

FUEL ADDITIVE STRATEGIES FOR ENHANCING THE PERFORMANCE OF ENGINES AND ENGINE OILS

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ABSTRACT

Chevron Oronite is developing and has commercialized fuel additives designed to reach the fuel/lubricant interface at the cylinder wall and impart performance improvements to both the engine and the engine oil. One such product is a gasoline-additive friction modifier that provides an immediate fuel economy benefit due to reduced friction between the piston ring and cylinder wall, a further improvement as it accumulates in the oil, as well as assisting wear protection and improving power output. In addition to these more obvious benefits, equal attention was given to avoiding harm issues such as in fuel handling, intake system deposits, combustion chamber deposits, and negative impacts on the engine oil.

We have designed diesel fuel additives that are intended to work similarly in a variety of diesel engines. The program has provided information about additive characteristics needed to reach the cylinder wall, despite engine design efforts to prevent fuel from doing so. As the candidate additives have reached the wall and sump intact, further work has shown that a functionalized molecule can provide the intended benefit upon reaching the cylinder wall and oil in this manner. We are now in the process of modifying the additive chemistry and getting dose/performance responses in a variety of engines.