Small Wind Turbine Certification and Labeling

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SWCC

Small Wind Turbines (≤ 200 m²)


Certificate number 3299.01

Dakota DT30 under test in Kansas
Medium Wind Turbines
> 200 m² < 1000 m²

**Power**
Performance Certification per IEC 61400-12-1

**Acoustic**
Performance Certification per IEC 61400-11

NEW Design
Certificate number 3299.01
Brief History, SWT Certification

- **Pre-2009**
  - Time consuming, expensive, not required
  - Evolution of the IEC Standards

- **2009**
  - BWEA Standard (UK) and AWEA Standard (US)

- **2010**
  - MCS FIT in UK; States require certification in US

- **2012**
  - Japan FIT, JSWTA0001 Standard

- **2013**
  - Danish Energy Agency's Executive Order

- **2014**
  - Following IEC-CAC, IECRE established, working toward globally harmonized scheme
Global Alignment

- AWEA Std ~ RUK Std ~ Japan Std ~ DK order
  - IEC 61400, foundation for all
  - Requirements are similar, not same
  - Loads modeling and structural analysis
    - IEC 61400-2
  - Safety and Function Test
    - IEC 61400-2
  - Duration Test
    - IEC 61400-2
  - Static Blade test
    - IEC 61400-2
  - Power Performance
    - IEC 61400-12-1
  - Acoustic Test
    - IEC 61400-11
Certification Bodies

- SWCC, Intertek in North America
- Intertek, NEL, BBA & BRE Global in UK
- DTU in Denmark
- ClassNK in Japan
- DNV-GL, Intertek Global

“Test once, certify everywhere”
Global Certification of SWT

- SWCC (7)
  http://smallwindcertification.org/certified-small-turbines/

- Intertek (22; or 31 on MCS list)
  http://www.intertek.com/wind/directory/
  http://www.microgenerationcertification.org

- ClassNK (7)

- DTU (13)
  http://www.dawt.dk/DK/Godkendte_small_WT.htm

- BBA (1)
  http://www.microgenerationcertification.org

- DNV-GL (5)

- BRE Global (4)
  http://www.microgenerationcertification.org/

- TUV-NEL (6)
  http://www.microgenerationcertification.org/
Global Certification of SWT

- Certificates issued (74)
  - BWEA Std (38)
  - AWEA Std (13)
  - Danish Req (8)
  - IEC 61400-2 (7)
  - JSWTA0001 (7)
  - GL Guidelines (1)

- Unique turbine models (59)
  - Several are variants (e.g. power form)
  - Some turbines have multiple certs (e.g. Sonkyo Windspot has AWEA, BWEA, Japan, Danish... and is on the Austrian list)
SWCC:
7 SWT certified, 1 LPP (Pika T701)
1 MWT Power & Acoustics
SWCC Deliverables

- **Consumer Label**
  - Single-number ratings

- **Certificate**
  - Available online to confirm validity

- **Summary Report**
  - Summary of testing
  - Power curve
  - Annual energy curve
  - Acoustic Data
IEA Task 27

- Developed the consumer label
- Coordinating testing orgs (SWAT)
  - VAWT design tools
  - Small wind turbines in the built environment
11.3 Consumer label

It is recommended that a consumer label be provided in accordance with Annex M. If this is done the measurement reports used to complete the consumer label shall meet the requirements of ISO/IEC 17025 and relevant standards used to define the test requirements (e.g. IEC 61400-12-1).

Consumer Label in IEC 61400-2 ed.3

Tests for label
- Duration test per IEC 61400-2
- Power performance per IEC 61400-12-1
- Acoustic noise test per IEC 61400-11
Conclusions and questions

- SWT certification has matured
  - ~59 turbines certified
- “Test once, certify everywhere”
  - Portable test results
  - Meeting national differences can be significant
- IECRE
  - Can global harmonization be realized?
- What will “new” markets do?
  - China? Brazil? Others?
- How is labeling vs certification perceived?
Thank you

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