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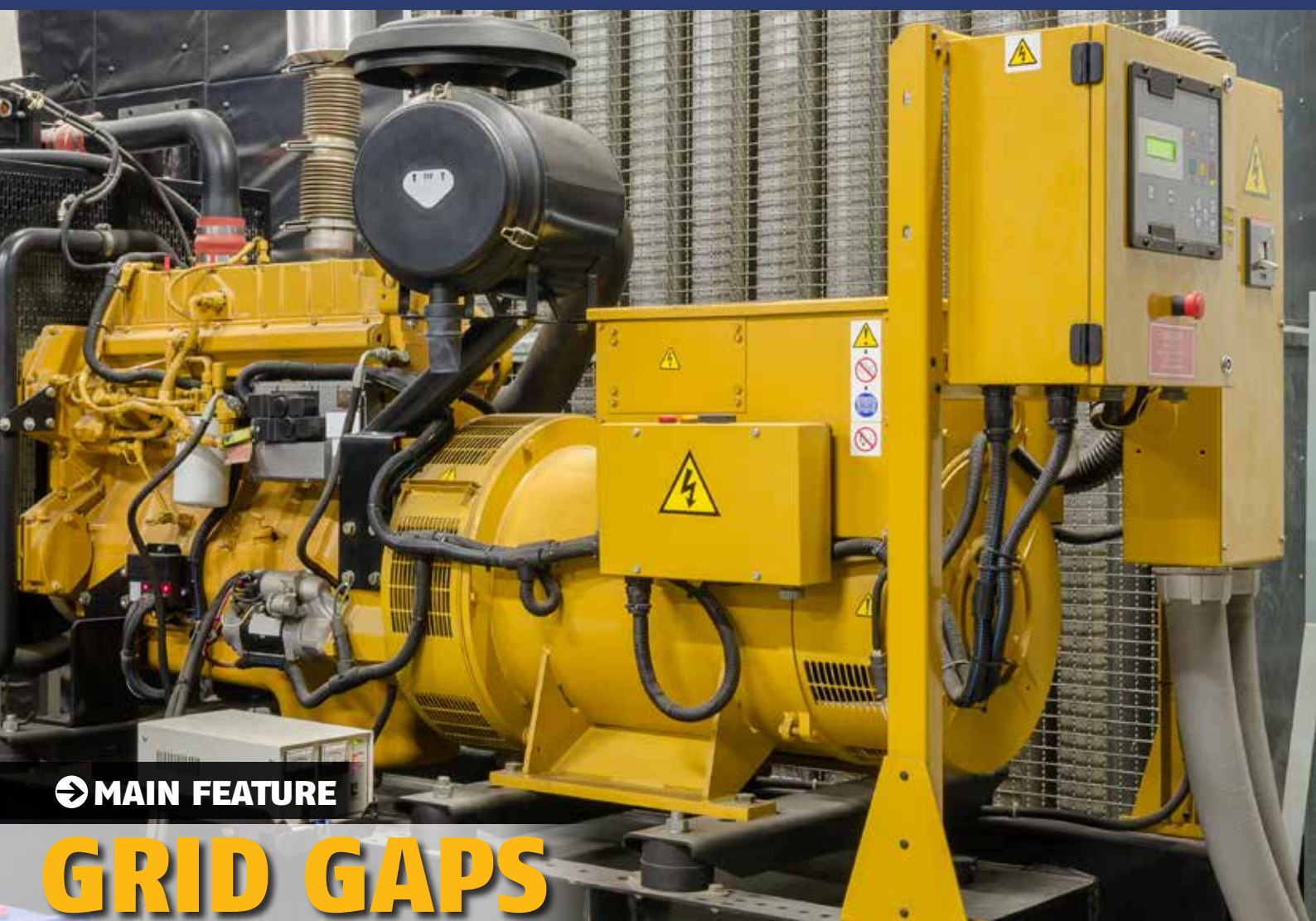
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# Lubezine

