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INDUSTRIAL CASE | MECHANICAL ENGINEERING | TURBOCOMPRESSOR · BEARINGS

CERTIFICATE OF REPAIR AND RESTORATION WORK · CONTRACT No. 72-45-1140

Turbocompressor K-500-61-1: electricity savings and stable bearing operation

JSC Kharkiv Tractor Plant named after S. Ordzhonikidze, power shop · approved by: Chief Power Engineer G. A. Donets, Head of the Power Shop · work performed by: XADO LLC

Kharkiv, Ukraine · contract No. 72-45-1140 of 26.07.2000

PRODUCT

XADO RVS

repair and restoration compound · treatment in three stages

TREATED OBJECT

Turbocompressor K-500-61-1

station No. 1, plant power shop · plain bearings, gearbox, lubrication system, electric drive

DOCUMENT TYPE

Certificate of completed work with calculation annex

signatures and seals of JSC KhTZ and XADO LLC

EQUIPMENT	UNIT	WHAT WAS MEASURED
Turbocompressor K-500-61-1, st. No. 1	Lubrication system, main oil pump	Oil pressure
Turbocompressor K-500-61-1, st. No. 1	Plain bearings Nos. 1, 2, 3, 5, 6, 7, 8	Temperature at seven points
Turbocompressor K-500-61-1, st. No. 1	Electric drive of the unit	Electricity consumption
Turbocompressor K-500-61-1, st. No. 1	Gearbox	Operating noise

XADO RVS treatment was carried out in three stages; measurements before and after were taken with the turbocompressor's standard instruments.

Key results

↓ 9-11 %

electricity consumption of the turbocompressor in normal operation

↑ 11.5 %

main oil pump pressure, 5.2 → 5.8 kgf/cm²

Results by turbocompressor unit

UNIT	PARAMETER	RESULT
Lubrication system	Main oil pump pressure	**5.2 → 5.8 kgf/cm²** — a gain of **0.6 kgf/cm²**, pressure stabilised
Electric drive	Electricity consumption	Reduction of **9-11 %**
Plain bearings	Temperature at seven points (Nos. 1, 2, 3, 5, 6, 7, 8)	Brought to the working norm and stabilised
Gearbox	Operating noise	Reduction noted by the operating personnel

Oil pressure, bearing temperature and electricity consumption were taken with the turbocompressor's standard instruments before and after the three treatment stages.

What the commission recorded

Following the repair and restoration work, the commission of the plant and the contractor recorded:

1. The oil pressure created by the main oil pump increased by **0.6 kgf/cm²** and stabilised (was **5.2 kgf/cm²**, became **5.8 kgf/cm²**).
2. The temperature of the plain bearings was brought to the working norm and stabilised (bearings Nos. 1, 2, 3, 5, 6, 7, 8).
3. Reduction of electricity consumption by **9-11 %**.
4. The operating personnel note a reduction in the operating noise of the turbocompressor gearbox. The annual economic effect from electricity savings alone is estimated in the annex to the certificate at **UAH 90,576** in year-2000 prices.

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The results refer to turbocompressor K-500-61-1, st. No. 1 of the power shop of JSC KhTZ; on other units and operating modes the figures may differ. The calculation of the annual effect in year-2000 prices was made by the contractor XADO LLC and approved by the plant's Chief Power Engineer. RVS is an obsolete XADO designation, zero-generation compounds; the current product generation is revitalizants. The original certificate is published in full and available for download.