

Note on Engineering Details

No: DWL-As-extern-001

Title: **Integration of Type Certificates in Project Certification**

Ref.: GL Wind “Guideline for the Certification of Wind Turbines”, Edition 2003 with Supplement 2004 and “Guideline for the Certification of Offshore Wind Turbines”, Edition 2005

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Within the Project Certification of wind farms, it is intended to integrate an existing Type Certificate (TC) and Statement of Compliance for an A-Design Assessment (DA) of the wind turbine. Within this note it is intended to describe some possible ways and to give one example for offshore wind turbines.

For issuing a Project Certificate (PC) or a Statement of Compliance for a Site Specific Design Assessment (SSDA) the following general procedures should be applied:

1. As a PC attests compliance to a certain guideline (e.g. GL Wind Guideline 2003 or GL Wind Offshore Guideline 2005), it has to be ensured that the TC used as basis, supports this. The best would be that the TC is in compliance with the guideline used for Project Certification. If this is not the case, additional items have to be assessed within the Project Certification procedure. This is also valid for an integration of a DA within a SSDA.
2. In principal SSDA is to be performed for every PC. Within the SSDA it shall be shown that the design of the wind turbine, including site specific loads, has been assessed and is in compliance with the guideline. In case a DA for the turbine already exists, this can be considered and extended accordingly, imply that only new design and changes in design, compared to DA, will be assessed within the SSDA. Of course, the assessment of site specific loads is always part of it.

In SSDA it has to be ensured that the site specific loads are covered by the DA thus a comparison of the site specific loads with those used for the DA of the wind turbine shall be assessed by GL. In case the site specific loads are more benign than those used for DA no further action is required. In case site specific loads are more adverse than those used for DA, the components affected need to be verified by the client with the higher loads and a new assessment is to be performed by GL. Alternatively the turbine manufacturer can update the DA by using the site specific loads.

3. For the integration of an existing TC or DA, the following documents shall be provided to GL:
 - 3.1 Type Certificate and all corresponding Statements of Compliance
 - 3.2 Certification Reports related to the Statement of Compliance for the A-Design Assessment
 - 3.3 Further documentation on request, if needed e.g. for manufacturing inspection.
4. The acceptance of existing Type Certificates and DA originating from bodies different to GL shall be agreed in advance for every project individually.
5. Example: In case a TC for the onshore version of the turbine in question exists this can be used for offshore project certification.
 - 5.1 GL examines if the TC fulfils the requirements of the offshore guideline according to which the project certification is performed. Outstanding items and questions arising during this examination shall be solved.
 - 5.2 Extra attention shall be paid e.g. to following issues:
 - Material selection according to offshore guidelines
 - Issues regarding atmospheric control and corrosion protection of the machinery
 - Requirements regarding offshore grid connection and electrical equipment
 - Adaptation of manuals for transport, installation, operation and maintenance to the offshore environment and the requirements of the offshore guidelines.
 - Fulfillment of the requirements for condition monitoring
 - Modifications of the onshore turbine

After examination GL issues Certification Reports for the above mentioned issues.
 - 5.3 An examination of the site specific loads is performed by GL. After examination GL issues a Certification Report for the site specific loads. The site specific loads are compared to those used for DA as stated under item 2.
 - 5.4 The examination of the site specific support structure is performed by GL separately. The support structure includes the substructure, the foundation and, if applicable, the tower as shown in Fig. 1.1.1 of the GL Guideline for the Certification of Offshore Wind Turbines, 2005 Edition. After examination GL issues a Certification Report for the support structure.

We want to point out that in general, the integration of a Type Certificate, a Design Assessment and Certification Reports should be agreed with GL in advance for every individual project as not all possible options can be foreseen and are shown within this note.

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