



# SERVICES FOR WIND POWER PRODUCTS



## WIND TURBINE IN-SERVICE/ END-OF-WARRANTY INSPECTION AND TESTING SERVICES

Inspection and testing services for wind turbines and parts thereof are designed to understand the overall health condition and performance of wind turbines after installation and operation, especially after a long run, check the wear and tear and faults conditions of mechanical and electrical components, understand the actual condition of electrical and other systems, and thus identify problems and risks found during wind turbine operation. This provides an objective basis for owners and operating companies (or wind turbine manufacturers) to understand the health and performance of wind turbines, and also an important basis for owners to conduct technical optimization and rule out safety risks

during operation. Overall inspection and testing of wind turbines need to be conducted by specialized technical personnel who are equipped with specific testing equipment. The results of the inspection and testing are presented to clients in the form of written reports.

### Services include

- Overall appearance inspection
- Yaw system inspection
- Blade inspection
- Hydraulic oil testing
- Gearbox oil testing
- Machine grease testing
- Drive train vibration inspection
- Gearbox endoscopic examination

- Drive chain alignment inspection
- Blade dynamic balance inspection
- Wind turbine electrical system installation and operation inspection
- Wind turbine lightning protection and grounding system inspection and testing
- Inspection and testing of safety functions of wind turbines
- Wind turbine grid connection power quality testing
- In-field power curve verification for wind turbines
- Wind turbine yaw verification
- Wind turbine nacelle anemometer calibration
- Wind turbine noise testing

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**In the current rapidly developing wind power industry, countries in the world have different laws and regulations on the certification of wind power systems. Enterprises must possess the appropriate certification qualifications before exporting their products to foreign countries, otherwise it is difficult for customers to accept such products. Having a highly experienced testing partner is essential for improving your exports, brands and images.**

**About Intertek**

Intertek is a leading Total Quality Assurance provider to industries worldwide. Our network of more than 1,000 laboratories and offices and over 44,000 people in more than 100 countries, delivers innovative and bespoke Assurance, Testing, Inspection and Certification solutions for our customers' operations and supply chains. Intertek Total Quality Assurance expertise, delivered consistently with precision, pace and passion, enabling our customers to power ahead safely.

**Why Intertek?**

We work faster and harder to bring new technologies to the marketplace, just like you. Our engineers have years of product and industry-specific expertise, ensuring your testing program runs quickly and efficiently at all times. With our global network of laboratories we can provide local service.

Intertek provides testing, evaluation and certification services for EU (CE Marking) and North American market (ETL/cETLus Mark) for wind turbines and major components in accordance with the corresponding IEC, IECRE, GB, EN, GL, NFPA, UL, CSA as well as other national and international standards.

**Qualifications**

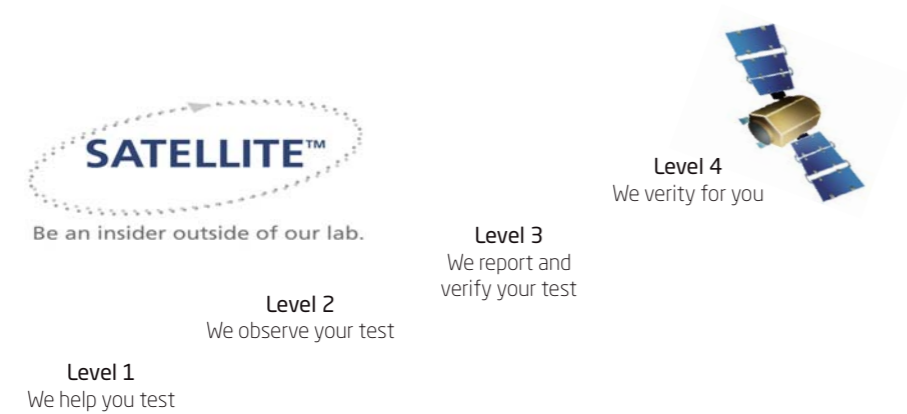
- Accredited by CNAS/CMA for type certification
- Accredited by UKAS for type certification
- Accredited by IAS for type certification
- Accredited by CNAS for type testing
- Accredited by A2LA for type testing
- Accredited by OSHA as Nationally Recognized Testing Laboratory (NRTL) for US
- Accredited by SCC as CO and TO for Canada
- Notified Body for EU

**Satellite program**

"Satellite Program" is a data acceptance program launched by Intertek that seamlessly integrates speed, flexibility, cost effectiveness, and certification marks. Through the program, Intertek issues test reports to customers on the basis of accepting in-house laboratory test data of qualify customers, and helps manufacturers better control product testing and certification, speed up certification process, and save time and costs.

- Cost savings: Greatly reduce project tracking and review and time to market costs
- Efficiency: Perform testing and certification according to your production schedule
- Speed: Accelerate the certification process and time to market and improve potential benefits
- Flexibility: Select the mark and market according to your sales/business objectives

**Satellite program™: A revolutionary data acceptance program**



# LARGE WIND TURBINE SERVICES

**One-stop services for**

- Wind turbine efficiency and technical improvement evaluation
- Power characteristic verification test
- Life-time extension evaluation
- Availability evaluation for wind turbines
- Maintenance capability evaluation
- Power characteristic measurement based on NTF
- AEP evaluation for wind power generation site

**Type certification**

Certification based on IEC 61400-1, IEC 61400-22, GB/Z 25458, GB 18451.1 and GL guidelines.

**Design assessment**

- Load assumptions
- Control and protection
- Structures and machinery components
- Electrical installations
- Foundation (Optional)
- Other aspects

**Manufacturing evaluation**

- Quality system evaluation
- Manufacturing inspection (Major components)

**Type testing**

- Per IEC 61400, GB and MEASNET
- Power performance measurements
  - Mechanical load measurements
  - Acoustic noise measurements
  - Power quality testing
  - Safety and function testing/wind turbine behavior testing
  - Gearbox testing

**ETL classification certification for US and Canada**

Legal requirement for compliance of North American

**CE verification for European market**

- Legal requirement for compliance with EU directives
- Machinery directive
  - Low voltage directive
  - EMC directive

**UKCA verification for UK**

**Inspection and testing services**

- Due diligence
- Wind measurements
- Post warranty inspection
- Periodic inspection
- Condition monitoring
- Fault analysis/expertise
- Manufacturing surveillance
- Engineering support/consulting

**Components/subassemblies testing, evaluation, certification**

- Blade
- Gearbox
- Inverter/converter
- Generator/Motor
- Main control system
- Pitch system
- Electrical insulating system
- etc.

# SMALL WIND TURBINE SERVICES

**Type certification**

- IEC 61400-2 type certification
- Type testing for ClassNK certification
- AWEA 9.1 certification for US
- MCS certification for UK

**Field testing**

- Per IEC 61400, GB, JSWTA, AWEA, and BWEA
- Safety and function testing
  - Power performance measurements
  - Duration testing
  - Static blade testing
  - Generator testing
  - Acoustic noise measurements
- \* Cooperation test site in Sonid Right Banner, Inner Mongolia

**ETL Electrical certification for US and Canada**

Legal requirement for compliance of North American

**CE verification for European market**

- Legal requirement for compliance with EU directives
- Machinery directive
  - Low voltage directive
  - EMC directive

**UKCA verification for UK Components/subassemblies testing, evaluation, certification**

- Blade
- Generator
- Controller
- Inverter
- Electrical insulating system
- etc.

