LOW-FRICTION GEAR OILS THAT OPTIMISE EFFICIENCY

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.

Castrol OPTIGEAR

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FIGHTING THE EFFECTS OF FRICTION IN GEARBOXES

CASTROL OPTIGEAR OPTIMISES EFFICIENCY AT EVERY TURN

Excessive friction in gearboxes is the enemy of efficiency. It can increase heat and cause unwelcome pitting and wear, shortening the life of components. The result? An asset that underperforms and doesn't return the effectiveness you need.

Castrol Optigear puts you firmly in charge when it comes to the efficiency of your gearboxes. Its advanced lubrication technology forms friction-fighting anti-wear films. These help to significantly reduce the local operating temperatures, as well as wear and pitting (which can occur when gear teeth mesh or bearing surfaces come into direct metal-to-metal contact). In extensive field and laboratory tests, Castrol Optigear has been shown to reduce the coefficient of friction by as much as 60% compared with standard gear oils.

More than just protecting against the harmful effects of friction, Castrol Optigear can actively improve the surface profile of contacting gears. The Castrol Optigear family has been formulated with MicrofluxTrans Plastic Deformation (MFT PD) additives. These adjust to operating conditions – such as increased loads and pressure – to form a micro-smoothing layer that evens out surface roughness and minimises abrasion.

Castrol Optigear is formulated to deliver:

— Improved operating efficiency and extended service life of over seven years in wind turbines and of over five years in industrial applications.

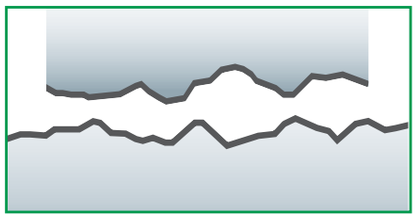
— Superior wear protection even with extreme temperature fluctuations and under heavy loads.

— Resistance to micro-pitting and protection against component damage.

— Potential energy savings from a lower coefficient of friction.

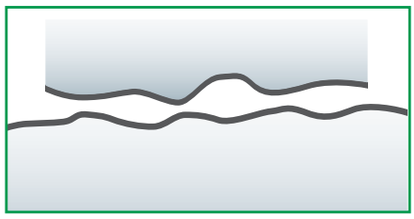
UNLOCK SUPERIOR PERFORMANCE WITH CASTROL MFT PD TECHNOLOGY

MFT PD technology is an integral part of Castrol Optigear. The three-stage process of how it works is explained and illustrated below.



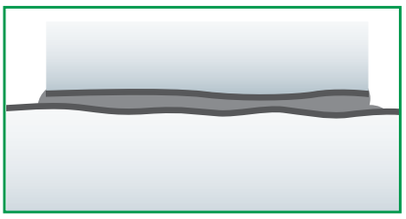
FORMATION OF A PROTECTIVE LAYER

The special molecules of MFT immediately form a highly lubricating protective layer over the peaks and valleys of the surface.



COMPRESSION OF THE PROTECTIVE LAYER

As the load increases, MFT is activated and releases load-resistant additives on the surface, lowering the coefficient of friction.

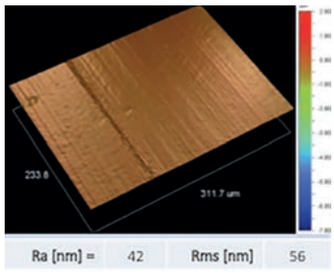


MICRO-SMOOTHING

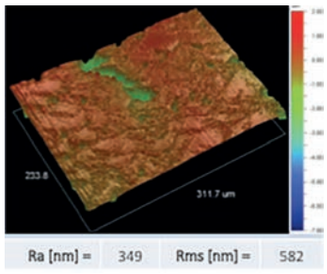
In this final stage, as pressure increases further, the MFT PD technology migrates into the metal surfaces. This micro-smoothing effect results in extreme pressure resistance and reduced friction – measurably lessening the coefficient of friction and the operating temperature.

