Growth in the synthetics market chimes with sustainability goals of automotive and industrial end users

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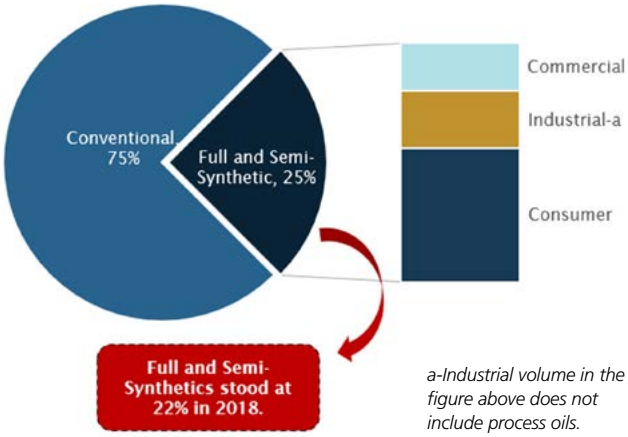
The use of synthetic lubricants continues to grow globally, owing to emissions regulations being increasingly stringent, upgrading fuel efficiency targets, the inclusion of alternative fuels, OEM recommendations, and a growing supply of synthetic basestocks. Synthetic oils and fluids are becoming the preferred choice of automotive and industrial end users, especially the leaders in industry best practices, such as automotive and metalworking companies.

Nearly one-fourth of the global demand for lubricants is currently being met by full synthetic and semi-synthetic products. The balance demand is still met by conventional mineral oil-based products still accounting for a large share — 75% of the total lubricant market. However, the demand for synthetic is growing at a fast pace of around 6–7% annually, while the global demand for lubricants remains flat. This means that synthetic lubricants are growing globally, at the expense of conventional lubricants, and are taking up their market space.

***Figure 1:** Global Finished Lubricant Demand by Product Type, 2020.*



a-Industrial volume in the figure above does not include process oils.

Transition toward synthetics from conventional lubricants is more pronounced in highly developed and environmentally conscious nations such as the United Kingdom, Germany, Australia, and Japan, especially in the private vehicle segment. Tightening fuel efficiency norms as well as growing regulatory push toward sustainable fuels in these countries is resulting in an increase in the parc size of modern and alternative fuel vehicles, such as hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), and bio-fuel compatible vehicles. These vehicles embody new technology and design upgrades that command synthetic lubricants. Synthetic lubricant demand in other country markets is also catching up fast, as these nations refine their national emission and fuel efficiency standards.

Synthetic lubricants are becoming the mainstream oils for private vehicles

Synthetic lubricants currently account for nearly half of the global private vehicle lubricant (PVL) demand, driven by the need for better-performing fluids for modern equipment. Geographically, Europe and North America have seen the strongest growth in full synthetic and semi-synthetic lubricants, primarily driven by the private vehicles market. Many advanced European countries, such as the United Kingdom and Germany, have largely adopted synthetic lubricants in the private vehicles category. Synthetic oils account for penetration levels as high as 70% in PVL in these countries. In North America as well, the penetration of synthetic oils in PVL is well above 60% in the United States and Canada.

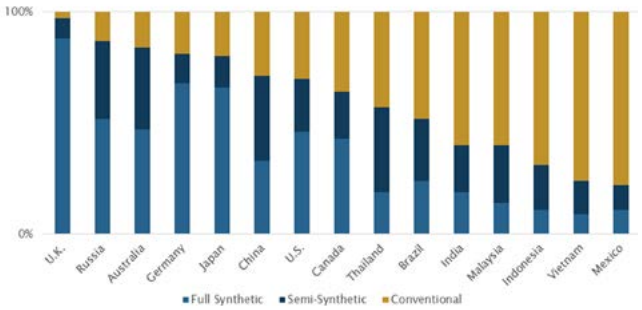


Figure 2: *Penetration of Full and Semi-Synthetic PCEOs in 15 Key Country Markets Across the World, 2020.*

Passenger car engine oils (PCEO) are the flag bearer of synthetic fluids growth in the global lubricant markets. The use of synthetics in this product category has reached nearly 57%, a significant growth compared to 48% in 2018, as reported in Kline's previous in-depth study on this topic. In Europe more than three-fourths of the PCEOs currently in use are synthetic. Countries such as Germany and the United Kingdom top the list for synthetic PCEO consumption globally, with penetration levels as high as 80–90%.