Focusing on Africa's lubrication needs

VOL.17 • JUNE 2016



➔ **MAIN FEATURE**

## GRID GAPS STOKE DEMAND FOR GENSET LUBES

**SEE INSIDE:.....**

**CONTINENTAL:** Group II Base Oil Advantages for Industrial Lubricants in Africa

**WEST AFRICA:** GOIL introduces automobile lubricants

**SOUTH AFRICA:** WearCheck unveils advanced industrial kit



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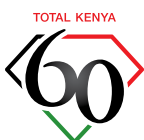
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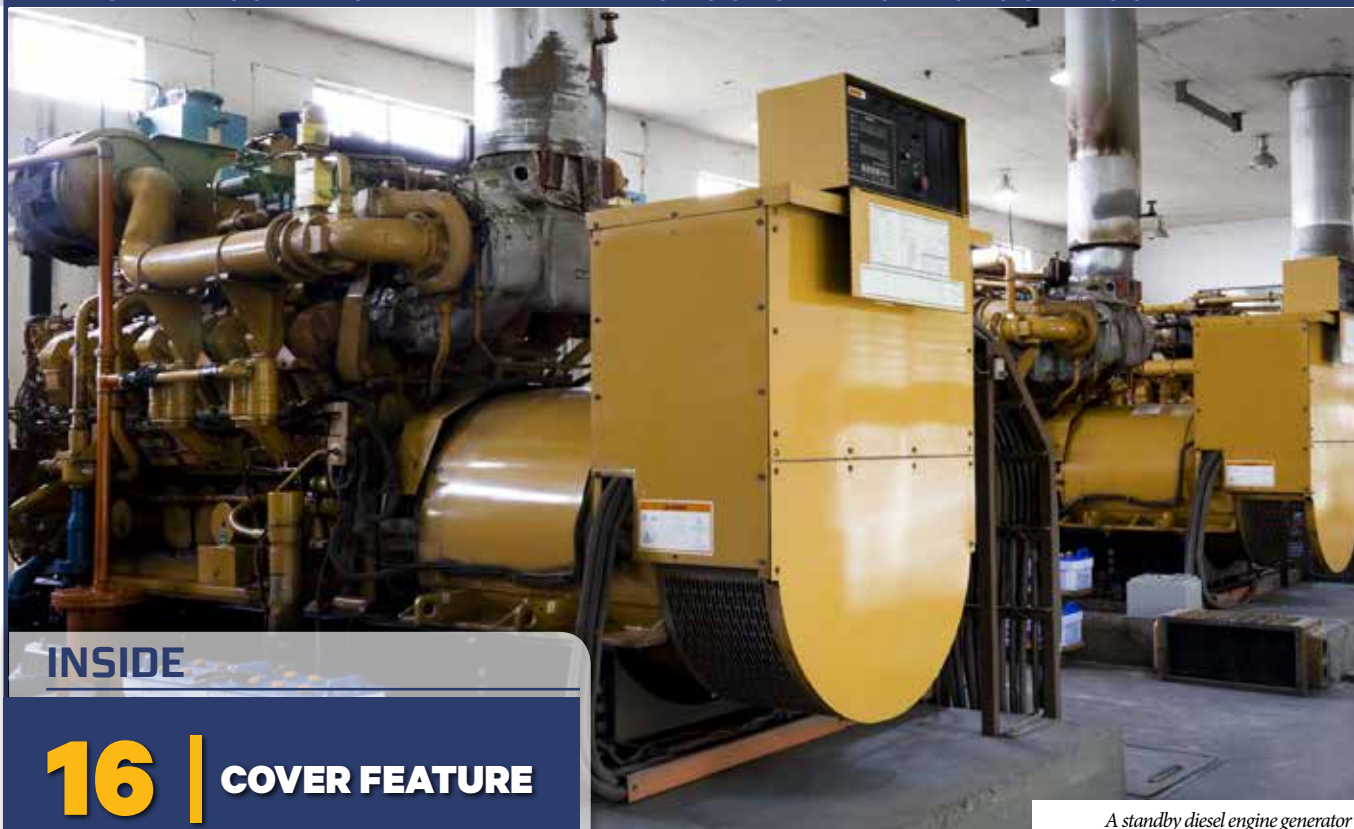




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# EDITOR'S DESK

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## EDITORIAL

# Strained grid power stokes genset lubes demand in Africa



We are pleased to welcome you to the 17<sup>th</sup> edition of Lubezine Magazine, your premier source of information on the lubricants industry in the African continent. This edition is a continuation of our unyielding commitment to highlighting industry developments in Africa, complete with insightful market analyses and reports as well as global happenings that have a bearing on the operations of regions lubricants industry.