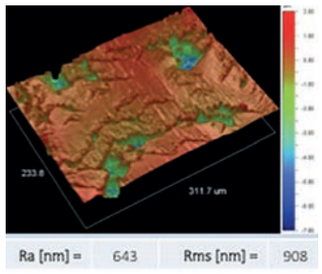
VIABLE WEAR PROTECTION FROM MFT PD ADDITIVES

With Castrol UFT PD additives



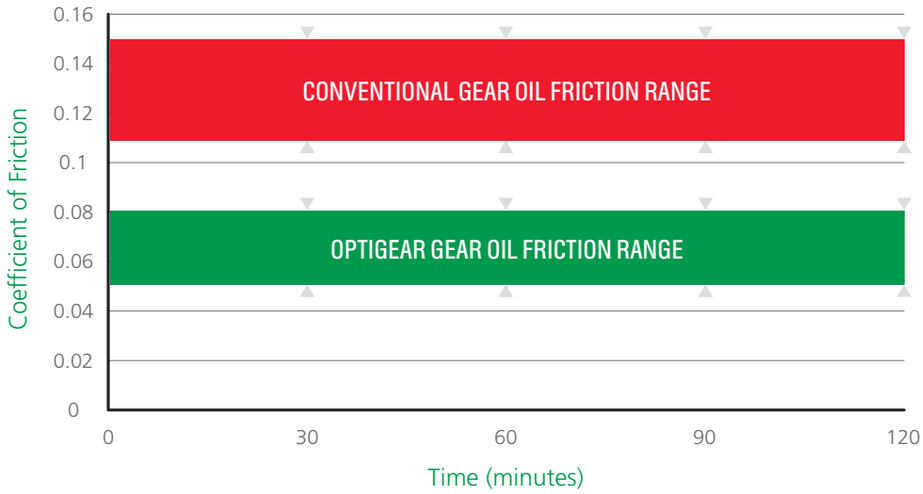
Reference without PD technology





* Independent MPR testing carried out by Powertrib showed weight loss was less than half that recorded with the use of a well-known conventional non-PD oil from a competitor.

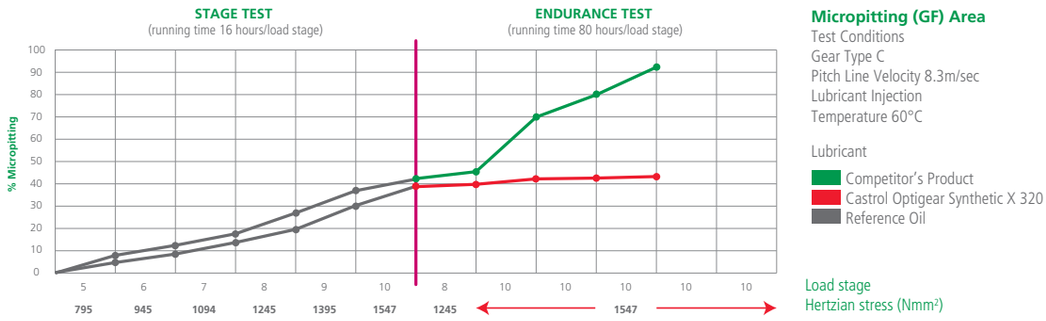
FRICTION IN ACTION



HIGH-FREQUENCY LINEAR-OSCILLATION SRV (SCHWINGUNG, REIBUNG, VERSCHLEISS) TEST

SRV test results show coefficients of friction of about 0.05 to 0.08 with Castrol Optigear compared to about 0.11 to 0.15 for conventional gear oil.

MICROPITTING COMPARISON TEST: CASTROL OPTIGEAR SYNTHETIC X 320 VERSUS COMPETITOR'S PRODUCT



On pre-damaged gears (shown up to stage 10 on the left of the graph), further micropitting and gear damage can be minimised by switching to Castrol Optigear. However, with conventional gear oils, the damage continues to propagate and would lead to eventual failure.

OPTIMISING EFFICIENCY

— Switching to a Castrol Optigear product helped a major tyre manufacturer that had heavy deterioration on a calendar gearbox. The result was a reduction in operating temperature, surface improvement and the postponement of a replacement gearbox. This saved the cost of a new gearbox, downtime and maintenance.

— Switching to a Castrol Optigear product helped a major wind manufacturer improve the average cost of energy. It was demonstrated that Castrol Optigear significantly increased oil life in the yaw drive, reducing maintenance costs over the life of the company's wind turbines.

— A mining company utilised a Castrol Optigear product to significantly reduce energy and lubricant consumption, component wear, and carbon emissions. The energy saved (calculated by an independent service company) was enough to provide electricity for 250 average households for one year.

— A major automotive manufacturer tested Castrol Optigear, as well as other products in a helical gear. Compared to the original transmission oil (85W90), Castrol Optigear reduced the energy usage by 9%. As a result, the gear oil for all gears was changed to Castrol Optigear to reduce energy usage.

Please contact us today for further information.

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