

TRIBOTECHNICAL TREATMENT REPORT — GEARBOX No. 401

Gearbox ZB-360Pm: less current to the drive, treated without disassembly

«Nikolaev Alumina Refinery» CJSC · work performed by XADO LLC: technical director S. N. Aleksandrov,
regional representative A. N. Svistun

Ukraine · report dated 21.05.1999 · inspection teardown after 168 hours of operation

PRODUCT

XADO tribotechnical
compound

applied by XADO technology to
the running gearbox, without
disassembly

TREATED UNIT

Gearbox No. 401, type
ZB-360Pm

gear drive: wheel — pinion ·
bearings · electric drive

DOCUMENT TYPE

Report signed by both
parties
and sealed by the refinery

EQUIPMENT**CONDITION AND DUTY****WHAT WAS MONITORED**

Gearbox No. 401, type
ZB-360Pm

In service; treated under normal
duty, without disassembly

Current drawn by the gearbox electric
drive

Gear drive: wheel — pinion
pair

168 hours of operation after
treatment, then taken out of
service

Condition of the tooth working surfaces
at the inspection teardown

Gearbox bearings

same

Radial play, condition of the surfaces

Current was measured at a constant resistance torque on the input shaft and with unchanged voltage and speed of the drive motor.

Key result

↓ **9.1%**

current drawn by the gearbox electric drive, 550 → 500 A

Treatment results for gearbox No. 401

PARAMETER	BEFORE TREATMENT	AFTER TREATMENT
Current drawn by the electric drive	550 A	500 A
Working surface of the wheel — pinion teeth	Traces of metal corrosion	Appearance of a smooth ground surface, traces of corrosion gone
Radial play of the bearings	Present	Eliminated; gear and bearing surfaces hardened

The surfaces and bearings were examined at the inspection teardown after **168 hours** of gearbox operation.

Conclusion of the report

The conclusion of the report states: «Use of XADO technology makes it possible to considerably extend the interval between repairs and to partly replace scheduled preventive repairs with tribotechnical treatment; reducing the friction coefficient to **0.007** units makes it possible to: extend oil service life by at least **3×**; extend the service life of worn equipment; prevent wear and optimise clearances in new equipment». The treatment was carried out on the running gearbox, without disassembly and without stopping production. Over the **168 hours** that followed, the drive current dropped, the teeth of the mating pair took on the appearance of a smooth ground surface, traces of corrosion disappeared, the radial play of the bearings was eliminated, and the noise of the running gearbox fell considerably.

XADO

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The results refer to gearbox No. 401, type ZB-360Pm, of the Nikolaev Alumina Refinery, treated by XADO technology without disassembly; on other equipment and under different operating conditions the figures may differ. The original report dated 21.05.1999, signed by both parties and sealed, is published in full and available for download.