Our cover article examines how the available power capacity inefficiency within some of the continent's key economies of Kenya and Nigeria, bears on the lubricants demand. With an expanding industrial base and surges in population, the power demand has outstripped supply, creating a wider market for standby power generators. It is the maintenance requirements of the power generating units that has continue to increase the demand for lubricants, especially engine oils. We have also explored the benefits of instituting condition-based maintenance regimes especially when dealing with large generator units.

An analysis by Mr. Baraka, our guest writer, presents the need to entrench the science of tribology to, among other benefits, alleviate losses incurred due to poor lubrication practices and minimize the associated negative impact on the environment. Mr. Baraka observes that most of the misapplications and use of low quality oil happens largely out of ignorance – despite the efforts the oil industry has made to educate users and prescribing appropriate recommendations.

While the availability of information on the Internet has helped end users to make informed decisions on the appropriate lubricants to use, establishing an East African Tribology Society can greatly enhance the application of desirable lubrication practices in the region. South Africa has already blazed the trail in this direction, with the creation of the South African Institute of Tribology (SAIT), an organization with a clearly spelt out mission statement: “promoting technology transfer, whereby local tribological problems can be solved and products improved”. Based on the benefits of this move, it behoves the East African industry to emulate the initiative.

We would be glad to receive your feedback regarding the articles we have featured in this issue. We thank our readers and loyal advertisers for your continued support, which continues to make Lubezine a leading source of information on the industry. ■

*Joseph Ngun'u*

» The rising power demand in Africa has strained the current output capacity of power companies, resulting in an increased use of generators to offset the supply balance.



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# THE MARKET REPORT

NEWS • BRIEFING • NEW PRODUCTS • TECHNOLOGY

## GOIL introduces automobile lubricants

**O**il marketing company Ghana Oil, also known as GOIL, has introduced a variety of lubricants suitable for the marine and other industries. The firm's Lubricants Marketing Manager Joshua Kwabena Duodu said GOIL specializes in quality lubricants for vessels that come to the Ports of Ghana and heavy duty trucks that convey cargo through and from the port.

"We have marine oil used for ships and fishing vessels. Our oils are competing very favorably at the ports," he averred, adding that GOIL supplies marine gas oil to vessels which seek bunkering services at the Port of Ghana. In an interview with Eye on the Port, Mr. Duodu said GOIL lubricants prices are tailored to suit the pocket of the ordinary Ghanaian. He said

GOIL markets the highest range of synthetic oil.

"The super synthetic has an API which is SN, the highest in the world now," he said. According to Kwabena Duodu GOIL also has on it shelves lubricants like GOIL Super Taxi and power trotro for easier identification by commercial vehicles in the country. He entreated lubricants consumers in Ghana to use GOIL lubricants because it ensures longevity for their vehicles. "Most of our lubricants have very high detergency power. They keep cleaning your engines so as to avoid blockage of important parts of the engine that could cause an engine breakdown. So when you use our lubricants you are actually assured of a long lasting engine performance," he said. ■



## Chevron Oronite announces new distributor in Nigeria

**C**hevron Oronite has appointed ABD Energy Solutions Limited as their distributor in Nigeria. The agreement with ABD Energy Solutions involves not only the sale of OLOA® additives and PARATONE® viscosity modifiers, but also providing technical and laboratory support to customers.

ABD Energy Solutions operates a strategically located warehouse in Nigeria's most populous city Lagos, which will allow storage of some Oronite products for greater availability and flexibility in meeting customer needs.

"ABD Energy Solutions Limited's vast experience in the refining and petrochemical business gives them a good knowledge of the lubricant, base oil and additives segments, and makes them a welcome addition to the Oronite distributor network," said Alain Robert, regional sales manager, Europe-Middle East-Africa for Chevron Oronite.

"Moreover, they have a very focused and strategic approach thanks to their extensive knowledge of the Nigerian market. This should help Oronite further strengthen our presence in the region and also enhance our level of service."

Oronite said that the selection of ABD Energy Solutions Limited is aligned with its continuous desire to be in close proximity to customers in the region.

"We strongly believe the ABD Energy Solutions Limited team is well positioned to help us deliver the required solutions and services to customers in Nigeria," Robert said.

Chevron Oronite Company LLC is an indirect, wholly-owned subsidiary of Chevron Corporation. Collectively, Chevron Oronite

Company LLC and other companies in the Chevron Oronite business unit are a leading developer, manufacturer and marketer of fuel and lubricant additives, helping provide solutions to customers globally.

