

ADDINOL - Highlights



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Providing lubrication solutions!

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Addinol Eco Gear 460M performs under the largest practical test largest bucket wheel excavator in the world.

Bucket-wheel excavators are among the largest and therefore most impressive machines. Bucket-wheel excavator "288" was built by Krupp Industry Technologies in 1978 and is in use in the open pit Garzweiler of the RWE Power AG. This excavator and its 7 siblings are the largest excavators in the world. Because of its sheer size, the gear of the bucket wheel drive has respective dimensions. In Autumn 2006 it was changed to a high performance gear oil of Addinol Lube Oil GmbH. So far, the gear oil masters its practical test without any problems.

The bucket wheel excavator mines 240,000 tons of brown coal every day. It weighs more than 13,000 tonnes. With 240 metres it is as long as two and a half football fields. The height amounts to 96 metres. The bucket-wheel itself has a diameter of 21.6 metres – roughly the height of an eight-storey apartment block. 18 buckets hold more than 5m³ each, and the large main drive of the bucket-wheel is lubricated with 2,800 litres gear oil.

The loads on the gear are enormous: it is exposed to pushes and vibrations as well as dirt, coal dust, varying temperatures and humidity. Damage seems to be unavoidable. During a large inspection of the gear in September 2006, evident damages were discovered on the gear teeth. The obvious thing to do was to change the lubricant. After detailed consultations between the RWE Power AG and the application technology of the ADDINOL Lube Oil GmbH, the gear was changed to ADDINOL Eco Gear 460M.

The gear oil of the German expert for high-performance lubricants contains ADDINOL's active substance combination Surftec®. It adapts to the changing load conditions in the toothing and prevents pitting and micropitting. The sharp edges of already existing pitting are rounded off resulting in a wear free and friction reduced run. Progressive metal abrasions are transformed into regressive ones.

Whether the lubricant could prove the ascribed effect also in the gear of bucket wheel excavator 288 was checked during the next inspection in spring 2007. The condition of the tooth flanks had not worsened. The high-performance gear oil had passed its first practical test. The sharp edges of the old pitting had been rounded off; smoothening of the pitting had already started.

The operation of the gear is still stable and trouble free. To be on the safe side, lubricant analyses are carried out at regular intervals with positive results.

This is one of our favourite Addinol case studies; the fact that this bucket wheel excavator was not disassembled to cross a road (as it was cheaper to repair the road than to disassemble and reassemble the machine) is another example of a job well done.



Typical condition of the tooth flanks in
September 2006
Sharp edged pitting on tooth flanks



Upon changing to Addinol Ecogear 460M
bypass filters were installed. Immediately
after, the change particles were still
clearly visible and had broken out of the
tooth flanks



Visual inspection in Spring 2007: the old
pitting was rounded off and smoothened.
There are no more sharp edges and
particle break outs.