REGIONI LIGURIA - PIEMONTE

Comuni:
CASTELVECCHIO DI ROCCA BARBENA(SV): LOCALITA' "MONTE LINGO"
GARESSIO (CN): LOCALITA' "ORTICO"

PROGETTO DEFINTIVO PER LA REALIZZAZIONE DI UN IMPIANTO DI PRODUZIONE DI ENERGIA ELETTRICA DA FONTE EOLICA 2 AEROGENERATORI

Sezione 10:
ALLEGATI

Titolo elaborato:
CERTIFICATI AEROGENERATORI

N. Elaborato 10.2 Data: FEBBRAIO 2012

Committente

fen Energia

Via Nazionale, 2
25052 Piancogno (BS)
p.iva 00814870986

Rappresentante Legale
Dott. Elio Rosario Gheza

Progettazione

TEN project srl

Via A. De Gasperi, 32
82018 San Giorgio del Sannio (BN)
p.i. 01465940623

Progettista
Dott. Ing. Vittorio Iacono

ORDINE DEGLI INGEGNERI DELLA PROVINCIA DI NAPOLI
DOTT. ING.
IACONO VITTORIO
SEZIONE A
SETTORI: CIVILE E AMBIENTALE - INDUSTRIALE - DELL'INFORMAZIONE
N° ISCRIZ.:
13366

Germanischer Lloyd Industrial Services GmbH • Wind Energy • Steinhöft 9 • 20459 Hamburg • Germany

Vestas Wind Systems A/S
Mr. Jens Ulrich Laursen B.Sc.
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6950 Ringkøbing
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Your reference	Your letter of	Our reference	Extension	Date
		25258/07/MLos	+49 40 36149-4015	2007-12-11

Structural Verification of Embedded Steel Sections for Vestas V52 - 850 kW, HH 40 m, 44 m, 49 m, 55 m, 60 m, 65 m and 74 m,

GL Wind Certificate No. TC-WT01-007A-2007
GL Wind Certificate No. TC-WT01-010A-2007.

Dear Mr Laursen,

We herewith confirm that the below listed embedded steel sections for the wind turbine Vestas V52-850 kW have been assessed according to the standards and guidelines as mentioned in the Type Certificates according to IEC WT01 TC-WT01-007A-2007 dated 21.11.2007 for the 50 Hz version and in TC-WT01-010A-2007 dated 21.11.2007 for the 60 Hz version. Additional the International Standard IEC 61400-1 "Wind turbines generator systems – Part 1: Safety requirements", 1999 edition is taken into account.
Both Type Certificates cover hub heights of 40m, 44m, 49m, 55m, 60m and 65m for wind class IA and hub heights of 55m and 74m for wind class IIA. The foundation design has not been assessed.

In your order we have verified the following documents and drawings by issuing parallel calculations and regarding civil engineering requirements:

Documentation according IEC IA:

- "Foundation Section for Tower Hubheight 40 m VESTAS V52 – 850 kW IEC IA", dated 09.11.2007
- "Foundation Section for Tower Hubheight 44 m VESTAS V52 – 850 kW IEC IA", dated 08.11.2007
- "Foundation Section for Tower Hubheight 49 m VESTAS V52 – 850 kW IEC IA", dated 09.11.2007
- "Foundation Section for Tower Hubheight 55 m VESTAS V52 – 850 kW IEC IA", dated 25.10.2007
- "Foundation Section for Tower Hubheight 60 m VESTAS V52 – 850 kW IEC IA", dated 09.11.2007
- "Foundation Section for Tower Hubheight 65 m VESTAS V52 – 850 kW IEC IA", dated 26.09.2007

Documentation according IEC IIA:

- "Foundation Section for Tower Hubheight 55 m VESTAS V52 – 850 kW IEC IIA", dated 09.11.2007
- "Foundation Section for Tower Hubheight 74 m VESTAS V52 – 850 kW IEC IA", dated 08.11.2007

Managing Directors: Lutz Wittenberg (Spokesman) • Hans Berg
Germanischer Lloyd Industrial Services GmbH, Registered Office Hamburg No. HR B 86804
Place of performance and jurisdiction is Hamburg. The latest edition of the General Terms and Conditions of Germanischer Lloyd Industrial Services GmbH is applicable. German law applies.

