



Certificate No.

**IECRE.WE.TC.20.0092-R0**

IECRE - IEC System for Certification  
to Standards Relating to Equipment  
for Use in Renewable Energy  
Applications

**TYPE CERTIFICATE**  
**Wind Turbines**

This certificate is issued to

Siemens Gamesa Renewable Energy Innovation & Technology SL  
Avda. Ciudad de la Innovación 9-11  
31621 Sarriguren (Navarra)  
Spain

for the wind turbines

SG 2.6-114

wind turbine class (class, standard, year)

IIA, IEC 61400-1, 2005

This certificate attests compliance with IEC 61400 Series as specified in subsequent pages . It is based on the following reference documents:

Design basis evaluation conformity statement  
Dated (\*covered in the design evaluation conformity statement)

STC-201101-R0  
2020-12-16

Design evaluation conformity statement  
Dated

STC-201101-R0  
2020-12-16

Type test conformity statement  
Dated

STC-201102-R0  
2020-12-16

Manufacturing conformity statement  
Dated

STC-201103-R0  
2020-12-16

Final evaluation report  
Dated

R12587544-12-R0  
2020-12-16

The conformity evaluation was carried out in accordance with the rules and procedures of the IECRE System  
[www.iecre.org](http://www.iecre.org)

The wind turbine type specification begins on page 2 of this certificate.

Changes in the system design or the manufacturer's quality system are to be approved by the Certification Body. Without approval, the certificate loses its validity.

This certificate is valid until:  
15.12.2021

Approved for issue on behalf of the IECRE  
Certification Body:

UL Renewables



Federico Osvald  
Vice Head of Certification Body  
Bremen 2020-12-16

DEWI-OCC GmbH  
Contrescarpe 45  
28195 Bremen, Germany



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#### Annex I - Wind turbine characteristics

##### Machine parameters:

Power regulation:	Variable speed and pitch control
Rotor orientation:	upwind
Number of rotor blades:	3
Rotor tilt:	6°
Cone angle:	-2°
Rated power:	2.625 MW
Rated wind speed $V_r$ :	11 m/s
Rotor diameter:	114 m
Hub height(s):	80 / 93 / 125 m
Hub height operating wind speed range $V_{in} - V_{out}$ :	3 m/s - 25 m/s
Design life time:	20 years
Software version:	Control Architecture V2 or superior

##### Wind conditions:

Characteristic turbulence intensity $I_{ref}$ at $V_{hub} = 15$ m/s:	16 %
Annual average wind speed at hub height $V_{ave}$ :	8.5 m/s
Reference wind speed $V_{ref}$ :	42.5 m/s
Mean flow inclination:	8 degrees
Hub height 50-year extreme wind speed $V_{e50}$ :	59.5 m/s

##### Electrical network conditions:

Normal supply voltage and range:	690 V $\pm$ 10%
Normal supply frequency and range:	50 / 60 Hz $\pm$ 6%
Voltage imbalance:	2% - 4%
Maximum duration of electrical power network outages:	not dimensioning
Number of electrical network outages:	52/yr.



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**Other environmental conditions (where taken into account):**

Design conditions in case of offshore WT	NA
Normal and extreme temperature ranges:	Normal: -10°C to +40°C Extreme: -20°C to +50°C
Relative humidity of the air:	Up to 95%
Air density:	1.225 kg/m <sup>3</sup>
Solar radiation:	1000 W/m <sup>2</sup>
Lightning protection system (standard and protection class):	IEC 61400-24:2010, LPL I
Earthquake model and parameters (standard and key parameters e.g. spectrum, model, seismic zone, soil class, etc.):	NA
Other design conditions :	NA



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**Annex II - Wind turbine variants**

ID	Type Designation	Rated Power	IEC Class	Frequency	Rotor Blade	Hub Height
1	SG2.6-114 MY18 2.625MW CIIA	2.625 MW	IIA	50 Hz 60 Hz	G114 V2 LM56.0 P	80 m
						93 m
						125 m
2	SG2.6-114 MY18.B 2.625MW CIIA	2.625 MW	IIA	50 Hz	G114 2.1 STD	93 m
						125 m



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## **TYPE CERTIFICATE**

### **Wind Turbines**

#### **Annex III - Major components**

\*\*If not otherwise stated, the certificate holder is the manufacturer.