Synthetic PCEO penetration levels in the developed countries of North America have reached 60–70%, driven by OEM technical demand. Leading passenger vehicle OEMs in the United States, such as General Motors and Ford, are now recommending 0W-20 and 5W-20/30 viscosity grades of engine oils, which are synthetic. Further, Toyota, a Japanese car manufacturer, recommends even lower viscosity grade engine oils, such as 0W-16, for both factory fill and service fill applications. This transition toward synthetic engine oils in the region is driven by the regulations for fuel efficiency being increasingly stringent, as well as the upgradation of lubricant performance requirements. In March 2020, new CAFE standards were introduced by the U.S. Environmental Protection Agency (EPA), which require cars to improve on fuel efficiency from the current average fuel economy standards of 35.5 miles per U.S. gallon to 47.7 miles per U.S. gallon by 2026. The pressure to meet these CAFE mandates will drive the market toward lower viscosity engine oils grades that offer improvement in fuel economy and work better with turbocharged engines. In addition to the new CAFE standards, the API service category for engine oils was also upgraded in 2020, and the new service category, GF-6, was commercially licensed. The products that meet these standards are typically full synthetic.

Asian markets are also catching up. Developing countries with large volume demand, such as China and India, are currently undergoing the implementation of new and stricter emission standards, resulting in the upgradation of car parcs in these countries. China is currently witnessing a transition from National V Standards to National VI Standards, and the Indian private vehicles market is leapfrogging directly from Bharat Stage IV standards to Bharat Stage VI (BS VI). Automotive OEMs in these countries proved to be ahead of the curve by introducing vehicles compliant with the new emission standards months before these standards were implemented. For example, in India, Maruti Suzuki rolled out BS VI-compliant vehicles models in 2019, and others such as Tata Motors and Mahindra & Mahindra rolled out BS VI-certified models months before BS VI standards came into effect in April 2020. These OEMs also recommend full synthetic and semi-synthetic lubricants to support the performance of the engine hardware design upgrades in their cars.

Other Asian countries such as Indonesia and Vietnam are predominantly cost-conscious markets, which rely heavily on mineral oil-based lubricants. These countries may transition toward synthetic fluids in the next five years; however, they are likely to exhibit a higher appetite for semi-synthetic lubricants rather than full synthetic, as semi-synthetics are more economically priced. Also, in some of these countries, the share of two-wheelers is much larger than that of passenger cars. For example, in Vietnam, more than 90% of the consumer vehicle parc comprises two-wheelers, belonging to OEMs such as Honda, Yamaha, and Piaggio, which currently use conventional oils. In the future, the prudency of these vehicle owners is likely to keep them more inclined toward semi-synthetic oils rather than full synthetic.

Strict emission and fuel efficiency norms are stirring up growth opportunities in synthetic HDEOs

In the commercial vehicle segment, heavy-duty engine oil (HDEO) is seeing higher volumetric growth of synthetics, though the penetration levels in this category remain distant from those in the PCEO category. In the last two years, the share of synthetic oils has increased in this category from 12% to 16%, driven by the changes taking place in commercial vehicle fleets in developed economies of the world.

