

Navigating a Growing Market for High-Performance Lubricant Additives

Kunal Nadkarni, Vice President, Global Strategic Marketing and Commercial Excellence, Lubrizol



The global lubricants market is one of continuous evolution. To meet today's and tomorrow's demands, the lubricants industry must deliver high-performance fluids by taking advantage of new additive technologies.

High-performance fluids and lubricants have come a long way. From early simple monogrades to today's formulations, the modern lubricant provides numerous operational benefits in their end-use applications, from higher levels of efficiency to long-lasting protection.

To achieve these levels of performance, lubricants have utilized a wide range of additive chemistries. Anti-wear additives, viscosity modifiers, detergents, dispersants and more all contribute to performance—and that's not changing anytime soon.

The nature of modern and future applications, along with global growth and demographic trends, will dictate the continued application of high-performance additives around the world. The drivers of this growth are worth further exploration — and with the right additive partners, lubricant and fluid marketers are in a position to capitalise. Here's how...

The Changing Nature of Lubricant Performance

No matter the industry or application, today's original equipment manufacturers (OEMs) are demanding higher performance from fluids and lubricants. They're also demanding fundamentally *different* performance in some applications. The growing market for additives reflects this trend, and there's no reason to expect it will reverse any time soon. A few examples include:

Electrification and Dedicated E-Fluids. As next-generation electric drive units (EDUs) continue to push the envelope for maximum performance, our industry should anticipate an increased demand for dedicated e-fluids. Many first-generation EDUs were designed with e-motors that were either air cooled or cooled indirectly using a standard automotive coolant that flowed through a cooling jacket surrounding the motor. In these designs, the e-fluid used to protect the gear sets was not required to interact with the motor.

But that is changing as OEMs seek to gain efficiency, improve range and reduce weight and cost.

Next-generation EDUs are designed with an e-motor that is integrated with the gearbox and inverter, and OEMs are utilising a single fluid to cool the motor and lubricate the gearbox. In this arrangement, the fluid must perform all the same functions as before, while also protecting against copper corrosion and keeping the motor at optimal temperatures. These demands will require specially formulated e-axle fluids that significantly differ from those available today.

New Demands in Industrial Equipment. In industrial applications, high-performance lubricants and hydraulic fluids are increasingly required as OEMs continue to design more-efficient machines. New hydraulic equipment is achieving increased power densities with higher-pressure pumps, finer filtration, all while reducing sump sizes and downsizing or outright eliminating coolers — all of which can create more challenging conditions for hydraulic fluids.

The Need for Environmentally Friendly Lubricants. Because many gallons of fluids and lubricants inadvertently escape into the environment every year, numerous industries are seeking lubricants that are friendlier to the environment. It's why demand for environmentally acceptable lubricants (EALs) will continue to grow in 2024 and beyond.

EALs are fluid formulations that have been shown to meet such regulatory standards for biodegradability, non-bioaccumulative potential and minimal toxicity to aquatic life compared to conventional lubricants. Importantly, EALs require fundamentally different additive packages than their traditional counterparts. Zinc, for example, is widely used as an anti-wear additive—but because it does not meet the stringent criteria for biodegradability, it cannot be used in EALs.

Global Growth Is Driving Greater Demand

Some global markets are presenting new opportunities for the lubricant space—and those opportunities will require the requisite additive chemistry. Some examples include:

Rapid Evolution in the Middle East. The Middle East region is rapidly evolving in terms of mobility,

and lubricant marketers will need to adjust in order to capitalise. For example, an expanding number of OEMs doing business throughout the Middle East, many of whom maintain their own specifications for lubricants to be used in their vehicles, will create increased difficulty for a single formulation to maintain broad applicability. This will require strategic thinking for lubricant marketers, as well as strategic sourcing of additive chemistries.

Fluid Engineering Growth in China. As noted earlier in this article, China represents a massive opportunity for global lubricant marketers. As demand increases across all industries, both performance requirements and complexity of product lines are increasing throughout the country. For lubricant marketers looking to take advantage of the opportunity, delivering high-performance products with the right additives will be equally important as strategic portfolio management.

Growing Need for Refrigerants in India. India passed China as the most populated country¹ in the world in 2023 and is home to roughly 18% of the world's population. As of 2023, only 36% of India is currently urbanised—but that is changing. Urbanisation and modernisation in the country will drive greater demand for air conditioning and refrigeration—and thus reliable refrigerants. As this happens, refrigerants suppliers must simultaneously move toward formulations that have low global warming potential (GWP), requiring the right additive chemistry to lessen their impact on the environment.

The Importance of the Right Partners

Meeting the needs described throughout this article will fundamentally depend upon working with the right additive suppliers and partner network.

When evaluating your additive partners, there are certain capabilities you should look for to help you meet evolving demands around the world. A long history and deep experience in the additive chemistry space is important, as is rigorous quality assurance and consistently high-quality products. A robust supply chain to help you get the additives you need to do business around the world is also critical to capitalise on new, global opportunities. Finally, technological leadership and expertise, backed by lab

¹ <https://www.worldometers.info/world-population/population-by-country/>

and real-world testing capabilities, will be essential to meet the increasingly difficult performance demands of tomorrow's lubricants.

For the lubricants industry, change is inevitable and is something that we will need to navigate together for the foreseeable future. As applications evolve, as sustainability efforts continue apace and as global markets grow and change, the right partnerships can make all the difference.

Kunal Nadkarni is vice president of global strategic marketing and commercial excellence for Lubrizol, where he is responsible for leading a global team to grow Lubrizol's additives business in key growth regions and segments. He brings over 22 years of experience in the oil and gas and industrials, spanning two continents and multiple industries. He holds his master's degree in international business from Symbiosis and in Commerce from Savitribai Phule Pune University and has completed his executive Master of Business Administration from McCombs School of Business at the University of Texas at Austin.



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