PILOT TREATMENT REPORT, MARCH — APRIL 2008

PND 100/250 metering pump: vibration and current fell without opening the gearbox

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Khabarovsk, Russia · measurements 13.03.2008 and 09.04.2008 · treatment 24.03.2008

PRODUCT

XADO revitalizant compound

36 ml, single addition to the gearbox oil bath

TEST OBJECT

Gearbox of the PND 100/250 metering pump

Worm gear, oil bath, integrated electric drive · boiler unit No. 9

DOCUMENT TYPE

Report of Khabarovsk TETs-1 with signatures and seal

EQUIPMENT	OPERATING CONDITIONS	WHAT WAS MEASURED
PND 100/250 metering pump	Boiler shop, boiler unit No. 9, phosphate pump	Gearbox vibration at three control points along the X, Y and Z axes
Metering pump gearbox	Worm gear in an oil bath, 650 h of operation after treatment	Current drawn by the integrated electric drive on all three phases

Single treatment — 36 ml of XADO revitalizant compound into the oil bath on 24.03.2008, without disassembling the unit and without taking the equipment out of service for repair.

Key result

↓ 8,6 %

current drawn by the electric drive, 3.5 → 3.2 A

Gearbox vibration level — three control points, 650 hours of operation

CONTROL POINT	AXIS	AMPLITUDE, µm	VIBRATION VELOCITY, mm/s
Gearbox flange	X	22 → 19	1.6 → 1.1
Gearbox flange	Y	60 → 50	2.5 → 1.8
Gearbox flange	Z	18 → 12	0.9 → 1.1
Blind cover, worm wheel side	X	39 → 23	1.6 → 1.3
Blind cover, worm wheel side	Y	28 → 20	1.3 → 0.8
Blind cover, worm wheel side	Z	20 → 20	1.4 → 1.4
Cover, eccentric side	X	24 → 20	1.6 → 1.4
Cover, eccentric side	Y	29 → 22	1.5 → 1.4
Cover, eccentric side	Z	12 → 12	0.8 → 1.1

According to the conclusions of the report, vibration along the X and Y axes decreased by 14-41 % in amplitude and by 12-38 % in vibration velocity. The Z axis runs along the axis of the worm and the worm wheel.

Current drawn by the integrated electric drive

PHASE	13.03.2008, before treatment	09.04.2008, 650 h of operation	CHANGE
Phase 1	3.5 A	3.2 A	−0.3 A
Phase 2	3.5 A	3.2 A	−0.3 A
Phase 3	3.4 A	3.2 A	−0.2 A

The decrease was recorded on all three phases of the drive; according to the conclusions of the report, the current drawn fell by 8 %.

Conclusions of the Khabarovsk TETs-1 commission

Based on the results of repeat measurements after **650 hours** of operation, the boiler shop commission recorded the following:

1. The vibration amplitude along the X and Y axes decreased by **14-41 %**; the vibration velocity along the X and Y axes decreased by **12-38 %**; the current drawn decreased by **8 %**.
2. The increase in vibration velocity along the Z axis, which runs along the axis of the worm, may be due to the fact that the upper rolling bearing of the gearbox worm was not exposed to the XADO revitalizant compound, since it is located outside the gearbox oil bath and is lubricated with grease.
3. The results obtained during the experiment make it possible to state that treating equipment with XADO revitalizant compounds to restore friction pairs is advisable.

XADO

The results refer to the gearbox of the PND 100/250 metering pump within boiler unit No. 9 of Khabarovsk TETs-1 after 650 hours of operation following a single treatment; on other equipment and under other operating modes the figures may differ. The original report with signatures and seal is published in full and is available for download.