

REPORT OF KGGMK "KRIVOROZHSTAL" · OXYGEN PRODUCTION

Turbocompressor K-500: less electricity with no unit shutdown

KGGMK "Krivorozhstal", electrical engineering laboratory shop (TsETL), oxygen production · report approved by V. F. Volkov, Deputy General Director for Power Engineering of the works; treatment — JV "AVIS"

Kryvyi Rih, Ukraine · treatment 25–27.12.2002 · report dated 18.02.2003

PRODUCT

XADO revitalizants

XADO technology · treatment under normal operating duty

TEST OBJECT

Turbocompressor K-500

ser. No. 9828 · electric motor, gearbox, bearing supports No. 1–9

DOCUMENT TYPE

Report of the plant commission approved by the works management

UNIT ASSEMBLY**TREATMENT AND RUNNING TIME****WHAT WAS MEASURED**

Turbocompressor K-500, ser. No. 9828

Treated 25–27.12.2002 without taking out of service and without disassembly

Stator and rotor current, phase currents, power draw

Drive gearbox

Treated as part of the unit; check measurements after 435 and 890 h

Vibration of bearing supports No. 4–7

Electric motor

Treated as part of the unit; check measurements after 435 and 888 h

Vibration of bearing supports No. 8–9, phase currents

Measurements were taken by the works personnel with the works instruments: the in-service electricity meter, VAF-85 (calibrated in Q2 2002), VIBROPORT-30.

Key results

↓ **6.1%**

power drawn by the electric motor at idle, 2682.5 → 2518.0 kWh

↓ **4.8 %**

stator current of the electric motor at idle, 250 → 238 A

Idle duty (P = 0.8 atm) — electrical parameters

PARAMETER	BEFORE TREATMENT	AFTER 435 H	AFTER 888 H
Power drawn per 1 hour	2682.5 kWh	2518.0	2518.0
Stator current	250 A	238	—
Rotor current	200 A	200	200
Phase A current	246.4 A	244.0	248.0
Phase B current	249.6 A	240.0	225.6
Phase C current	260.8 A	237.6	225.6

Phase currents were measured with a VAF-85 instrument at a transformation ratio of 80, power — by the in-service meter. According to the conclusions of the report, the average current at idle dropped by 4.6 %.

Conclusions of the commission

The commission of KGGMK "Krivorozhstal" recorded:

1. As a result of the treatment of turbocompressor K-500 (ser. No. 9828) by the XADO technology, the current in idle duty decreased on average by **4.6 %**, the power drawn by the electric motor at idle decreased by **164.5 kW** per hour (**6.1 %**), which makes it possible to obtain savings amounting to **15500 UAH** per month and to fully recoup the cost of the restorative repair of the turbocompressor carried out by the XADO technology.
2. The insignificant decrease (and on some supports an increase) of the vibration level after the turbocompressor had run **435 hours** is explained by the fact that during the treatment period (after **360 hours** of operation) an emergency shutdown was carried out because of a false tripping of the rotor axial shift protection, together with disassembly of the thrust bearing assembly for the purpose of inspection.



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The results relate to turbocompressor K-500 (ser. No. 9828) of the oxygen production facility of KGGMK "Krivorozhstal" and to idle duty at a pressure of 0.8 atm; on other equipment and in other duties the figures may differ. The original report is published in full and available for download.