



Interconnection and cross-border market integration

Perspective of 50Hertz

Berlin, 24.9.2015

Dr. André S. Estermann



50Hertz at a glance – a German TSO

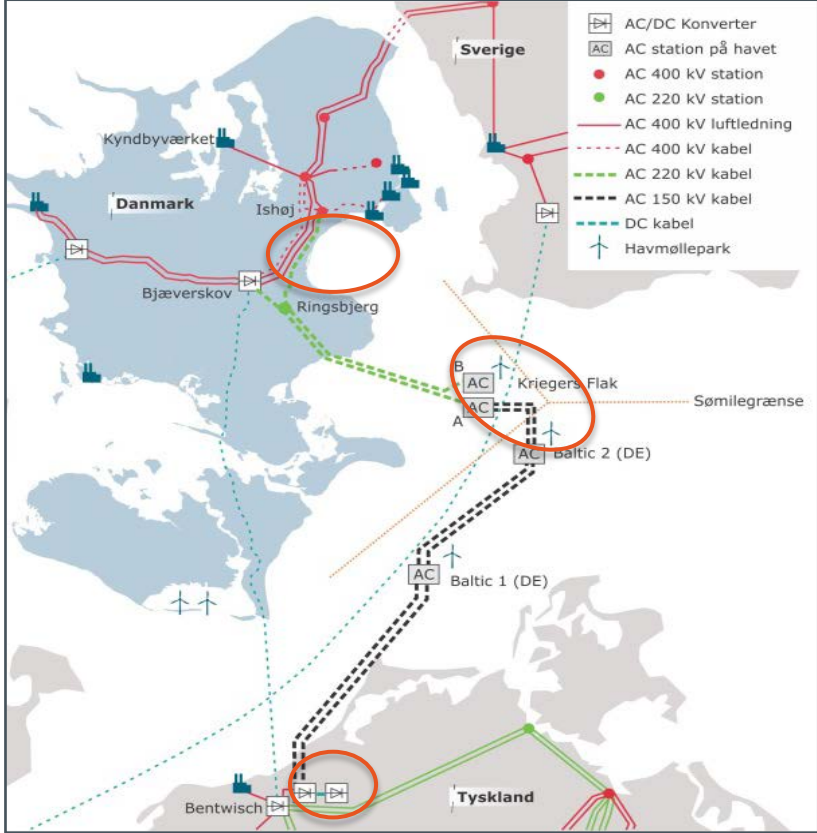


	2014 (<i>Share in DE</i>)
Area	109,360 (31%)
Total length of lines	9,855 (29%)
Maximum load	~ 16 GW (21%)
Energy consumption (based on electricity supplied to final consumers in acc. with the EEG)	~ 95 TWh (20%)
Installed capacity: - of which Renewables - of which on-shore wind	~ 47,802 MW (~24%) 24,938 MW (~29%) 14,589 MW (~38%)
Workforce	893
Turnover - of which grid	8,569 billion € 0.976 billion €

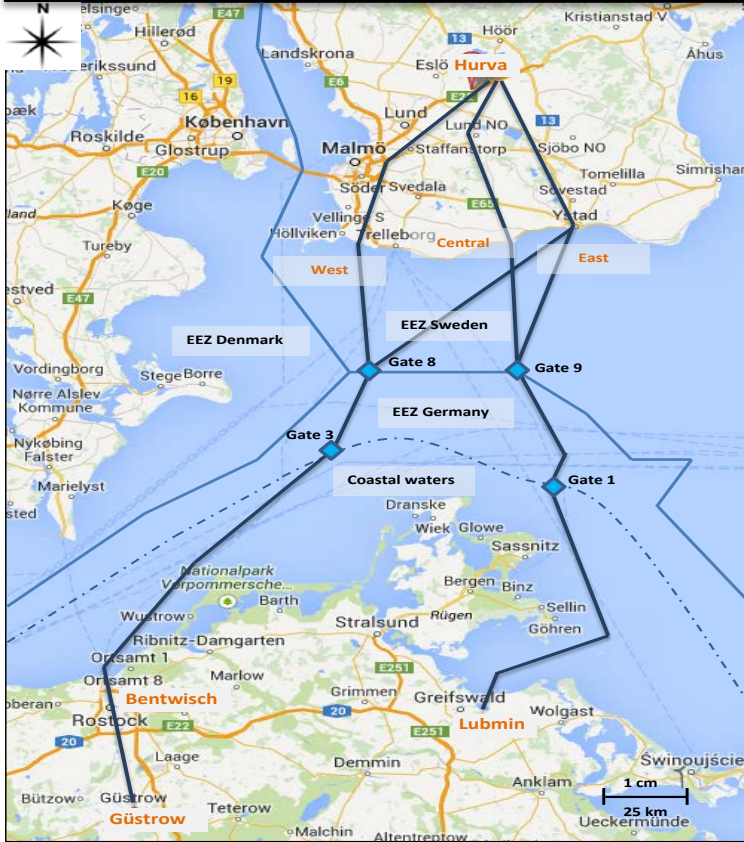
1. Expanding and Optimising the Power Grids