Headquartered in San Ramon, Calif.,

U.S.A., Chevron Oronite maintains three regional offices in Houston (Americas Region), Paris (Europe -

Africa-Middle East Region), and Singapore (Asia-Pacific Region); manufacturing sites in Belle Chasse, La., U.S.A., Gonfreville, France, Singapore, and Mauá, Brazil; an affiliated blending and shipping plant in Omaezaki, Japan; and interests in additive companies in India and Mexico. ■



# TOTAL, KIA Motors in new lubricant supply agreement

**T**otal Lubrifiants and KIA motors have signed a lubricant supply agreement in Nigeria, aiming to trail and reinforce the global cooperation agreement signed between the two companies in Seoul, Korea in 2011.

Following the partnership, Total Lubrifiants becomes the recommended lubricant sales partner for KIA equipment across all KIA after sales service networks in participating countries. The networks will also receive access to high performance Total Quartz automotive lubricants that will exceedingly suit all KIA's equipment specification.

Also included in the agreement is a full program to provide technical training, marketing support tools and lubricant analysis

services to KIA network for equipment monitoring.

Alexis Vovk, Managing Director, Total Nigeria, said the partnership will provide a channel for OEMs like KIA to have access to genuine Total lubricants and world class technical and marketing support.

"Satisfying our unique customer needs is very important to Total, which is why Total is dedicated to continuous investment in research and innovation in pursuit of developing products and services of the highest quality to best satisfy our client requirements," he said, adding

that the commitment has led to the development of over 400 unique Industry applications that are tailor made to suit a wide range of Industrial Lubricant needs.

"Total Nigeria is glad to be partnering with KIA motors Nigeria and look forward to a fruitful relationship," said Vovk. ■



# Lubes distributors urged to prioritize customer needs

**S**hell brand distributors have been encouraged to prioritize meeting customer needs as part of their efforts aimed at achieving their individual targets for this year. To achieve this, the marketers have been urged to focus on good pricing, time delivery of products and emphasize on continuous training of staff to provide the highest level of customer service at all times.

Speaking in May at the end of the Vivo Energy (Ghana) lubricants' distributor conference held in Accra, Vivo Energy (Ghana) Managing Director Mr. Ebenezer Faulkner advised Shell lubricants distributors to make customers the center of their businesses.

The conference, themed 'The Customer - Our People, Our Growth', brought together over 35 distributors and focused on reviewing the performance of distributors across Ghana as well as sharing the current business priorities.

"The customer should be the focus of the business," said Mr. Faulkner, revealing that the company's lubricants business saw significant growth in the commercial sector last year. Presenting awards to distributors that had performed exceptionally well, he urged the distributors to go the extra mile to achieve their individual targets for the year 2016.

In the ceremony, Mr. Dickson Yengbe, Managing Director of Dicko Dee Company Limited was awarded the Best Distributor for 2015 while Mr. Michael Banahene, Managing Director of Dap Motors, was named the Best Distributor for the first quarter of 2016. Mrs. Cecelia Konadu of Konadu and Owusu Limited was also named the Best Distributor for Kumasi.

Vivo Energy (Ghana) has put in place various initiatives to support lubricants distributors to grow their businesses. These include an interest-free credit facility, arrival of lubricants vans, branding of lubricants outlets and an all-expenses paid trip for leading distributors to join the Shell family at a Formula One motor racing event in Monza.

**C**ountry Lubes Sales and Marketing Manager of Vivo Energy (Ghana) Mr. John-Doe Samlafo said that the company will continue to embark on more

marketing initiatives to create top-of-range awareness for Shell lubricant brands, which he said have led to a surge in demand in recent months.

Mr. Samlafo said that for over a century Shell had been at the forefront of lubricants development and that it has currently leveraged the expertise of over 120 scientists, in about 11 research centers around the world to create the world's most advanced lubricants that meet the needs of motorists.

He said Shell lubricants are endorsed by the world's top vehicle manufacturers, including Ferrari, Mercedes, BMW, Toyota and the world's leading motorbike brand, DUCATI. ■





## WearCheck unveils advanced industrial kit



Condition monitoring experts WearCheck have developed an Advanced Industrial Kit, in which an expanded range of sample types can be analysed for particle counts and acid numbers (TAN). The company has also introduced a product that includes a debris image pad, both normal and magnified, irrespective of whether any significant debris is detected in the analysis process.

