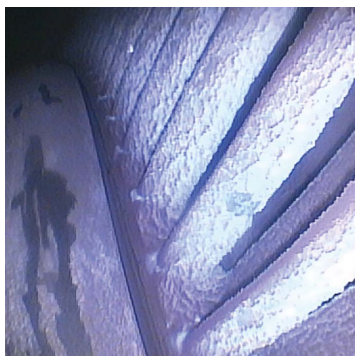


STEAM TURBO SET OVERHAUL FREQUENCY

Allianz Center for Technology (AZT)

FEBRUARY 2019

Rising costs cause increasing pressure on the operators of industrial turbo sets to extend the time between major overhauls. This is linked to an increase in the operational risk for steam turbines, gearboxes and generators.



Hard deposits on turbine blades

EVALUATING POSSIBLE EXTENSIONS OF OVERHAUL CYCLES

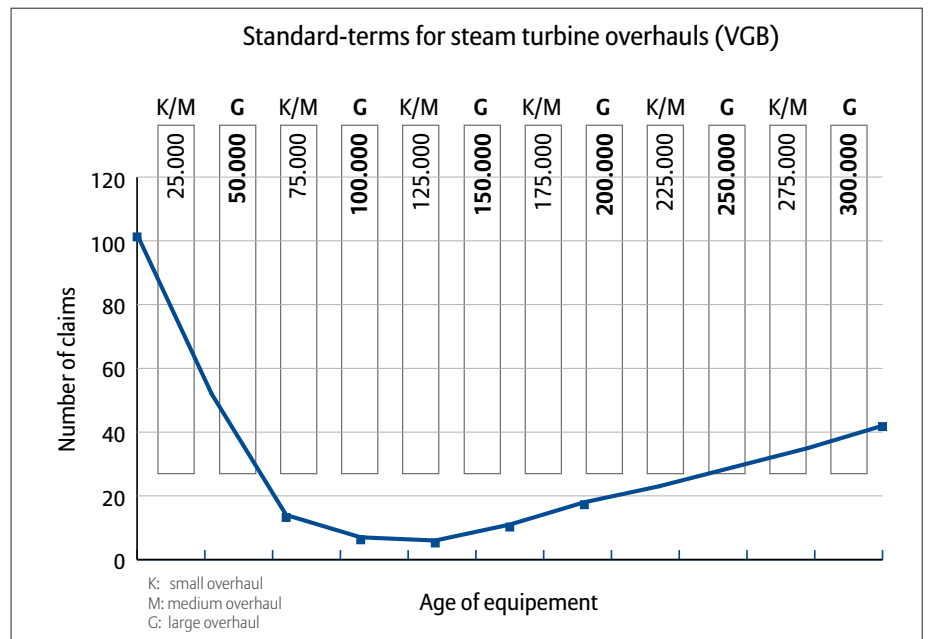
The Allianz Center for Technology (AZT) supports the operator in evaluating the change in operational risk from a technical perspective. This evaluation serves as a basis to determine an extended time between

major overhauls. The basis for the analysis is condition-based data.

To evaluate the extension of overhaul terms, an analysis of the specific steam turbine set is necessary.

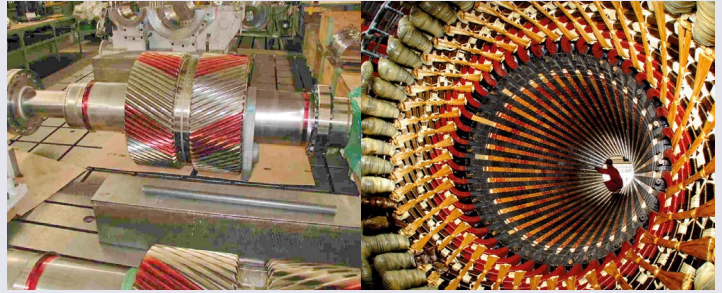
THE FOLLOWING COMPONENTS WILL BE ANALYSED IN DETAIL:

- Steam turbine
- Gear box
- Generator
- Auxiliary units
- Protection



MAIN CRITERIA FOR THE CONDITION-BASED EVALUATION OF STEAM TURBINE SETS

- **Operation and damage history**
e.g. Operating mode, AZT – fleet experience
- **Turbine-specific aspects**
e.g. Design of control and the last stage
- **Gearbox related aspects**
e.g. QA-compliant manufacturing, technical design & operating history
- **Generator-specific aspects**
e.g. Insulation concept and cooling
- **Monitoring concept**
e.g. Condition Monitoring, protection and control systems
- **Operational management and maintenance strategy**
e.g. Documentation and QA measures, water-steam-cycle
- **Facility management**
e.g. Organisation and staff qualification

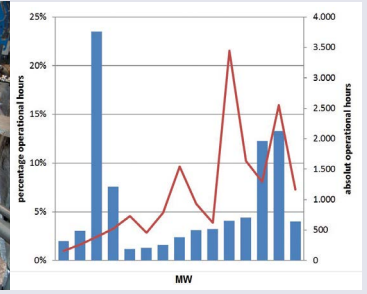


Non-destructive gearbox testing

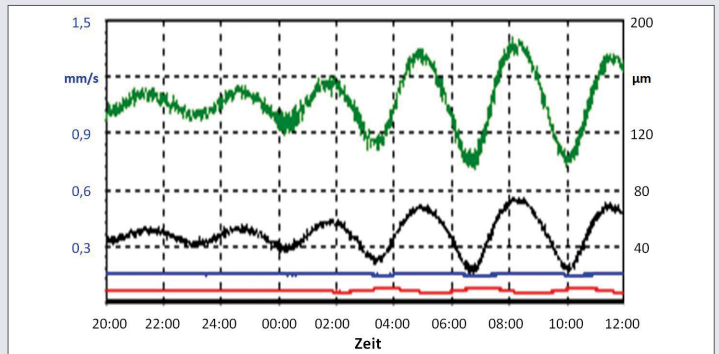
Inspection of a generator stator



Steam turbine opened for maintenance



Analysis of the operational history



Vibration diagnostic

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YOUR BENEFITS

- ✓ Individual risk evaluation as a basis for a technically and commercially acceptable extension of overhaul terms
- ✓ Independent recommendations for the optimisation of facility specific maintenance strategy
- ✓ Support for the implementation of the recommendations