

Preventive maintenance for wind turbine generators, AM_ 500



SM017 EN REV A 2006



Service notes

ABB recommends regular preventive maintenance over the entire lifetime of wind turbine generators. This ensures maximum availability while minimizing unplanned repair costs.

Preventive maintenance aims to increase the reliability and extend the lifetime of generators by providing appropriate servicing at the right time. It consists of annual system inspections and component replacements based on a generator-specific maintenance schedule. The formation of defects in wind turbine generators is normally a long process, so systematic preventive maintenance can prevent unplanned shutdowns.

Benefits

- Increased generator reliability
- Optimized maintenance costs and minimized repair costs
- Easy-to-plan maintenance budget
- Extended generator lifetime
- Genuine, factory-certified ABB parts
- PM kits based on extensive experience of requirements

Comprehensive maintenance

Preventive maintenance includes the labour and parts needed to perform on-site work as specified by the maintenance schedule:

- Visual inspection of the generator and its operating environment
- Inspection of the connections
- Checking of the generator mounting bolts and alignment
- Inspection, testing and cleaning of the stator and rotor
- Condition monitoring of the bearings and lubrication
- Cleaning and checking the bearing shield insulation
- Inspection and cleaning of the slip ring assembly
- Cleaning of the cooling system
- Inspection and/or testing of the accessories
- Inventory of the generator spare parts

The ABB logo is the letters 'ABB' in a bold, red, sans-serif font.



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Once the maintenance work has been completed and the inspection data fully analyzed, a detailed service report is provided. This includes recommendations for service actions, for spare parts, and special tools for future actions. On-site training can be undertaken, with maintenance work performed by an ABB supervisor.

Preventive maintenance kits are available at aftersales.machines@fi.abb.com for component replacements marked "R" on the maintenance schedule.

Preparations for preventive maintenance

The effectiveness of the preventive maintenance work depends on the quality of the information provided by the system owner in service reports. In general, preventive maintenance is more effective when the information provided is as comprehensive as possible. If the information available is not sufficient, it is recommended that a site survey is performed on the generator before the preventive maintenance is carried out. During the shutdown ABB must have free access to the generator for maintenance purposes as agreed. Preventive maintenance must be planned well in advance in order to ensure that the required resources and service parts are available.

Maintenance schedule

Experience indicates that generators become more likely to fail after a number of years in operation. Failing interval depends on the component and how punctually and duly the commissioning and scheduled maintenance have been done. Other determinant factor is the life expectance of the individual component. The main reason is ageing of the components, but operating conditions also play a major role. Failure of a component may cause damage to other parts of the machine, including the stator and rotor.

The maintenance schedules are based on extensive know-how and they provide an effective and systematic means of maintaining a specific type of generator. The maintenance schedules comply with any specifications issued by the component suppliers.

Environmental and operating conditions are also taken into account. Tough conditions - such as high ambient temperatures, high vibration levels, high operating altitude, humidity, dirt, or heavy loads - can significantly shorten component lifetime and reduce maintenance and component replacement intervals. In order to ensure optimum performance over the entire lifetime of a generator, ABB recommends that annual inspections are carried out in addition to regular maintenance.

For further information please contact
Email: aftersales.machines@fi.abb.com
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Example of recommendations for Wind Turbine Generators Preventive Maintenance

Maintenance activities

Inspection I Replacement or reconditioning R
Performance of the Site Work P Cleaning C

Table with 5 columns: Recommended Maintenance Intervals, 1/2 year, 1 year, 3-5 years, Overhaul. Rows include: 1. General construction, 2. Low voltage connection, 3. Stator & Stator windings, 4. Rotor & Rotor windings, 5. Slip ring assembly, control & protection, 6. Bearings, 7. Cooling system.

Please note that the given recommendations are suggestive. Tailor made application may differ from the recommendations.



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