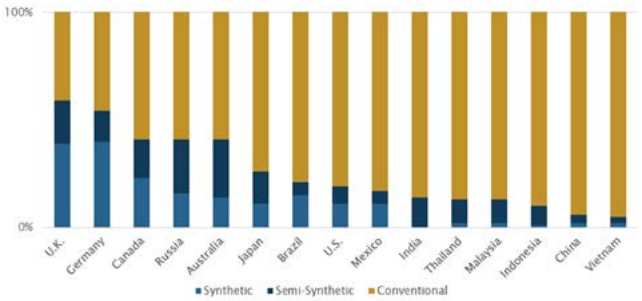


Figure 3: *Penetration of Full and Semi-Synthetic HDEOs in 15 Key Country Markets Across the World, 2020.*

Europe has witnessed the highest levels of synthetic penetration in HDEO, followed by North America. Continuous renewal of commercial vehicle parcs in these regions has been the main driver for synthetics growth in the commercial automotive segment, as new vehicles in the regions typically use synthetic lubricants. Regulatory norms for emissions and fuel economy at international and national levels incentivise OEMs in these regions to use and recommend full synthetic lubricants in their new vehicle models. The United Kingdom is witnessing a strong transition toward synthetic oils. The country witnessed growth in registrations of new commercial vehicles at a strong annual rate of 4% between 2012 and 2019, driven by investments by fleet owners in the country to renew their fleets to align with Euro-6 standards. The renewal of fleets to Euro-6 standards helped the fleets comply with London's Ultra Low Emission Zone and other planned Clean Air Zones.

In North America, the transition is fostered by the fuel economy appeal of synthetic oils. The new API service category, API CK-4/FA-4 — which proffers engine oils with lower high-temperature-high-shear (HTHS) viscosity, providing improved fuel efficiency over the existing service category oils such as API CI-4 and CJ-4 — has been introduced in the region. The region has seen a visible shift toward CK-4 service category oils, at the expense of the existing API CI-4 and CJ-4 service categories oils. While CI-4 and CJ-4 service category oils were more inclined toward conventional oil-based 15W-40 viscosity grade engines oils, the oils meeting the new service category CK-4/FA-4 are typically synthetic and are available in a lower viscosity grade of 10W-30. The U.S. CVL market is witnessing a transition of fleets belonging to very large national haulers to this engine oil grade due to its fuel economy benefits, the compliance with OEM warranties, and the comparability of its price to 15W-40 viscosity grade engine oils.

Strict fuel efficiency norms, upgradation of lubricant specifications, and low current penetration rates of synthetic fluids in the CVL segment are anticipated to favour the growth of synthetics in this market. Top-ranked countries in synthetic penetration in HDEOs, such as the United Kingdom and Germany, are still at 60% of synthetic demand. Other country markets are well below this level. For instance, the two largest volume markets for HDEO, the United States and China, are still at under 20% penetration of synthetics, showcasing a substantial potential for growth.

Growth for synthetics in industrial oils and fluids is slow but steady

On the industrial front, demand for synthetic products remains more or less stable. The synthetics penetration rate in this segment has increased 1% through the last five years. Nevertheless, the future trend for synthetics in this segment is toward growth, driven by environment protection and safety matters.

Synthetic penetration in industrial oils and fluids is highest in the mature, industrial economies of Western Europe and North America, such as Germany, the United Kingdom, and the United States. These country markets lead the synthetics penetration rates, as all these countries have well-established manufacturing industries, advanced power generation industries, and strict government and industry regulations for health, safety, and environment (HSE) issues.

Synthetic industrial oils demand is led by hydraulic fluids and metalworking fluids (MWF). Fire-resistant synthetic hydraulic fluids are finding increasing demand driven by environmental and safety regulations. For example, synthetic fire-resistant hydraulic fluids approved by the Mine Safety and Health Administration are increasingly being used in roof supports in underground mining, keeping in mind the safety aspect. In MWF, low misting synthetic fluids are often used to ensure the work environment safety of industrial workers. Other products experiencing growth in demand for synthetic oils and fluids include gear oils, compressor oils, and refrigeration oils.

Lubricant suppliers are playing their part in promoting synthetic oils

All leading lubricant marketers are currently focusing their marketing efforts on their synthetic products. They are investing heavily in branding and brand

differentiation of their synthetic offerings as well as promoting these products via sponsorships, advertising, and discount offers. Suppliers are also investing in training technicians to promote sales of their synthetic products via installed channels such as quick lubes, fast-fits, and garages.

