



Cefmof
Hydrogen

Vetytalous käytäntöön

Cefmofin pilotit ja kumppanuudet

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Who We Are



Name: Central Finland **Mobility** Foundation (**Cefmof**)

Type: An independent, non-profit organization

Location: Jyväskylä, Finland

Established: January 2024

Shared Vision: Co-creating a carbon-neutral future
in Central Finland

Founders:

JYVÄSKYLÄ



Cefmof Strategic Focus areas

Through offering experiences and accelerating innovations,
building H2 ecosystem in Central Finland

We enable hydrogen experiences to increase awareness of hydrogen's potential.

Experience



We foster innovation to accelerate carbon neutrality with hydrogen.

Innovation



Ecosystem

Through experiences and innovations, Cefmof builds a hydrogen ecosystem.

Jyväskylä

From Plans to Real Life

Delivering experiences and accelerating innovation to bring hydrogen into everyday life.

Key Milestones (Jan 2024- May 2026)



Experience

Awareness Building

Demonstration

Everyday Experience

Innovation

Exploration

Pilots

Implementation

Ecosystem

Engagement

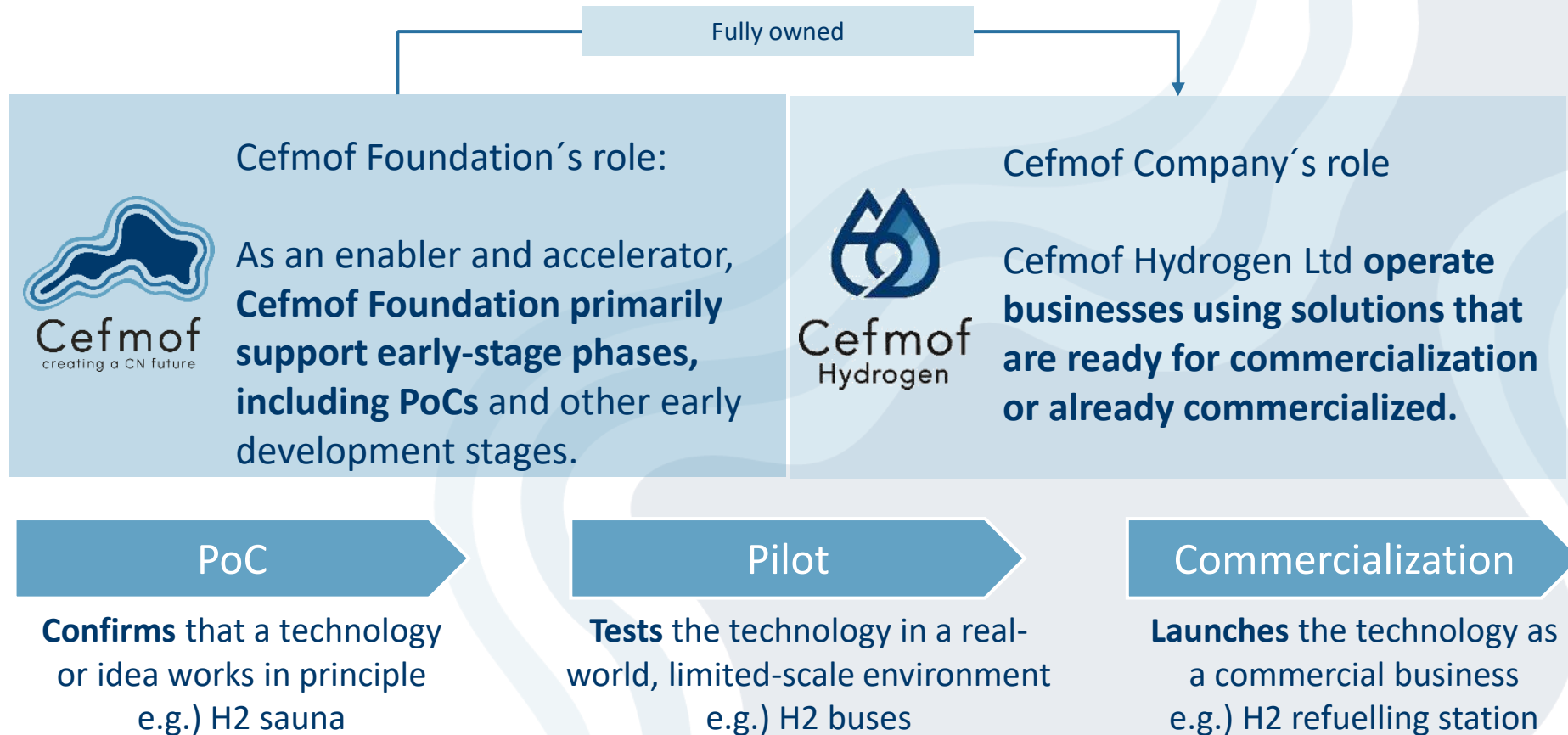
Collaboration

Expansion

Cefmof Foundation and Cefmof Hydrogen Ltd roles

Cefmof foundation supports early-stage phases, including Proof of Concepts (PoC).

If the PoC works and it can be a business, Cefmof Hydrogen Ltd will take over the projects and operate them as a business.



Hydrogen Sauna



Hydrogen Sauna

We bring new uses of H₂ to life and facilitate innovation.

