Welcome

WIND . ASSURING CONFIDENCE THROUGH COMPETENCE

Andreas Reuter
Fraunhofer’s business model: Focus on industry as a factor for success

- 67 Fraunhofer institutes in Germany
- More than 24,000 employees, mainly with an academic background in natural or engineering sciences
- € 2.1 billion annual research budget
Short profile of Fraunhofer IWES North-West

Managing Director
Prof. Dr.-Ing. Andreas Reuter

Research spectrum
Wind energy from material development to grid connection

Operational budget 2015
€ 15 million

Staff
150 employees

Located in
Bremerhaven, Oldenburg, Bremen, Hanover

Investments to date in the establishment of infrastructure
€ 80 million

Research Alliance
Strategic Alliance with ForWind and the German Aerospace Center (DLR)
Accelerated time to market through realistic testing

Rotor blade test hall up to 90 meters
  - Testing of design prototypes prior to series production
  - Max. static bending moment 115,000 kNm; max. dynamic bending moment: +/- 30,000 kNm

DyNaLab with 10 MW drive performance / peak 15 MW
  - Nominal torque: > 8.6 MNm
  - Rotor load application unit for dynamic bending moments, thrust and radial forces
  - Artificial grid: 44 MVA installed inverter power

Support structure test center
  - Testing of fatigue behavior of foundations and support structures
  - Scale 1:10 to 1:3.5
Site assessment, CFD simulation and field measurements

Site assessment onshore and offshore
- Wind speed measurements with LiDAR devices up to 200 meters
- High-resolution, spatial geophysical analysis of planning areas

CFD simulation and wind farm modeling
- Numerical simulations (CFD) for site assessment in complex terrain
- Optimization of entire wind farms with flapFoam

Accredited measurements of operating turbines
- Measurement of mechanical loads and power performance according to IEC 61400-13 /-12
- Analysis of component dynamics, loads and operating behavior
Methodological competence

Awarded with “Norddeutscher Wissenschaftspreis” for the successful cooperation within the “Research Alliance Wind Energy” for the joint project “Smart Blades”

ISO9001-certified in the areas of “product development up to the prototype stage, technology development and optimization, technology assessments and studies” as well as “trials in demonstration centers”.

Accredited according to DIN EN ISO / IEC 17025:2005 for -testing of mechanical loads on wind turbines
-determination of physical properties of fibre enhanced synthetic materials and fibre composite materials using mechanic-techno-logical and thermal testing
Workshop Conclusions / Remarks

- Wind energy technology is highly dynamic
- Academia has always struggled to stay ahead of the development
- Technology challenges become more complex -> new opportunities for research
- „Think big“ is needed – the small stuff is done by the industry (100 mio +)
- Make sure to map all activities globally (incl. China)
- Globally integrated activities might make sense
Thank You For Your Attention

Any questions?