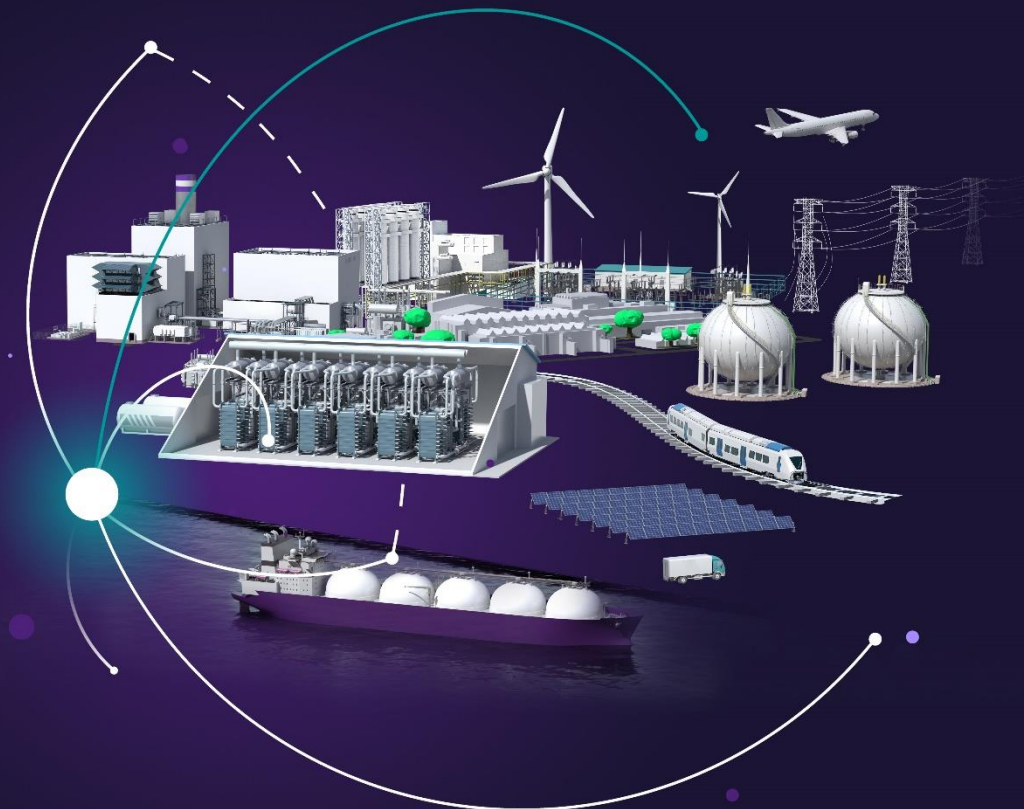


Electrolyser Technology Development

Terry Austin
May 2023



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



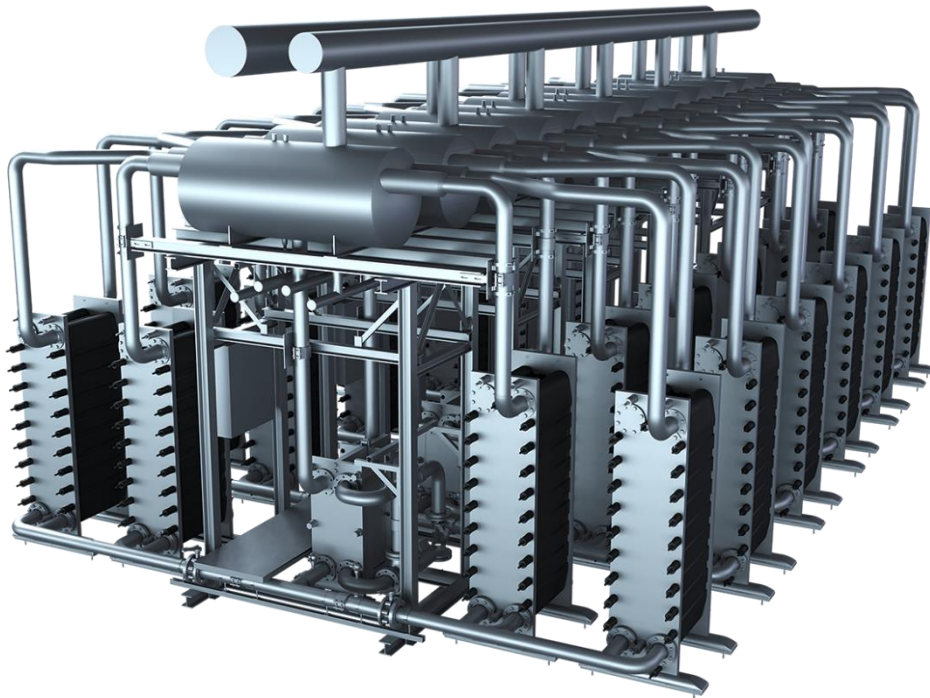
- 2 competing companies in the market
- Receiving conflicting messages (developers and banks)
- Stabilizing the technology
- Configuration and supply chain challenges
- Recruiting people with little manufacturing history

Silyzer 300

PEM electrolysis

SIEMENS
energy

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



Electrolyser Development



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



Published by Siemens Energy

Terry Austin

Head of Electrolyser Product Line UK



LinkedIn

www.siemens-energy.com