



Certificate No.

IECRE.WE.TC.19.0040-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

Envision Energy (Jiangsu) Co., Ltd.
No. 3 Shenzhuang Road, Lingang New City Low-Carbon Industrial Park; Jiangyin, Jiangsu, 214443
P.R. China

for the wind turbine

Envision EN2.5-131 50Hz IEC S HH100 and HH120

wind turbine class (class, standard, year)

IEC S, IEC 61400-1:2005 incl. 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

DB-DNVGL-SE-0074-04019-5
12.12.2018

Design evaluation conformity statement
Dated

DE-DNVGL-SE-0074-04020-6
12.12.2018

Type test conformity statement
Dated

TT-DNVGL-SE-0074-04022-6
12.12.2018

Manufacturing conformity statement
Dated

ME-DNVGL-SE-0074-04021-6
12.12.2018

Component certificates
Dated

CC-DNVGL-SE-0074-03571-0
09.02.2018
CC-DNVGL-SE-0074-03997-0
25.06.2018

Final evaluation report
Dated

FER-DNVGL-SE-0074-04018-6
12.12.2018

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:
08.02.2023

Approved for issue on behalf of the IECRE
Certification Body:



Caroline Cröpelin / Bente Vestergaard
Project Manager / Service Line Leader

DNV GL Renewables Certification
Brooktorkai 18
20457 Hamburg
Germany

Hamburg 25.03.2019



Certificate. No.

IECRE.WE.TC.19.0040-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:	pitch-controlled (IPC)
Rotor orientation:	Upwind
Number of rotor blades:	3
Rotor tilt:	6 °
Cone angle:	-3.5 °
Rated power:	2500 kW
Rated wind speed V_r :	9.4 m/s
Rotor diameter:	131.2 m
Hub height(s):	100.336 m and 120.336 m
Hub height operating wind speed range $V_{in} - V_{out}$:	3.0 to 20.0 m/s
Design life time:	20 years
Software version:	Bladed 4.7

Wind conditions:

Characteristic turbulence intensity I_{ref} at $V_{hub} = 15$ m/s:	0.14 (class B) for HH100 0.12 (class C) for HH120
Annual average wind speed at hub height V_{ave} :	6.5 m/s (class S) for HH100 7.0 m/s (class S) for HH120
Reference wind speed V_{ref} :	37.5 m/s (class B) for HH100 32.5 m/s (class S) for HH120
Mean flow inclination:	8 °
Hub height 50-year extreme wind speed V_{e50} :	52.5 m/s (class B) for HH100 45.5 m/s (class S) for HH120

Electrical network conditions:

Normal supply voltage and range:	690 V ($\pm 10\%$)
Normal supply frequency and range:	50 Hz ($\pm 5\%$)
Voltage imbalance:	Max. 2% acc. to IEC 60146
Maximum duration of electrical power network outages:	6 h acc. to IEC 61400-1
Number of electrical network outages	20 per year acc. to IEC 61400-1



Certificate. No.

IECRE.WE.TC.19.0040-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):

Normal and extreme temperature ranges:

-30°C to 40°C

-40°C to 50°C

Relative humidity of the air:

Up to 95%

Air density:

1.225 kg/m³

Lightning protection system (standard and protection class):

Designed acc. to IEC 61400-24,
Protection Level I



Certificate. No.

IECRE.WE.TC.19.0040-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: TMT64.5A
Material: Glass fibre-reinforced plastic
Blade length: 64.5 m
Number of blades: 3
Manufacturer: TMT
Drawing / Data sheet / Part No.: TX5F2601-10100, Rev. A

Blade bearing:

Type: Double Row Slewing Bearing
Manufacturer: Xuzhou Rothe Erde
Drawing / Data sheet / Part No.: BD.H.2430.N1.F3, Rev. a

Manufacturer: Yantai Tiancheng Machinery Co., Ltd.
Drawing / Data sheet / Part No.: 073.55.2430.001.24.03D2

Pitch System:

Type: Gearbox with electrical motor
Motor / Actuator Type: FDX105A10-01-00R1, Rev. -
Pitch Controller Type: N/A
Manufacturer: Nanjing High Speed Gear Manufacturing
Co., Ltd.

Motor / Actuator Type: BJ2500YJA-WX, Ver. 00
Pitch Controller Type: N/A
Manufacturer: Chongqing Gearbox Wind Power
Gearbox Co., Ltd.



Certificate. No.

IECRE.WE.TC.19.0040-R0

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

TYPE CERTIFICATE

Wind Turbine

Motor / Actuator Type: I7090T012500-A, Rev. A

Pitch Controller Type: N/A

Manufacturer: Bonfiglioli Transmittal

Motor / Actuator Type: B255A, Rev. 02

Pitch Controller Type: N/A

Manufacturer: Yinchuan Weili Transmission Technology
Co., Ltd.

