WEC RECURRING PERIODIC INSPECTION

In Germany, wind energy converters are subject to a recurring inspection cycle, in much the same way as motor vehicles. As a rule, the length of the inspection intervals can be derived from the individual reports of the relevant type testing documents or the approval documents (usually every 2 or 4 years).
The type test of a wind energy converter describes its technical specification and forms a decisive basis of the approval procedure. Information and conditions formulated there are thus bindingly defined for the operating life of the WEC plant.

Inspection

A quote from "Principles for the Recurring Periodic Inspection of Wind Turbine Generator Systems" German Wind Energy Association, edition from 29.10.2012: "The RPI serves to identify damage potential and thus to reduce it. The assignment of the PI is to inspect the machinery of the WEC and the safety equipment as well as the stability of the structure. It serves to assess the actual condition. "Experts who are authorized to carry out these inspections are included in the list issued by the GWEA Expert Advisory Board entitled" Authorization to carry out the recurring periodic inspection of WECs".
In contrast to the commissioning inspection or the inspection before the expiry of the warranty period, the subject of a recurring periodic inspection focuses on the fundamental safety issues. The inspection thus serves to make certain that the plant does not represent a hazard, either from the point of view of structural stability or operational functional sequences.
A statement must be made as to whether:
- the official regulations have been adhered to,
- the plant constructed conforms with the documents submitted,
- there are safety issues that would preclude operation and if necessary which measures must be taken to ensure t he safe operation of the WEC,
- initial damage exists, including its definition and evaluation

Scope of inspection

Because the scope of inspection of the GWEA directive exceeds the scope of the DIBt directive by far, the scope of inspection for a recurring periodic inspection to must be specified by the client within the framework of the directives when the contract is awarded.
Inspection of the following is standard:
- conformance of the plant with the documents submitted (type testing, individual inspection, building permit) as well as the plant documentation (e.g. expert opinions)
- maintenance assignments on the basis of the documentation in the maintenance requirements specification,
- foundations (insofar as accessible) and the tower,
- mechanical components (optional - extensive gearbox inspection using a video endoscope),
- welding seams of load bearing parts and safety-relevant screwed/bolted connections,
- electrical components, including lightning stroke arrester path,
- safety chain, over-speed test, etc.,
- rotor blades - outside (per rope access technique/elevating work platform) and inside, insofar as accessible.

The rotor blades will (above all) be inspected for structural deficiencies.
Extensive tests are carried out on the plant during the inspection. The function of the plant, including the safety procedures, is tested in detail. Important screwed/bolted connections are subject to an extensive loosening test. The gearbox is listened to and opened up in order to inspect the gearing. The participation of the client/operating company/investor in the on-site inspection is possible. It is advisable that a representative of the manufacturer
(e.g. service technician) participates to operate the system.

Inspection Result

We value your cooperation in reducing the impact on the environment. Therefore, the client/operating company/investor will receive a detailed digital condition report of every plant in the shape of a Word or PDF file in which all deficiencies identified are named, described and documented to a large extent by photos. Insofar as the issues affect the operational safety or the stability of the entire structure, impermissible deviations from the nominal condition are recorded and documented in a test report.
In a final inspection report, the deficiencies detected are evaluated with regard to their safety-relevant significance for the continued operation of the WEC and given a deadline for their removal/rectification. In the case of serious deficiencies, the plant operating company will be recommended to shut the WEC plant(s) down until remedial action has been taken. The inspection report serves as proof of inspection for submission the relevant authorities.

Von der Oldenburgischen Industrie- und Handelskammer
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INSPECTION PRINCIPLES (GENERAL)

Depending upon requirements, our tests are carried out in accordance with the following regulations/documents:

- Principles for the "Recurring Periodic Inspection of Wind Turbine Generator Systems", German Wind Energy Association (GWEA)
- Principles for Condition-Based Maintenance of Wind Turbines, German Wind Energy Association (GWEA)
- Guideline for Wind Turbines – impact and Verification of Stability of Tower and Foundation",
  German Institute for Structural Engineering (DIBt) ,
- DIN EN 61400 WIND TURBINES,
- DIN EN 50308 WIND TURBINES - PROTECTIVE MEASURES - REQUIREMENTS FOR DESIGN, OPERATION AND MAINTENANCE
- Principles for the implementation of an Evaluation and Assessment with Regard to the Extended Operation of Wind Energy Plants (EAW),
  German Wind Energy Association, Edition 05/2017,
  DNV GL Guideline, Germanischer Lloyd,
  Regulations of the German Social Accident Insurance (DGUV),
  Ordinance on Industrial Safety and Health (BetrSichV),
  Ordinance on Workplaces (ArbStättV) ,
- Principles for Condition-Based Maintenance of Wind Turbines (GWEA),,
- Impact and Verification of Stability of Tower and Foundation (DIBt).

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