

Type Certificate

Conformity evaluation has been conducted according to **IEC 61400-22: 2010-05, Wind Turbines – Part 22: Conformity testing and certification, First edition**. This certificate attests compliance with IEC 61400-22: 2010-05 and IEC 61400-1: 2005-08, third edition and amendment 1: 2010-10 concerning the design, type test and manufacture of Wind Turbine model FD25-60.

Type Certificate Number: CN-WT-210303048, Revision 0

Applicant Name & Address:	Shanghai Ghrepower Green Energy Co., Ltd. No.1281, Ronghua Rd, Songjiang Shanghai 201611,China
For the Wind Turbine(s):	FD25-60 The characteristic data are given in the attached Annex 1.
Design Evaluation Conformity Statement:	220100929SHA-A, Rev.1
Manufacturing Conformity Statement:	210303046SHA-A, Rev.0
Type Test Conformity Statement:	220400525SHA-A, Rev.0
Final Evaluation:	210303048SHA-001, Rev.0
Wind Turbine Specifications:	WT Class IIIA (See also Annex 1)
Issuing Office Name & Address:	Intertek Testing Service Ltd. Shanghai West Area, 2 nd Floor, No. 707, Zhangyang Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, P. R. China

Any change in the design, the production and erection or the manufacturer's quality system has to be approved by Intertek. Without approval this certificate loses its validity.



Signature

Name: Kevin Zhu

Manager

Date: 24 April 2022



中国认可
产品
**PRODUCT
CNAS C058-P**



Signature

Name: Gary Hu

Certification Manager

Date: 24 April 2022

Valid Until: 23 April 2027

NOTE : This Conformity Statement is part of the full evaluation report(s) and should be read in conjunction with it.

Certification procedure SMS-WT-OP-19

Product certification scheme type: Design Evaluation + Type testing + Initial factory inspection + Surveillance after certification

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Annex 1 to Wind Turbine Type Certificate No: CN-WT-210303048, Revision 0
Wind turbine type specification: (Page 1 of 3)

Machine Parameters

Model:	FD25-60
WT manufacturer and country:	Shanghai Ghrepower Green Energy Co., Ltd.
WT class:	IIIA
Rated power [kW]:	59
Rated wind speed V_r [m/s]:	9
Rotor diameter [m]:	25
Hub height(s) [m]:	37
Hub height operating wind speed range $V_{in} - V_{out}$ [m/s]:	3-25
Design life time [y]	20

Wind Conditions

Characteristic turbulence intensity I_{15} at $V_{hub} = 15$ m/s [-]:	0.16
Annual average wind speed at hub height V_{ave} [m/s]:	7.5
Reference wind speed V_{ref} [m/s]:	37.5
Mean flow inclination [deg]:	8
Hub height 50-year extreme wind speed V_{e50} [m/s]:	52.5



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Annex 1 to Wind Turbine Type Certificate No: CN-WT-210303048, Revision 0
Wind turbine type specific: (Page 2 of 3)

Electrical Network Connections

Normal supply voltage and range [V]:	3 phase; 400(90%~110%)/ 3 phase; 480(88%~110%)
Normal supply frequency and range [Hz]:	50 / 60 (45 ~ 65)
Voltage imbalance [V]:	2%
Maximum duration of electrical power network outages [days]:	7
Number of electrical network outages [1/y]:	20

Other Environmental Conditions (where taken into account)

Design conditions in case of offshore WT (water depth, wave conditions, etc.):	Onshore
Normal and extreme temperature ranges [°C]:	-10°C to +40°C (Normal) -20°C to +50°C (Extreme)
Relative humidity of air [%]:	≤100
Air density [kg/m ³]:	1.225
Solar radiation [W/m ²]:	1000
Description of lightning protection system:	Refer to ZY20172510053-FD25 Wind Turbine Specifications for Earthing and Lightning Protection, Rev. V1.00
Earthquake model and parameters:	Not applicable
Salinity [g/m ³] :	≤ 0.0001



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Annex 1 to Wind Turbine Type Certificate No: CN-WT-210303048, Revision 0
Wind turbine type specific: (Page 3 of 3)

Major Components

Blade type:	ZY-R12.5II
Gear box type	Not Applicable
Generator type:	PMSG / GH100
Tower Type:	Tubular steel tower, Three sectional modular tower



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