



UK Certification update and DECC support for small wind

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(Supported by DIUS – NMO & DECC)





Overview

- UK certification landscape
- Requirements
- Lessons learned
- Challenges moving forward

- DECC support to small wind





Terminology.....

- Testing (EN 17025 procedures)
- Certification (EN 45011 procedures)
- Accreditation (ISO 17011 procedures)

eg UKAS/A2LA/DAR/CNAS + others



certification





UK certification landscape:

DECC – MCS (Gemserv – Licensee)

Certification Bodies

(EN 45011 or equivalent compliant)

Testing Organisations

(EN 17025 or equivalent compliant)



Requirements:

- MCS 006 – Product (BWEA Standard)
- MCS 010 – FPC
- MCS 011 – 3rd party testing
- MIS 3003 – Installer



BWEA



Delivering the UK's wind, wave and tidal energy

British Wind Energy Association

Small Wind Turbine Performance and Safety Standard

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are part of the small wind turbine generator system;

- 2.1.17.4 nominal battery bank voltage (e.g., 12, 24, 48 volts);
- 2.1.17.5 battery bank size (i.e., amp-hour capacity), battery type and age; and
- 2.1.17.6 description including make, model, and specifications of the voltage regulation device used to maintain the battery bank voltage within specified limits.

2.2 The Performance Test Report shall include the turbulence intensity for each data set (sequential, unbroken, time series) so that the reviewers can pass judgment on the appropriateness of the test site.

3 Acoustic Sound Testing

3.1 The acoustic noise from a wind turbine shall be expressed as:

- 3.1.1 a "Declared Apparent Emission Sound Power Level, $L_{WA,8m/s}$ " in dB(A) re 10^{-12} Watts for a wind speed of 8 m/s at rotor centre height together with a "Wind Speed Dependence, S_{WB} " value in dB/m/s for the Declared Apparent Emission Sound Power Level. These are obtained from measurement of the turbine as described in Section 3.3.
- 3.1.2 an "Immission Sound Pressure Level at 60m, $L_{p,60m}$ " in dB(A) re 20 μ Pa at a slant distance of 60 m for a wind speed of 8 m/s at rotor centre height. (i.e. the BWEA Reference 60 m Sound Level). This is calculated from the Declared Apparent Emission Sound Power Level, $L_{WA,8m/s}$, assuming hemispherical propagation.
- 3.1.3 an "Immission Sound Pressure Level at 25m, $L_{p,25m}$ " in dB(A) re 20 μ Pa at a slant distance of 25 m for a wind speed of 8 m/s at rotor centre height. (i.e. the BWEA Reference 25 m Sound Level). This is calculated from the Declared Apparent Emission Sound Power Level, $L_{WA,8m/s}$, assuming hemispherical propagation.
- 3.1.4 an "Immission Noise Map" showing zones where audible incident (free field) sound pressure level is likely to fall in the 40 – 45 dB(A) range and how this is affected by slant distances from the rotor centre and wind speed at the rotor centre. This is calculated from the Declared Apparent Emission Sound Power Level, $L_{WA,8m/s}$, and its wind speed dependence, S_{WB} , given in Section 3.1.1 assuming hemispherical propagation. The noise map will cover from cut-in speed to, where relevant, cut-out speed.
- 3.1.5 an indication of whether the turbine has any particular Character to its noise that would make its presence more noticeable.

3.2 The acoustic noise data as described in Section 3.1 shall be summarised in a "Noise Label". An example Noise Label is given in Figure 1. The scales of the label shall be from 1m/s to 18m/s and 5m to 100m, and the minimum coverage of the data on the label shall be from 1m/s to 11m/s and 5m to 100m. Areas of no data shall be clearly indicated.



BWEA S&P Standard:

- IEC 61400-2: 2006
- IEC 61400-11: 2003 (as amended....)
- IEC 61400-12-1: 2006
- IEC 61400-14: 2003



Some lessons learned:

- Pre-test shake down
- Power curve....read the standard
- Permitted changesread the standard
- Scope of certification.....not a catch all...

Challenges moving forward:

- Masts and supporting structures
- Simplified loads or aero-elastic modelling.....
- Swept area.....medium wind standard?
- 50/60Hz – Inverters/induction machines
- Survivability/durability – **NOT THE SAME**
- Braking – 2nd or 3rd levels of redundancy



DECC support to small wind:

- Recognition by UK Government that wind is a 'special case' and requires support
- £550k for infrastructure development
- £200k for R&D Project
- Huge interest in R&D project