

Electrolyser Technology Development

Terry Austin
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How will Electrolyser Technology and Costs Develop?

“Tell us what your next electrolyser can do, and how much it will cost?”



Lessons Learned from Offshore Wind

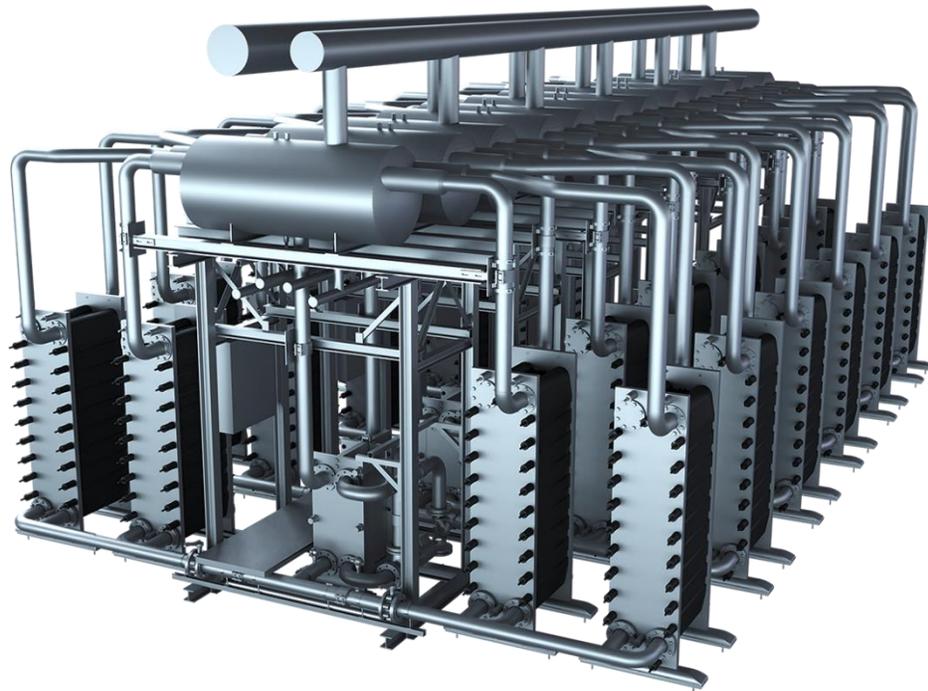


- 2 competing companies in the market
- Receiving conflicting messages (developers and banks)
- Stabilizing the technology
- Configuration and supply chain challenges
- Recruiting people with little manufacturing history

Silyzer 300

PEM electrolysis

Silyzer 300 – Array (24 stacks)



17.5 MW
plant power demand

>75.5 %
plant efficiency

24 stacks
to build a full stack
array

335 kg
hydrogen per hour

Electrolyser Development



Since
1995

2011

2015

2019

2022

2023

Testing in
Lab-Scale and
Short-Stacks



Lab-scale demo



**World's largest
Power-to-Gas
plants with PEM
electrolysers** in
2015 and 2017 built
by Siemens Energy



**World's largest
Power-to-Gas plant**
with PEM electro-
lysis in operation



eMethanol Kassø:
First largest
eMethanol plant for
shipping
announced



**World's first
integrated &
commercial large-
scale plant for
e-fuel production
complete.**



Continuous laboratory and test operation

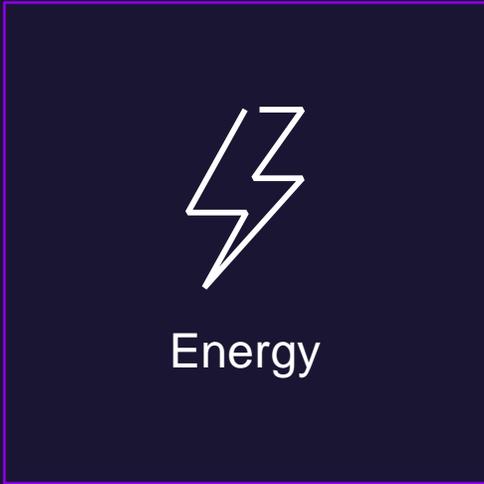
Silyzer 100 & Silyzer 200 in test rig and commercial operation

Silyzer 300 in test rig

Test plant operation

1 Operating Hours; Data OH & tons as of Oct 2020

Electrolyser Development



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Projects completed or in implementation

6 MW

8.5 MW

17.5 MW

50 MW

70 MW

8 MW

200 MW



H2Future Linz

- Green hydrogen for the steel making process
- Our partners: VERBUND, voestalpine, Austrian Power Grid (APG), TNO, K1-MET



Wunsiedel

- Green hydrogen for industry, grid services and mobility
- Our partners: Siemens AG, WUNH2, SWW Wunsiedel GmbH



