

GEARBOX CONSULTING SERVICES

Allianz Center for Technology (AZT)

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In drivetrains, a gearbox is needed to transform the power input from the drive unit (e.g. turbine or electric motor) according to the requirements (torque/speed) of the working machine (e.g. generator). In most cases the gearbox is not the high-value component in this setup. Nevertheless, a gearbox failure cuts off the connection between the drive unit and the working machine, potentially resulting in long standstill periods because of long lead-times for gears.



COMPREHENSIVE PRE-LOSS ASSESSMENT AND DAMAGE INVESTIGATION

Allianz Center for Technology (AZT) can help to avoid such situations by offering independent consulting for gearbox design and condition assessment. In the event of damage, AZT also provides comprehensive root cause analysis on gearboxes.

PRE-LOSS ASSESSMENT

- Evaluation of gear, shaft and bearing design according to standards – DIN, ISO, AGMA, ...
- Evaluation of gearbox condition by means of visual inspection (fig. 1), non-destructive testing, replicas (fig. 2) with assessment via laboratory microscopy and oil/grease analysis
- AZT developed non-destructive tooth volume testing via ultrasonic technique for flank breakage (fig. 3)

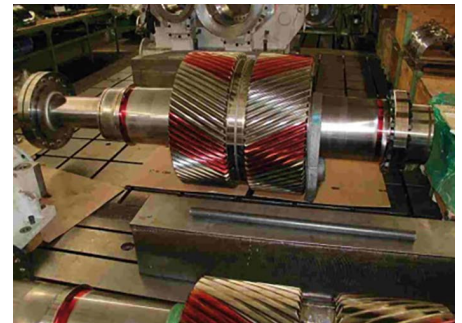


Figure 1: Contact pattern

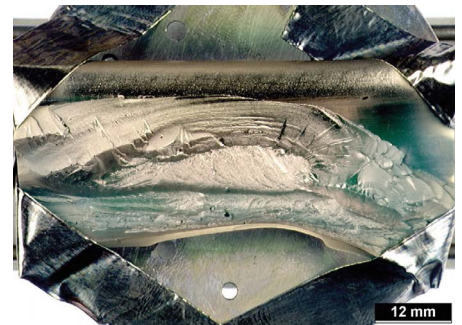


Figure 2: Replica prepared for microscopy

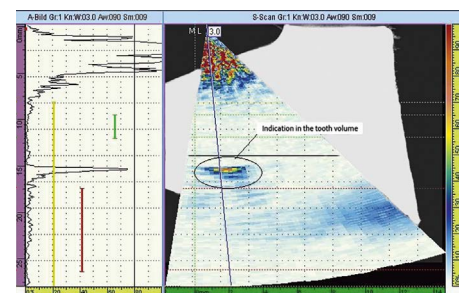


Figure 3: Scan of tooth with indication possibly causing a flank breakage (fig. 5)

DAMAGE INVESTIGATION

AZT has long-term experience in damages of gearboxes from:

- Power generation, such as gas/steam/wind/hydro turbines
- Industrial applications
- Transportation

Frequently seen damage patterns on gears are:

- Pittings and micropittings / grey staining (fig. 4)
- Electric current transfer
- Flank breakage (fig. 5)

AZT also has long-term experience in damage investigation of shafts and bearings (roller and journal bearings).

Beyond the investigation of damaged parts, AZT is capable of evaluating the design and operating conditions of the gearbox through calculation.

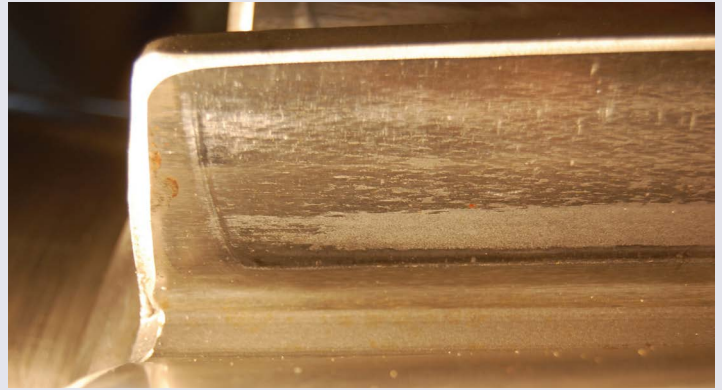


Figure 4: Micropitting



Figure 5: Flank breakage of a turbo gear

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Find out more
about our services
and products.

YOUR BENEFITS

- ✓ Tooth volume testing allows a full assessment of the tooth volume, making critical defects visible
- ✓ AZT provides an independent assessment of your gearbox
- ✓ In the event of damage, AZT offers comprehensive root cause analysis on your gearbox
- ✓ A proper assessment of the gear condition supports safe and reliable operation of the gearbox until the next service, avoiding unplanned unavailability