Main shaft:

Type: Flanged shaft

Material: Forged steel

Drawing / Data sheet / Part No.: ENV22110093, Rev. A

Main bearing:

Type: Spherical roller bearing

Manufacturer: SCHAEFFLER / FAG

Drawing / Data sheet / Part No.: EDD F-620179.PRL 000, Rev. AA

Manufacturer: SKF

Drawing / Data sheet / Part No.: 240_750_ECA_CN LW33_11G00

Gearbox:

Type: EH826A

Gear Ratio: 1:148,06

Manufacturer: ZF Wind Power (Tianjin) Co., Ltd

Drawing / Data sheet / Part No.: 096-EH0826A001, Rev. A



Certificate. No.

IECRE.WE.TC.19.0040-R0

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

TYPE CERTIFICATE

Wind Turbine

Yaw System:

<i>Drive Type:</i>	5 yaw drives with electrical motor, planetary gearbox with pinion
Manufacturer:	Nanjing High Speed Gear Manufacturing Co., Ltd.
Drawing / Data sheet / Part No.:	FDX206B08-02-00R1, Rev. -
Manufacturer:	Bonfiglioli Transmittal
Drawing / Data sheet / Part No.:	17130T000400
Manufacturer:	Chongqing Gearbox Wind Power Gearbox Co., Ltd.
Drawing / Data sheet / Part No.:	PH2200YJ-WX
Manufacturer:	Yinchuan Weili Transmission Technology Co., Ltd.
Drawing / Data sheet / Part No.:	P255A
<i>Bearing Type:</i>	9 Yaw callipers with mounted yaw pads (friction bearing)
Manufacturer:	Jungblut wind elements GmbH & Co. KG
Drawing / Data sheet / Part No.:	VA001287, Rev. B
<i>Gear Type:</i>	Slewing ring gear
Manufacturer:	Xuzhou Rothe Erde
Drawing / Data sheet / Part No.:	401.22.1599.042.02.0132
Manufacturer:	Yantai Tiancheng Machinery Co., Ltd.
Drawing / Data sheet / Part No.:	CQW.22.2971F2



Certificate. No.

IECRE.WE.TC.19.0040-R0

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

TYPE CERTIFICATE

Wind Turbine

Brake Type: Yaw claw brakes plus motor brakes
(friction brake) of the electrical motor

Manufacturer: Jungblut wind elements GmbH & Co. KG

Drawing / Data sheet / Part No.: VA001287, Rev. B

Generator:

Type YJ258CX1

Manufacturer: CRRC Yongji Electric Co., Ltd.

Drawing / Data sheet / Part No.: 1216370199, Rev.C

Rated Power: 2550 kW

Rated Frequency: 50 Hz

Rated Speed: 1820 rpm

Rated Voltage: 690 V

Rated Current: 1769 A

Insulation Class: H

Degree of Protection: IP54 (housing)
IP23 (slip-ring)

Type DASAA5025-4UF

Manufacturer: Nanjing Turbine & Electric Machinery
Changfeng New Energy Corp.

Drawing / Data sheet / Part No.: OCF.301.0394

Rated Power: 2600 kW

Rated Frequency: 50 Hz

Rated Speed: 1820 rpm

Rated Voltage: 690 V

Rated Current: 1799 A

Insulation Class: F

Degree of Protection: IP54 (housing)
IP23 (slip-ring)



Certificate. No.

IECRE.WE.TC.19.0040-R0

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

TYPE CERTIFICATE

Wind Turbine

Converter:

Type: ENVERT-1DA-2.X
Manufacturer: Envision Energy (Jiangsu) Co., Ltd.
Drawing / Data sheet / Part No: YJ11110005, Rev. 0
Rated Voltage (grid side): 690 V
Rated Current: Grid side: 450 A
Generator side: 900 A
Degree of Protection: Power cabinet: IP20
Control cabinet: IP54
Drive cabinet: IP20

Tower:

Type: Tubular steel tower
Manufacturer: Envision Energy (Jiangsu) Co., Ltd.
Sections: 5
Length: 117.3m (HH120m)
97.3m (HH100m)
Drawing / Data sheet / Part No.: Tower_2x_120FT, Rev. 3 &
Tower 2x 100JT, V02

Manuals:

Operation & maintenance manual: PRC-0003544, rev. 1.5
Maintenance Manual for Envision 2.5-131
WTG, rev. 1.0
Transport manual: EN2.5/131-100HH EN2.5/131-120HH
WTG Transportation Manual, rev. 1.0
Installation & commissioning. manual: ENVISION Mechanical Installation
Manual For EN2.5-131, rev. V1.2
PRC-0003842, rev. 1.0