‘Traditionally, particle counting has only been carried out on what are termed ‘clean-oil-systems. The components include hydraulics, compressors, automatic transmissions and turbines,’ said WearCheck Diagnostic Manager John Evans. He added that particle counting has not been carried out on ‘drivetrain’.

‘Components such as gearboxes and drives, as dilution of the sample is required to process high viscosity oils or oils that are badly contaminated. This is time-consuming and difficult to carry out, but WearCheck has created an automated procedure to handle these samples, making it a lot easier process them,’ he said.

Mr Evans added: ‘The effect that particulate

contamination of oil has on wear rates has been well established for many years. Cleaner oils will reduce the possibility of equipment failure and greatly extend its lifetime. Many customers are now interested in monitoring the cleanliness of gear as well as hydraulic oils, and this new service will allow the assessment of contamination in gear oils, enabling customers to set targets, achieve these targets and improve on them - thus extending the life of gear type components.’

Typically, acid numbers are only analysed for compressor and turbine samples, but with the introduction of particle counting on all samples except engines due to the fact the oil is often too dark, WearCheck has announced that it has decided to extend the service to

include a TAN on all samples.

On industrial equipment, the acid number is almost the only means of assessing the health of the oil and has now been included in all hydraulics and gearboxes as well as turbines and compressors. Mr Evans said the TAN gives WearCheck’s customers an extra indication of oil degradation and alerts that the oil needs changing before damage is done to the component.

Also, the company carries out various screening tests on all samples to establish whether debris analysis is required. The MPE or Microscopic Particle Examination is carried out when one or more of the tests fail, in which case the oil is filtered through a fine filter membrane, and any debris present is assessed with a microscope. A zoomed in (20 time magnification) and a normal image of the debris is taken and included on the report.

WearCheck’s new service includes a full debris analysis irrespective of whether the screening tests have failed or not. This gives customers extra assurance of oil cleanliness or, in the case of severe wear or contamination, two pictures detailing all the gory details. ■

## WearCheck marks 40th year, hints at further expansion plans

Condition monitoring specialist WearCheck has celebrated the 40th year in operation, hinting at plans to roll out further expansion programs in Africa. A press release issued in March this year described 2016 as “a very auspicious and exciting year for WearCheck “as they proudly celebrate their 40th birthday”.

Established in Durban in 1976 as a soil-testing laboratory in the founding director’s garage, WearCheck has established a reputation as a reliable condition monitoring company in Africa. Currently, WearCheck has an established presence in at least seven countries, with eleven laboratories providing both mechanical and electrical condition monitoring services to a wide range of clients.

“With the fundamental goal to save money and time for customers, WearCheck has evolved into a convenient “one-stop-shop” for any mechanical or electrical operation that can benefit from reliability solutions services.

WearCheck’s services include scientific analyses of used oil, fuels, transformer oils, coolants, greases and filters. The firm employs other monitoring techniques such as testing and control of combustion efficiency, heat transfer, thermography, vibration analysis, balancing, laser alignment and milling, according to the press release.

Over the past 40 years, the firm has continued to provide services to a wide range of industries, including mining, construction, transport, electrical, shipping, industrial, and aircraft.

“The highly-qualified team of diagnosticians has amassed an invaluable databank of results and trend information over the four decades of the company’s lifetime. This information is key to providing a benchmark in many cases, and is referenced frequently in the diagnostic process, as well as for training purposes and case studies,” said the statement.

WearCheck recently joined the Torre Industries family, in what it describes as an exciting development with lots of potential for business growth. ■



## ENOC appoints GBFL to sell marine lubricants in South Africa

**G**lobal shipping, logistics and marine services provider GAC announced an exclusive partnership between its bunker fuels trading arm GAC Bunker Fuels (GBFL) and ENOC Global Marine.

Under the agreement, which was announced during the Posidonia international shipping event in Athens, GBFL has been appointed as ENOC's exclusive sales agent and distributor, for marine lubricants in South Africa.

The deal marks the first time GBFL has been appointed to provide sales and distribution for a lubricants manufacturer, on the strength of the GAC Group's extensive logistics expertise, strong agency network and experienced bunker fuels team.

By combining the strength of the GAC supply chain and ENOC's marine products, which are approved by the biggest marine engine manufacturers, the partnership offers vessel owners and operators a quality service

at a competitive price.

