

ECONOMIC EFFICIENCY CALCULATION APPROVED BY THE ENTERPRISE

Heat-supply units: lower current, quieter running, rarer bearing service

VOK PTM Vinnytsiateplokomunenergo · approved by General Director V. F. Zherdetsky; signed by Head of the Technical Department L. V. Gulkina and Energy Facilities Manager A. I. Kravchenko

Vinnytsia, Ukraine · units treated since November 2000 · calculation approved 20.03.2002

PRODUCT

XADO revitalizants
treatment performed by TOV
VV Tekhnolohiya without
dismantling the units

TREATED EQUIPMENT

32 units with 380 V electric
drives
rated 630 · 315 · 200 · 110 · 95 ·
75 kW · bearings treated

DOCUMENT TYPE

Economic efficiency
calculation, approved
by the enterprise

OBJECT**POWER****WHAT WAS MEASURED**

Unit No. 1, 107 Pyrohova St.

75 kW

Current on each phase before treatment and **180 h**
after it

Units No. 1-4, 1 Medvedeva St.

90 kW

Current on each phase before treatment and **180 h**
after it

Other units of the enterprise

75-630 kW

Running noise, interval between bearing services

Since November 2000 the enterprise has treated {{32 units}} with {{380 V}} electric drives; current measurements were taken on the units at two addresses.

Key result

↓ **3.07 %**

phase current of the 90 kW units, 130 → 126 A

Phase current 180 hours after treatment

OBJECT	BEFORE TREATMENT	AFTER 180 H	CHANGE
Unit No. 1, 107 Pyrohova St. (75 kW)	126 A	124 A	–2 A
Units No. 1-4, 1 Medvedeva St. (90 kW)	130 A	126 A	–4 A (3.07 %)

Current was measured on each phase, mains voltage **380 V**; the enterprise attributes the lower consumption to the reduced friction coefficient in the bearings.

Electricity saving over the heating season — calculation by the enterprise

OBJECT	CURRENT REDUCTION	SAVING OVER THE HEATING SEASON	SHARE OF SAVING
Unit No. 1, 107 Pyrohova St.	2 A	3597.3 kWh	1.58 %
1 Medvedeva St. — two units	4 A	14 389 kWh	3.07 %

The saving was calculated by the enterprise with the formula $E = 1.73 \cdot U \cdot I \cdot n \cdot \cos \varphi \cdot k$ at $U = 380 \text{ V}$, $n = 2880 \text{ h}$ of operation over the heating season and $\cos \varphi = 0.95$.

Conclusion of the enterprise

180 hours after the treatment the enterprise recorded a significant drop in the running noise of the units and a drop in electricity consumption — a consequence of the reduced friction coefficient in the bearings. The programme has been running since November 2000, with **32 units** treated in total; the enterprise keeps monitoring them and periodically takes documented measurements of electricity consumption. The calculation approved by VOK PTM Vinnytsiateplokumunenergo on 20 March 2002 states:

1. The use of XADO technology led to a reduction of electricity consumption on the treated units by **2.32 %**.
2. The use of XADO technology made it possible to extend the interval between repeat bearing services.



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The results relate to units with 380 V electric drives rated 75-630 kW at the sites of VOK PTM Vinnytsiateplokumunenergo; with other units and operating modes the figures may differ. The original document with signatures and stamp is published in full and available for download.