GHRE100



GHREPOWER

GHRE100 Class II Power Curve
21.5m Rotor

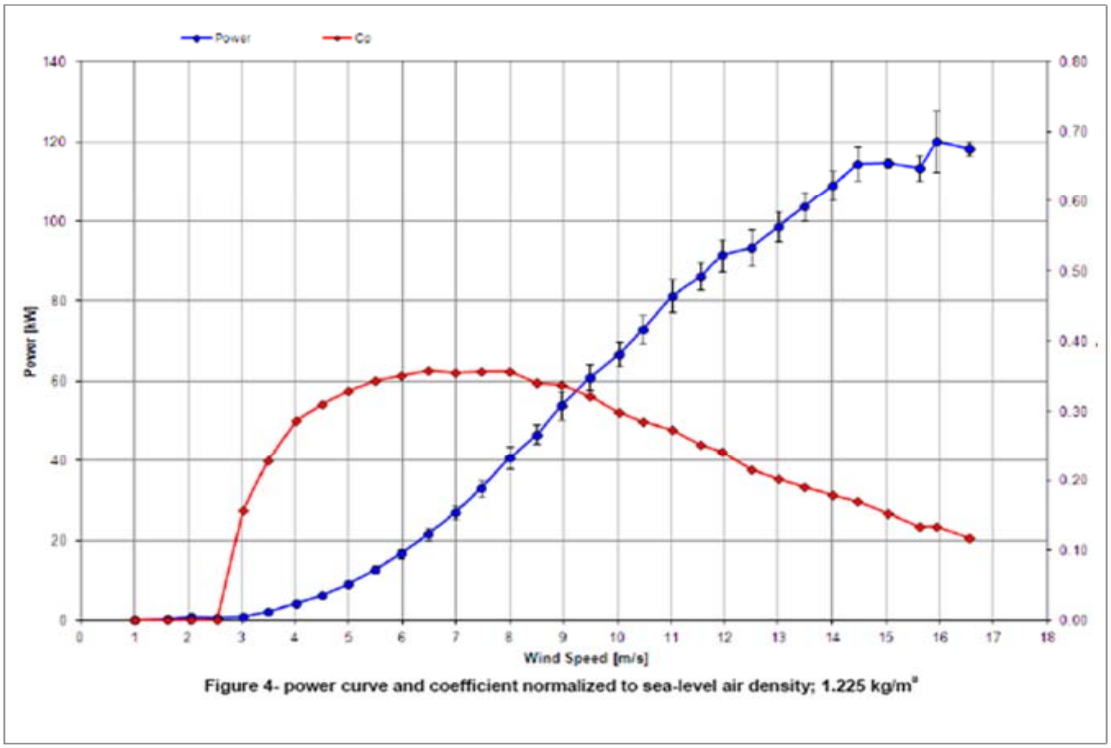
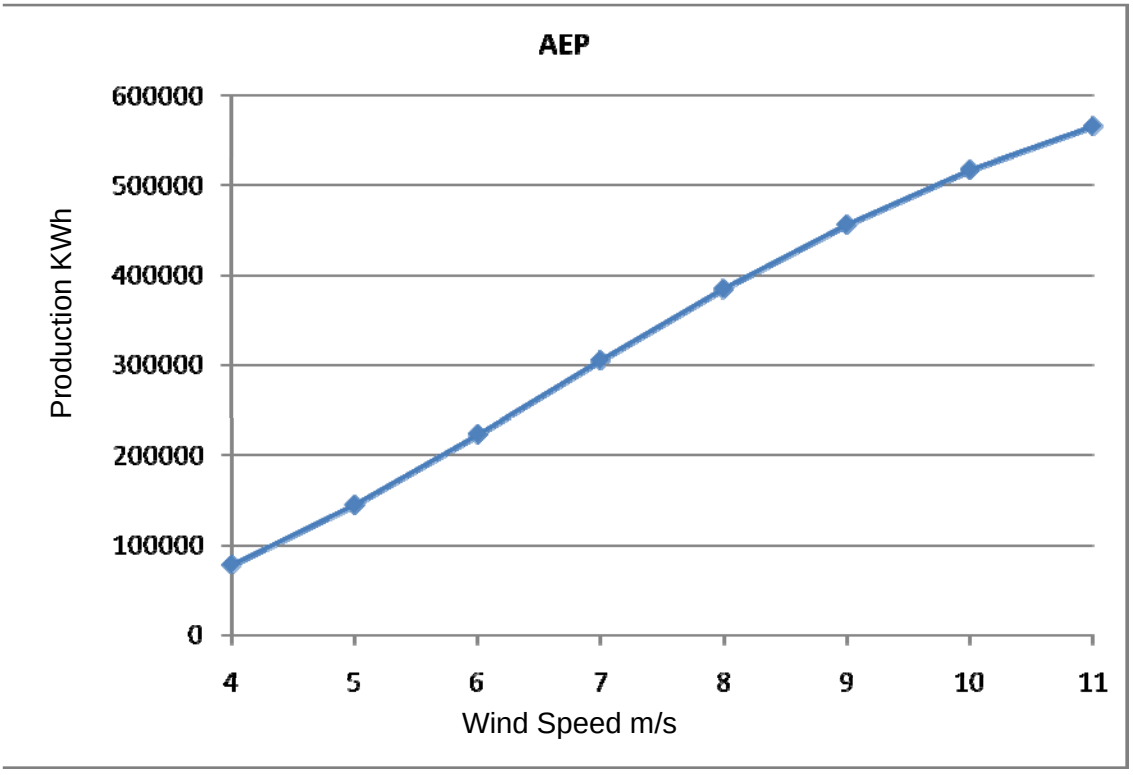


