



## Periodic Inspection of Wind Energy Converters

Wind energy converters in Germany are subject to periodic inspections – similar to the recurring inspections of motor vehicles in road traffic. As a rule the period between inspections is taken from the individual reports of the corresponding type approval documentation. This type approval documentation of a WEC describes its technical specifications, and it is fundamental to the licencing procedure. The provisions and conditions stipulated here are binding for the operating life of the machine.

### Goal

In contrast with a commencement-of operations inspection or an inspection prior to end of warranty, a periodic inspection focuses on the important safety aspects. The inspection serves to establish that no endangerment arises from the machine, neither from the standpoint of structural stability nor from the sequence of operations.

It must be ascertained whether:

- the official requirements are met;
- the erected converter plant complies with the submitted documents;
- any technical-safety considerations exists.

### Scope

Standard procedure of Veltrup-Neil is the inspection of:

- the maintenance-and-repair assignments according to the documentation in the maintenance manual,
- the compliance of the converter plant with its documentation (type approval, individual approval, building permit),
- the foundation and the tower,
- the machine components including the gearbox,
- the welded seams on supporting structures as well as safety-relevant screw connections,
- the electrical components including the lightning conducting path,
- the security chain and
- the rotor blades.

Extensive tests are carried out with the inspection. The functioning and the safety sequence of the converter plant are tested in detail. Important screw connections are spot-checked, either by tapping or, as the case may be, with the aid of a torque wrench in connection with a force enhancer. The gearbox is listened to and opened in order to examine the gears. The rotor blades are inspected for structural defects.

The participation of the client/operator/investor is possible. It is also convenient for a representative of the manufacturer (for example, a service technician) to take part in an inspection.

### Results

The client/operator/investor is given a full-length status report for each converter plant as an original document as well as a PDF (portable document format) file. Here all identified defects are named, described and documented – photographically, for the most part.



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All inadmissible deviations from the prescribed standard are listed and documented in an inspection report, in as far as the requirements for operational safety or the stability of the entire construction are concerned. These ascertained defects are assessed with respect to their technical-safety relevance for a continued operation of the WEC, and a time limit is stipulated for the removal of these defects. Serious defects will lead to the recommendation to the operator of shutting down the machine until such defects are removed.

The inspection report serves as a proof of inspection with the official authorities.

Further services offered by SV-**Veltrup** are:

- technical due-diligence
- commencement-of-operations inspection,
- inspections prior to end of warranty,
- damage appraisals,
- condition-oriented inspections for insurers,
- gearbox and drivetrain inspections (incl. endoscopy with flexible videoendoscope),
- rotor blade inspection – also with rope-down technique,
- vibration analysis of the drivetrain (condition monitoring),
- implementation of measurements (optical pitch angle measurements, laser optical measurements of generator and gearbox, etc.).



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