

REPORT ON TREATMENT RESULTS · VINTER OJSC

Vkh260 screw compressor: lower vibration and drive current on a unit kept in service

VINTER OJSC, compressor shop · commission: shop manager G. A. Orlov, chief power engineer A. N. Kulik, XADO LLC representative S. M. Zobnin · approved by chief engineer V. B. Sobolev

Donetsk, Ukraine · work carried out 06.07–02.08.1999 · report dated 05.08.1999, signed and stamped by the plant

PRODUCT

XADO RVS
called "RVS technology" in the
report; XADO zero-generation
formulations

TREATED EQUIPMENT

Vkh260 screw compressor
No. 20
compressor · 160 kW electric
motor · plant oil pump

DOCUMENT TYPE

VINTER OJSC report
signed and stamped

PLANT COMPONENT	CONDITION AT START OF WORK	WHAT WAS MEASURED
Vkh260 screw compressor No. 20	In service, paired with AU 2000 compressor No. 10	Vibration velocity, four measurement points
Drive motor, 160 kW	Operating current 153 A against a rating of 280 A — 55 % load	Current draw, vibration velocity at two points
Plant oil pump	Most vibration-loaded component: 7.65–13.75 mm/s	Vibration velocity, three directions

Treatment was performed on the running unit at 90 % load (36 slide-valve turns); check measurements were taken 24 days later.

Key results

↓ **7,0 %**

current draw of the electric motor, 153 → 142.3 A

↓ **13-31 %**

vibration velocity across plant measurement points,
1.6–13.75 → 1.3–12.1 mm/s

Current draw of the compressor drive motor

PARAMETER	BEFORE TREATMENT	AFTER TREATMENT	CHANGE
Current of the 160 kW electric motor	153 A	142.3 A	-10.7 A, or 7.0 %

Measured with an ammeter. By the commission's calculation this amounts to **5.5 kWh** for every hour the compressor plant runs.

Summary by plant component

COMPONENT	VIBRATION VELOCITY REDUCTION
Vkh260 compressor No. 20	1.4×
Plant oil pump	1.2×
Drive motor	1.15×

The "Machine average" column of the report's table: the factor by which the component's vibration velocity fell over 24 days of operation.

Vibration velocity by measurement point, mm/s

COMPONENT · POINT	VERTICAL	HORIZONTAL	AXIAL
Electric motor, point 1	1.75 → 2.1	6.5 → 4.75	4.7 → 4.05
Electric motor, point 2	3.05 → 2.7	6.7 → 4.65	5.4 → 4.95
Compressor, point 3	1.6 → 1.3	4.9 → 3.0	3.95 → 2.8
Compressor, point 4	2.65 → 1.9	3.9 → 2.9	4.4 → 2.75
Compressor, point 5	2.8 → 1.95	4.25 → 3.0	4.4 → 2.8
Compressor, point 6	2.65 → 2.3	5.1 → 3.35	3.5 → 2.25
Oil pump, point 7	12.6 → 12.1	13.75 → 10.2	7.65 → 6.9

Mean values of the measurements of 06.07 and 30.07.1999; a reduction was recorded in 20 of the 21 directions. Components are named as listed in the report.

Conclusion of the report

The VINTER OJSC report states: "Electricity savings amount to **7.2 %**, which corresponds to **5.5 kW/h**". Behind that line is an ammeter measurement: the operating current of the **160 kW** electric motor fell from **153** to **142.3 A**. The vibration velocity table attached to the report shows the same result from the mechanical side: over **24 days** vibration velocity fell in **20** of the **21** measurement directions, most of all on the compressor itself — by **1.4x**. The most vibration-loaded component of the plant, the oil pump, went from **13.75** to **10.2 mm/s** in the horizontal direction. All of this was obtained on a unit in operation under **90 %** load: the compressor was neither dismantled nor taken out of service.



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The results relate to Vkh260 screw compressor No. 20 with a 160 kW electric motor under the conditions of the VINTER OJSC compressor shop; on other units and duty cycles the figures may differ. RVS is an obsolete XADO designation for zero-generation formulations; the current product generation is revitalizants. The original report with signatures and stamp is published in full and available for download.