In an environment of reinforced global attention toward sustainability, lubricant suppliers are proving their ingenuity by chiming their targets with global sustainability goals. Many lubricant suppliers are currently working toward reducing carbon footprints through manufacturing processes, product offerings, and packaging. Striking evidence of this is the addition of lubricating fluids for electric vehicles in the product portfolios of some of the prominent suppliers such as Shell, ExxonMobil, Fuchs, Castrol, Valvoline, and Total. These fluids are typically fill-for-life products that are formulated from synthetic base fluids. Other suppliers such as CITGO Chevron and Penrite have introduced sustainable packaging for their products to reduce carbon footprints. For example, CITGO introduced GOBOX, which is a fully recyclable cardboard package that helps reduce storage space and produces 89% less plastic landfill waste than a conventional 24-quart bottle. This packaging is available for full synthetic, semi-synthetic, and select conventional lubricants only.

CITGO's Environment-Friendly Lubricant Package: GOBOX

Chevron's Environment-Friendly Lubricant Package: SMART CHANGE

Regional and niche lubricant suppliers are also growing in the synthetics market. These include RelaDyne and SuperTech in the United States, Cosan and Morris Oil in the United Kingdom, Lopal in China, and PT. Wiraswasta Gemilang Indonesia in Indonesia. Typically, these suppliers economise from synthetic lubricant performance claims by major marketers and are able to offer synthetic products at lower price points. These suppliers focus on offering lower-priced synthetic fluids and help price-sensitive customers cross over to the synthetic fluids category.

Synthetic lubricants will experience strong tailwinds driven by a need for more sustainable and better-performing fluids

In the next five years, the global synthetic/ semi-synthetic lubricant demand is estimated to grow at 6% to 7%, while the demand for conventional oils will slow down. OEM technical demand and recommendations continue to remain the top driver for synthetic lubricant consumption due to stricter fuel efficiency targets. In the passenger cars segment, OEMs are now recommending 0W 20/30 and 5W-20/30 viscosity grades for engine oils, which are synthetic. The commercial automotive segment is experiencing a transition toward lower HTHS oils belonging to the new API CK-4/FA-4 service category engine oils. Additionally, global regulations for emission reduction and increasing fuel efficiency are also driving demand for more sustainable, environment-friendly, and longer-service life products, which can be met by synthetic fluids.

OEMs' and lubricant suppliers' push toward synthetics, together with a regulatory impetus to use sustainable, better-performing, and safe lubricants, has set the stage for growth of synthetics. As a result, the global lubricants market will continue to endure

PENRITE's Environment-Friendly Bag-in-a-box lubricant package: ENVIRO BOX

Figure 4: *Sustainable Packaging for Lubricants by Select Suppliers.*

a transition away from conventional mineral oil-based lubricants toward better-performing and longer-lasting full synthetic and semi-synthetic products, which can also meet the requirements of new emission standards/fuel efficiency. It is anticipated that by 2025, the penetration level for synthetics in the global lubricant market will increase to 30% from the current level of 25%.

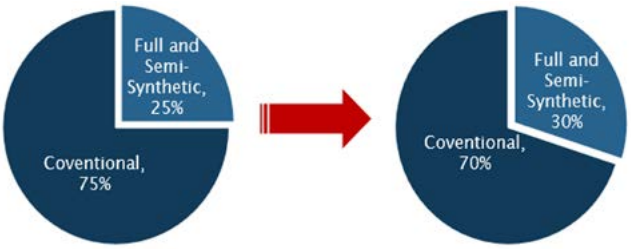


Figure 5: *Forecast penetration of full synthetic/semi-synthetic lubricants, 2020-2025*

Strong tailwinds are driving the lubricant industry toward more sustainable and better-performing synthetic oils. This has created a need for many lubricant suppliers and marketers to formulate new strategies and product offerings to meet the new requirements.

LINK
https://www2.klinegroup.com/synthetics