leader in e-Fuels development

Global Leader in CO2 capture from air (TRL 5-6)
Climeworks, Switzerland / Germany

Global Leader in green hydrogen generation (TRL 7-8)
Hydrogenics, Belgium / McPhy, France / ITM, UK

Global Leader in e-Methanol (TRL 8-9)
Carbon Recycling International, Iceland

Global Leader in e-Crude (TRL 8-9)
Sunfire and Ineratec, Germany
e-Fuels predicted to play large role in the future

- In 2050, hard-to-electrify sector will make up 50% or 5,000 PJ
- For e-Fuels to be available in those quantities after 2030, we must start now

Calculation based on dena/LBST „E-Fuels - The potential of electricity based fuels for low emission transport in the EU”, 2017
Key Positions from Sunfire

+ Electricity must be renewable - flexible operation allows 100%
+ Key criteria to impose: Full cost coverage, guarantee of origin, time- and space-related reference
  + Power-Purchase-Agreement + GoO enable all four criteria
+ Not useful: “Additionality” or “direct connection”

+ Carbon dioxide must come from unavoidable sources
+ CO₂ from coal fired power plants is avoidable!
+ Short-term unavoidable: Steel, chemicals, cement and biogas
  + Long-term: Direct air capture
+ In both cases atmospheric CO₂ balance is neutral
+ Create a registry which CO₂ sources are unavoidable
e-Fuels will be able to compete with fossil fuels

- 100% e-Fuel will be able to compete with fossil fuels
- Effect when blended with fossil fuel negligible for end-customers
- Additional costs compared to battery mobility is 2,000 € / 100,000 km
Key Positions from Sunfire

- Be technology neutral - the plate is full enough for all of us
- Prevent past mistakes: 2007 (1G biofuel-only) and 2017 (battery electric-only)
- Equal footing for batteries, hydrogen, e-Fuels and advanced biofuels

- Battery electric mobility is more efficient for passenger transport, but requires additional investment in grid and seasonal storage
- Do not impose unjustified multipliers for any technology

- Start with passenger transport, as regulatory framework (RED) exists
- Switch to aviation, shipping, chemicals, steel, etc. (hard-to-electrify) once legislation is in place
- If necessary, impose a maximum quantity in RED II
e-Fuels put wind and solar power in the tank...

...Done the right way, it’s a huge opportunity for Europe!

Artist: Jean-Yves Hamel
VIELEN DANK!

ENERGY EVERYWHERE

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