

TYPE CERTIFICATE

Certificate No.:
TC-DNVGL-SE-0074-04018-3

Issued:
2018-07-30

Valid until:
2023-07-11

Issued for:

Envision EN2.5-131 50Hz IEC S HH120

Specified in Annex 1

Issued to:

Envision Energy (Jiangsu) Co., Ltd.

No. 3 Shenzhuang Road, Lingang New City Low-Carbon Industrial Park, Jiangyin,
Jiangsu, 214443 P.R. China.

According to:

**IEC 61400-22:2010, Wind turbines – Part 22: Conformity
Testing and Certification**

Based on the document:

DB-DNVGL-SE-0074-04019-3

Design Basis Conformity Statement, dated 2018-07-30

DE-DNVGL-SE-0074-04020-3

Design Evaluation Conformity Statement, dated 2018-07-30

ME-DNVGL-SE-0074-04021-3

Manufacturing Evaluation Conformity Statement, dated 2018-07-30

TT-DNVGL-SE-0074-04022-3

Type Testing Conformity Statement, dated 2018-07-30

CC-DNVGL-SE-0074-03571-0

Component Certificate: Gearbox ZF EH826A,
dated 2018-02-09

CC-DNVGL-SE-0074-03997-0

Component Certificate: TMT64.5A Rotor Blade, dated 2018-06-25

FER-DNVGL-SE-0074-04018-3

Final Evaluation Report, dated 2018-07-30

Changes of the system design are to be approved by DNV GL.

Hamburg, 2018-07-30

For DNV GL Renewables Certification


Mike Wöbbeking
Head of Certification Body



By DAkkS according DIN EN IEC/ISO 17065
accredited Certification Body for products. The
accreditation is valid for the fields of certification
listed in the certificate.

Hamburg, 2018-07-30

For DNV GL Renewables Certification


Tim Pöppel
Senior Engineer



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General

Wind turbine class
Power regulation
Rotor orientation
Rotor tilt
Cone angle
Rated power

IEC S
pitch-controlled
Upwind
6 °
-3.5 °
2500 kW
(de-rated above 15 m/s)
10 m/s
131.2 m
120.336 m
3.0 to 20.0 m/s
20 years
Bladed 4.7
2017r1.1320.1302
Permanently disabled

Rated wind speed v_r
Rotor diameter
Hub height(s)
Hub height operating wind speed range $v_{in} - v_{out}$
Design life time
Software version
Controller version
Independent Pitch Controller (IPC)

Wind conditions

Turbulence intensity I_{ref} at $v_{hub} = 15$ m/s
Annual average wind speed at hub height v_{ave}
Reference wind speed v_{ref}
Mean flow inclination
Hub height extreme wind speed v_{e50}

0.1 (class S)
7.0m/s
32.5m/s
8°
45.5m/s

Electrical network conditions

Normal supply voltage and range
Normal supply frequency and range
Voltage imbalance
Maximum duration of electrical power network outages
Number of electrical network outages

690 V ($\pm 10\%$)
50 Hz ($\pm 5\%$)
Max. 2% acc. to IEC 60146
6 h acc. to IEC 61400-1
20 per year acc. to IEC
61400-1

Other environmental conditions

Normal temperature ranges
Extreme temperature range
Relative humidity of the air
Air density
Description of lightning protection system

-10 °C to 40 °C
-20 °C to 50 °C
Up to 95%
1.225 kg/m³
Designed acc. to IEC 61400-24, Protection Level I



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Major components

Blade	Type	TMT64.5A
	Manufacturer	TMT
	Material	glass fibre-reinforced plastic
	Blade length	64.5 m
	Number of blades	3
	Drawing / Data sheet / Part no.	TX5F2601-10100, Rev. A
Blade bearing	Type	Double Row Slewing Bearing
	Manufacturer 1	Xuzhou Rothe Erde
	Drawing / Data sheet / Part no.	BD.H.2430.N1.F3, Rev. a
	Manufacturer 2	Yantai Tiancheng Machinery Co., Ltd.
	Drawing / Data sheet / Part no.	073.55.2430.001.24.03D2
Pitch system	Type	Gearbox with electrical motor
	Manufacturer 1	Nanjing High Speed Gear Manufacturing Co., Ltd.
	Controller type	n/a
	Motor / Actuator	FDX105A10-01-00R1, Rev. -
	Manufacturer 2	Chongqing Gearbox Wind Power Gearbox Co., Ltd.
	Controller type	n/a
	Motor / Actuator	BJ2500YJA-WX, Ver. 00
	Manufacturer 3	Bonfiglioli Transmittal
	Controller type	n/a
	Motor / Actuator	I7090T012500-A, Rev. A
	Manufacturer 4	Yinchuan Weili Transmission Technology Co., Ltd.
	Controller type	n/a
	Motor / Actuator	B255A, Rev. 02
Main shaft	Type	Flanged shaft
	Material	Forged steel
	Drawing / Data sheet / Part no.	ENV22110093, Rev. A
Main bearing	Type	Spherical roller bearing
	Manufacturer 1	SCHAEFFLER / FAG
	Drawing / Data sheet / Part no.	EDD F-620179.PRL 000, Rev. AA
	Manufacturer 2	SKF
	Drawing / Data sheet / Part no.	240_750_ECA_CNLW33_11G 00
Gearbox	Type	EH826A
	Manufacturer	ZF Wind Power (Tianjin) Co., Ltd



