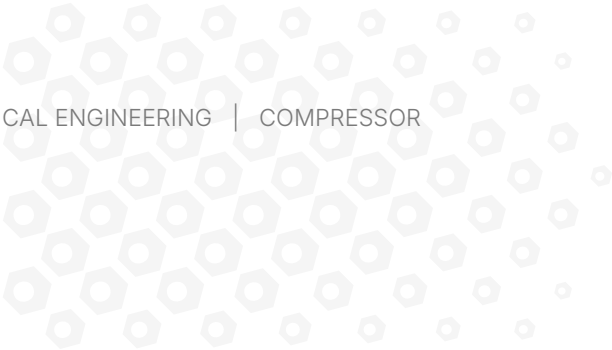




WORK ACCEPTANCE CERTIFICATE WITH MEASUREMENT REPORT

Turbocompressor K-500-61-1: vibration down, oil pump holds pressure again

State Enterprise "Malyshev Plant", EP ZIM branch — compressor station · measurement report approved by the branch chief engineer A.V. Biletsky; measurements certified by the head of the compressor station, the chief field engineer and the head of the laboratory of the occupational safety department
Kharkiv, Ukraine · contract No. 2505 dp · treatment 17–23.03.1999, control measurements after 439 hours of operation · report dated 18.05.1999

PRODUCT	TEST OBJECT	DOCUMENT TYPE
XADO RVS repair-and-restoration compound, introduced into the unit's lubrication system in three stages	Turbocompressor K-500-61-1 station No. 8 · compressor, gearbox, electric motor, main oil pump	Work acceptance certificate with measurement report (annex No. 1)

UNIT ASSEMBLY	MEASUREMENT POINTS	WHAT WAS MEASURED
Compressor K-500-61-1	1, 2	Vibration displacement in three directions
Gearbox, pinion gears	3, 4	Vibration displacement in three directions
Gearbox, bull gear	5, 6	Vibration displacement in three directions, noise level
Electric motor	7, 8	Vibration displacement in three directions
Main oil pump	MOP	Vibration displacement, lubrication system pressure

The unit was treated with XADO RVS on 17–23.03.1999 without disassembly and without being taken out of service; control measurements were taken after 439 hours of operation.

Key results

↓ **30-60 %**

vibration displacement of the unit bearings, 5-45 → 4-17 μm

↑ **12.2 %**

main oil pump pressure, 4.9 → 5.5 atm

Vibration displacement by unit assembly, μm: before treatment → after 439 hours of operation

MEASUREMENT POINT · ASSEMBLY	VERTICAL	TRANSVERSE	AXIAL
1 · compressor	11 → 6	9 → 4	13 → 6
2 · compressor	16 → 9.5	8 → 6	24 → 15
3 · gearbox, pinion gears	22 → 4	10 → 7	32 → 15
4 · gearbox, pinion gears	10 → 7	13 → 6	32 → 15
5 · gearbox, bull gear	5 → 7	5 → 6	9 → 8
6 · gearbox, bull gear	10 → 5	8 → 8	8 → 8
7 · electric motor	12 → 4	9 → 5	40 → 16
8 · electric motor	9 → 5	10 → 8.5	23 → 17
MOP · main oil pump	45 → 4	30 → 5	35 → 6

Measurements were taken and certified by the customer's compressor station personnel. The card above shows the typical reduction range across 27 measurement points.

Main oil pump: lubrication system pressure

PARAMETER	BEFORE TREATMENT	AFTER THREE STAGES
Pressure delivered by the main oil pump	4.9 atm	5.5 atm

At each of the three treatment stages the pressure rose by 0.2 atm within 40–50 minutes after the compound was introduced — the response repeated three times.

Noise level at the compressor station, dB

MEASUREMENT POINT	BEFORE TREATMENT	AFTER 439 H OF OPERATION
Point 3' on the measurement diagram	97 dB	95 dB
Point 5' on the measurement diagram	97 dB	96 dB

Brüel & Kjær type 2203 sound level meter; the measurement points are marked on the diagram in annex No. 1 to the report.

Conclusion of the work acceptance certificate

The certificate, signed by the chief engineer of State Enterprise "Malyshev Plant" and sealed with the enterprise stamp, states: "The test results demonstrate the effectiveness of applying the technology at State Enterprise 'Malyshev Plant'". Behind this wording are measurements taken and certified by the customer's own personnel. After **439 hours** of operation, vibration displacement at the bearings of the compressor, gearbox and electric motor decreased within a typical range of **30-60 %**, and at the main oil pump from **45 to 4 µm** vertically and from **35 to 6 µm** axially. The pressure delivered by the oil pump rose from **4.9 to 5.5 atm**: the restored pump clearances hold pressure in the lubrication system again. The unit was neither disassembled nor taken out of service — the compound was introduced into the oil of a running machine.

XADO

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The results relate to the K-500-61-1 turbocompressor at the compressor station of State Enterprise "Malyshev Plant"; on other equipment and under other operating conditions the figures may differ. RVS is an obsolete XADO designation for zero-generation compounds; the current product generation is revitalizants. The original report with signatures and stamps is published in full and available for download.