

TWO TEST REPORTS · JANUARY — APRIL 2013

GAZ-52 and D-245 engines: compression increased on both machines without teardown

SE UkrNTC "Energostal", pilot plant · the reports were signed by the plant's chief mechanic and garage facilities manager and by XADO LLC engineers

Kharkiv, Ukraine · measurements 23.01 — 11.04.2013

PRODUCT

XADO revitalizants
full treatment cycle · oil system
pre-flushed with XADO
"VitaFlush" cleaner

TEST OBJECTS

Two engines of the plant
fleet
petrol GAZ-52 on a LAZ 4081
loader · D-245 diesel on a
ZIL-5301 truck

DOCUMENT TYPE

Two technical reports
signed and stamped by the
plant

MACHINE AND ENGINE	HOURS AT START	TREATMENT CYCLE	WHAT WAS MEASURED
LAZ 4081 loader, inv. No. 54771 GAZ-52 engine, petrol, 6 cylinders	7381.5 h	67 h of operation 23.01 — 11.04.2013	Compression by cylinder, spread between cylinders
ZIL-5301 truck, reg. No. AKh 0613 VE D-245 engine, diesel, 4 cylinders	59 452 km	1335 km of mileage 27.01 — 11.04.2013	Compression by cylinder

Both machines belong to the pilot plant fleet and were in ordinary service; the engines were not disassembled.

What was repeated on both machines

↑ 2-13 %

compression by cylinder of the petrol GAZ-52, 7.1-9.6
→ 8.5-9.8 kgf/cm² (single maximum 32 %)

↑ 2-6 %

compression by cylinder of the D-245 diesel, 20.8-24.8
→ 21.5-26.1 kgf/cm²

Compression by cylinder — both machines, before treatment and after the full cycle

MACHINE, ENGINE	CYLINDER	BEFORE, kgf/cm ²	AFTER, kgf/cm ²	CHANGE, kgf/cm ²
LAZ 4081 · GAZ-52	Cylinder 1	9.1	9.7	+0.6
LAZ 4081 · GAZ-52	Cylinder 2	7.1	9.4	+2.3
LAZ 4081 · GAZ-52	Cylinder 3	8.2	9.3	+1.1
LAZ 4081 · GAZ-52	Cylinder 4	8.1	8.5	+0.4
LAZ 4081 · GAZ-52	Cylinder 5	8.8	8.6	−0.2
LAZ 4081 · GAZ-52	Cylinder 6	9.6	9.8	+0.2
LAZ 4081 · GAZ-52	Spread between cylinders	2.5	1.3	−1.2
ZIL-5301 · D-245	Cylinder 2	24.6	26.1	+1.5
ZIL-5301 · D-245	Cylinder 3	24.8	25.4	+0.6
ZIL-5301 · D-245	Cylinder 4	20.8	21.5	+0.7

Measurements taken with MOTOMETER and ZECA 363 compression testers on diagram forms. According to the conclusion of the ZIL-5301 report, compression rose by 0.6 to 2.4 kgf/cm² across the cylinders.

Conclusions of the reports

The commission of the pilot plant of SE UkrNTC "Energostal" recorded a rise in compression on both engines. On the LAZ 4081 loader, compression "evened out and increased across the cylinders": the spread before treatment was **2.5 kgf/cm²**, after the full cycle — **1.3 kgf/cm²**, which, according to the report's conclusion, "eliminates crankshaft imbalance, reduces noise and vibration, and increases engine service life by no less than 1.5×". On the ZIL-5301 truck, compression rose by **0.6** to **2.4 kgf/cm²**; the smaller gain in two cylinders is attributed by the report to piston ring wear or a defect of the working surface, "which may be eliminated with a longer period of operation". The rise in compression, according to the conclusions of the reports, "indirectly indicates the formation of a XADO metal-ceramic coating on the working surfaces, which contributes to increased engine power, optimisation of the fuel combustion process and ultimately leads to reduced fuel consumption".



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The results relate to the GAZ-52 petrol engine and the D-245 diesel under the operating conditions of the pilot plant of SE UkrNTC "Energostal"; on other equipment and in other duty cycles the figures may differ. The originals of both reports, signed and stamped, are published in full and available for download.