Drawings:

- "FOUND.SEC.∅3000 40-44m IEC", dated 07.11.2007, drawing no. 946881, rev. 5
- "FOUNDATION SECTION V52-850kW HH: 49 – 55M IEC IA", dated 25.10.2007, drawing no. 946882, rev. 4
- "FOUNDATION SECTION V52-850kW HH: 60 – 65M IEC IA / IIA", dated 07.02.2007, drawing no. 946883, rev. 5
- "FOUND SEC V52-850kW NH-55M IEC II", dated 07.11.2007, drawing no. 946902, rev. 1
- "FOUND SEC V52-850kW 74 IEC II", dated 07.11.2007, drawing no. 951163, rev. 0

The result of the verification is that the embedded steel sections of the above mentioned documents are feasible for the respective hub heights and wind classes.

Yours faithfully,

Germanischer Lloyd Industrial Services GmbH

i.V. Dr. Torsten Faber

i.A. Malte Lossin

Audit Report

Control Centre for Condition Monitoring System

Brüel & Kjær Vibro A/S
Skodsborgvej 307 b
2850 Nærum
Denmark

Report No. 72105-17-Audit **Date 07.02.2007**

Germanischer Lloyd Industrial Services GmbH
Business Segment Wind Energy

Customer	Vestas Wind Systems A/S Alsvej 21 8900 Randers Denmark
Documentation by	Brüel & Kjær Vibro A/S or as stated
GL Wind Order No.	26277/66
Valid for Condition Monitoring System	Wind Turbine Analysis System (WTAS) Type 3651/3652
Expert in Charge	Torsten Muuß
Address	Germanischer Lloyd Industrial Services GmbH Business Segment Wind Energy Steinhöft 9 20459 Hamburg Germany

Germanischer Lloyd

1 Documentation

1.1 Documentation noted

1.1.1 Internal audit report of remote monitoring group (RMG) – back office functions, audit date 13.11.2006, 2 pages

1.1.2 "Certificate DS/EN ISO 9001:2000", ID No.: DSC 00734, 2 pages, by Danish Standards

1.1.3 "Wind Turbine Monitoring System – Type 365x – Guidelines & Process Instructions", dated November 2006, 44 pages

1.1.4 "Wind Turbine Monitoring System – Type 3650x – WTG Status Reporter", dated September 2006, 29 pages

1.1.5 Wind Turbine Monitoring System – Type 3650x – WTG Analyzer Type 7125", dated December 2005, 60 pages

1.1.6 "Wind Turbine Monitoring System – Type 3650x – Alarm Handling Manual", dated September 2006, 26 pages

1.1.7 "Wind Turbine Monitoring System – Type 3650x – Commissioning of Turbines", dated September 2006, 11 pages

1.1.8 "Wind Turbine Monitoring System – Type 3650x – Data Subscription Homepage Type 7125", dated September 2006, 24 pages

1.1.9 "Wind Turbine Monitoring System – Type 3650 – Diagnostic Data Acquisition Unit Type 2540", dated August 2006, 21 pages

2 Assessment criteria

The audit of the control centre was performed on the basis of the "Guideline for the Certification of Condition Monitoring Systems for Wind Turbines" (CMS Guideline) of Germanischer Lloyd, 2003 edition.

3 Scope of examination

The practical assessment of the control centre Brüel & Kjær Vibro A/S, Skodsborgvej 307 b, 2850 Nærum, Denmark was done according to the CMS Guideline.

It was shown how the supervision of a wind turbine is carried out by the condition monitoring system.

The supervision method was assessed to ensure supervision, as defined in the CMS Guideline (see Section 2).

The instructions and procedures of alarm handling, status reporting, data storage and expert-training for the persons (experts) at the control centre were examined for completeness and correctness.

4 Remarks

4.1 The control centre Brüel & Kjær Vibro A/S, Skodsborgvej 307 b, 2850 Nærum, Denmark complies with the requirements of the CMS Guideline.

4.2 Appropriate instructions and procedures for the supervision, alarm handling, status reporting, data storage, expert-training and interpretation of the measured data are available.

5 Conditions

5.1 The condition monitoring system requires continuous (24 hours a day) and qualified technical support by the control centre.

6 Conclusion

The conditions (section 5) shall be observed.

The control centre Brüel & Kjær Vibro A/S, Skodsborgvej 307 b, 2850 Nærum, Denmark complies with the requirements as given in the "Guideline for the Certification of Condition Monitoring Systems for Wind Turbines" of Germanischer Lloyd, 2003 edition.

The control centre Brüel & Kjær Vibro A/S, Skodsborgvej 307 b, 2850 Nærum, Denmark is certified to do supervision with the condition monitoring system "Wind turbine Analysis System (WTAS) Type 3651/3652" (according to certification report No. 72012) for wind turbines.

The certification report No. 72105 of the control centre has be observed as well.

Any modifications to the supervision procedures will render the present report invalid, if they are not approved by Germanischer Lloyd Industrial Services GmbH, Business Segment Wind Energy.

