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True Upgrade: ILSAC GF-5 Delivers Performance



GF-5 will deliver improved performance including fuel economy, emissions system protection, seal protection and cleanliness.

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True Upgrade: ILSAC GF-5 Delivers Performance



by James Puckace

As the final pieces of the ILSAC GF-5 specification fall into place, lubricant manufacturers around the world are preparing for the impact of this significant performance upgrade. New United States governmental regulations for 2011, and beyond, will demand improvements in fuel economy and emissions systems performance. Fuel economy improvements are driving the development of engine hardware technology such as GDI and GDI/turbo that can only be protected by more robust engine oils. GF-5 oils fit the bill; requiring changes to the DI package and upgrades in base oil technologies. GF-5 is a step-up in performance over GF-4 with improvements in fuel

economy, emissions system protection, seal protection and cleanliness. GF-5 is the first industry-wide specification developed to meet the unique requirements of flex fuel (E-85) vehicles, offering protection from ethanol-containing fuels.

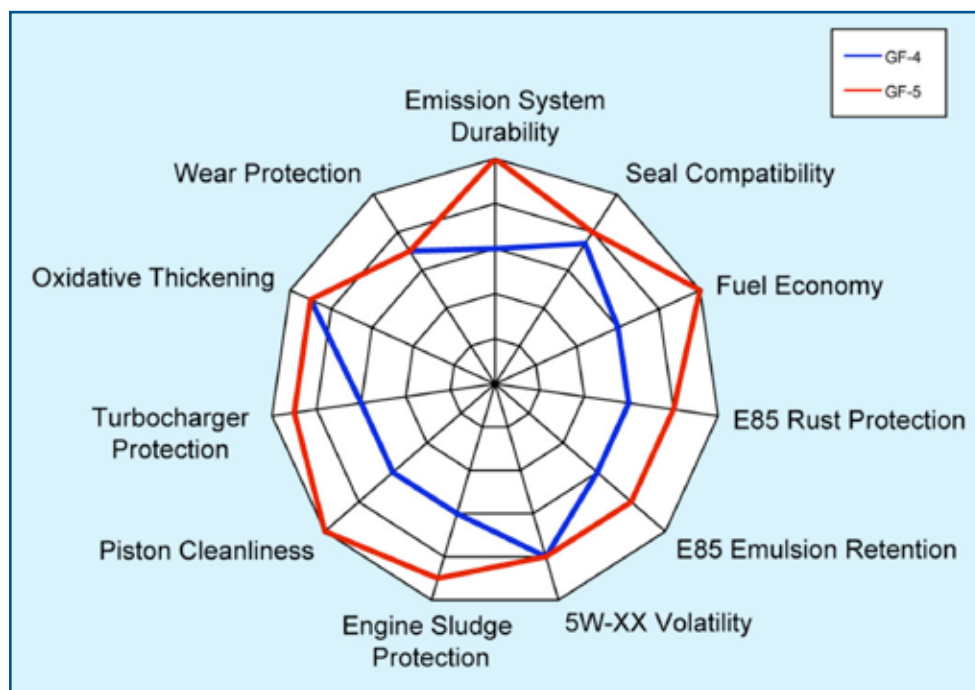
First licensing for GF-5 is only months away — October, 2010 — with mandatory licensing scheduled for October, 2011. As lube manufacturers align base oils and formulations in preparation for what promises to be a complex and challenging market transformation, several game changing aspects of the new specification will drive their decisions.

The GF-5 Opportunity: New and Improved

GF-5 is better. It's better for the lubricant manufacturer and it is better for the consumer. As a true performance upgrade, the GF-5 specification offers marketable benefits related to improved lubricant performance and longer catalyst life. Enhanced emissions system protection is just one feature of the new specification, but one that requires a careful balance. High phosphorus retention oils will need to navigate the thin line between protecting the engine against wear and staying off the catalyst to protect the emission system and reduce tailpipe pollutants. Improved fuel economy and seal compatibility are additional features of the new specification. GF-5 also specifies improved engine cleanliness through better sludge protection (Seq VG), increased piston cleanliness (Seq IIIG) and reduced turbocharger coking (TEOST 33C). To meet the cleanliness requirement, GF-5 additives will need to be fortified with an optimal combination of ashless antioxidants, detergents, dispersants and friction modifiers.