- **Harvia and Toyota Co-Develop Concept Model for Hydrogen Sauna Utilizing Hydrogen Combustion Technology**
 - Cefmof connects both parties and supports to promote hydrogen.



Hydrogen Sauna Project Milestones



September 2024
First discussion with Harvia and TMC



November 2024
TOYOTA top management visited the Harvia HQ
Had an agreement on conducting a demonstration at Rally Finland 2025 for the future hydrogen society.

May 2025
Internal customer evaluation blind test

June 2025
Press release

April 2024
Cefmof experienced the first H2 sauna prototype at TMC
Impressed by the tent sauna experience utilizing a hydrogen grill, Cefmof contacted Harvia.



January 2025
Engineers from TMC arrived in Finland, and full-scale joint development begin with Harvia



July 2025
Public event

Hydrogen Sauna Boat



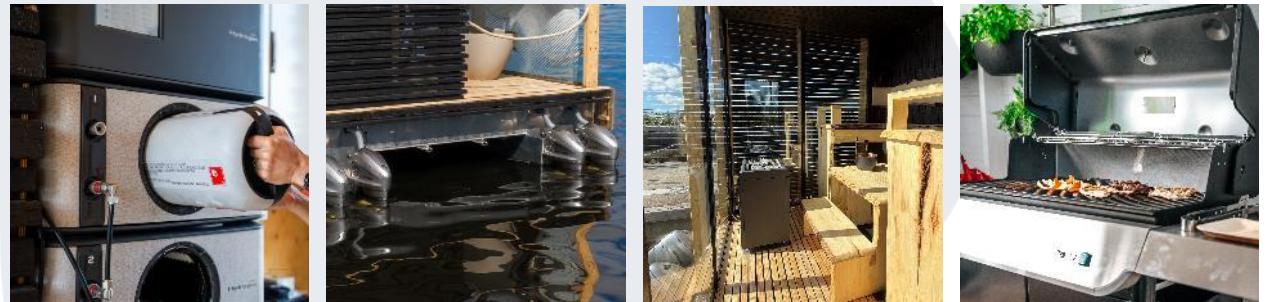
Hydrogen Sauna Boat



Hydrogen Sauna Boat

Exploring Practical Hydrogen Use in Marine Applications

- Joint PoC with Yamaha to validate hydrogen technologies for marine applications
- Swappable hydrogen cartridges reduce the need for fixed refuelling infrastructure and support propulsion, sauna heating and cooking



H2 Sauna Boat in brief

- Length: 14.36 m
- Beam: 4.36 m
- Maximum number of persons: 12
- Propulsion system: 4 × Yamaha HARMO electric control systems
- Electricity generated by a hydrogen fuel cell
- Hydrogen is also used to heat the sauna and power the grill
- Approximately a two-hour operating experience with around one kilogram of hydrogen
- Hydrogen cartridges can be quickly replaced at the harbour for the next departure