"ENOC is an exceptionally strong brand in the Middle East, and their business ethics and values are very similar to GAC's," says Nicholas Browne, GAC Bunker Fuels Director. "Sales and distribution is a logical extension to GAC's existing service offering, and it meets a very real need. We're excited to see this partnership develop and open new avenues of growth for both parties."

"At ENOC, we aspire to build upon our successes by expanding our regional and international presence and are well aware of the potential that international markets present; particularly the African region and its contribution to the success of our operations. This newly forged collaboration with GAC presents ample opportunity for us to expand our network and cater to the ever evolving needs of our customers," stated Zaid Alqufaidi, Managing Director, ENOC Marketing.

Since its inception in 2015, ENOC Global

Marine has built a strong presence across Africa, covering some of the continent's key ports in Egypt, Nigeria, Angola, Ghana, Kenya, Morocco and Mauritania and now South Africa. The newly announced partnership with GAC Bunker Fuels will contribute to increasing the division's vessel delivery by 300,000 litres annually. ■



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## Frequently Asked Questions

# FAQS



**Q If I drive through deep water (as during a flood), does that affect the lubricating grease in my car's wheel bearings?**

Driving through water that is deep enough to cover a car's wheel bearings can cause contamination of the grease with water, or even wash the grease out of bearings. After driving through deep water, the vehicle should be checked by a mechanic, and the wheel bearings should be re-lubricated if necessary.

**Q What are anti-seize compounds?**

Anti-seize compounds are

formulated to prevent mating surfaces from seizing under high loads. For example, anti-seize compounds are used on threaded connections and static joints so that they can be disconnected easily.

**Q There is a burnt odor around a grease lubricated bearing. Is that a concern?**

A burnt odor may indicate overheating of the bearing. A burnt odor suggests that the grease may have been oxidized or thermally degraded. It is prudent to investigate the source of a burnt odor, and to determine its cause. If the source of the odor is a grease lubricated bearing, the equipment should be shut down and the problematic bearing checked.

**Q What is waterproof lubricating grease?**

Waterproof lubricating grease is a grease that is formulated to resist water and its effects. This type of grease repels water, forms an excellent seal against water, and provides protection against rust and corrosion.

**Q What is a lubricating paste?**

Lubricating paste typically contains fine particles of a lubricating solid such as graphite or molybdenum disulfide and a small amount of oil. The consistency of a paste depends on the amounts of particles and oil. ■





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# Rally Launch



**L**ibya Oil Kenya Ltd. – owners of the OiLibya brand in Kenya - is a devoted promoter of Motor sports in Kenya, both through the Kenya National Rally Championship (KNRC) rallies and the Auto cross championships. This is in line with the company's vision of encouraging collaboration, nurturing leadership and pursuing excellence.

Libya Oil Kenya Ltd has been active in the Kenya National Rally Championship (KNRC) since 2008 by sponsoring drivers under the banner 'OilLibya Racing Team.'

OiLibya Racing has over the past decade been at the forefront of nurturing rallying talent, and sustaining the racing culture in Kenya. Through sponsoring and nurturing the talents of the likes of Azar Anwar, Asad Anwar, Baldev Charger, Charles Hinga, Quentin Mitchell and Farhaaz Khan.

In 2016 they continue with that strong legacy by sponsoring the young and talented Farhaaz Khan. The driver will be representing the "Built With Tomorrow In Mind" ACCEL Liquid Confidence Petrol Engine Lubricant, in his completely rebuilt Mitsubishi Evo 9.

The launch event was recently held at The Great Rift Valley Circuit in Mai Mahiu, a multipurpose facility, boasting a go-kart track and rally car training circuit. The event provided an opportunity for staff and guests to see the EVO 9 taken through its training paces. A few lucky guests also got a chance to take a couple of laps around the track in a rally car, a truly unique launch event.

All the best to the OiLibya Racing team of Farhaaz Khan and Keith Henrie, driving in car number 23 in this year's Kenya National Rally Championship (KNRC). ■







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# MOTUL



# Plugging grid power deficits with generators expands lubes market in Africa



*A standby diesel engine generator*

**By Olaolu Olusina & Yusuf Kipruto**

**I**n many countries across Africa, there is a raging demand for electricity as a result of rapid industrialization and increases in population sizes. The situation is fast outstripping the available power supply capacities, leading to a rise in the use of generators especially in industrial setups. The generators (gensets) have, in turn, widened the market for lubricants.