The growing market for flex fuel vehicles and the corresponding expansion in ethanol fuels provides another opportunity to benefit from GF-5. Currently, not all GF-4 oils provide

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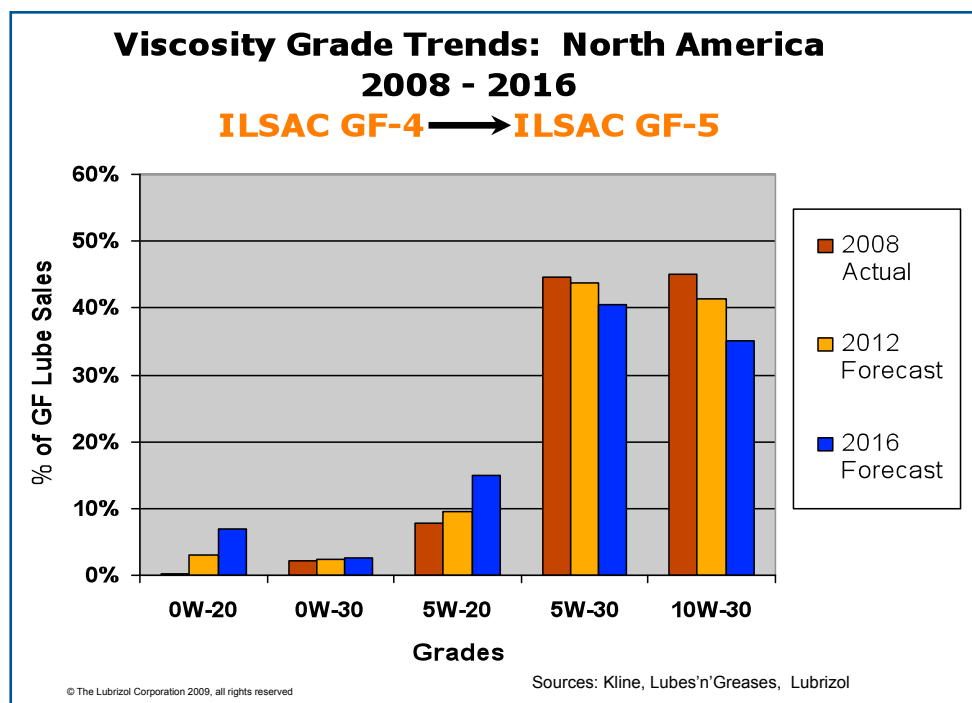
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engine protection when high levels of ethanol are used in gasoline. GF-5 premium lubricants enable ethanol containing fuels up to E-85.

Enabling GF-5

Given the complexities involved and performance level expected, the GF-5 specification required serious upfront work and extensive testing by additive companies. “At Lubrizol alone, four years and millions of dollars went into engineering products and new technologies that work in the advanced base oils necessary to qualify for this specification,” comments Mark Pringle, VP of Sales, Lubrizol Additives. “This upfront work by additive companies is incredibly valuable to oil marketers because it means they can depend on their additive supplier for testing, formulating and support needs — really helping them prepare for GF-5 well in advance of the first licensing date.”

Take the issue of fuel economy as an example. GF-5 is stretching the limits of what can be accomplished, with requirements that are much more aggressive than anything the industry has seen in the past. This led to development of the new Sequence VID fuel economy test. Far more advanced than the VIB test it replaces, the Sequence VID is a good test that will ensure that GF-5 technology delivers advanced fuel economy. Because of these upfront development costs and new component technologies, such as advanced friction modifier systems for fuel economy improvements, GF-5 oils will be more expensive, although ultimately worth the price. Consumers should save fuel, gain better protection for their emissions systems, have cleaner engines and experience fewer concerns when choosing a flex fuel vehicle.



