



Germanischer Lloyd

Note on Engineering Details

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- Ref.:** „Richtlinie für Windenergieanlagen, Einwirkungen und Standsicherheitsnachweise für Turm und Gründung (Guideline for wind turbines, loads and strength analysis for tower and foundation)", Edition March 2004, Deutsches Institut für Bautechnik – DIBt – (German Institute for Civil Engineering – DIBt –), Berlin
- „Guideline for the Certification of Wind Turbines", Edition 2003 with Supplement 2004, Germanischer Lloyd WindEnergie GmbH, Hamburg
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- Key Words:** wind turbine, Type Approval, German building law, scope of assessment

Enclosed please find:

GL Wind Technical Note "Gutachtliche Stellungnahmen (Expert's Reports) according to DIBt Guideline, Scope of Assessment", Revision 5 dated 01.06.2006, 4 pages plus appendix 1 page

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GL Wind Technical Note

Gutachtliche Stellungnahmen (Expert's Reports) according to DIBt Guideline

Scope of Assessment

Revision: 5

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Germanischer Lloyd WindEnergie GmbH

- Reference**
- /1/ „Richtlinie für Windenergieanlagen, Einwirkungen und Standsicherheitsnachweise für Turm und Gründung (Guideline for wind turbines, loads and strength analysis for tower and foundation)", Edition March 2004, Deutsches Institut für Bautechnik – DIBt – (German Institute for Civil Engineering – DIBt –), Berlin
 - /2/ „Guideline for the Certification of Wind Turbines“, Edition 2003 with Supplement 2004, Germanischer Lloyd WindEnergie GmbH, Hamburg
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20459 Hamburg / Germany
- Revision**
- 4 After meeting of Wind Energy Committee on 03.05.2005
 - 5 After becoming recognized authority for issuing German "Typengenehmigungen" (German type approval)



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1 *Inducement*

In section 3 of the guideline /1/ the following Gutachtlichen Stellungnahmen (Expert's Reports) are required:

- Load report,
- Machinery report, including safety systems and
- Gutachtliche Stellungnahme (Expert's Reports) for the verification of the rotor blades.

In this GL Wind Technical Note the scope of assessments which form the basis of these Gutachtlichen Stellungnahmen (Expert's Reports) is defined.

2 *Scope of assessment*

The scope of assessment described in the following forms the basis for the Gutachtlichen Stellungnahmen (Expert's Reports).

	Gutachtliche Stellungnahme (Expert's Reports) (7xxx-i)	Scope of assessment	Reference in /1/
1.	Load assumptions (-1)	Load assumptions according to DIBt-Richtlinie /1/	<ul style="list-style-type: none"> - 3.D - 3.I, 1 - Chapter 6 to 8
2.	Safety system and manuals (-2)	Safety system, protection and monitoring devices according to chapter 2 in /2/.	<ul style="list-style-type: none"> - 3.A, 4 - 3.A, 6 - 3.I, 2 - 8.2.2
		Manuals according to chapter 9 in /2/.	<ul style="list-style-type: none"> - 3.G - 3.J - 3.K - 3.L - 6.3.4 - 12.1
		Type sheet according to appendix to this Technical Note	<ul style="list-style-type: none"> - 3.A.3

	Gutachtliche Stellungnahme (Expert's Reports) (7xxx-i)	Scope of assessment	Reference in /1/
3.	Rotor Blade (-3)	Verifications of the rotor blade according to section 6.2 in /2/. Chapter 5 in /2/ is used where required.	- 3.A.5 - 3.1.3
4.	Machinery Components (-4)	Verification of machinery components according to section 6.3, 6.5 and chapter 7 in /2/. Chapter 5 in /2/ is used where required.	- 3.B - 3.1, 2 - 8.2.2
5.	Electrical Equipment (-6)	Verification of the Electrical Installations including lightning protection according to chapter 8 in /2/.	- 1 - 3.A.6
6.	Commissioning (-8)	Visit of a wind turbine and commissioning procedure according to section 10.8 in /2/.	- 3.K - 13.
7.	Nacelle cover and spinner (-12)	Examination of the verifications of nacelle cover and spinner according to section 6.4 in /2/.	No reference to /1/. (Failure of the covers leads to falling down of big components.)

3 Configuration of the wind turbine (Type sheet)

According to 3.A, 3 in /1/ a type sheet is required. Requirements for the type sheet are not stated in /1/.

In the appendix to this Technical Note our document "Requirements for a type sheet" is to be found.

4 Appendices to Gutachtliche Stellungnahmen (Expert's Reports)

The Gutachtlichen Stellungnahmen „Load assumptions“ and „safety systems and manuals“ are issued including the following appendices:

Appendix to „Load assumptions“:

- Listing of the loads on tower and foundation

Appendix to „Safety systems and manuals“:

- Type sheet

5 *Manuals*

In sections 3.J - 3.L in /1/ the following manuals, which have to be examined by the expert in charge, are mentioned:

- J Operating manual
- K Commissioning record (blank form sheet)
- L Maintenance manual

These manuals are quoted in the Gutachtliche Stellungnahme (Expert's Report) „Safety Systems and Manuals“ and they are marked with corresponding stamps by the expert in charge.

Schl/MRat

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Appendix: Germanischer Lloyd WindEnergie: „Requirements for a type sheet“, 10.05.2005, 1 page



Requirements for a type sheet

Assignment of the type sheet

The type sheet is appended to the Gutachtliche Stellungnahme (Expert's Reports) for the safety system and is part of the documentation which is to be submitted together with the building application.

By means of the type sheet it shall be possible to identify the main components of the wind turbine and to check, to what extent the currently built wind turbine corresponds with the design which has been examined in the scope of the type approval.

Content of the type sheet

The type sheet shall provide a short overview of the machinery part of the wind turbine, contain a dimensioned and complete overview drawing of the wind turbine as well as an outline sketch of the nacelle with labelling of the main components and briefly describe the operating method and safety systems. Furthermore a list of the main components shall be included which specifies the classification and the component manufacturer in each case. For structural components (e.g. hub, spinner, machine frame, cover, tower), which were designed by the wind turbine manufacturer, a reference to the respective drawings is sufficient.

The type sheet shall not contain details about turbine characteristics which were not submitted for assessment, such as power curve, sound power level, etc.

Structure of the type sheet (proposal)

The type sheet shall be prepared in DIN A 4 format and in German language and can be structured as follows:

1. Overview drawing complete wind turbine
2. Outline sketch nacelle
3. Short description of wind turbine and operating method
4. Short description of the safety installations including a schematic illustration of the safety system.
5. List of the main components, e.g. in this way:

Component	Type designation	Manufacturer
Rotor blade
Rotor brake
Tower

10.5.2005 Schl/MRat