



Everfuel 

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HySynergy I

The making of a 20 MW electrolyzer plant

Jesper Veilstrup – Senior Project Manager



Electrolyser building and trailer bay from above | HySynergy

HySynergy - the concept

Phase I

- **20MW green hydrogen** production facility next to refinery
- Surplus heat used for district heating to **~1,800 households**
- H2 delivery by pipeline and Distribution Centre

Phase II

- **300MW** electrolyzer, 3x 100MW
- **Commercial agreement** with Crossbridge refinery
- Conditional **O2 offtake** agreement with industrial neighbour

Phase III

- **Ambition of 1 GW** in HySynergy
- Land reserved for full implementation

Phase 1: **20MW** operational in 2024 | Phase 2: **~300MW** | Phase 3: **1GW**

April 2024



The making of HySynergy 1

- **Offtake agreement with main stake holder Crossbridge Refinery**
- **Funding from Danish EUDP scheme (48 mill DKR) and CEF funding (max 20 %)**
- **Project to be "Proof of business" not "Proof of concept"**
 - Operation to be "as the wind blows"
- **Technology choice conservative to assure stable operation and de-risk the project timeline**
 - Atmospheric alkaline electrolyzers with a track record
 - 200 bar compression on 2 units from experienced vendor
 - 5 t 200 bar H₂ storage in ceramic vessels
 - 380 bar trailer fill compression and 5 trailer filling bays
 - Waste heat utilization and district heating integration for ~1,800 households
- **Design and integration of all plant parts not done before**
 - Prioritized inhouse engineering and competence development
 - Experienced consultant engaged for process design and process safety engineering
 - Close cooperation with all vendors

- **Main electrolyser facility ready for start-up**
 - First hydrogen produced in test mode
- **Mechanical and electrical installation well progressed**
- **Remaining commissioning ongoing**
 - Low pressure and utility systems functioning
 - Medium pressure system ongoing
 - High pressure system expected second half of 2024
 - Automation and signal testing has priority
- **Permitting and compliance**
 - Environmental and fire permits in place
 - PED certification and installation control almost done

HySynergy 1 – Project completion and status

Storage containers | HySynergy

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Pictures from HySynergy



Electrolyser room at HySynergy



Electrolyser room at HySynergy



One of two hydrogen compressors at HySynergy



Hydrogen distribution centre and distribution trailer | HySynergy

Learnings

- Frontload the project with resources and competencies
- Spend time on planning
- Anticipate challenges Electrolyser building
- Use authorities as sparring partners
- Do your research
- Focus on safety!

Transformer area with entrance to Electrolyser | HySynergy



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HySynergy 2 – project insights

Trailer filling compressor | HySynergy

- 300 MW electrolyser to be developed in 3x 100 MW stages
- FID planned to be in 2025, incorporating experiences from HySynergy 1
- FID is subject to regulatory approval and funding, as well as synchronisation with Crossbridge Energy's investment decisions for required refinery installations
- Investment budget of EUR ~255 million for 300 MW facility
- EUR ~33 million IPCEI CAPEX funding for the first 100 MW electrolyser
- EUR 28.3 million OPEX funding for ~30 MW capacity from Danish Power-To-X, highest support/MW in the tender

Expected sector coupling

Power

- 350 MW TSO grid agreement with Energinet
- Power to assure green hydrogen production – ongoing work for local solar power and PPA agreements

Water

- Consumption not to be from local drinking water sources
- Several sustainable paths to follow

Oxygen

- Offtake agreement for oxygen supply subject to FID for HySynergy 2 and offtaker

Waste heat

- Expected integration with district heating grid



Strong strategic partnerships



- Everfuel and Hy24 JV completed 2023
- Framework model to develop large-scale H2 production in SPVs
- Winner of first Danish PtX tender with highest OPEX support

3rd
largest TopCo
investor

Everfuel and Hy24 JV formally established

Combining the industrial experience and financial strength of two leaders within green hydrogen to accelerate and build electrolyzers in Nordics

- JV agreement signed in late September with Everfuel owning 51% and Hy24-managed Clean Hydrogen Infrastructure Fund 49%
- Initial equity funding transferred to the JV

Commitment to invest up to EUR 200 million in equity in the JV over time

- Equity matched with grants and debt financing for a total of EUR 1 billion investment → 1GW electrolyser capacity
- Cash flow to Everfuel from project development, construction and operations fees

First JV acquisition completed

- HySynergy phase 1 (HySynergy 1) for a sum of EUR 26.9 million and a debt free asset value of EUR 44.9 million.
- Loan provided from Hy24 to JV to repay European Investment Bank (EIB)

Winners of the first Danish Power-to-X tender (December 15th 2023)

- Offered DKK 211 million green hydrogen production and supply subsidy
- Second-biggest amount offered under the program with the highest support rate



EUR 26.9 million



- Strategic collaboration agreement with Japanese Majors
- Leverage competencies and resources to commercialise H2
- Committed to support potential future Everfuel equity financing

2nd
largest TopCo
investor

Strategic collaboration with ITOCHU and Osaka gas

Strategic collaboration with HyVC ApS a JV between ITOCHU Corporation and Osaka Gas Co., Ltd.:

- Ambition of accelerating development of green hydrogen production and sharing of related technology, know-how and best-practices
- Commitment to support a potential future Everfuel equity financing
- Leverage combined competencies and resources to develop and commercialise green hydrogen, initially targeting Germany, Benelux and the Nordic countries
- Over time expanding into new markets

