Small wind certifications, innovation and lessons learned - Danish perspective

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DTU Vindenergi
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Danish Certification Scheme

- Wind turbines including foundation to be installed, maintained and serviced in Denmark or in Danish waters must be certified according to the requirements in the Danish Certification Scheme.

- The rules and procedures are described The Danish Energy Agency's Executive Order on The Technical Certification Scheme for wind turbines no. 73 of January 25\textsuperscript{th} 2013 and the appurtenant guideline.
Certification scheme – Order no 73; 2013

Purpose: Ensuring requirements for wind turbines:

✓ Energy production,

✓ Safety and the environment,

✓ Service and maintenance

➢ Energy Agency’s Secretariat for Danish Wind Turbine Certification Scheme – EGV (DTU Wind Energy)
Certification scheme – BEK 73

- **IEC 61400-2**  Design requirement for SWT
  - Loads modeling and structural analysis
  - Safety and Function Test
  - Operational Test  $> 6$ months
  - Static Blade Test

- **IEC 61400-11**  Acoustic noise measurements
- **IEC 61400-12-1**  Power performance
Certification scheme – Order no. 73

- IEC 61400-2
  or either
  Danish Regulation

✓ Test of strength of tower and blades - Thrust of 300 N/m²
✓ Safety and function test - @ ws > 25% of nominal
✓ Operational test – >3 months & El. production of 500 peak load-hours
✓ Acoustic measurement (IEC61400-11)
Certification scheme – BEK 73

- Exempted from certification

- Technical description & Safety system
- Instruction for use & Installation
- Operational manual
- Maintenance & service manual
- AEP
- Acoustic measurement (IEC61400-11)
Certified turbines
October 2015

- Prototype: 17
- 40 - 200 m²: 5
- 5 - 40 m²: 9
Service & Maintenance

Producer

• Deliver service manual & Forward updates

Owner

• Responsible for service & maintenance

Service

• Accredited or approved service company
  • Exceptional circumstances: Owner performs service
Small Wind - Project

✓ Leading Danish SWT Market players

✓ Identify Market Potential

✓ Promoting international partnership

✓ Realization of export campaign
myWindTurbine.com
for small & medium sized wind turbines

- Optimize siting of turbine (Online WAsP engine)
- Energy, environmental and financial analysis of individual WT
- Monitor performance

- Wind statistics (Global Wind Atlas, European Atlas)
- Terrain conditions & obstacles

Cluster data
- Turbine catalog (only certified turbines)
Thank you
Peggy Friis - Senior Advisor
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