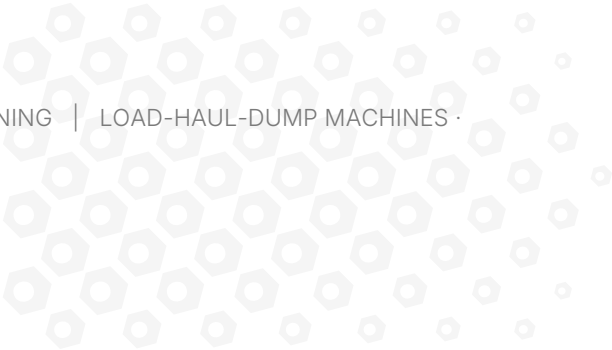




INDUSTRIAL TEST REPORTS · MAY 2001

# LHD LK-2ACD and ST-2DR: diesel compression rose with no engine teardown

Copper Plant: mechanical services of the smelting and drying shops · trials run jointly with Taimyr-Resurs LLC

industrial trials 3–8 and 14–15 May 2001 · reports dated 21.05.2001 · basis — minutes of the technical meeting held by the chief mechanic on 28.04.2001

| PRODUCT                                                                                          | TEST OBJECT                                                                                                 | DOCUMENT TYPE                                                             |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| XADO RVS<br>repair-and-restoration<br>compound, added to a running<br>engine without disassembly | Load-haul-dump machines<br>LK-2ACD, DF8L413 diesel, 8<br>cylinders · ST-2DR, P6L912B<br>diesel, 6 cylinders | Two industrial test<br>reports, approved by the<br>plant's chief engineer |

| MACHINE AND ENGINE                           | SHOP     | XADO RVS TREATMENT                                                                         | CONTROL<br>MEASUREMENT                         |
|----------------------------------------------|----------|--------------------------------------------------------------------------------------------|------------------------------------------------|
| LHD LK-2ACD · DF8L413<br>diesel, 8 cylinders | smelting | Three stages of 45 g each,<br>3–4 May 2001; at least 4 h of<br>idling after every addition | 8 May 2001, four days<br>after treatment ended |
| LHD ST-2DR · P6L912B diesel,<br>6 cylinders  | drying   | Compound added on 14 May<br>2001, then the engine kept<br>running at idle                  | 14 May 2001, after 12 h<br>of idling           |

Condition before treatment on both machines: uneven compression across the cylinders and extraneous noise with the engine running.

## Key result

↑ **5.6-42.9 %**

cylinder compression, 10.5-16 → 15-19 kgf/cm<sup>2</sup>

## Compression by cylinder — both machines

| MACHINE | CYLINDER    | BEFORE, KG/CM <sup>2</sup> | AFTER, KG/CM <sup>2</sup> | CHANGE |
|---------|-------------|----------------------------|---------------------------|--------|
| LK-2ACD | right No. 1 | 9                          | 11                        | +2     |
| LK-2ACD | right No. 2 | 15                         | 16                        | +1     |
| LK-2ACD | right No. 3 | 13                         | 17                        | +4     |
| LK-2ACD | left No. 1  | 13                         | 17                        | +4     |
| LK-2ACD | left No. 2  | 10.5                       | 15                        | +4.5   |
| ST-2DR  | No. 1       | 13                         | 18.5                      | +5.5   |
| ST-2DR  | No. 2       | 16                         | 19                        | +3     |
| ST-2DR  | No. 4       | 18                         | 19                        | +1     |
| ST-2DR  | No. 5       | 12                         | 16                        | +4     |
| ST-2DR  | No. 6       | 13                         | 14                        | +1     |

A compression gain was recorded in every cylinder measured on both machines — engines of different size, machines from different shops of the plant.

## Findings and recommendations of the commissions

Both reports end with the same wording: "Application of the XADO technology made it possible to significantly improve engine performance in a short time, which gives grounds to consider the industrial trials carried out successful and to recommend introducing the XADO technology into production". Behind that wording is the restored sealing of the cylinder-piston group on two different air-cooled diesels, an eight-cylinder and a six-cylinder, in two shops of the plant. Both machines came to the trials with uneven compression and extraneous noise while the engine was running; after treatment the commissions recorded that the noise had practically disappeared. On the LK-2ACD compression kept rising even after treatment ended: left cylinder No. 1 went **13 → 15.5 kgf/cm<sup>2</sup>** within a day and **17 kgf/cm<sup>2</sup>** by the fourth day. The engines were never disassembled — the compound was added to a running machine right in the shop.

**XADO**

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The results apply to the air-cooled DF8L413 and P6L912B diesels of the LK-2ACD and ST-2DR load-haul-dump machines under industrial trial conditions at the Copper Plant; on other equipment and in other duty cycles the figures may differ. RVS is an obsolete XADO designation, the zero-generation compounds; the current generation of products is the revitalizants. The original reports are published in full and available for download.