

Better together

Transnational projects and interconnectors
in the Baltic Sea

22.05.2023 | Dr. Paul Nahmmacher

Transmission System Operator 50Hertz

We are responsible for...

- The reliable electricity supply to 18 million people in the northern and eastern part of Germany
- The electricity system in Berlin, Brandenburg, Hamburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt and Thuringia
- The operation, maintenance, development and safety of the on- and offshore extra high voltage grid.

50Hertz is the only German TSO responsible for offshore grid connections in the Baltic Sea.



Dänemark

Schweden

Rønne
Bornholm

BEI:
2,000 MW

Ostwind 3:
300 MW

OST-2-4:
2,000 MW

Baltic 2:
288 MW

OST-6-1:
900 MW

Baltic 1:
48 MW

Testfeld:
300 MW

Ostwind 2:
750 MW

Ostwind 1:
735 MW

Rügen

Mecklenburg-
Vorpommern



Offshore grid connections
realised (more than **1.8 GW**)



Offshore grid connections planned or
under construction (more than **8 GW**)

The Baltic Sea hosts a potential for up to 93 GW offshore wind energy.

International cooperation and interconnection is key to make use of this potential.

- ✓ Contributing to EU and national **climate and renewable energy targets**
- ✓ Supporting the **market integration** around the Baltic Sea
- ✓ Strengthening **energy security and security of supply**

The 93 GW are a result of the „Study on baltic offshore wind energy cooperation under BEMIP“ (2019)

Cooperation 50Hertz-Energinet

In operation:

- 1995: Kontek Interconnector
- 2020: Combined Grid Solution (CGS)
 - *The world's first hybrid offshore interconnector*
 - *Combination of offshore wind integration and cross-border electricity trading*

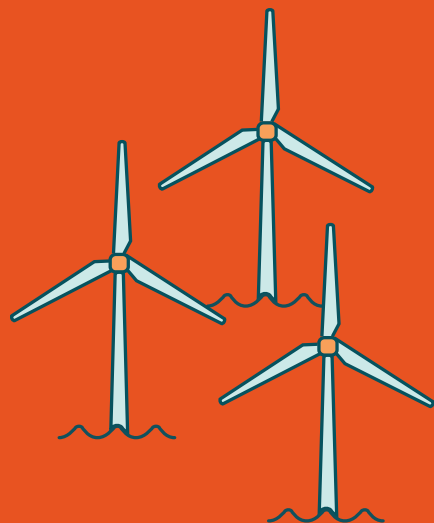
Planned:

- Bornholm Energy Island (BEI)
 - *The vision of BEI includes further connections to other countries bordering the Baltic Sea.*

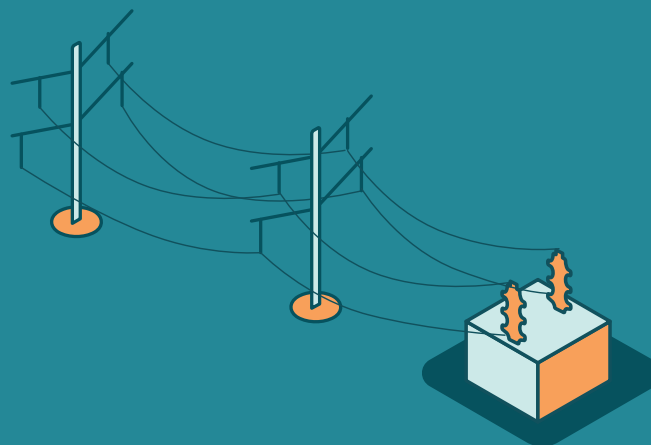
The realization of CGS and BEI are important milestones for the establishment of a meshed offshore grid in the Baltic Sea.



Challenges for energy islands and hybrid offshore wind projects



**Challenging
market environment**



**Applying innovative
and new technologies
for the first time**



**Complex
stakeholder
management**



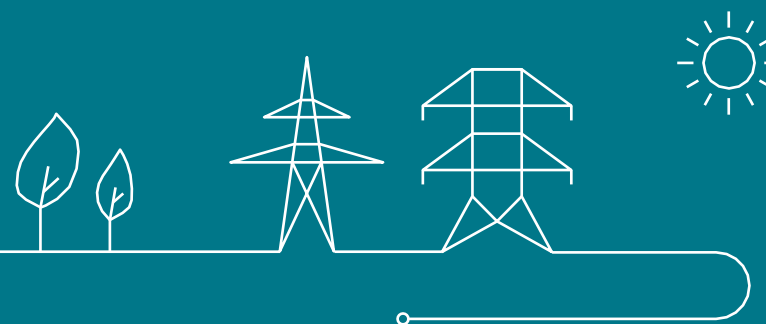
50Hertz strengthens cooperation with Baltic States

Signing of two *Letters of Intent* with the TSOs of **Estonia, Latvia and Lithuania** at the Baltic Offshore Wind Forum in Berlin two weeks ago.

1. Development of a hybrid interconnector (“Baltic WindConnector”) **with Estonian TSO Elering** to make use of Estonians offshore wind potential and increase security of supply for both countries
2. Joint work **with all three Baltic TSOs** on meshed offshore grids in the Baltic Sea.



What about hydrogen?



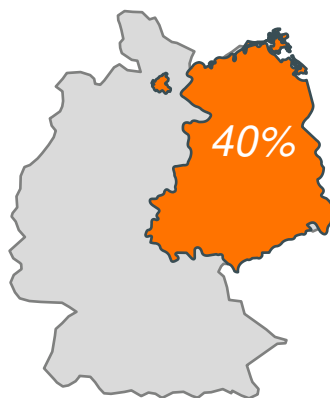
Hydrogen production in Germany

Insights from the German TSO's current grid development plan (NEP 2037/2045, 1st draft)

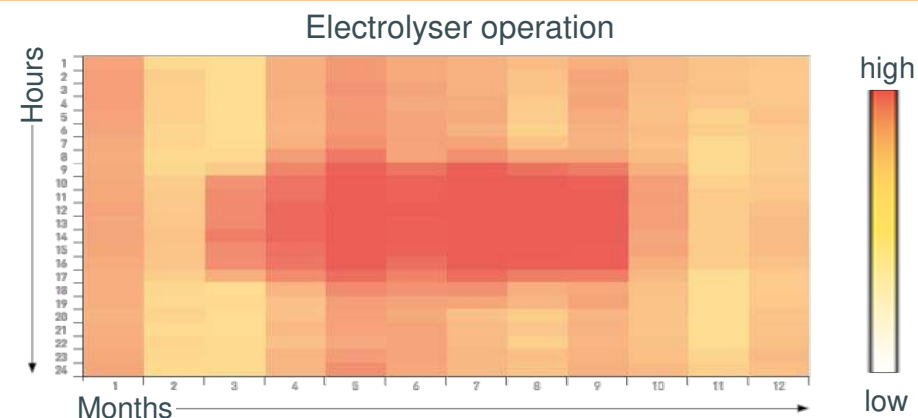
120-160 TWh net electricity import to Germany in 2045

50-80 GW electrolysis in Germany in 2045

Electrolysers to be located and operated in a grid-friendly way.



50Hertz area is very attractive for electrolysis:
40% of German electrolyser capacity in 50Hertz area
(compared to only 20% of total electricity demand)



Electrolysis is an important source of flexibility:
*Operation according to RES supply,
esp. to integrate PV peaks*

Thank you!

