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AMENDMENT 1
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Wind energy generation systems - Part 5: Wind turbine blades

Systèmes de génération d'énergie éolienne - Partie 5: Pales d'éoliennes

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Wind energy generation systems - Part 5: Wind turbine blades

AMENDMENT 1

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Amendment 1 to IEC 61400-5:2020 has been prepared by the IEC technical committee 88: Wind energy generation systems.

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

Draft	Report on voting
88/1086/FDIS	88/1107/RVD

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

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications/.

A list of all parts of the IEC 61400 series, under the general title: *Wind energy generation systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

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1 Scope

In the second paragraph, delete: ", as well as to define requirements for certification.".

2 Normative references

Delete ISO/IEC 17021-1 from the list.

3 Terms and definitions

3.4
characteristic value

Add, after the definition, the following new Note to entry:

Note 1 to entry: See 61400-1.

6 Design

6.4.2.1 Characterization

In the third paragraph, delete "For certification purposes, the tests for establishing design values for structural verification shall be performed according to requirements specified in the relevant certification scheme, e.g.:

- an accredited test organization;
- a company approved by a suitable certification agency;
- a non-certified company witnessed by the certification agency."

6.6.2.3 Stability analysis

Replace the existing text with the following:

Global static instability (i.e., global buckling) occurs when a small increase in load results in a large and unstable increase in deformation, thereby limiting the capacity of the blade to carry any further load. It shall be demonstrated that global static instability does not occur at any load less than or equal to the product of the design load and the applicable combined factor of safety required herein. Nonlinear increases in the deformation of the blade in response to increases in load are permissible so long as the response remains stable, the blade does not lose its ability to carry further increases in load, and the nonlinear response does not induce damage in any structure due to other failure modes or result in excessive deflection of the blade towards the tower.

Local instability (i.e., local buckling) refers to a portion of a structural member (e.g., sandwich panel face sheet wrinkling or crimping) and shall be evaluated.

The verification of static stability shall be based on analytical or numerical methods, full scale testing or a combination hereof.

6.6.3.2 Validation of global model by testing

*In the first paragraph, replace "*For certification, a general validation of the design through a comparison with obtained results from full scale blade testing applies. This includes as a minimum*" with "*When the design created in accordance with the requirements of this document is validated through a comparison with obtained results from full scale blade testing, the following applies as a minimum:".

6.6.3.3 Validation of analytical models and methods

Delete, at the end of the third paragraph, "and/or certified".

6.6.4.1 Definitions

Add, after "γ_{m5} is the factor for load characterization.*" the following new text:*

The combined partial safety factor for materials in this document shall not be less than the minimum partial safety factor for resistance specified in IEC 61400-1.

6.6.5.5 Sandwich core ultimate strength verification

*In the first paragraph, replace "*core material mean strength values.*" with "*core material statistically derived characteristic strength values*".*

6.6.5.6 Global static stability (global buckling)

Replace the first five paragraphs with the following new text and figure:

The designer shall verify through analysis that the blade does not lose its ability to carry load due to static instability at the design load with a combined safety factor equal to the product of γ_{m0} and the factors γ_{m1} through γ_{m5} listed in the table below.

The analyses shall be based on using statistically derived mean values of the material stiffness.

Thicknesses of sandwich cores shall be conservatively estimated, including potential compression related to the selected method of manufacturing.