Figure 4- power curve and coefficient normalized to sea-level air density; 1.225 kg/m³

Wind speed	Annual Production
(m/s)	(kWh)
4	78200
5	144700
6	223100
7	305100
8	384500
9	456300
10	517300
11	565300



Design Features

Gearless, Direct Drive, PM generator

Optimized Active Pitch Power Control

Active electrical yaw system

Electromagnetic brakes & air compressed brakes

Automatic lubrication

Automatic cable untwist

Full power inverter with isolation and variable speed stall control strategy

SCADA : Real time remote monitoring and control

GHRE100

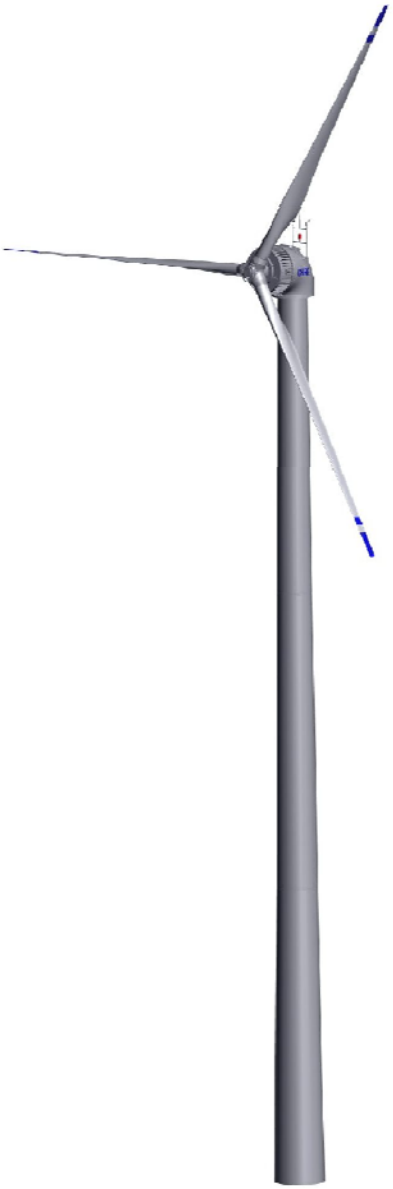
» GHRE100 wind system is a gearless, direct drive permanent magnet wind generator system with active pitch control in the world. Rated at 100kW @ 13m/s (29mph)

