



Certificate No.

**IECRE.WE.TC.18.0024-R1**

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

## TYPE CERTIFICATE

### Wind Turbine

This certificate is issued to

Siemens Gamesa Renewable Energy Innovation & Technology  
Avda. Ciudad de la Innovación 2  
31621 Sarriguren (Navarra)  
Spain

for the wind turbine

SG 3.4-132 3.3 / 3.465 MW IEC-IIA HH84m, 97m, 101.5m, 114m, 50/60Hz

wind turbine class (class, standard, year)

WT class IIA, IEC 61400-1/A1, 2010

This certificate is transferred from IEC 61400-22 to IECRE and 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 – 170608 Rev. 4  
20.12.2018

Design evaluation conformity statement  
Dated

STC – 170608 Rev. 4  
20.12.2018

Type test conformity statement  
Dated

STC – 170905 Rev. 2  
20.12.2018

Manufacturing conformity statement  
Dated

STC – 170904 Rev. 2  
20.12.2018

Final evaluation report  
Dated

R12647885-12 Rev. 0  
20.12.2018

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:  
2022-10-05

Approved for issue on behalf of the IECRE  
Certification Body:

UL Renewables



Jörn Gerlach  
Vice Head of Certification Body  
Cuxhaven 2019-07-16

DEWI-OCC GmbH  
Am Seedeich 9  
27472 Cuxhaven, Germany



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#### Machine parameters:

Power regulation:	Variable speed and pitch regulation
Rotor orientation:	Upwind
Number of rotor blades:	3
Rotor tilt:	6°
Cone angle:	-4°
Rated power:	3300 / 3465 kW
Rated wind speed $V_r$ :	9.6 m/s (3300 kW) 10.3 m/s (3465 kW)
Rotor diameter:	132m
Hub height(s):	84 / 97 / 101.5 / 114 m
Hub height operating wind speed range $V_{in} - V_{out}$ :	3 – 25 m/s
Design life time:	20 years
Software version:	Control Architecture Version V1 or superior

#### Wind conditions:

Characteristic turbulence intensity $I_{ref}$ at $V_{hub} = 15$ m/s:	0.16
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°
Hub height 50-year extreme wind speed $V_{e50}$ :	59.5 m/s

#### Electrical network conditions:

Normal supply voltage and range:	690V +/- 10%
Normal supply frequency and range:	50/60Hz +/- 6%
Voltage imbalance:	2%
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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**Major components:**

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

**Blade:**

Type: B132 Infused blade, structural shells and  
adhesive joints  
Material: Glass fiber reinforced epoxy resin  
Blade length: 64.5 m  
Number of blades: 3  
Manufacturer: Siemens Gamesa  
Drawing / Data sheet / Part No.: G132i 3.3MW

**Blade:**

Type: B132 Infused blades, structural shells and  
adhesive joints  
Material: Glass fiber reinforced epoxy resin  
Blade length: 64.5 m  
Number of blades: 3  
Manufacturer: Siemens Gamesa / TPI Mexico / TPI  
Turkey  
Drawing / Data sheet / Part No.: G132 3.3MW T-Bolts

**Blade:**

Type: B132 Infused blades, structural shells and  
adhesive joints  
Material: Glass fiber reinforced epoxy resin  
Blade length: 64.5 m  
Number of blades: 3  
Manufacturer: Siemens Gamesa  
Drawing / Data sheet / Part No.: G132FL 3.3MW TB

**Blade bearing:**

Type: Four point contact double row  
Manufacturer: Laulagun  
Drawing / Data sheet / Part No.: M00DST0125XZ  
M00DST0125PN



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#### Blade bearing:

Type: Four point contact double row  
Manufacturer: Rollix  
Drawing / Data sheet / Part No.: 13-2892-AB  
13-2892-01  
13-2892-03

#### Blade bearing:

Type: Four point contact double row  
Manufacturer: SKF  
Drawing / Data sheet / Part No.: 18536001  
18536A01

#### Blade bearing:

Type: Four point contact double row  
Manufacturer: Renogear SL  
Drawing / Data sheet / Part No.: 200.0/60.2890.000 (98-106)  
200.0/60.2890.000 (76-106)  
200.0/60.2890.000 (94-106)

#### Pitch System:

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

#### Main shaft:

Type: Steel shaft  
Manufacturer: Siemens Gamesa  
Material: 42CrMo4+QT /  
Forged 34CrNiMo6 + QT  
Drawing / Data sheet / Part No.: GP360398 & GP404059 /  
GP334823



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#### **Main bearing:**

Type: Spherical Roller Bearing  
Manufacturer: Timken  
Drawing / Data sheet / Part No.: YMDWEW886F / WE-1478-A

#### **Main bearing:**

Type: Spherical Roller Bearing  
Manufacturer: Koyo  
Drawing / Data sheet / Part No.: RHAW33TS1CS

#### **Main bearing:**

Type: Spherical Roller Bearing  
Manufacturer: Schaeffler  
Drawing / Data sheet / Part No.: 623409.PRL  
623394.PRL

