

REPORT OF OAO «GRODNEFSKII STEKLOZAVOD», 2004

Compressor 2VM10-50/9: crankpin wear offset without shutting it down

OAO «Grodnerskii Steklozavod» (Grodno Glassworks), Belarus · treatment by GT ODO «VaTT» together with the plant services · report approved by the plant chief engineer, signed by the chief power engineer, the shop head and the foreman

Grodno, Belarus · work from 20.02.2004, report dated 24.03.2004 · control measurement after 450 h of operation

PRODUCT

XADO technology
treatment under normal
operation, without
disassembling the unit

TREATED OBJECT

Reciprocating compressor
2VM10-50/9
crankshaft · lubrication system ·
drive motor

DOCUMENT TYPE

Plant technical report
signed and stamped by
both parties

EQUIPMENT**CONDITION AT THE START OF WORK****WHAT WAS MEASURED**

Compressor 2VM10-50/9

Crankpins of the crankshaft worn by
0.04–0.11 mm from the nominal **180
mm**; oil pressure **1.2 atm**, stator
current **27 A**

Journal diameter in two planes on
each stage, oil pressure in the system,
drive stator current

The treatment was carried out on the running machine, without taking the compressor out of service; the control measurement was made after 450 h of operation.

Key results

↑ **0.02–0.07 mm**

crankshaft crankpin diameter, 179.89–179.96 →
179.93–179.99 mm

↓ **2 A**

drive motor stator current, 27 → 25 A

↑ **41.7 %**

oil pressure in the system, 1.2 → 1.7 atm

Crankshaft — crankpin diameter, measured before treatment and after 450 h

MEASUREMENT POINT	BEFORE TREATMENT	AFTER 450 H	WEAR COMPENSATED
1st stage, plane A	180 – 0.04 mm	180 – 0.01 mm	+0.03 mm
1st stage, plane B	180 – 0.08 mm	180 – 0.01 mm	+0.07 mm
2nd stage, plane A	180 – 0.08 mm	180 – 0.06 mm	+0.02 mm
2nd stage, plane B	180 – 0.11 mm	180 – 0.07 mm	+0.04 mm

The size is recorded as the nominal 180 mm with a deviation. At all four points the journal diameter increased: the layer built up exactly where the wear was.

Lubrication system and electric drive of the compressor

PARAMETER	BEFORE TREATMENT	AFTER 450 H	CHANGE
Oil pressure in the system	1.2 atm	1.7 atm	+0.5 atm
Drive stator current	27 A	25 A	–2 A

According to the conclusion of the report, the economic effect of the reduced power consumption amounted to 7.5 %.

Conclusion of the report

At the start of the work the crankpins of the crankshaft were worn by up to **0.11 mm** from the nominal, and the oil pressure in the system stayed at **1.2 atm**. The treatment was carried out under normal operation, without taking the compressor out of service and without disassembly; the control measurement was made after **450 h** of operation. The commission of OAO «Grodnenskii Steklozavod» and GT ODO «VaTT» recorded in the report: the use of XADO technology makes it possible to —

1. Significantly extend the interval between overhauls and partly replace scheduled preventive repairs.
2. Optimise clearances and restore the dimensions of friction-pair parts. The economic effect of the reduced power consumption amounted to — **7.5 %**.



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The results relate to the reciprocating compressor 2VM10-50/9 of OAO «Grodnenskii Steklozavod» and to the conditions of its normal operation; on other units and duties the figures may differ. The original report dated 24.03.2004, with signatures and stamps, is published in full and available for download.