50Hertz projects for interconnecting hydro- and wind- & solarpower

Kriegers Flak Combined Grid Solution

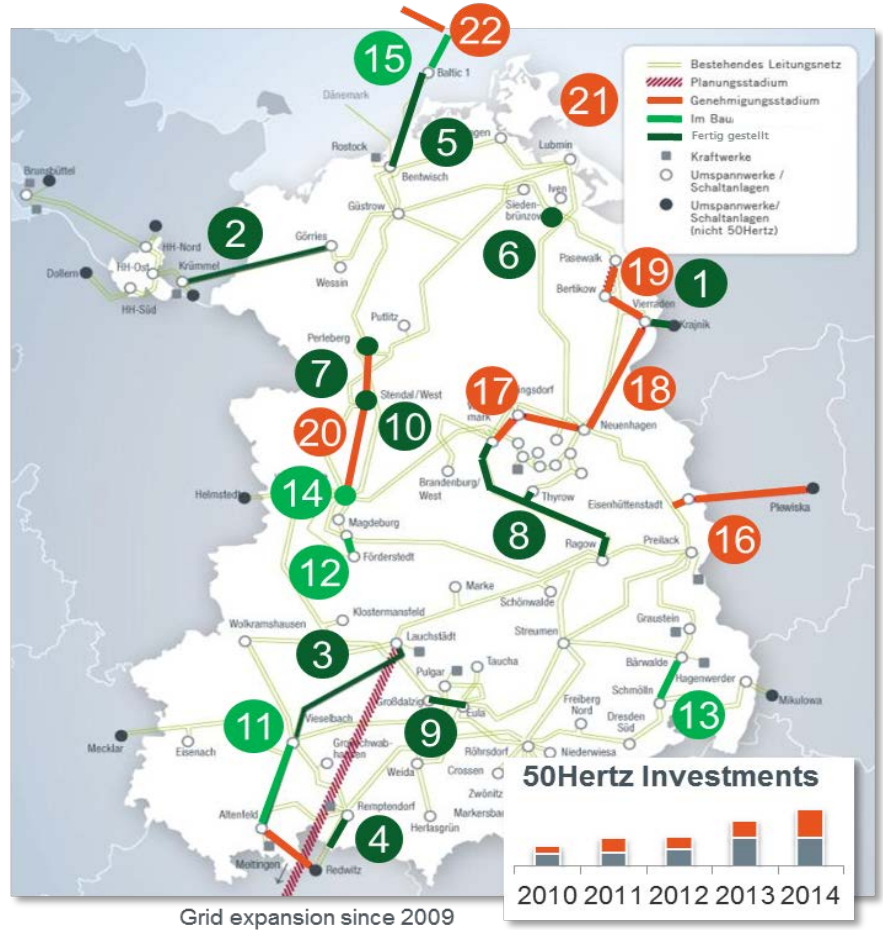
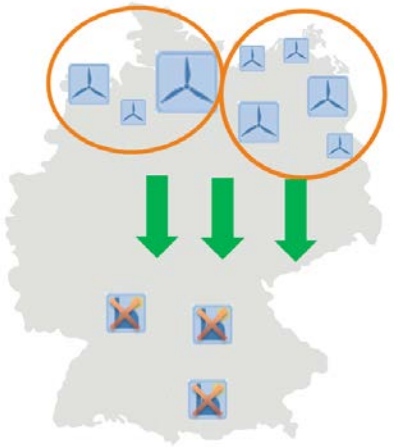


