

TECHNICAL REPORT OF 05.12.2003 WITH ECONOMIC EFFICIENCY CALCULATION

Compressor VP-20/8: lower current, faster charging, no shutdown, no teardown

KRAST JSC, Stavropol Truck Crane Plant · commission: chief engineer V. A. Yakhno, chief power engineer I. N. Selivanov · work performed by Revitalization Center LLC

Russia · work contract No. 16 of 20.11.2003 · works 20.11–05.12.2003 · report of 05.12.2003

PRODUCT

XADO technology
MK treatment of the crank mechanism and cylinder-piston group — restoration of rubbing surfaces without disassembly

TEST OBJECT

Compressor VP-20/8
Serial No. 9949 · 29 years in service · receivers with a total volume of 27 m³

DOCUMENT TYPE

Technical report
with economic efficiency calculation

EQUIPMENT

Compressor VP-20/8,
serial No. 9949

CONDITION AT START OF WORK

Built in 1974, 29 years in service;
treated on site, without taking it
out of operation

WHAT WAS MEASURED

Drive motor current and stage pressures
at five operating modes, time to fill the 27
m³ receivers to 6 kgf/cm², oil pressure in
the crank mechanism lubrication system

The MK treatment was carried out under normal operation — without stopping the compressor for repair, without disassembly and without replacing parts.

Key results

↓ **33-37 %**

drive motor current at operating
modes, 180-245 → 120-160 A

↓ **1.5 min**

time to fill the 27 m³ receivers to 6
kgf/cm², 7 → 5.5 min

↑ **11.4 %**

first-stage pressure at the operating
mode, 1.75 → 1.95 kgf/cm²

Motor current and first-stage pressure by operating mode

2ND-STAGE PRESSURE, kgf/cm ²	CURRENT BEFORE, A	CURRENT AFTER, A	CURRENT CHANGE	1ST-STAGE PRESSURE, kgf/cm ²
6.0 — operating mode	245	160	–34.7 %	1.75 → 1.95
5.0	230	145	–37.0 %	1.65 → 1.8
4.0	205	130	–36.6 %	1.5 → 1.7
3.0	180	120	–33.3 %	1.4 → 1.55

First-stage pressure rose at every mode — a direct sign of reduced clearances in the cylinder-piston group and restored sealing.

Output and lubrication system

PARAMETER	BEFORE TREATMENT	AFTER TREATMENT
Time to fill the 27 m ³ receivers to 6 kgf/cm ²	7 min	5 min 30 s
Oil pressure in the crank mechanism lubrication system	2.9 kgf/cm ²	2.9 kgf/cm ²

According to the conclusion of the report, compressor output increased by 22 %; our measurement of the receiver filling time is 7 → 5.5 min.

Commission findings

The compressor had been running at the plant for **29 years**, and the MK treatment of the crank mechanism and cylinder-piston group by XADO technology was performed while it stayed in operation — without stopping for repair, without disassembly and without replacing parts. The commission of KRAST JSC and Revitalization Center LLC recorded: "The measurements established that the parameters characterizing the operation of the compressor differ for the better." Conclusions of the report:

1. As a result of the MK treatment of the crank mechanism and cylinder-piston group, the rubbing metal parts were restored and friction between them was significantly reduced, which made it possible to increase compressor output by **22 %** while simultaneously reducing power consumption by **35 %**.
2. The results obtained confirm the expediency of performing MK treatment on equipment units.



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The results relate to the VP-20/8 piston compressor (serial No. 9949) and to its normal operating modes; on other equipment and under other conditions the figures may differ. The treatment was performed by Revitalization Center LLC, which also prepared the economic efficiency calculation attached to the report. The original technical report of 05.12.2003 with signatures and stamps is published in full and available for download.