According to the African Development Bank, the total generation capacity of Africa's 48 Sub-Saharan countries is just 68 gigawatts, with a quarter of the capacity being unavailable due to aging power generation plants and poor

maintenance practices. With this, there are fears that less than 40 percent of African countries will reach universal access to electricity by 2050. At the moment, more than thirty African countries are experiencing power shortages, leading them to depend on leased generating plants as emergency stopgaps.

Although this is a costly resort, it continues to open up the market for diesel generators in Africa despite the fact such other dynamics as the exploitation of recent gas discoveries and rising use of geothermal energy is expected to significantly change the energy landscape across the region.

In Kenya, severe droughts have limited the capacity of hydro-powered plants to produce

adequate electricity, forcing the country's electricity company to rely on genset leasing to offset the deficit. The situation is not different in Uganda, where widespread power shortages have led to an average of five hours of load shedding per week, forcing companies to adopt diesel gensets, according to Frost & Sullivan. The institutional reforms policy in Tanzania has resulted in more efficiency, fuelling the demand for diesel gensets.

According to Mr. Kelvin Ngumbau of the Kenya-based Memtech Electrical Limited, economic development and increasing real estate in both up market and commercial segments are currently listed among the key drivers of the uptake of generators in the

## According to the ADB, the total generation capacity of Africa's 48 Sub-Saharan countries is just 68 gigawatts, with a quarter of the capacity being unavailable due to aging power generation plants

country.

"Unpredictability of the power grid in Kenya, coupled with increased demand for uninterrupted electricity supply among consumers and industries are forcing real estate providers and corporate entities to provide stand-by gensets for their clients," Mr. Ngumbau stated, noting that apart from real estate developers, telecoms providers are among key clients in the generators industry. He added that uninterrupted connectivity for network stations also need generators to provide back up to their clients.

"About 90% of the generators in the market consist of diesel engines while only around 10% of the industry use petrol engines. This is because petrol engines provide only 1 kW – 5 kW, which is inadequate. Petrol power generators are mainly used in up market segments, where individual consumers need power in small rooms or business outlets," he said. "Diesel engine generators provide a wide range of power options, ranging between 5 kW to 5000 kW. The choice of generator depends of the amount of power needed to be provided by the generator," he added.

Although the demand for power alternatives in Kenya is increasing, the market is not short of generators engines and generator suppliers. The types of generator brands available include Cummins, Perkins, Volvo and CAT Cummins. CAT, Atlas Copco, ListerPetter, and SDMO are among the most common brands.

While operational service intervals for generators vary depending on the suppliers, service providers for gensets generally agree that the service interval of generators in Kenya is 250 hours or 3 months, whichever comes first. According to Mr. Nyiri of Generators Kenya Limited, this is on account of the conditions for Kenya such as dusty environment, and the tropical climates which affects the lubricants performance. According to both Mr. Nyiri and Mr. Ngumbau, the generators industry in Kenya has preference for multigrade 15W40 diesel engine oils.

"Multigrade 15W40 oil is preferred because it performs well in tropical regions like Kenya in both high temperature and lower temperature operations," Mr. Ngumbau stated. "The industry shy away from lower grade lubricants like say SAE 40 which reduces the service interval of the generators and can be costly to the client," he added.

The uptake of synthetic oils in generators is very low according to Mr. Ngumbau. According to him, this is because of their perceived high cost of purchase and fear among clients of increasing the maintenance period

under prevalent environmental conditions. Both Mr. Ngumbau and Mr. Nyiri agree that manufacturer recommendations are a key factor in determining the choice of lubricant used in gensets.

"We are provided with the recommended brand to use in the gensets we service by the manufacturer's manual. In case the particular brand is not locally available, we look at the manual for approved grades which we then use while not violating the warranty, said Mr. Ngumbau.

"The smallest generator uses 5 liters of lubricant per service which is compared to a small automobile. Big generators use up to 200 litres of lubricant per service," he stated, suggesting that with the increasing number of generators in Kenya in both up market and commercial segments, the amount of lubricants consumed annually is high.

