What sets UL apart?

TECHNICAL EXPERTISE  We are globally recognized as leading experts within the wind energy industry, setting the benchmark to which others aspire.

FLEXIBILITY  Our extensive portfolio covers the entire range of certification needs, from design and type testing evaluation to final certification and renewals.

RESPONSIVENESS  Our long experience with manufacturers, developers, owners, operators and government regulators enables us to respond quickly to any situation.

CUSTOMER FOCUS  We understand our customers and anticipate their needs. We assist them in maximizing global opportunities by placing our expertise at their service.
Certification Services

Our Turbine and Component Expertise

UL offers one-stop certification services for wind turbines and their components based on international and national standards and regulations (e.g., IEC 61400 series, GL guidelines, UL 6141).

We address each customer’s individual needs by drawing upon our wide range of services to find the combination that most rapidly and efficiently brings their product to market. Our services for manufacturers include:

• **Type / Component Certification** to confirm that the wind turbine type or component has been developed by the manufacturer in conformity with the design assumptions, specific standards and other technical requirements.

• **Project Certification** to confirm the suitability of “type certified” wind turbines and their foundations, for the requirements of a certain site and governed by site-specific conditions.

• **Grid Code Compliance Certification** to confirm that a power generation unit and/or plant is in conformity with local network connection rules.

**National & International Committees**

UL is a member of major national and international committees which are defining wind energy standards, such as:

• **IEC** – International Electrotechnical Commission

• **UL-AWEA** – US National Standards Development

• **DKE** – Deutsche Kommission Elektrotechnik Elektronik-Informationstechnik in DIN und VDE

• **DPInst** – Committee of German Certification Bodies for Wind Turbines

• **BSH** – German Federal Maritime and Hydrographic Agency

• **FGW** – Federation of German Windpower and other Renewable Energies
### Design Evaluation

The purpose of the design evaluation is to examine whether the wind turbine type is designed and documented in conformity with design assumptions, specific standards and other technical requirements.

### Manufacturing Evaluation

The purpose of the manufacturing evaluation is to assess if a specific wind turbine type is being manufactured in conformity with the requirements set forth in the certified design.

### Guidelines

#### Onshore
- IEC 61400-1 or IEC 61400-2 ( SWT) in connection with IEC WT01 or IEC 61400-22
- GL 2003 / 2004 or GL 2010

#### Offshore
- IEC 61400-3 in connection with IEC WT01 and / or IEC 61400-22
- GL 2005 or GL 2012
- BSH (for Germany)

### Services

#### Evaluation of
- Load Assumptions
- Safety System
- Rotor Blades
- Mechanical and Structural Components
- Electrical System
- Tower
- Foundation

#### Onshore
- ME for machinery components, gear boxes, generators, nacelles, towers and rotor blades
- Substructure and foundation

### Schematic Overview of a Type Certification Process (Onshore, acc. to IEC 61400-22)

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**Guidelines**

#### Onshore
- IEC 61400-1 in connection with IEC WT01 or IEC 61400-22
- GL 2003 / 2004 or GL 2010

#### Offshore
- IEC 61400-3 in connection with IEC WT01 or IEC 61400-22
- GL 2005 or GL 2012
- BSH (for Germany)
The purpose of design evaluation is to examine whether the wind turbine type is designed and documented in conformity with design assumptions, specific standards and other technical requirements.

The purpose of manufacturing evaluation is to assess if a specific wind turbine type is being manufactured in conformity with the requirements set forth in the certified design.

The purpose of type testing evaluation is to verify such variables as wind turbine function, safety, structural integrity, power performance, power quality, and acoustic noise emission characteristics.

UL issues a specific type / component certificate once the certification process is complete and the final evaluation is satisfactory.

Other supported certification schemes & requirements:
- USA: UL 6141 (large WT), UL 6142 (small WT)
- Japan: JSWTA0001 (small WT)
- UK: IEC 61400-2, MCS (small WT)
- Germany: Type Approval is mandatory under German law for the installation and operation of wind turbines within Germany.

The renewal of a type / component certificate becomes mandatory if any changes are made by the manufacturer to their turbine/component design.

The certification services offered by UL depend on the changes in the turbine/component design introduced by the manufacturer.

Please note: All services are available as a complete package or individually.
**Component certification**
A component certificate is applied to the major mechanical and/or electrical components of the wind turbine, e.g. the frequency converter, transformer, generator, or rotor blade gearbox. The aim is to confirm that the specific component is designed, documented, manufactured and tested in conformity with the applicable design assumptions, specific standards and other technical requirements. A component certificate supports designers and their suppliers by streamlining the wind turbine design and its type certification.

**Type certification**
The purpose of type certification is to confirm that a wind turbine type is designed, documented and manufactured in conformity with a specific standard and/or guideline. In addition, type certification covers the evaluation of the erection, installation and maintenance of the wind energy turbine. A type certificate denotes a fully independent proof of the completeness, correctness and safe functioning of a wind energy turbine. Finally, a type certificate demonstrates that the wind turbine corresponds to the technical state of the art.

**Project certification**
After passing the type certification process, project certification is the next step in the development of an on/offshore wind farm. It proves that the type-certified wind turbines and the particular substructure and foundation designs meet site-specific conditions and are in conformity with applicable local codes, official regulations and other site-specific requirements. A project certificate confirms that the structural integrity of the type-certified wind turbines should remain safe under the influence of site-specific conditions, e.g. wind, sea, soil and electrical network.

**Grid connection compatibility according to grid codes**
A certificate of grid code compliance is applied to a power generation unit and/or power generation system. When connecting a renewable-energy generating unit/plant to a network, the certification of the unit/plant must be provided to the grid operator. Certification of grid code compliance is of interest to manufacturers (unit certification) as well as to renewable power plant developers, investors and operators (plant certification). The certification of grid connection refers to the local grid codes and the requirements of the network operators in a specific region.
Global Wind Energy Services
All-in-One Certification Provider

UL is a premier global independent safety and performance science company, with 120 years of history, and recognized worldwide as a leading certification body for on/offshore wind turbines and their components. Combining technical expertise with years of in-depth industry experience, UL offers global one-stop wind energy services to turbine and component manufacturers, project developers, utilities and other companies within the sector.

UL Accreditations / Quality Agreements

The accreditations are valid for the UL locations, test and calibration procedures mentioned in the certificates. The certificates are available on request or at www.dakks.de