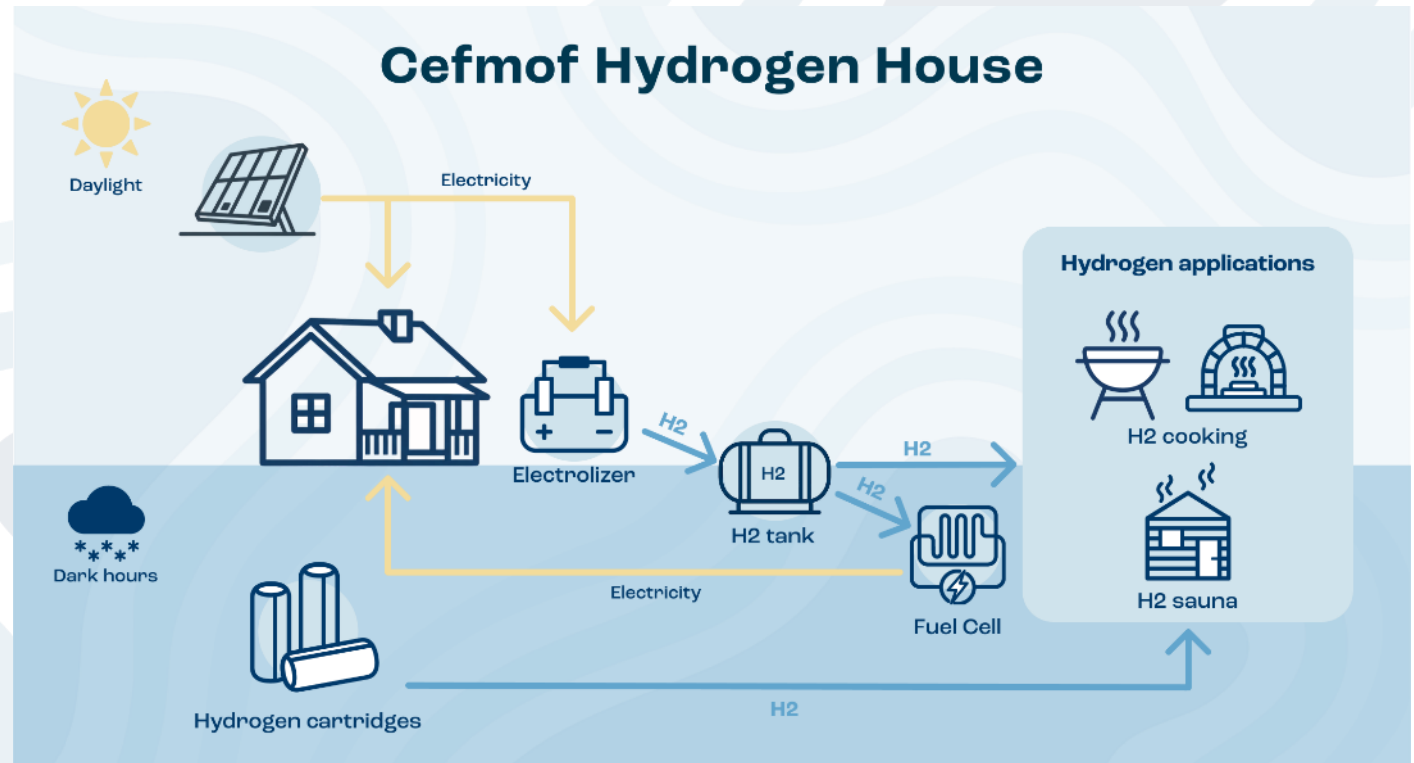
Hydrogen House project



Hydrogen House

Accelerating H2 Commercialization through Residential-Type Demonstration

- Integrates H2 production, storage, and utilization in one living environment
- Real-life testing of cooking, heating, and off-grid solutions



Hydrogen House



Hydrogen Fireplace & Oven

A hydrogen fireplace warms and brightens the room, while a hydrogen oven expands cooking possibilities.



Hydrogen Grill

The hydrogen flame makes food crispy on the outside and juicy inside.



Hydrogen Sauna

Hydrogen sauna generates only steam and warm air, emitting no CO2 during use.



Technical Garage

When solar power is unavailable, the fuel cell generates electricity from hydrogen while reusing waste heat for thermal management. Backup mobile hydrogen cartridges are also stored in this garage.



Electrolyser & Hydrogen Storage

The electrolyser produces hydrogen using electricity generated from solar power. The hydrogen is stored in tanks with a maximum capacity of 90 kg. The hydrogen tanks continuously supply hydrogen to each application and supply hydrogen to the fuel cell when solar power is unavailable.



