



The technology behind the Nanodrive range was developed entirely in house, in Millers' new state-of-the-art research and development centre

Nano Technology Lubricants from Millers Oils

A low friction oil developed for motorsport applications could provide a cost-effective reduction in the CO₂ emissions of road cars. Developed entirely in house by UK specialist oil developer and producer, Millers Oils, Nanodrive is a family of fully synthetic lubricants containing nanoparticles. Independent back-to-back tests on a Porsche 911 race engine showed an immediate power gain of over five percent by replacing a top conventional synthetic lubricant with Nanodrive oil of the same viscosity.

"In motorsport, lower friction means quicker lap times and reduced wear means fewer costly engine rebuilds," said Martyn Mann, Millers Oils technical director. "In the road car industry, there is mounting pressure to reduce vehicle fuel consumption and CO₂ emissions, so engineers are continually trying to improve engine efficiency through developments such as smaller bearings and low friction rings and cylinder liners. Nanodrive contributes to each of these requirements without needing any design modifications or changes to

manufacturing. It can be implemented immediately and compared with engine modifications giving the same benefit, it is very low cost."



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Engine friction arises from two primary sources: viscous losses and boundary friction. "Viscous losses occur wherever a lubricant flows, due to shearing between adjacent layers of the oil," explained Mann. "To reduce the effect, engine manufacturers specify ever thinner grades of lubricant. Replacing a 5w30 multigrade oil with a 0w20 grade has been estimated to give a direct improvement of two percent in fuel consumption."

Martyn Mann,
Millers Oils
technical
director



Nevil Hall,
Millers Oils
joint
managing
director



But, reducing viscous losses by using thinner oils risks increasing boundary friction and reducing engine life through increased wear, said Mann: "Boundary friction occurs where the oil films are so thin that opposing metal surfaces begin to interact with each other," he continued. "These conditions exist between piston rings and cylinder bores, and in the crankshaft bearings as they begin to rotate during engine start-up. As more vehicle manufacturers introduce stop-start technology to eliminate wasteful idling and improve urban fuel economy, start-up conditions will occur much more frequently, from an average of around 40,000 times in a lifetime to one million."

Millers Oils used nanotechnology to create a combination of low viscous friction and reduced boundary friction. Proven in their range of transmission lubricants that won the World Motorsport Symposium's Product Innovation award, the technology has now been further developed to provide a family of race engine lubricants.