Specifications

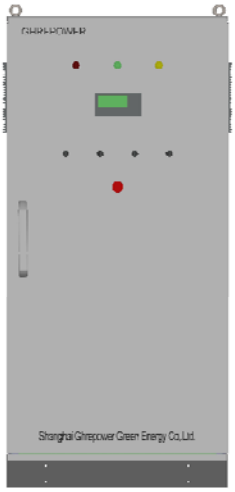
General details	Description
Model	GHRE100
Design class	IECII
Orientation	Upwind
Design life	20 years
Rotor diameter	21.5 m (70.5ft)
Hub height	37m(121ft)/31m (102ft)/25m (82ft)
Tower type	Monopole
Certifications	CEI 0-21, UL1741, IEEE1547, CSA C22.2 107.1-01, G59/2 and CE
Performance	
Rated power	100KW
Power regulation	Variable pitch control
Rated rotation speed	60 RPM
Cut-in wind Speed	3m/s
Rated wind speed	13m/s
Cut-out wind Speed	25m/s
Survival wind Speed	59.5m/s
Weight	
Blades	1140 kg
Nacelle& Generator	8000 kg
Tower	15,000/13,000/8,600kg
Brake system	
Air Brake	Blades pitch
Mechanical brake	Air driven caliper
Electrical brake	Dump load
Yaw system	
Control	Driven by electric motor and actively trace wind direction and automatic untwist cable
Control /Inverter System	
Control type	Industry Siemens PLC
Inverter type	Full power Inverter with isolation transformer
Monitoring System	Cube 2.0
Generator	
Generator type	3 Phase, Permanent Magnet Generator
Gearbox	No gearbox – Direct Drive
Rated Voltage	400VAC
Isolation class	F
Blades	
Material	FRP
Blade length	10.2m (33.5ft)
Quantity	3
Tower	
Tower Type	Monopole with internal ladder
Surface treatment	Anti-rust painting
Height	36m (118ft)/ 30m (98ft)/ 24m (79ft)
Noise	
Noise level	Less than 50dBA
Environmental specification	
Operational temperature	-20℃ to 50 ℃
Generator	IP54
Lightening protection	Receptors installed in the blades, nacelle lighting rod and electrical surge protection

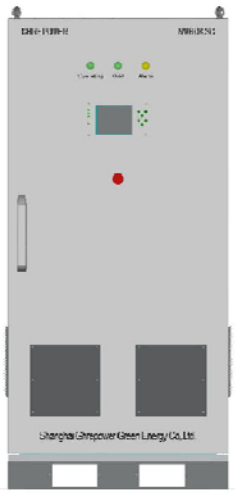
System Schematic

Wind turbine system consists of wind turbine, on-grid controller, on-grid inverter and tower.









On-grid Controller

Grid-tied controller is the key part of wind turbine system.

General Parameter

Rated Working Voltage: 540Vdc

Output voltage rang: 0~680Vdc

Rated Output Power: 100kW

Maximum Output Power: 120kW

Rated Rotor Speed: 60rpm

Protect Rotor Speed : 65rpm

Operating data of Wind Turbine

Pitch speed of blade: 8° /s

Yaw speed:0.55° /s

Ambient Parameter

Ambient Temperature: -20℃～+50℃

Storage Temperature: -25℃～+60℃

Relative Humidity: ≤90%RH

Height above sea level: ≤1000m



Controller Functions

Auto control Voltage

Voltage will be adjusted by controller automatically when input voltage is too high and could be adjusted to assist variable speed stall control.

Display

Check parameter and operating states by LCD.

Yaw Control

In order to improve generator efficiency, wind turbine automatically traces wind direction under rated wind speed. At the same time, the direction of wind turbine is adjusted at exceeded rated wind speed in order to protect it from damage.

Automatic Lubrication

Providing seasonal lubrication protection for bearing and yaw equipment.

Shut-down

Automatic air brake and electromagnetic braking, Manual Parking brake for servicing.

Automatic Untwist

It can avoid gnarling cable and has untwisted function in order to protect cable.

Failure Alarm

Controller will alarm when the system failure is found.

Rotor Speed Control

Superior stall function realized electromagnetic control,
rotor speed and torque control function.

On-grid Inverter

Inverter Specifically Designed for Wind System

Fast-response inverter designed for wind system;

Optimized power tracking maximizes wind power output;

Wide range of DC input voltage (Max input Voltage: 750V);

Customized power curve setting through HMI;

Isolation transformer included.

User-Friendly Design

Display in multi-language, on-the-fly operational parameter setting;

Grid-connected operation in accordance with international standard;

RS-485 communication interface for remote monitoring.

