



Certificate No.

IECRE.WE.TC.19.0038-R0

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 SL
Avda. Ciudad de la Innovación 9-11
31621 Sarriguren (Navarra)
Spain

for the wind turbine

SG 3.4-132 50/60Hz Rated Power 3.3 - 3.65MW

wind turbine class (class, standard, year)

WT class IIA / S, 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 – 181004 Rev. 1
19.03.2019

Design evaluation conformity statement
Dated

STC – 181004 Rev. 1
19.03.2019

Type test conformity statement
Dated

STC – 181006 Rev. 1
19.03.2019

Manufacturing conformity statement
Dated

STC – 181005 Rev. 1
19.03.2019

Final evaluation report
Dated

R12766984-12 Rev. 0
20.03.2019

The conformity evaluation was carried out in accordance with the rules and procedures of the IECRE System
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:
2023-12-19

Approved for issue on behalf of the IECRE
Certification Body:

UL Renewables



Jörn Gerlach
Vice Head of Certification Body
Cuxhaven 2019-03-26

DEWI-OCC GmbH
Am Seedeich 9
27472 Cuxhaven, Germany



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

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 / 3550 / 3650kW
Rated wind speed V_r :	See Annex I
Rotor diameter:	132
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:	See Annex I
Annual average wind speed at hub height V_{ave} :	See Annex I
Reference wind speed V_{ref} :	See Annex I
Mean flow inclination:	8°
Hub height 50-year extreme wind speed V_{e50} :	See Annex I

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.



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

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:	See Annex I
Solar radiation:	1000 W/m ²
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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

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 (one planetary
stage and two helical gear stages)
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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE
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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

Generator (valid only for 3.3/3.465MW variants):

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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

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



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

Annex I – Wind conditions

<i>Wind conditions</i>	<i>SG3.4-132 3.3/3.465MW</i>	<i>SG3.4-132 3.55MW</i>	<i>SG3.4-132 3.65MW</i>
50-year reference wind speed (V_{ref})	42.5 m/s	41 m/s	39 m/s
50-year extreme wind speed (V_{e50})	59.5 m/s	57.4 m/s	54.6 m/s
Annual average wind speed (V_{ave})	8.5 m/s	8.2 m/s	7.8 m/s
Characteristic turbulence intensity I_{ref} at $V_{hub} = 15\text{m/s}$	0.16	0.153	0.147
Air density	1.225 kg/m ³	1.20 kg/m ³	1.18 kg/m ³
Cut-in wind speed	3 m/s	3 m/s	3 m/s
Rated wind speed	9.6 m/s (3.3MW) 10.3 m/s (3.465 MW)	10.6 m/s	11 m/s
Cut-out wind speed (10 min mean)	25 m/s	25 m/s	25 m/s



Certificate. No.

IECRE.WE.TC.19.0038-R0

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

TYPE CERTIFICATE

Wind Turbine

Annex II - Turbine variants

ID	ID (Type Variant)	IEC WT Class	Power	Derating Temperature	Hub Height	Blade manufacturer
1	AM-1	cIIA	3.3MW	40.5°C	84 m	Siemens Gamesa
2	AM-1	cIIA	3.3MW	40.5°C	97 m	Siemens Gamesa
3	AM-1	cIIA	3.3MW	40.5°C	101.5 m	Siemens Gamesa
4	AM-1	cIIA	3.3MW	40.5°C	114 m	Siemens Gamesa
5	AM 0	cIIA	3.465MW	40°C	84 m	Siemens Gamesa
6	AM 0	cIIA	3.465MW	40°C	97 m	Siemens Gamesa
7	AM 0	cIIA	3.465MW	40°C	101.5 m	Siemens Gamesa
8	AM 0	cIIA	3.465MW	40°C	114 m	Siemens Gamesa
9	AM+1	S	3.55MW	25°C	84 m	Siemens Gamesa
10	AM+1	S	3.55MW	25°C	97 m	Siemens Gamesa
11	AM+1	S	3.55MW	25°C	101.5 m	Siemens Gamesa
12	AM+1	S	3.55MW	25°C	114 m	Siemens Gamesa
13	AM+2	S	3.65MW	20°C	84 m	Siemens Gamesa
14	AM+2	S	3.65MW	20°C	97 m	Siemens Gamesa
15	AM+2	S	3.65MW	20°C	101.5 m	Siemens Gamesa
16	AM+2	S	3.65MW	20°C	114 m	Siemens Gamesa