INTERNATIONAL STANDARD

IEC 61400-11

2002

AMENDMENT 1
2006-05

Amendment 1

Wind turbine generator systems –

Part 11:
Acoustic noise measurement techniques

IEC 61400-11 am1 Ed. 2.0 - Preview only Copy via ILNAS e-Shop

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PRICE CODE E

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FOREWORD

This amendment has been prepared by IEC technical committee 88: Wind turbines.

The text of this amendment is based on the following documents:

FDIS	Report on voting
88/260/FDIS	88/264/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This amendment to IEC 61400-11:2002 addresses special cases where 95 % of rated power is reached below 10 m/s speed at 10 m height and for sites where wind speeds of 10 m/s at 10 m height are very rare. Furthermore a clarification on regression analysis and frequency weighting is included.

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4 Symbols and units

Add the following new symbol:

V_n wind speed measured by the nacelle anemometer (m/s)

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5 Outline of method

Insert, after the fifth paragraph, the following text:

If this part of IEC 61400 is used for verification that actual noise emission is in accordance with a reference/declared noise level, the verification measurement shall be made in accordance with the present standard for a wind speed range given by:

– Annual average wind speed at 10 m height onsite ±1 m/s as a minimum. As a minimum, three integer wind speed values and 8 m/s shall be reported (i.e. site average = 4,8 m/s, use 4, 5, 6, and 8 m/s).

– If the declaration measurements indicate that audible tones are present at other wind speeds, these wind speeds shall be included as well.

Where local codes or contracts between parties involved (i.e. manufacturers, developers, owners) require measurements at a different wind speed or wind speed range, this part of IEC 61400 may be applied at those wind speeds.

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6.2.1 Anemometers

Add, at the end of the Subclause:

Because the nacelle anemometer is *in situ* calibrated during measurement, the demand for calibration does not apply to the nacelle anemometer. The measurements from the nacelle anemometer may be supplied from the wind turbine control system. The nacelle anemometer shall not be used for background noise measurements.

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7.1.2 Wind speed and direction measurement positions

Add, at the end of the Subclause:

If 95 % of the rated power is reached below a standardized wind speed of 10 m/s and the nacelle anemometer method is chosen, the wind speed from the nacelle anemometer shall be measured. If no nacelle anemometer is available, an anemometer shall be mounted on the nacelle. For wind turbines with a hub height below 30 m, all wind speed measurements may be taken from an anemometer between 10 m and hub height.

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7.2.2.3 Narrow band measurements

Replace the text of this Subclause by the following new text:

For each integer wind speed, at least 2 min of A-weighted wind turbine noise and background noise are required. These 2 min shall be as close as possible to the integer wind speeds. If the A-weighting cannot be applied during measurement, linear spectra may be converted to A-weighted spectra according to IEC 61672-1:2002.

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7.3.1.1 Method 1: determination of the wind speed from the electric output and the power curve

Replace the last paragraph, equation 6 and its legend by the following:

If the standardised wind speed corresponding to 95 % of rated power is below 10 m/s, one of the following two methods shall be used to determine the wind speed for data above 95 % of rated power:

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