H2 experience events

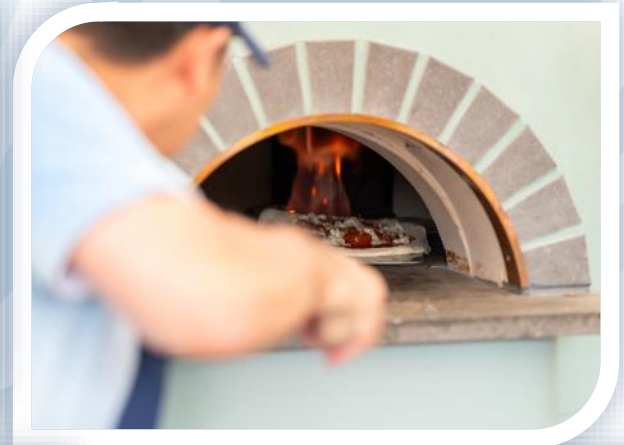
We provide experiences for the community to raise awareness about hydrogen.

- **H2 exhibition at Aalto2 museum**

-> The contents moved to the University of Jyväskylä and it became part of the science education activities.

- **H2 experience in daily life at the Rally Finland**

- Hydrogen cooking demonstration
- Hydrogen powered radio-controlled car
- Hydrogen roasted coffee
- Hydrogen cargo bike etc



Fostering future innovation

We foster H2 innovation by partnership.

- **H2 Innovation Alliance launched – Hydrogen innovation partnership in Central Finland**
 - Partnering with local stakeholders interested in H2
 - Expanding to involve partners from outside the region
- **Support hydrogen research at Universities, Universities of Applied Sciences and national research institute**
- **Connecting with emerging innovators, including startups**



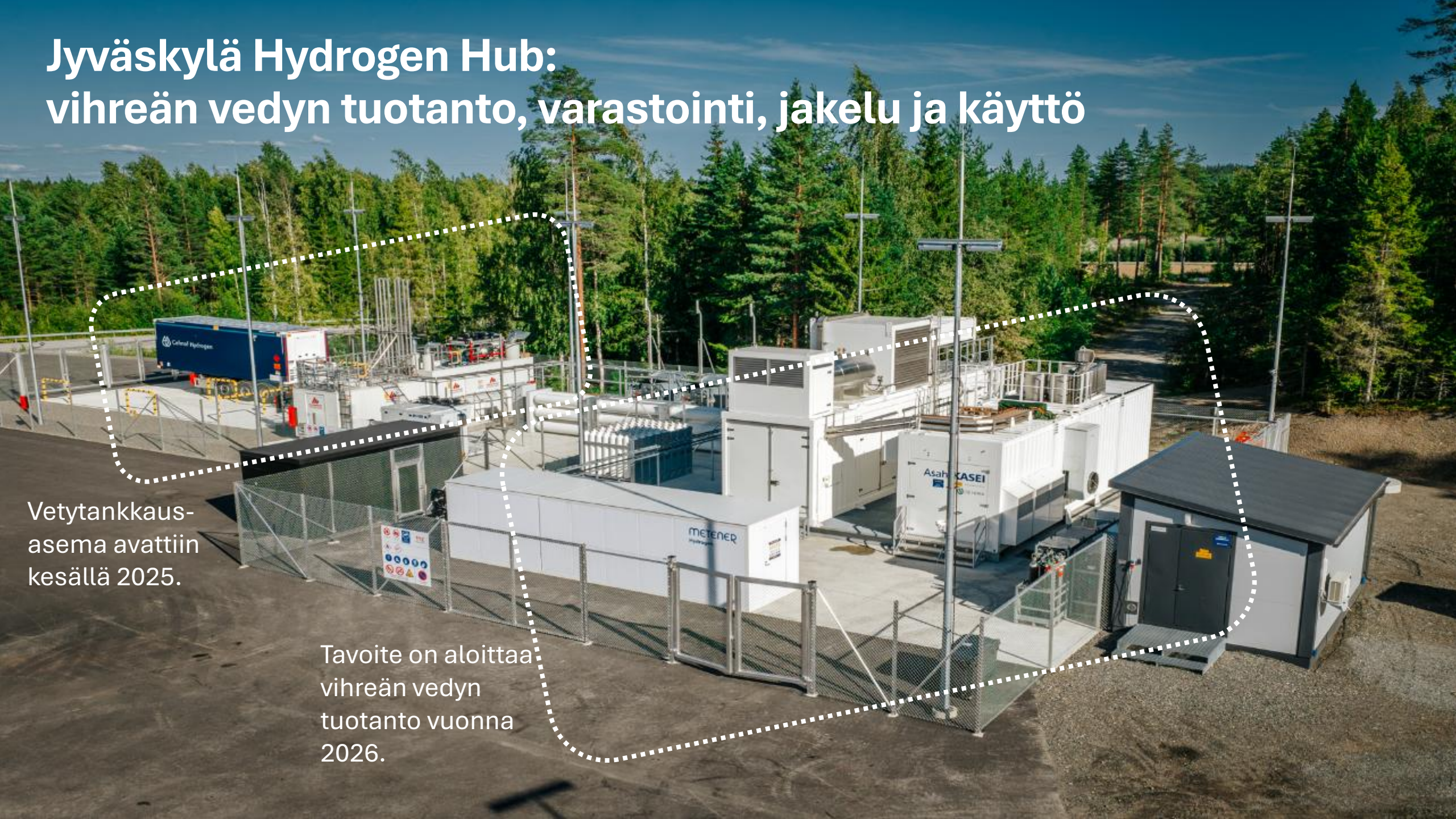
Jyväskylä Hydrogen Hub: vihreän vedyn tuotanto, varastointi, jakelu ja käyttö