Field-proven reliability

Five-year warranty;

Available for extendable service.



Inverter Specification

Input Parameters (DC Side)

Model	GNW
DC	380V ～ 680VDC
Maximum Input Voltage	750VDC
Allowed Voltage Ripple	＜5%

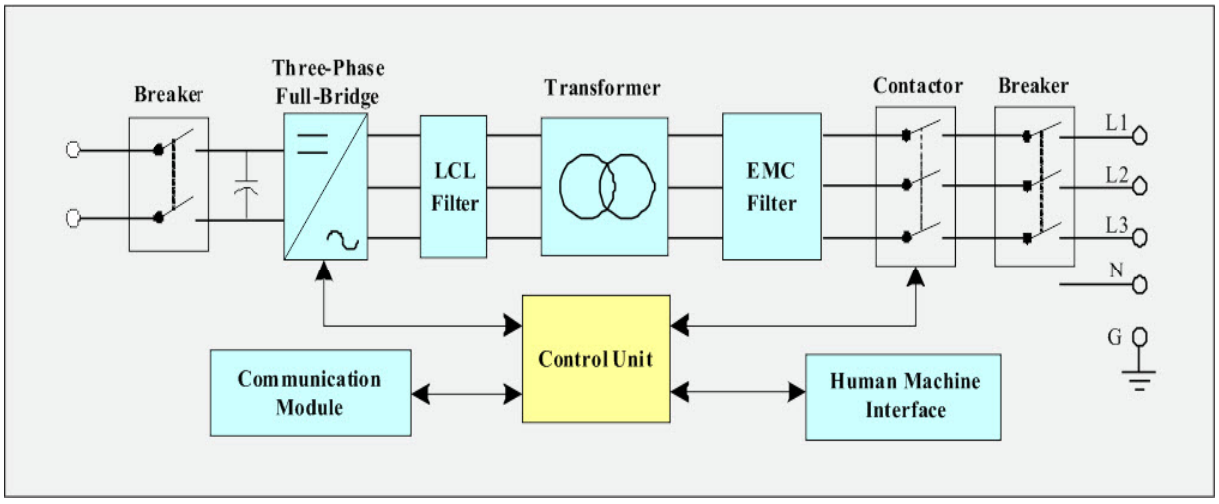
Output Parameters (AC Side)

AC Grid Connection	3 Phase 400 VAC/ 3 Phase 480 VAC (US)
Maximum AC	323-437VAC/ 423-528VAC(US)
Nominal AC Frequency	50Hz(49-51) / 60Hz(58.8-61.2)
Nominal Current (at 400Vac)	86.6A
Power Factor (cosθ)	>0.99
Maximum Efficiency	≥94%
AC Current Distortion(THD)	<5% at rated power

Display & Communication

Display	LCD(320x240)
Communication	RS485

Inverter Schematics



Tower & Foundation

Tower Model	TD36
Drawing No.	ZY4.133.050
Height	36m
Section	3
Thickness	10mm
Material	Q345(E355CC)
Top / Bottom Dia.	1000mm / 2100mm
Surface Treatment	Anti-rust painting
Weight	16000kg
Foundation Size	7mx7mx2.1m