Oberhausen

- Green hydrogen for Air Liquide pipeline infrastructure
- Our partner: Air Liquide



Kassø

- Green hydrogen for CO₂-neutral shipping at large-scale
- E-methanol
- Our partner: European Energy



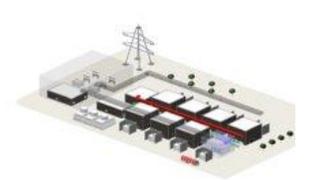
FlagshipONE

- Hydrogen for e-methanol
- Our partner: Orsted



H2Annibal

- New Electrolysis Technology
- Pilot Project
- Our Partner: Evonik



NormandHy

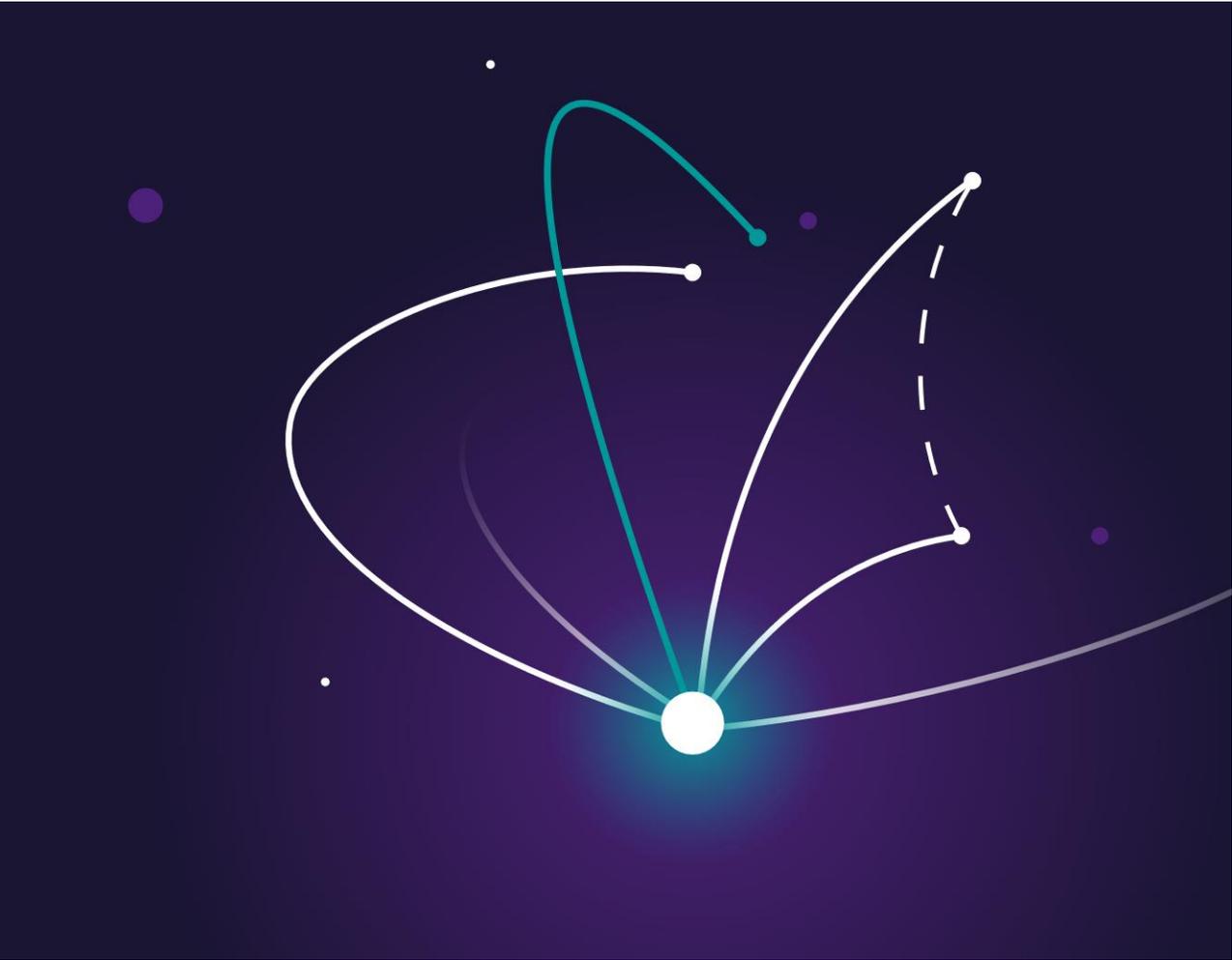
- Renewable electricity
- Engineering and Long Lead Started
- Our Partner: Air Liquide

Conclusion

“We should focus our efforts on safely deploying current electrolyser systems, standardise, gain familiarity, and scale up accordingly”



Contact Details



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www.siemens-energy.com