Jyväskylä Hydrogen Hub: vihreän vedyn tuotanto, varastointi, jakelu ja käyttö

Vetytankkaus-
asema avattiin
kesällä 2025.

Tavoite on aloittaa
vihreän vedyn
tuotanto vuonna
2026.

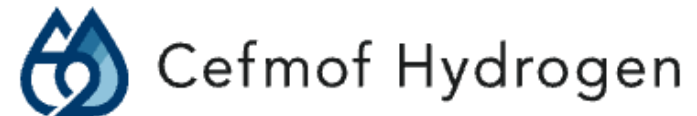


Reducinerin tutkimus- ja kehityskeskus: Biogeeninen CO₂ ja vihreä vety hyötykäyttöön



Biogeeninen CO₂ ja vihreä vety hyötykäyttöön

- **Reduciner** kehittää teknologiaa, jossa hiilidioksidia ja biopohjaisia hiilisyötteitä hyödynnetään uusiutuvien kaasujen ja aktiivihiilen tuotannossa. Samalla syntyy aktiivihiiltä.
- **Mustankorkean** biokaasulaitoksessa syntyvää biogeenistä hiilidioksidia ja **Cefmofin** tuottamaa vihreää vetyä hyödynnetään uusiutuvan metaanin valmistuksessa.
- Pilotissa tutkitaan mm. prosessin toimintaa, erilaisia syötteitä sekä lopputuotteiden ominaisuuksia ja laatua
- Tavoitteena on löytää teollisuudelle uusia tapoja korvata fossiilisia raaka-aineita uusiutuvilla vaihtoehdoilla.



Vetyajoneuvoista



Henkilöautot

- Viisi vetytaksia käytössä Jyväskylässä
- Useita yritysautoja
- Toyota KINTO flex –palvelu vuokraa Mirai-autoja
- Yksi Mirai-auto kaupungin henkilöstön käytettävissä OmaGo –palvelun kautta

Vetyrekat

- Paljon julkistuksia ja uutisia eri valmistajilta.
- Milloin saadaan Suomeen?

Vetybussit

- Viisi Caetano H2.City Gold bussia säännöllisessä liikenteessä syyskuusta 2025 alkaen

Vetybusseista

- **Cefmof** omistaa bussit
- **Koiviston Auto** operoi busseja osana **Linkki** - joukkoliikennepalvelua
- Kaksivuotinen pilotti
- Koiviston Auto huoltaa bussit, varikko varusteltu sitä varten
- Toistaiseksi vähän suoraan vetyyn liittyviä ongelmia
- Jatkuvaa oppimista ja kehittämistä yhteistyössä Koiviston Auton ja **Caetanon** kanssa
- *Esimerkki: akkujen kylmäsuojausta ja lämmitystä tarve parantaa*



Inspire, Impact, Excite





Cefmof
Hydrogen

**Kiinnostuitko? Haluatko kuulla lisää?
Seuraa meitä some-kanavillamme!**

Kiitos!