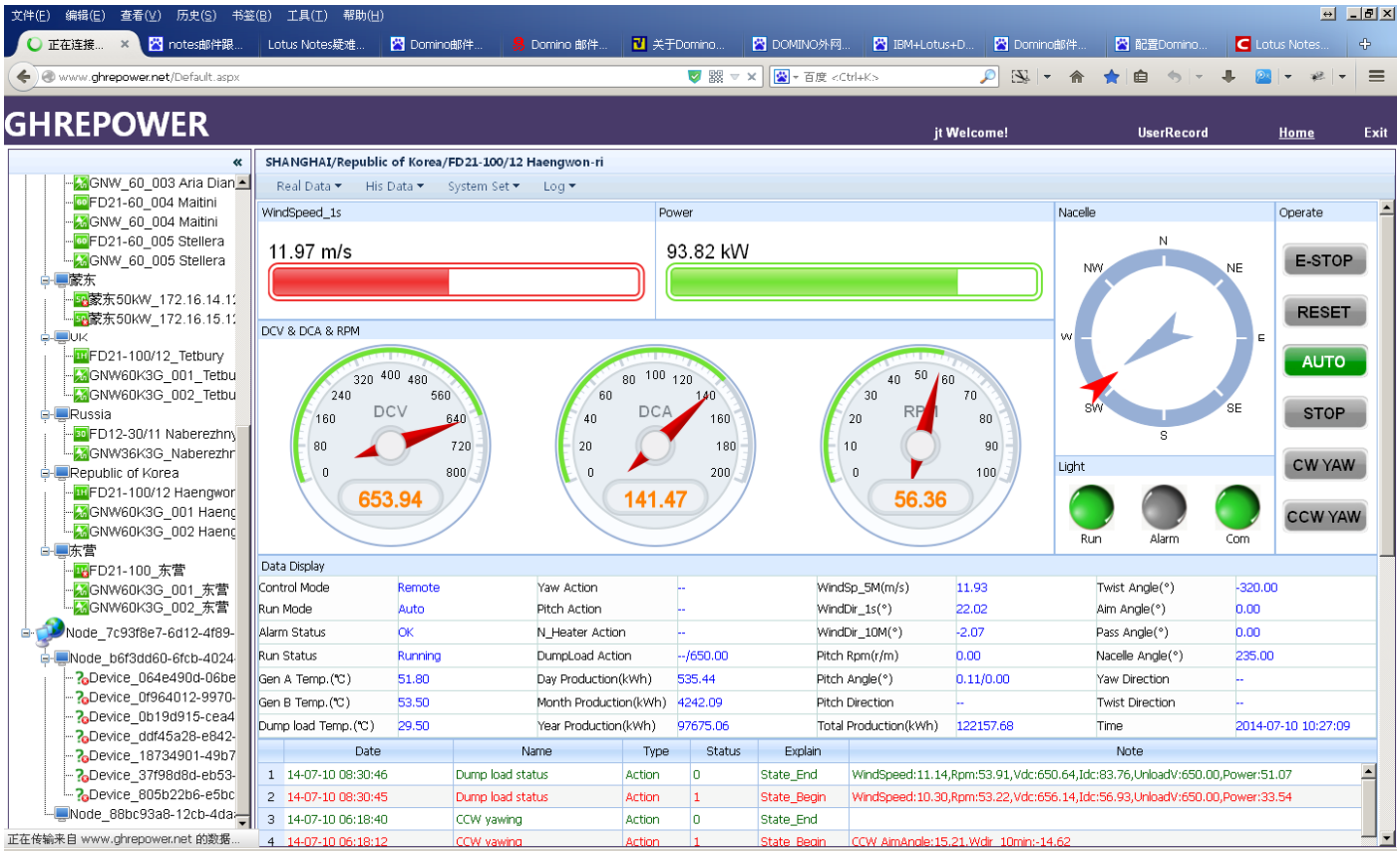
SCADA System

Optional cabled or wireless internet connection

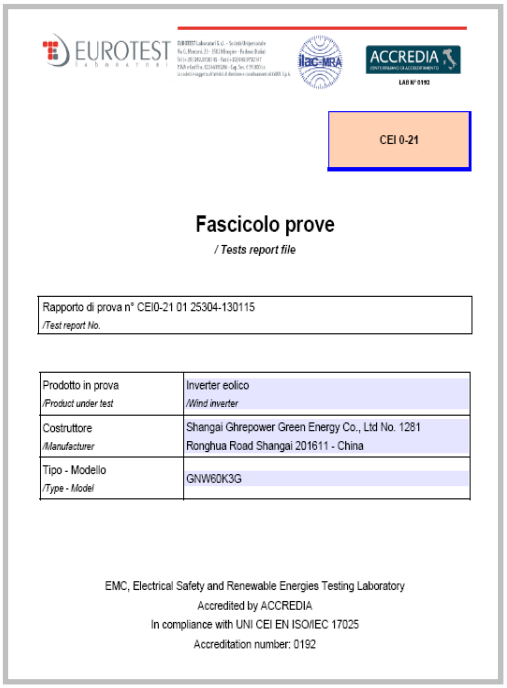
Real time system operation status monitoring

Operating wind turbine remotely through internet

Daily production log and historical volume record



Certificate



EUROTEST

CEI 0-21

Fascicolo prove

/ Tests report file

Rapporto di prova n° CEI0-21 01 25304-130115
/Test report No.

