

Application Report: Flender gearboxes of TACKE-wind turbines

Plant Operation: TM Windpower GmbH & Co. KG
Date: Oktober 2007
Data: TACKE TW 250, Flender gear box, oil content: 75 Liter Mobil XMP SHC 320
TACKE TW 500, Flender gear box, oil content: 400 Liter Mobil SHC 632

Target of Application:

- Restoration of worn gear surfaces.
- Reduction of micro pitting
- Wear protection and extension of lifetime of the gearboxes

Application:

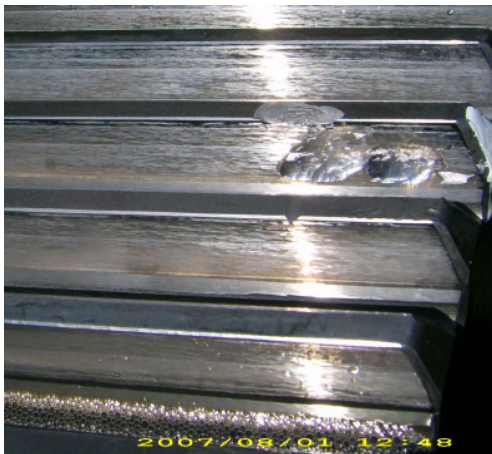
Neutralization of the oil filter.

Application of the first half of the REWITEC-concentrate to the gear oil.

24 hours later application of the second half of the REWITEC-concentrate to the gear oil.

Reactivation of the oil filter approx. 100 operation hours later.

TACKE TW 250 - Documentation of the gearbox conditions before and after the coating:



Before



After

Condition before the coating:

The gears showed significant wear and tear and fragments from the tooth flanks had broken off. The beveled edges and tooth tips were sharp edged. Imprints were taken from the marked tooth. The measured values of the resistances of the tooth surfaces were 0 Ohm.

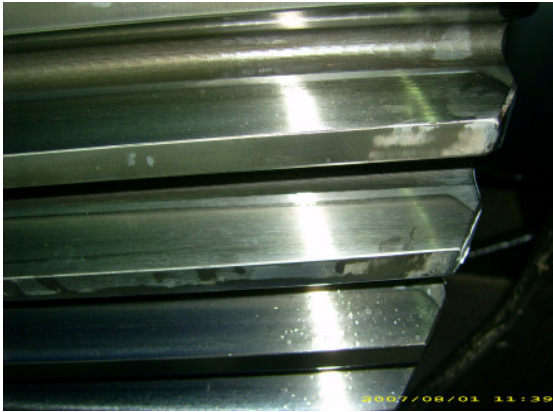
Condition after 700 operating hours:

The teeth have smooth and shiny surfaces. Imprints were taken from the marked tooth again. They showed significant smoothing of the surface compared to the imprints that were taken before. Values as high as 50 Ohm were measured for the resistances of the tooth surfaces due to the formation of the REWITEC coating. The highest values of resistance were measured at the lower part of the teeth.

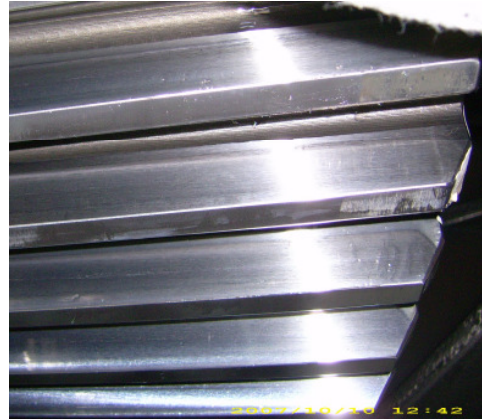


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TACKE TW 500 - Documentation of the gearbox conditions before and after the coating:



before



after

Condition before the coating:

The gears showed significant wear and tear. Imprints were taken from the marked tooth. The measured values of the resistances of the tooth surfaces were 0 Ohm.

Condition after 700 operation hours:

The teeth showed smooth and shiny surfaces. Imprints were taken from the marked tooth again. They showed significant smoothing of the surface compared to the imprints which were taken before. Values as high as 50 Ohm were measured for the resistances of the tooth surfaces due to the formation of the REWITEC coating. The highest values of resistances were measured at the lower part of the teeth.

According to the plant operator after the REWITEC coating the running noise has decreased and vibrations have disappeared.

Result: The following benefits have been achieved in both applications:

- Restoration of worn gear surfaces
- Reduction of micro pitting

Evidence about wear protection and extension of life cycle of the gears has to be provided during future operation.