Muu-JRat

Germanischer Lloyd Industrial Services GmbH
Business Segment Wind Energy

Torsten Muuß
Expert in Charge

Certificate

Germanischer Lloyd
WindEnergie GmbH

GL Wind Certificate No. **TZ-005A-2004**

We hereby certify that the control centre

Brüel & Kjær Vibro A/S
Linde Allé 5a
2850 Nærum
Denmark

has been assessed by Germanischer Lloyd WindEnergie GmbH concerning the supervision method and the quality system.

The Certificate is based on the indicated documents as follows:

Report No. 72105, Rev. 0	Certification Report for the Control Centre dated 11th March, 2004
Report No. 72012, Rev. 0	Certification Report for the Condition Monitoring System dated 11th March 2004
Registration No. DK 734	IQ Net and DS Certificate, Certificate of Approval acc. to ISO 9001:2000, valid until 24th January 2006
Normative references:	Germanischer Lloyd WindEnergie "Guideline for the Certification of Condition Monitoring Systems for Wind Turbines", 2003 Edition.

Changes of the supervision method or the quality system are to be approved by Germanischer Lloyd WindEnergie GmbH, otherwise this Certificate loses its validity.

This Certificate is valid until **10th March 2009,** if the validity of the certificate for the Quality Management system is maintained and if an audit of the control centre will take place within the **3rd quarter of 2006**.

Hamburg, 11.03.2004
Muu/LoMe

Germanischer Lloyd
WindEnergie GmbH

Chr. Nath

i.V. M. Woebbeking

By DAP German Accreditation System for Testing
accredited Certification Body for products
The accreditation is valid for the fields of certification
listed in the certificate

Deutscher Akkreditierungs Rat
DAP
DAP-ZE-3443.00

Germanischer Lloyd WindEnergie GmbH
Steinhöft 9
20459 Hamburg
Germany

The latest edition of the "General Terms and Conditions of Germanischer Lloyd WindEnergie GmbH" is applicable. German law applies.

CERTIFICATE

DQS GmbH
Deutsche Gesellschaft zur Zertifizierung von Managementsystemen

hereby certifies that the company

Brüel & Kjær Vibro

Brüel & Kjær Vibro A/S
Skodsborgvej 307 B
DK-2850 Nærum
Denmark

Brüel & Kjær Vibro GmbH
Leydheckerstraße 10
D-64293 Darmstadt
Germany

has implemented and maintains a **Quality Management System**.

Scope:
Developing, manufacturing and marketing of products and systems for monitoring and maintaining of machines, aggregates and operational plants as well as consultation and service

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2008

Certificate registration no.	067156 QM08
Date of certification	2009-10-29
Valid until	2012-10-28

TGA-ZM-02-90

Michael Drechsel
Managing Director

Jan Böge
Managing Director

August-Schanz-Straße 21, 60433 Frankfurt am Main

Type Certificate

GL Renewables Statement No. **TC-GL-010A-2009**

We hereby certify that the condition monitoring system

Wind Turbine Analysis System (WTAS)
Type 3652

designed and manufactured by **Brüel & Kjær Vibro A/S**
Skodsborgvej 307B
2850 Nærum, Denmark

has been assessed by Germanischer Lloyd Industrial Services GmbH, Renewables Certification concerning the system design, the prototype testing and the manufacturer's quality system.

The Type Certificate is based on the indicated documents as follows:

Report No. 73824-16	Certification Report for the Condition Monitoring System "WTAS Type 3652", dated 10th September 2009
Certificate FQA 0353276/A	DQS Certificate of Approval acc. to DIN EN ISO 9001:2000 valid until 28.10.2009

Normative references:

Germanischer Lloyd "Guideline for the Certification of Condition Monitoring Systems for Wind Turbines", 2007 Edition

Changes of the system design or the manufacturer's quality system are to be approved by Germanischer Lloyd otherwise the Type Certificate loses its validity.

This Type Certificate is valid until **9th September 2011,** if the validity of the certificate for the Quality Management system is maintained.

Hamburg, 10.09.2009
Stgr

Germanischer Lloyd Industrial Services GmbH

Christian Nath

i. V. Mike Woebbeking

By DAP German Accreditation System for Testing
accredited Certification Body for products
The accreditation is valid for the fields of certification
listed in the certificate

Deutscher Akkreditierungsrat
DAR
DPT-ZE 3443.00

Germanischer Lloyd Industrial Services GmbH
Renewables Certification
Steinhöft 9
20459 Hamburg, Germany

The latest edition of the "General Terms and Conditions of Germanischer Lloyd Industrial Services GmbH " is applicable. German law applies.