GEARBOX TREATMENT REPORT UNDER XADO TECHNOLOGY

MChT-125 machine gearbox: metal grew on the teeth, bearing clearances shrank

Dneproshina OJSC · report approved by chief engineer S. I. Goryainov · signed by design engineer A. V. Konyukhov (Dneproshina OJSC), engineers I. N. Sharaykin and O. A. Lobach (XADO LLC)

Ukraine · treatment 11.04–02.08.2002, cycle of 468 hours · report dated 02.08.2002

PRODUCT

XADO revitalizants

treatment under XADO technology · cycle of 468 hours

TREATED UNIT

Two-stage gearbox of the MChT-125 machine

drive pinion and driven gears of both stages · six bearing supports

DOCUMENT TYPE

Dneproshina OJSC report dated 02.08.2002

four signatories, approved by the chief engineer of the plant

EQUIPMENT	CONDITION BEFORE TREATMENT	WHAT WAS MEASURED
MChT-125 machine, gearbox gear train	As assessed in the report — wear above 100%; deep pits and fine scoring on the working surfaces of the teeth	Tooth thickness on the drive pinion and two driven gears, working backlash in the mesh
Bearing supports of the same gearbox	Radial clearance of the right support of the angular-contact ball bearing — 1.15 mm	Radial clearance of six supports: angular-contact ball, double-row spherical roller, angular-contact

Treatment carried out 11.04–02.08.2002, cycle of 468 hours. Measurements were taken before it began and at the end of the cycle.

Key results

↑ 0.05-0.15 mm

tooth thickness on the gears of both stages, 5.1-9.7 → 5.2-9.8 mm

↓ 20-30 %

radial clearance of the bearing supports, 0.10-1.15 → 0.08-0.90 mm

↓ 3.95 %

working backlash in the mesh, 1.77 → 1.70 mm

Tooth thickness before and after treatment, mm

UNIT AND MEASUREMENT HEIGHT	BEFORE	AFTER	GAIN
Stage 1, driven gear (h = 4 mm)	5.10-5.15	5.20-5.25	0.10-0.15
Stage 2, drive pinion (h = 5 mm)	7.20-7.40	7.35-7.45	0.05-0.15
Stage 2, drive pinion (h = 9 mm)	9.55-9.70	9.60-9.75	0.05
Stage 2, driven gear (h = 5 mm)	7.40-7.85	7.55-7.85	0-0.15
Stage 2, driven gear (h = 9 mm)	9.70	9.70-9.80	0-0.10

At each mark on the gear three consecutive teeth were measured — 36 points in all; a gain of metal was recorded at 32 of them.

Clearances in the mesh and in the bearing supports, mm

MEASUREMENT	BEFORE	AFTER	CHANGE
Working backlash between the teeth	1.77	1.70	−0.07
Angular-contact ball bearing, right support	1.15	0.90	−0.25
Angular-contact bearing, left support	0.20	0.14	−0.06
Double-row spherical roller bearing, right support	0.10	0.08	−0.02
Angular-contact ball bearing, left support	0.09	0.08	−0.01
Angular-contact bearing, right support	0.08	0.07	−0.01

MEASUREMENT	BEFORE	AFTER	CHANGE
Double-row spherical roller bearing, left support	**0.02**	**0.02**	0

The most worn is the right support of the angular-contact ball bearing — 1.15 mm before treatment; the relative change given in the header covers the three supports with the largest clearance.

Conclusion of the report

The commission of Dneproshina OJSC and XADO LLC recorded in the report dated 02.08.2002: “At the start of treatment the gearbox had wear above 100%. This fact explains the slight gain on the working surfaces of the teeth, as well as the incomplete disappearance of the deep pits. Nevertheless, it can be concluded that after the gearbox was treated with XADO revitalizants the wear was fully halted. The working surface of the teeth took on a smooth form, the fine scoring and pits disappeared.” The condition of the unit before treatment — deep pits on the teeth and a clearance of **1.15 mm** in the most worn support — is not a caveat here but the working premise: over **468 hours** metal was added on the teeth of both stages, while the clearances in the supports and in the mesh decreased.

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The results refer to the two-stage gearbox of the MChT-125 machine under the conditions of Dneproshina OJSC; with a different unit condition and operating mode the figures may differ. The treatment and the measurements were carried out jointly by Dneproshina OJSC and XADO LLC. The original report dated 02.08.2002 is published in full and available for download.