The GF-5 Challenge: A Sharper Focus on Viscosity Grades and Base Oils

With the introduction of GF-5, there could be a substantial increase in the demand for 0W-20 viscosity grade oils. Fully synthetic oils, 0W-20 formulations may be less familiar to some ILMA members. 0W-20 also offers blending challenges ranging from the need for different base oils to increased storage and inventory complexity. Group I oils, once the mainstay of the industry, are on their way to becoming obsolete in high performance engine oils like GF-5. The 0W-20 viscosity grade, along with the other, more robust GF-5-approved multigrade oils, demands high viscosity index (VI) base stocks, such as Group II, Group II+ and Group III oils. The good news is that no high VI base stock supply shortages are anticipated, with additional Group II/III capacity due online within the next year. The not so good news? Upgraded base oils cost more. Then, there is the additional expense associated with testing and formulating different viscosity grades, across a wider range of base oils. And

finally, since most of the stocks are located near the Texas Gulf, logistics can be a serious concern for lubricant manufacturers headquartered in the Midwest. Given the economies of scale, shipping costs may prove to be a serious roadblock for smaller blenders, who may want to look to service providers as an option to provide finished fluids.

What about dexos™ 1? (GM Service-fill)

GF-5 isn't the only new specification on the horizon. General Motors has developed its own, more robust specification that will be required for service-fill in their vehicles. Trademarked as dexos™ 1—yes, that is a lower case “d”—it is a full-synthetic oil requiring low volatility (13 percent NOACK) Group III base stocks. The question is often asked: “Is it possible to have a dexos™ 1 and a GF-5 cross-functional additive?” Right now, the issue is still under study.

Installers and quick lubes will feel the crunch as they are faced with stocking

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Timing	Activity
2Q 2006	GF-5 test development begins
1Q 2007	ILSAC Standard for PCMO proposed
1Q 2008	GF-5 needs statement defined
4Q 2008	Start Fuel Economy Test Precision Matrix
2Q 2009	ASTM test acceptance
2Q 2009	Technology demonstration
3Q 2009	ACC test registration
December 2009	Final ILSAC GF-5 Specification
January 2010 – October 2010	API mandatory waiting period from GF-5 Specification finalized to first licensing
October 2010	Oct 1, 2010; 1st License date for ILSAC GF-5
October 2011	Mandatory GF-5 licensing (GF-4 not licensable)

up to meet two new specifications. With a very few exceptions, GF-4 oils worked for most vehicles. Things just became much more complicated. In the future, installers will need to cover more viscosity grades and carry a larger number of products, GF-5 and dexos™ 1, leading to increased complexity and the greater possibility of misapplication.

The dexos™ 1 specification is scheduled to launch slightly ahead of GF-5. The two specifications will compete in the marketplace and, while each offers attractive opportunities, the production challenges seen for GF-5 will be magnified in the manufacture of dexos™ 1. In either case, the need for field-proven additive technology from a partner with in-depth knowledge of both specifications is more critical than ever.

Right Oil; Right Application

Why GF-5? The answer is clear. If you want to improve fuel economy, GF-5 is the right oil to use. If you want to

extend the life of your vehicle's catalytic converter, GF-5 is a better choice. And if you want to use ethanol containing fuels above E-10, all the way up to E-85, GF-5 is the only choice. GF-5 oils reduce piston deposits, provide better sludge protection and minimize turbocharger coking. GF-5 oils will be more thoroughly tested in elastomer compatibility over GF-4.

To ensure the consumer is getting the performance that GF-5 oils will deliver, various organizations are pushing for more proactive enforcement of monitoring oil quality. One such organization is ILMA. The emphasis on performance in the GF-5 specification is aligned with ILMA's commitment to consistent, high-quality products. Jim Taglia, a long time ILMA member and Past President, expresses the view that ILMA supports the API GF-5 licensing process and the associated AMAP (After Market Audit Program). "The API process lays down rules that are followed in

licensing GF-5 lubricants that help assure product performance and the AMAP process verifies compliance," he says. "In addition, the ILMA Ethics program, modeled after the API AMAP process, has been embraced by ILMA member companies and will lead to better quality products in the field and increase consumer confidence in ILMA member company products." In the end, these efforts will be beneficial to the industry and consumers.

A specification change of this caliber of GF-5 can create uncertainty about what is happening, what is needed and what is next. To learn more about the GF-5 specification, visit www.GF-5.com, the industry's leading resource for up-to-the minute news and information about the ILSAC GF-5 specification. 💧



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Industry Sessions: dexos™ & GF-5

Get vital information on both dexos™ and GF-5 programs at the Management Forum on April 9.

Eric Johnson will present *dexos™ Global Engine Specification Update with General Motors*.

Kevin Ferrick will present *GF-5 Update with American Petroleum Institute*.

For more information go to the Management Forum website at www.ilm.org.

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