

TREATMENT RESULT PASSPORTS · SEPTEMBER 2002 — SEPTEMBER 2003

10D100 and 12VFE diesels: compression up, fuel consumption down

Main Locomotive Department of Ukrzaliznytsia, T. G. Shevchenko locomotive depot of the Odesa Railway · measurements and signatures: depot chief engineer Marzan V. A., deputy depot head Puzyr Yu. M., head of the depot technical division

Ukraine, Odesa Railway · treatment 13–27.09.2002 · measurements 16.01.2003 — 27.09.2003

PRODUCT

XADO revitalizant gel
for diesel engines
three application stages into the
standard lubrication system ·
without engine disassembly

TEST OBJECTS

Two locomotive diesels
10D100 No. 1432FKh —
locomotive 2TE10UT No. 0036 ·
12VFE 17/24 No. 24282 —
diesel train D1 No. 764

DOCUMENT TYPE

Passports of unit treatment
results
under the XADO
technology
four depot documents: two
mileage checkpoints for each
diesel

EQUIPMENT	DIESEL	CONDITION BEFORE TREATMENT	MILEAGE AFTER TREATMENT	MEASUREMENT
Locomotive 2TE10UT No. 0036, section A	10D100 No. 1432FKh	11 years of service without overhaul	29 864 km	16.01.2003
Locomotive 2TE10UT No. 0036, section A	10D100 No. 1432FKh	11 years of service without overhaul	114 014 km	18.09.2003
Diesel train D1 No. 764, section 764-3	12VFE 17/24 No. 24282	overhaul one month before treatment	41 136 km	07.02.2003
Diesel train D1 No. 764, section 764-3	12VFE 17/24 No. 24282	overhaul one month before treatment	115 675 km	27.09.2003

Treatment — September 2002, without engine disassembly. Compression, combustion and oil pressure, fuel consumption and noise were measured; on the locomotive also the power output on the test bench.

What was repeated on both diesels

↑ **13-72 %**

cylinder compression, 25-28 → 27-31
and 18-20 → 31-35 kgf/cm²

↓ **14.5-25 %**

fuel consumption at idle, 108 → 81 l/h
on the D1 diesel train

↓ **8-17 dBA**

noise level at maximum speed, 131 →
114 and 108 → 95 dBA

Cylinder compression — both diesels, two mileage checkpoints

DIESEL · MILEAGE AFTER TREATMENT	BEFORE TREATMENT	AFTER	CHANGE
10D100 No. 1432FKh · 29 864 km	25-28 kgf/cm ²	27-31 kgf/cm ²	+12.8 %
10D100 No. 1432FKh · 114 014 km	25-28 kgf/cm ²	28-30.5 kgf/cm ²	+13.4 %
12VFE 17/24 No. 24282 · 41 136 km	18-20 kgf/cm ²	31-33 kgf/cm ²	+61.9 %
12VFE 17/24 No. 24282 · 115 675 km	18-20 kgf/cm ²	32-35 kgf/cm ²	+72.0 %

Depot compression gauges, GOST 2405-80. The gain is the greater the lower the compression was before treatment; growth was recorded in every measured cylinder of both diesels.

Fuel consumption at idle

DIESEL	AFTER 30-41 THOUSAND KM	AFTER 114-116 THOUSAND KM
Locomotive 2TE10UT No. 0036 · 10D100 diesel	-14.5 %	-19.8 %
Diesel train D1 No. 764 · 12VFE 17/24 diesel	-21.3 % · 108 → 85 l/h	-25.0 % · 108 → 81 l/h

Measured at idle with the depot's standard instruments. On each diesel the saving at the second measurement was deeper than at the first.

Noise level at maximum speed

DIESEL · MILEAGE AFTER TREATMENT	BEFORE TREATMENT	AFTER	CHANGE
10D100 No. 1432FKh · 29 864 km	131 dBA	123 dBA	–8 dBA
10D100 No. 1432FKh · 114 014 km	131 dBA	114 dBA	–17 dBA
12VFE 17/24 No. 24282 · 41 136 km	108 dBA	96 dBA	–12 dBA
12VFE 17/24 No. 24282 · 115 675 km	108 dBA	95 dBA	–13 dBA

Depot sound level meter, measured at the maximum operating speed of each diesel.

Power output, combustion pressure and oil pressure

DIESEL · PARAMETER	BEFORE TREATMENT	AFTER	CHANGE
10D100 · power on the rheostatic test bench, 850 rpm	1780 kW	1850 kW	+3.9 %
12VFE 17/24 · maximum combustion pressure, 1180 rpm	40 kgf/cm ²	59-63 kgf/cm ²	+52.9 %
12VFE 17/24 · oil pressure, 830 rpm	2.8 kgf/cm ²	3.4 kgf/cm ²	+21.4 %

The locomotive diesel power was taken on the depot's rheostatic test bench; the gain holds even after 114 014 km of mileage.

Conclusions of the depot commissions

The commissions of the T. G. Shevchenko locomotive depot measured the parameters of each diesel twice — at scheduled repairs after 30-41 thousand km and after 114-116 thousand km of mileage. Compression grew in every measured cylinder of both engines, fuel consumption at idle fell in all four measurements, and by the second measurement the effect had become deeper, not weaker. The diesel of locomotive 2TE10UT had run eleven years without overhaul by the time of treatment; the document of 18.09.2003 records: «after a mileage of 114014 km no deterioration of the engine's operating parameters occurred, which in fact indicates the absence of engine part wear». The passport for the D1 diesel train concludes that the measurements «confirm the stability of the results obtained after treatment under the XADO technology over a long period of operation».



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The results relate to the 10D100 and 12VFE 17/24 locomotive diesels under the operating conditions of the T. G. Shevchenko depot of the Odesa Railway; on other engines and duty cycles the figures may differ. The original passports with signatures and stamps are published in full and available for download.