Prodotto in prova */Product under test*	Inverter eolico */Wind inverter*
Costruttore */Manufacturer*	Shangai Ghrepower Green Energy Co., Ltd No. 1281 Ronghua Road Shangai 201611 - China
Tipo - Modello */Type - Model*	GNW60K3G

EMC, Electrical Safety and Renewable Energies Testing Laboratory
Accredited by ACCREDIA
In compliance with UNI CEI EN ISO/IEC 17025
Accreditation number: 0192

CEI 0-21



NOVA CERTIFICATION

CERTIFICATE OF ADEQUACY

Certificate Number : GR2107/009068C2
Date of Issue : October 20, 2011
Manufacturer : SHANGHAI GHREPOWER GREEN ENERGY CO., LTD. No.1281, Ronghua Rd, Songjiang, Shanghai, China

Certificate Holder : SHANGHAI GHREPOWER GREEN ENERGY CO., LTD. No.1281, Ronghua Rd, Songjiang, Shanghai, China

Product Description : WIND TURBINE
Product Type or Model : FD12-20/11, FD12-30/11, FD13-30/12, FD13-40/12, FD13-50/12, FD14-30/12, FD14-40/12, FD14-50/12, FD21-50/12, FD21-60/12, FD21-70/12, FD21-80/12, FD21-90/12, FD21-100/12, FD28-150/12, FD28-200/12, FD32-300/12
European Union Directive : Machinery Directive 2006/42/EC, Annex VIII Low-Voltage Directive 2006/95/EC, Annex IV
European Standards : EN ISO 12100:2010, EN 61400-2:2006, EN 60204-1:2006+A1:2009
Report Number : ZY-11001002 / October 20, 2011

Statement

This certification **declares** that the manufacturer or his authorised representative established in the EU, has draw up and submit the Technical File referred to in Annex VII.A of Directive 2006/42/EC and Annex IV §3 of directive 2006/95/EC, for the mentioned above product type (as described in Annex VIII of the Directive 2006/42/EC).
The Certification Body received and keeps the Technical File for specified period (until **October 19, 2016).**

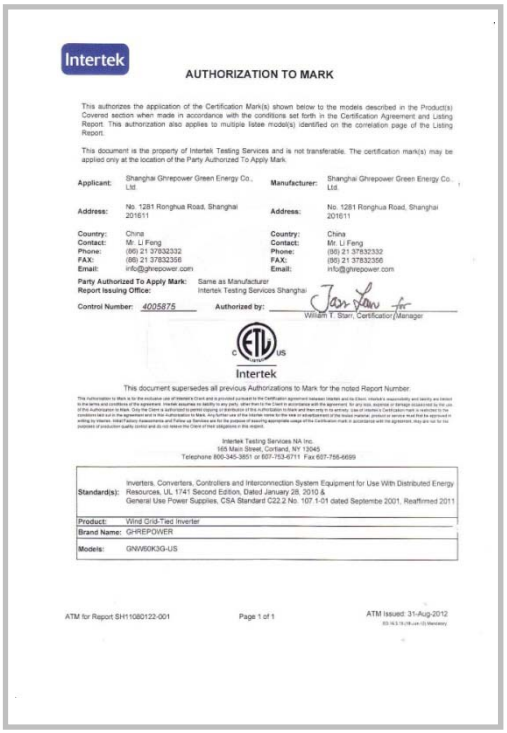
Additional information – Remarks

The certification body should be informed (revision of technical file) for any modification or alterations made to the aforementioned product type(s), including design and manufacture and/or extension to the existing scope of application.
The manufacturer is responsible (within internal production control procedure) for certifying the product and ensuring that all manufactured products are in compliance with the specifications declared in the technical construction file.
The CE mark as shown below can be used under the responsibility of the manufacturer (other EC directives should be considered).
The manufacturer should accompany the product with EC Declaration of Conformity and appropriate operation and maintenance instructions.
This certificate may be reproduced only in a complete form.

