KAZZINC JSC REPORT · 1700 OPERATING HOURS IN SERVICE

4VM 10-120/9 compressor: less power to the drive, shaft geometry preserved

Kazzinc JSC, LGOK industrial complex, power shop · commission: LGOK chief power engineer V. A. Voronin (chairman), LGOK chief mechanical engineer V. S. Laptiev, power shop chief engineer S. V. Seliverstov · approved by N. V. Prokhorenko, deputy chief mechanical engineer of Kazzinc JSC

Leninogorsk, Kazakhstan · treatment 26.11.2001 · control measurements and report 21.05.2002

PRODUCT

XADO compounds · Compressor Gel

running gear — 100 tubes in four stages · cylinder-piston group — 20 tubes through the standard lubricator

TEST OBJECT

4VM 10-120/9 reciprocating compressor

serial no. 1700 · drive SKD2-16-44-10, 800 kW, 6000 V

DOCUMENT TYPE

Commission report of Kazzinc JSC signed and stamped

ASSEMBLY	HOURS RUN AT TEST START	WHAT WAS MEASURED
Running gear: crank mechanism, Ø180 crankshaft, bearing shells, crosshead bush	over **40,000 operating hours** since 1992, last overhaul — 2001	drive current, oil pressure, dimensions of journals and bearing shells
Cylinder-piston group	same machine, serial no. 1700	level of the ultrasonic component by compressor rows

Treatment was carried out without disassembly, on the running machine: running gear — in four stages, cylinder-piston group — through the standard lubricator with KS-19 oil.

Key results

↓ 14.3 %

drive rotor current under load, 210 → 180 A

↑ 0.2 kgf/cm²

oil pressure in the running gear, 4.0 → 4.2 kgf/cm²

Drive current and oil pressure: before treatment and after 1700 operating hours

PARAMETER	BEFORE TREATMENT	AFTER 1700 OPERATING HOURS	CHANGE
Drive rotor current, under load	**210 A**	**180 A**	**−14.3 %**
Drive rotor current, no load	**180 A**	**170 A**	**−5.6 %**
Drive stator current, under load	**70 A**	**70 A**	no change
Drive stator current, no load	**44 A**	**44 A**	no change
Oil pressure in the running gear lubrication system	**4.0 kgf/cm²**	**4.2 kgf/cm²**	**+0.2 kgf/cm²**

Readings of the drive's standard instruments. Motor nameplate: **800 kW**, stator current **81 A**, rotor current **260 A** — the machine ran in an unchanged load mode.

Conclusion of the Kazzinc JSC commission

Following **1700 hours** of compressor operation after treatment with XADO compounds, the commission recorded:

1. The level of mechanical losses in the cylinder-piston group and the crank mechanism decreased: at no load — **5.6 %**, under load — **14.3 %**, which correspondingly reduces energy consumption.
2. Wear-free operation of the crankshaft was ensured for **1700 operating hours** under load.
3. Oil pressure increased by **0.2 kgf/cm²**. At the control opening of the running gear the report states: "The connecting-rod and main journals showed no change in geometric dimensions. Traces of a shiny coating"; it is separately noted that the compressor runs quieter and smoother, with a reduced vibration level in the area of row
2. The machine came to the treatment with over **40,000 operating hours** run, and the entire result was obtained without disassembly, on the running unit.

XADO

The results refer to a 4VM 10-120/9 reciprocating compressor with an 800 kW synchronous drive under the industrial operating conditions of LGOK; on other machines and duty modes the figures may differ. The treatment was performed by the contractor W.F.G. Corporation LLP (XADO technologies), whose representatives sat on the commission alongside officials of Kazzinc JSC. The original report is published in full and available for download.