



PROJECT CERTIFICATION



TODAY LARGE SCALE WIND FARMS ARE MOVING OFFSHORE WHICH INVOLVES NEW RISKS AND CHALLENGES.

Focus is placed not just on wind climate but location's water depth, soil, wave, current, ice and corrosion conditions also have to be considered.

The possibility for standardization is reduced and a site-specific Fit-for-purpose approval is necessary.

To protect wind farm project investments and assure the quality of the project deliverances, owners, investors and insurance companies are increasingly looking for an independent certification and inspection company to verify that the wind farm will perform successfully throughout the intended lifetime.

One of the major concerns in investing in the wind turbines is related to the availability of the turbines, i.e., the risk of loosing/having less wind power production from the wind turbines due to stand still and repair. Reliability of the structures and the wind turbines is therefore essential for the wind farm to perform successfully.

A minor failure can cause unacceptable down time and loss. By subjecting the wind farm project to certification, demonstrates awareness of the financial risk involved in the wind farm project.

The purpose of Project Certification is to verify that the wind turbine and its support structure meet the site-specific conditions.

THE STEP-BY-STEP PROJECT CERTIFICATION OF SGS WILL MINIMISE THE TOTAL PROJECT RISK

0. The earlier risks are detected the earlier countermeasures can be taken. Therefore it is recommended to start up the certification process already in the conceptual phase of the project. Services such as Technical Consultancy and Tender Support can minimize risks both related to costs and time during the execution of the project.
- I. The verification of the Design Basis will include an assessment of all environmental conditions - e.g. wind, oceanographic, geotechnical- and consequential load and design assumptions.
- II. The verification of the detailed Design includes assessment of the combined load cases for the complete wind turbine, its support structure and electrical components as well as for the transformer platform, the cables and the J-tubes.
- III. A significant part of the Project Certification is the Manufacturing Survey. To assure quality during production of the components regular inspection visits of the different manufacturers will be performed. This starts with a pre-production meeting to establish the Inspection and Test Plan and includes welding, NDT and material testing supervision, coating inspections, assembly checks as well as supervision of test runs of electrical and mechanical components. If

requested also quality management and/or ability audits can be performed in the very beginning to select qualified suppliers.

- IV. To minimize risks during offshore Transportation and Installation, marine verification and warranty survey should be performed. The specific scope for this phase depends on requirements related to insurance of transportation and installation.
- V. The critical Commissioning of the wind farm will be surveyed by SGS experts to confirm a work according to the approved procedures and a safe start-up and functional test of the wind turbines.
- VI. In addition to the project certificate reached after the above mentioned 5 phases SGS performs periodical In-Service Inspections to maintain the Project Certificate.

The SGS Periodical Inspections of wind farms during its design life time includes

- Wind Turbine Gear Boxes Oil Analyses and Tests
- Monitoring and Inspections of Wind Turbine Blades
- Inspections of Structural and Electrical Systems
- Inspection of Coating and Corrosion Protection Systems
- Coating Failure Analyses and Investigations

The above range of services will be tailored to suit the actual needs for verification in the project.



SGS SERVICES IN PROJECT PHASES



SGS COMPETENCE CENTRE WIND ENERGY

Raboisen 28, D-20095 Hamburg, T +49 40 30101 - 236, F +49 40 30101 - 936, wind@sgs.com

WWW.SGS.COM