##### **Blade:**

Type: G114 Infused blade, structural shells and adhesive joints  
Material: Fiberglass reinforced resin  
Blade length: 56 m  
Number of blades: 3  
Manufacturer: SGRE / TPI Composites / Shanghai Aeolon Wind Energy Technology  
Drawing / Data sheet / Part No.: G114 V2  
G114 2.1 STD

##### **Blade:**

Type: Infused blade, structural shells and adhesive joints  
Material: Fiberglass reinforced resin  
Blade length: 56 m  
Number of blades: 3  
Manufacturer: LM  
Drawing / Data sheet / Part No.: LM 56.0 P

##### **Blade bearing:**

Type: Four point contact double row  
Manufacturer: Rollix Defontaine  
Drawing / Data sheet / Part No.: 13-2418  
13-2425

##### **Blade bearing:**

Type: Four point contact double row  
Manufacturer: Laulagun Bearing S.A.  
Drawing / Data sheet / Part No.: M00DST0125



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#### Blade bearing:

Type: Four point contact double row  
Manufacturer: Kaydon Bearings Division  
Drawing / Data sheet / Part No.: 18190001  
18190A01  
18222001  
18222A01  
18645A01  
18645001

#### Blade bearing:

Type: Four point contact double row  
Manufacturer: Tianma (Chengdu) Precision Machinery, Co.  
Ltd (TMB)  
Drawing / Data sheet / Part No.: B030.53.2418

#### Blade bearing:

Type: Four point contact double row  
Manufacturer: TyssenKrupp Rothe Erde  
Drawing / Data sheet / Part No.: 090.55.2418.XXX.49.1422

#### Blade bearing:

Type: Four point contact double row  
Manufacturer: IMO  
Drawing / Data sheet / Part No.: 40-552418/0

#### Pitch System:

Motor / Actuator Type: Double acting hydraulic cylinder  
Pitch Controller Type: Hydraulic  
Manufacturer: SGRE

#### Main shaft:

Type: Steel Shaft  
Manufacturer: SGRE  
Material: Forged steel  
Drawing / Data sheet / Part No.: GP439104  
GP373768



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#### **Main bearing:**

Type: Spherical roller bearing  
Manufacturer: KOYO  
Drawing / Data sheet / Part No.: RHAW33TS1  
RHAW33TS1

#### **Main bearing:**

Type: Spherical roller bearing  
Manufacturer: JTEKT Corporation  
Drawing / Data sheet / Part No.: RHAW33TS1  
RHAW33TS1

#### **Main bearing:**

Type: Spherical roller bearing  
Manufacturer: ZKL Group  
Drawing / Data sheet / Part No.: EW33MH TPF 11528-16  
EW33MH TPF 11517-15

#### **Main bearing:**

Type: Spherical roller bearing  
Manufacturer: Timken  
Drawing / Data sheet / Part No.: YMDWEW886C  
2WE-A

#### **Gearbox:**

Type: Three stages gearbox (two planetary stages  
and one helical gear stage)  
Gear Ratio: 1:129.68 (50Hz)  
1:103.99 (60Hz)  
Manufacturer: SGRE  
Drawing / Data sheet / Part No.: gBOX2.625 STD  
gBOX2.625 STD MOD

#### **Gearbox:**

Type: Three stages gearbox (two planetary stages  
and one helical gear stage)  
Gear Ratio: 1:130.03 (50Hz)  
Manufacturer: NGC  
Drawing / Data sheet / Part No.: NGC FD2750GC



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#### **Yaw System:**

*Drive Type:* Active by yaw drives  
*Manufacturer:* SGRE  
*Drawing / Data sheet / Part No.:* Included in yaw gear

*Bearing Type:* Friction Bearing  
*Manufacturer:* SGRE  
*Drawing / Data sheet / Part No.:* GD293701

*Gear Type:* Planetary gear with motor and brake  
*Manufacturer:* Comer  
*Drawing / Data sheet / Part No.:* 5718.050.0508 (PG 2504DSP)  
5718.050.0505 (PG 2504DSP)

*Gear Type:* Planetary gear with motor and brake  
*Manufacturer:* Bonfiglioli  
*Drawing / Data sheet / Part No.:* 710T4U

*Gear Type:* Planetary gear with motor and brake  
*Manufacturer:* Brevini Transmissions  
*Drawing / Data sheet / Part No.:* ELS2814-E.L/9026922/1022/A.D.IEC100-112

*Gear Type:* Planetary gear with motor and brake  
*Manufacturer:* NGC  
*Drawing / Data sheet / Part No.:* FDX204S-01-00R1

*Gear Type:* Planetary gear with motor and brake  
*Manufacturer:* SEW  
*Drawing / Data sheet / Part No.:* P4W034 M4 – i1060.2

