

Note on Engineering Details

No: DWL-An-extern-001, Rev. 1

Title: **Alternative interpretation of load case DLC 6.1 of IEC 61400-1, edition 2, applying EN 61400-1, November 2005**

Ref.: IEC 61400-1, "Wind turbine generator systems – Part 1: Safety requirements" Edition 2, 1999-02.
EN 61400-1, "Wind turbine generator systems – Part 1: Design requirements" November 2005, Section 7.4.6

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Load case 6.1 according to IEC 61400-1 covers the situation where the 50-year-gust and grid loss occur simultaneously. Since July 1, 2001 Germanischer Lloyd WindEnergie (GL Wind) has interpreted the load case DLC 6.1 according to IEC 61400-1, edition 2, following the Dutch definition as indicated in GL Wind letter, dated 08.03.2001, ref. No. 91565-I/01/Wac-RKI. There it was defined that a grid loss may occur 30 minutes prior to the 50-year-gust, leading to a change in the mean wind direction of $\pm 30^\circ$. The value of $\pm 30^\circ$ was accepted as a compromise in Working Group 1 (WG 1) of the CENELEC Committee BTF 832 (responsible for the European Standardisation in wind energy).

Within the scope of harmonising the IEC 61400-1, edition 2, to become a European standard, the definition of load case DLC 6.1 was defined in more detail by splitting this load case into two load cases (EN 61400-1 load cases DLC 6.1 and DLC 6.2) and introducing the safety factor for abnormal load cases for the situation when grid loss is to be considered (DLC 6.2 of EN 61400-1). Details for considerations are given in section 7.4.6 of EN 61400-1 and are to be observed.

GL Wind decided to alternatively accept the interpretation of load case DLC 6.1 as per EN 61400-1. This new procedure was introduced on July 1, 2005. In case of application of the interpretation as per EN 61400-1 for load case DLC 6.1 a remark will be clearly stated in the Certification Report on the loads.

For areas subject to danger of hurricanes/cyclones or with well-known grid problems (frequent grid outages) additional site specific analysis is required and assessed for conformity.

This Note may be applied alternatively to our Note "Load Case 6.1 according to Table 2, IEC 61400-1, edition 2", dated 15.02.2001, sent with letters ref. No. 91565-I/01/Wac-RKI (Engl.), dated 08.03.2001 and ref. No. 91565-II/01/Wac-RKI (Germ.), dated 06.03.2001.

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