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	Gear ratio	1:148,06
	Drawing / Data sheet / Part no.	096-EH0826A001, Rev. A
Yaw system	Drive type	6 yaw drives with electrical motor, planetary gearbox with pinion
	Drive manufacturer 1	Nanjing High Speed Gear Manufacturing Co., Ltd.
	Drawing / Data sheet / Part no.	FDX206B08-02-00R1, Rev. -
	Drive manufacturer 2	Bonfiglioli Transmittal
	Drawing / Data sheet / Part no.	17130T000400
	Drive manufacturer 3	Chongqing Gearbox Wind Power Gearbox Co., Ltd.
	Drawing / Data sheet / Part no.	PH2200YJ-WX
	Drive manufacturer 4	Yinchuan Weili Transmission Technology Co., Ltd.
	Drawing / Data sheet / Part no.	P255A
	Bearing type	9 Yaw callipers with mounted yaw pads (friction bearing)
	Bearing manufacturer	Jungblut wind elements GmbH & Co. KG
	Drawing / Data sheet / Part no.	VA001287, Rev. B
	Gear type	Slewing ring gear
	Gear manufacturer 1	Xuzhou Rothe Erde
	Drawing / Data sheet / Part no.	401.22.1599.042.02.0132
	Gear manufacturer 2	Yantai Tiancheng Machinery Co., Ltd.
	Drawing / Data sheet / Part no.	CQW.22.2971F2
	Brake type	Yaw claw brakes plus motor brakes (friction brake) of the electrical motor
	Brake manufacturer	Jungblut wind elements GmbH & Co. KG
	Drawing / Data sheet / Part no.	VA001287, Rev. B
Generator	Type	YJ258CX1
	Generator Manufacturer 1	CRRC Yongji Electric Co., Ltd.
	Rated power	2550 kW
	Rated frequency	50 Hz
	Rated speed	1820 rpm
	Rated voltage	690 V
	Rated current	1769 A
	Rotor rated current	619 A
	Insulation class	H
	Degree of protection	IP54 (housing) IP23 (slip-ring)
	Drawing / Data sheet / Part no.	1216370199, Rev. C



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	Type	DASAA5025-4UF
	Generator Manufacturer 2	Nanjing Turbine & Electric Machinery Changfeng New Energy Corp.
	Rated power	2600 kW
	Rated frequency	50 Hz
	Rated speed	1820 rpm
	Rated voltage	690 V
	Stator rated current	1799 A
	Rotor rated current	625 A
	Insulation class	F
	Degree of protection	IP54 (housing) IP23 (slip-ring)
	Drawing	OCF.301.0394
Converter	Type	ENVERT-1DA-2.X
	Manufacturer	Envision Energy (Jiangsu) Co., Ltd.
	Rated voltage	690 V
	Rated current	grid side: 450 A generator side: 900 A
	Degree of protection	Power cabinet: IP20 Control cabinet: IP54 Drive cabinet: IP20
	Drawing / Data sheet / Part no.	YJ11110005, Rev. 0
Tower	Type	Tubular steel tower
	Manufacturer	Envision Energy (Jiangsu) Co., Ltd.
	Number of sections	5
	Length	117.3m (HH120m)
	Drawing / Data sheet / Part no.	Tower_2x_120FT, Rev. 3
Manuals	Maintenance manual	Maintenance Manual for Envision 2.5-131 WTG, rev. 1.0
	Operation manual	PRC-0003544, rev. 1.3
	Transport manual	EN2.5/131-100HH EN2.5/131-120HH WTG Transportation Manual, rev. 1.0
	Commissioning manual	PRC-0003842, rev. 1.0
	Installation manual	ENVISION Mechanical Installation Manual For EN2.5-131, rev. V1.2
Service lift (optional)	Not present	
Crane (optional)	Not present	