*Brake Type:* Friction – brake on motor  
*Manufacturer:* SGRE  
*Drawing / Data sheet / Part No.:* Included in yaw gear motor





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#### Generator:

Type:	Doubly – fed induction machine
Manufacturer:	Gamesa Electric
Drawing / Data sheet / Part No.:	CR25-4P
Rated Power:	2500 - 2695 kW
Rated Frequency:	50Hz
Rated Speed:	1680 rpm
Max. speed:	1900 rpm
Rated Voltage:	690 V
Rated Current:	774 A (rotor) / 1973.5 A (stator)
Insulation Class:	F
Degree of Protection:	IP54/IP23

#### Generator:

Type:	Doubly – fed induction machine
Manufacturer:	Gamesa Electric
Drawing / Data sheet / Part No.:	CR25-6P C1
Rated Power:	2695 kW
Rated Frequency:	60Hz
Rated Speed:	1344 rpm
Max. speed:	1520 rpm
Rated Voltage:	690 V
Rated Current:	749 A (rotor) / 2039 A (stator)
Insulation Class:	F
Degree of Protection:	IP54/IP23

#### Converter:

Type:	Back to back DFIG converter
Manufacturer:	SGRE
Drawing / Data sheet / Part No:	DAC 2.5 MW
Rated Voltage (grid side):	690V
Rated Current (grid side):	950A
Degree of Protection:	IP54



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### Wind Turbines

#### Transformer:

Type: Dry type vacuum cast resin transformer  
Manufacturer: ABB  
Degree of Protection: IP00  
Location (e.g. tower bottom): nacelle

Drawing / Data sheet / Part No.: DTE 2775/AF  
Rated Voltage: 0.69 / 20 or 34.5 kV  
0.69 / 15.5 kV  
0.69 / 22 kV  
0.69 / 33 kV  
Rated Power: 2775 kVA

Drawing / Data sheet / Part No.: 3160/20 Ecodesign  
Rated Voltage: 0.69 / 20 kV  
Rated Power: 3160 kVA

Drawing / Data sheet / Part No.: 2910/34.5 Optiloss  
Rated Voltage: 0.69 / 34.5 kV  
Rated Power: 2910 kVA

Drawing / Data sheet / Part No.: DTE 2910/36  
Rated Voltage: 0.69 / 30 kV  
0.69 / 34.5 kV  
0.69 / 33 kV  
Rated Power: 2910 kVA

Drawing / Data sheet / Part No.: DTE 2910/22  
Rated Voltage: 0.69 / 22 kV  
Rated Power: 2910 kVA



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## **TYPE CERTIFICATE**

### **Wind Turbines**

#### **Transformer:**

Type: Dry type vacuum cast resin transformer  
Manufacturer: SGB  
Degree of Protection: IP00  
Location (e.g. tower bottom): nacelle

Drawing / Data sheet / Part No.: DTTH1NG 3150/20  
Rated Voltage: 0.69 / 20 kV  
Rated Power: 2910 kVA

Drawing / Data sheet / Part No.: DTTHG 2910/24  
Rated Voltage: 0.69 / 22 kV  
Rated Power: 2910 kVA

#### **Transformer:**

Type: Dry type vacuum cast resin transformer  
Manufacturer: Hainan Jinpan Electric Co., Ltd.  
Drawing / Data sheet / Part No.: SCLB10 2910/40.5  
Rated Voltage: 0.69 / 35 kV  
Rated Power: 2910 kVA  
Degree of Protection: IP00  
Location (e.g. tower bottom): nacelle



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#### **Tower:**

Type:	Tubular steel
Manufacturer:	Windar Renovables (Aemsa Santana, Linares) (Tadarsa Eolica, Aviles) (Windar windservices El Fresno) (Apoyos Metálicos, Olazagutía) Broadwind Energy Gesbey Enerji Turbini China Construction Equipment Engineering CS Wind
Length:	HH 80 m
Sections:	4
Drawing / Data sheet / Part No.:	GD415761
Length:	HH 93 m
Sections:	4
Drawing / Data sheet / Part No.:	GD212018 GD414936
Length:	HH 125 m
Sections:	5
Drawing / Data sheet / Part No.:	GD233243

#### **Foundation::**

Type:	NA
Manufacturer:	NA
Drawing / Data sheet / Part No:	NA

#### **Foundation Adaptor::**

Type:	NA
Manufacturer:	NA
Drawing / Data sheet / Part No.:	NA

#### **Manuals:**

Operation & maintenance manual:	A17-01-ECM011
Transport manual:	A17-01-ECM011
Installation & commissioning. manual:	A17-01-ECM011