



NEN

Standardisation for Offshore Wind

An introduction at the meeting International coordination of TKI Wind op Zee

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Introduction

- **Martijn Geertzen**

- Standardisation consultant NEN, Dutch Standards institute
- Consultant on Solar, Wind, and Water
- Secretary to IEC and CENELEC
TC 88 Wind turbines
- Introducing Standard Development
- Position of standards within rules and regulations
- Wind turbine standards suite NEN-EN-IEC 61400

Standard Development





standards within rules and regulations

Standards are voluntary, but:

- If approved by EC presumption of compliance with EU directives like Machinery directive, is granted
- Are the basis for certification without which no wind turbine will ever be built, allowed, nor financed
- Are the de facto rules and regulations if no other are in place
- International standards drive innovation and successful implementation of research and development
- Recognised by EC as preferred way of dissemination in FP 7 and Horizon 2020
- Not just for the wind turbines itself

Wind turbine standards suite NEN-EN-IEC 61400



- -1 Design requirements for wind turbines
- -2 Requirements for small wind turbines
- -3 Design requirements for offshore wind turbines
- TS Standard for floating offshore wind turbines
- -4 Design requirements for wind turbine gearboxes
- -5 Rotor blades
- -6 Towers and foundations
- -11 Acoustic noise measurement techniques
- -12 (-1, 2, 3, 4) Power performance measurement
- -13 Measurement of mechanical loads
- -14 Declaration of apparent sound power level and Tonality values

Wind turbine standards suite NEN-EN-IEC 61400



- -21 Measurement and assessment of power quality
- -22 Conformity testing and certification
- -23 Full scale structural testing of rotor blades
- -24 Lightning protection
- -25 (-1, 2, 3, 4, 5) Communication for monitoring and control
- -26 Availability for wind turbines
- -27 Electrical simulation models for wind power generation
- NEN-EN 50308 Personnel safety
- TKI WoZ: Better and cheaper constructions
 - Development and testing of highly improved installation methods for standard foundations



Thank you

Questions?

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