For Third Party Inspection Body
General Director

NOVA CERTIFICATION LTD
Ag. Dimitriou Street No.163, GR-54638 Salonica, Greece
Tel. +30-23410-70380 email: info@novacert.com
China Tel.: 400-882-8600
Certificate data can be validated at our website (www.novacert.com).

CE



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AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant:	Shanghai Ghrepower Green Energy Co., Ltd.	Manufacturer:	Shanghai Ghrepower Green Energy Co., Ltd.
Address:	No. 1281 Ronghua Road, Shanghai 201611	Address:	No. 1281 Ronghua Road, Shanghai 201611
Country:	China	Country:	China
Contact:	Mr. LI Feng	Contact:	Mr. LI Feng
Phone:	(86) 21 37832332	Phone:	(86) 21 37832332
FAX:	(86) 21 37832356	FAX:	(86) 21 37832356
Email:	info@ghrepower.com	Email:	info@ghrepower.com

Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Intertek Testing Services Shanghai

Control Number: 4005875 Authorized by: William T. Starr, Certification Manager

Intertek

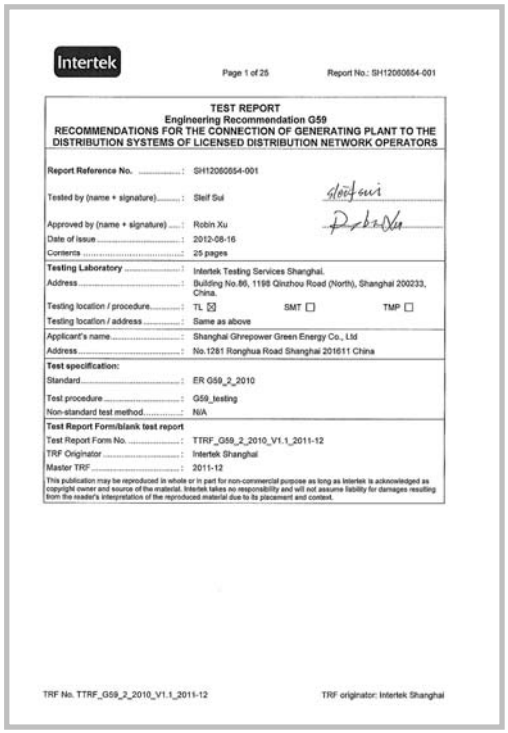
This document supersedes all previous Authorizations to Mark for the noted Report Number.

Intertek Testing Services NA Inc.
165 Main Street, Cortland, NY 13045
Telephone 800-345-3851 or 607-753-6711 Fax 607-756-6699

Standard(s):	Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, UL 1741 Second Edition, Dated January 28, 2010 & General Use Power Supplies, CSA Standard C22.2 No. 107.1-01 dated Septembe 2001, Reaffirmed 2011
Product:	Wind Grid-Tied Inverter
Brand Name:	GHREPOWER
Models:	GNW60K3G-US

ATM for Report SH11080122-001 Page 1 of 1 ATM Issued: 31-Aug-2012

ETL



Intertek

Page 1 of 25 Report No.: SH12060654-001

TEST REPORT
Engineering Recommendation G59
RECOMMENDATIONS FOR THE CONNECTION OF GENERATING PLANT TO THE DISTRIBUTION SYSTEMS OF LICENSED DISTRIBUTION NETWORK OPERATORS

Report Reference No.	SH12060654-001
Tested by (name + signature)	Steif Sui
Approved by (name + signature)	Robin Xu
Date of issue	2012-06-16
Contents	25 pages
Testing Laboratory	Intertek Testing Services Shanghai.
Address	Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China.
Testing location / procedure	TL ☒ SMT ☐ TMP ☐
Testing location / address	Same as above
Applicant's name	Shanghai Ghrepower Green Energy Co., Ltd
Address	No.1281 Ronghua Road Shanghai 201611 China
Test specification:	
Standard	ER G59_2_2010
Test procedure	G59_testing
Non-standard test method	N/A
Test Report Form/blank test report	
Test Report Form No.	TTRF_G59_2_2010_V1.1_2011-12
TRF Originator	Intertek Shanghai
Master TRF	2011-12

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TRF No. TTRF_G59_2_2010_V1.1_2011-12 TRF originator: Intertek Shanghai

G59

Reference



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Shanghai Ghrepower Green Energy CO.,Ltd.
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