#### **Main bearing:**

Type: Spherical Roller Bearing  
Manufacturer: ZKL  
Drawing / Data sheet / Part No.: EW33MH TPF 11519-15  
EW33MH TPF 11519-15

#### **Gearbox:**

Type: Three stages gearbox (two planetary stages and one helical gear stage)  
Gear Ratio:  $i=1:106.404$  (50Hz)  
 $i=1:127.286$  (60Hz)  
Manufacturer: Gamesa Energy Transmission, SAU  
Drawing / Data sheet / Part No.: gBOX 3.3

#### **Yaw System:**

Drive Type: Activated by Yaw drives  
Manufacturer: Bonfiglioli  
Drawing / Data sheet / Part No.: GD268640



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### Wind Turbine

*Drive Type:* Activated by Yaw drives  
*Manufacturer:* Comer  
*Drawing / Data sheet / Part No.:* PG 2504DSP

*Drive Type:* Activated by Yaw drives  
*Manufacturer:* NGC  
*Drawing / Data sheet / Part No.:* FDX204S

*Bearing Type:* Friction Bearing  
*Manufacturer:* Siemens Gamesa  
*Drawing / Data sheet / Part No.:* GD268640

*Gear Type:* Yaw Ring G132 3.3MW  
*Manufacturer:* Siemens Gamesa  
*Drawing / Data sheet / Part No.:* GP300882

*Brake Type:* Integrated in yaw bearing claws with active  
and passive brakes  
*Manufacturer:* Siemens Gamesa  
*Drawing / Data sheet / Part No.:* GD268640

#### **Generator:**

*Type:* Asynchronous doubly-fed machine  
*Manufacturer:* Gamesa Electric  
*Drawing / Data sheet / Part No.:* CR33-6P  
*Rated Power:* 3615 kW  
*Rated Frequency:* 50/60Hz  
*Rated Speed:* 1120/1344 rpm  
*Max. speed:* 1713/2055.6 rpm  
*Rated Voltage:* 690 V  
*Rated Current:* 3000 / 1198A (Stator/Rotor)  
*Insulation Class:* F  
*Degree of Protection:* IP54



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#### Generator:

Type	Asynchronous doubly-fed machine
Manufacturer:	Siemens
Drawing / Data sheet / Part No.:	JFWA-630MR
Rated Power:	3585 kW
Rated Frequency:	50/60Hz
Rated Speed:	1120/1344 rpm
Max. speed:	1332 / 1599 rpm
Rated Voltage:	690 V
Rated Current:	2829 / 1125 A (Stator/Rotor)
Insulation Class:	F
Degree of Protection:	IP54 / IP23

#### Converter:

Type:	4 Quadrant DFIG Converter
Manufacturer:	Gamesa Electric
Drawing / Data sheet / Part No:	DAC 3.3 MW
Rated Voltage (grid side):	690V
Rated Current (grid side):	1250/660 A (MSC/LSC)
Degree of Protection:	IP54

#### Transformer:

Type:	Three Phase Dry Type
Manufacturer:	ABB
Drawing / Data sheet / Part No.:	DTE 3900/36
Rated Voltage:	0,69 / 33.6 kV & 0,69 / 34.5 kV
Rated Power:	3900 KVA
Degree of Protection:	IP00
Location (e.g. tower bottom):	Nacelle





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### **Wind Turbine**

#### **Transformer:**

Type:	Three Phase Dry Type
Manufacturer:	ABB
Drawing / Data sheet / Part No.:	DTE 3900/24
Rated Voltage:	0,69 / 20 kV
Rated Power:	3900 KVA
Degree of Protection:	IP00
Location (e.g. tower bottom):	Nacelle

#### **Transformer (only for 3.3MW):**

Type:	Three Phase Dry Type
Manufacturer:	Schneider Electric
Drawing / Data sheet / Part No.:	GP321808
Rated Voltage:	0,69 / 20 kV
Rated Power:	3668 KVA
Degree of Protection:	IP00
Location (e.g. tower bottom):	Nacelle

#### **Tower:**

Type:	Tubular Steel
Manufacturer:	Siemens Gamesa
Sections:	4
Length:	84 m HH
Drawing / Data sheet / Part No.:	GD289760

#### **Tower:**

Type:	Tubular Steel
Manufacturer:	Siemens Gamesa
Sections:	4
Length:	97 m HH
Drawing / Data sheet / Part No.:	GD339547



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#### **Tower:**

Type: Tubular Steel  
Manufacturer: Siemens Gamesa  
Sections: 4  
Length: 101.5 m HH  
Drawing / Data sheet / Part No.: GD340275

#### **Tower:**

Type: Tubular Steel  
Manufacturer: Siemens Gamesa  
Sections: 5  
Length: 114 m HH  
Drawing / Data sheet / Part No.: GD275737

#### **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: See R11268035-2-R6  
Transport manual: See R11268035-2-R6  
Installation & commissioning. manual: See R11268035-2-R6