Hansa PowerBridge



Cross-border interconnectors are true contributors to system security

50Hertz efforts for connecting renewables to load centers



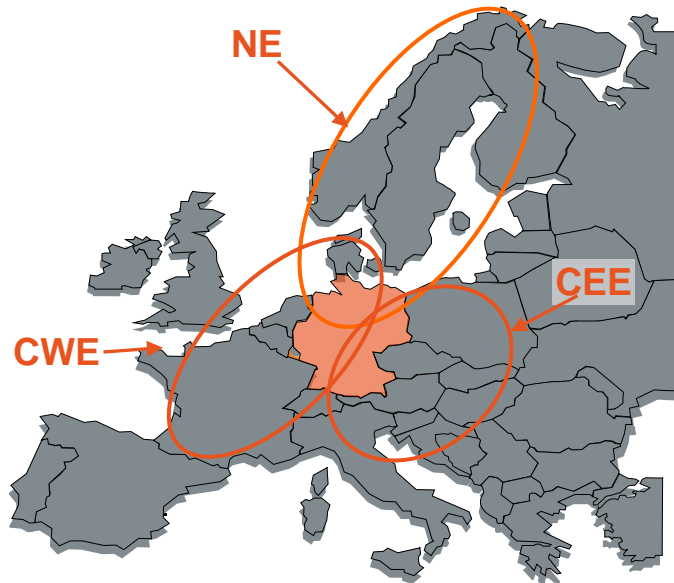
50Hertz Grid Expansion	km
Completed since 2009	310
Under construction	300
Approved	225
In approval process	270

Increasing North-South transmission needs (internal) German as well as regional contributions

2. Intensifying European Cooperation

Facilitation of cross-border power trading

Regional initiatives with German participation



NE = Northern Europe: Germany, Norway, Sweden, Denmark, Poland and Finland

CEE = Central Eastern Europe: Germany, Austria, Czech Republic, Hungary, Poland, Slovakia and Slovenia

CWE = Central Western Europe: Germany, France, Belgium, Netherlands and Luxemburg

Tasks of regional initiatives

- Co-ordinated congestion management in market areas.
- Establishment of service providers like auction offices for congestion management and TSOs security initiatives in the respective regions.
- Development and implementation of flow-based capacity calculation mechanisms.
- Development and implementation of a European solution for implicit capacity allocation. Price Coupling of Regions (PCR) is the chosen capacity allocation mechanism. PCR is to be provided by co-ordinated action of PXs.

Trading in EU leads to complex procedures and increased transit flows

Current developments in European Regions

Multi Regional Coupling project (NE+CWE+SWE+IBWT)

- NWE (NE+CWE) market coupling successfully went live in February 2014. Spain & Portugal joined in May 2014. Italy & Slovenia joined in February 2015.
- Flow-based allocation in CWE went live in May 2015.
- Multi Regional Coupling (MRC) project has proven to be operationally and is in line with the CACM GL the basis for further extensions.



CEE Region

- Based on MoU a project for day-ahead flow-based market coupling in the overall CEE region has been started in 2014.
- A flow-based method for the region (compatible with CWE) is under development and planned to go-live in 2018.

Several initiatives are ongoing in parallel in order to reach an integrated European spot market in the day-ahead and intraday timeframe asap

3. Summary and Conclusions

Summary and Conclusions

✓ We face today a set of unique challenges which need to be managed by TSOs to ensure the secure and reliable operation of the power grids

✓ Key measures of 50Hertz and its neighbours focus on:

Expanding and reinforcing the power grids (internally and cross-border)

Cooperating with neighbouring TSOs and promoting European market integration

Ensuring sufficient flexibility in the system (appropriate balancing capacity and demand-side response)

✓ Challenges not only for TSOs but also for academia and the contribution of ambitious researchers

Many thanks for your attention!

Dr. André S. Estermann

50Hertz Transmission GmbH

Eichenstraße 3A

12435 Berlin

030 - 5150 - 2609

andre.estermann@50Hertz.com

www.50Hertz.com