In West Africa, Nigeria is also embracing other alternatives of electricity to power its economy in the face of a diminishing capacity of the giant oil producer's national power grid. As at February 2016, the



country's power capacity was estimated at 2,000 megawatts, down from an earlier average of 5,500, compared to the approximately 60,000 megawatts required optimum output for the country. While the prevailing power deficit has been blamed on the country's national power company, it has left a majority of Nigerians with no other recourse than using electricity generators to meet the rising demands of the growing economy.

According to Airtel Chief Executive Officer Mr. Segun Ogunsanya, only about 10 to 15 percent of the telecom's base stations are connected to the national power grid. Industry analysts estimate that companies may be spending N730 billion annually in fuel expenses. The Nigerian government recently increased petrol pump prices by 35 percent from N86.50 to between N135 and N145.

In Nigeria, telecommunication companies alone require multiple power generators to operate their 30,000-base of trans-receiver stations scattered across the country. Lube manufacturers are required to pump in about 106.0 tonnes of lubricants (mostly the mono-grade/motorcycle oils) annually for the generators market, constituting about 39 percent of the total lube demands in the country.

The Manufacturers Association of Nigeria (MAN) revealed that an estimated 60 million Nigerians are currently using power generators, spending at least N1.56 trillion to fuelling them annually. According to the association, its member-companies alone spent a N20.8 billion every month over the past three years to service their power generators, incurring an additional 70 percent in production costs.

While individual households and offices contend with smaller petrol-powered generator brands such as the 0-5 KVA Tiger, Elemax, Sumec Firma, Honda, Tec, and Hyundai, SMEs and large companies have resorted to diesel-powered brands such as Perkins, Cummins, Deere, Lister and other industrial generator,

which have higher oil sump and fuel consumption capacities.

To reduce both operational and maintenance costs, many households and offices have had to cut down the hours of generators' use.

In a bid to resolve the power crisis, the country's government says plans are in the pipeline to revive the power sector by increasing the capacity to generate to at least 12,000 megawatts.

"If we fix all of what is not working in the industry, including building a new power plant, the country would be generating close to 12,000 megawatts," said Works and Housing Minister Babatunde Fashola, revealing that just a little over half of the over 140 gas turbines in the country are being powered by gas to generate electricity.

As the use of generators in Africa continues to increase, many service providers say the reluctance of consumers to perform preventive or planned maintenance services prescribed by the generator suppliers is one of the main challenges. Many clients are reluctant to incur maintenance costs and end up undertaking expensive engine rebuilds when the engine fails or overheats.

But with advances in technology and environmental emissions control, the future of generator industry and the associated support industries notably the oil sector, is positive. ■





James Wakiru

## Lubrication related Maintenance Program for standby Generator sets

Standby generators are depended on for back-up power systems in very critical situations and locations like airports, hospitals, government buildings, telecommunications industry and other critical installations that require power energy throughout. In standby power applications, diesel generators can start and assume full-rated load in very short time and can operate for many hours between major overhauls. The generator sets should be available without any fault as and when called in to provide power without fail. The critical need for power always comes at a time that simply cannot be predicted. Proactive programs designed to improve the “state of readiness” for your emergency generator will greatly improve the reliability of your backup system. Despite a lot of resources and money spent to improve the generator sets condition and reliability, improper lubrication is still cited as the primary cause of failure of the equipment.

“It is generally accepted in the lubrication community that 60 percent of all mechanical

failures are due to inadequate or improper lubrication practices,” states Kenneth Bannister in his book *Lubrication for Industry*.

The majority of prime movers for standby power generators are diesel engine due to durability and performance. Maintenance is critical for ensuring that a diesel powered standby generator will start and run when needed. We look at the place of lubrication in the four maintenance philosophies namely Preventive maintenance, Corrective maintenance, Condition based maintenance and Risk based maintenance.

### Preventive Maintenance

Maintenance carried out at predetermined intervals or according to prescribed criteria, aimed at reducing the failure risk or performance degradation of the equipment. The maintenance cycles are planned according to the need to take the device out of service. The incidence of operating faults is reduced. Preventive maintenance for diesel engine generators plays a critical role in maximizing the reliability of these standby systems.

Because of the durability of diesel engines, most maintenance is preventive in nature and consists of the following operations:

- General inspection
- Lubrication service
- Cooling system service
- Fuel system service
- Servicing and testing starting batteries
- Regular engine exercise

It is generally a good idea to establish and adhere to a schedule of maintenance /service based on the specific power application and the severity of the environment. While determining the type of lubrication schedule and lubricant to use, it is important to analyse the environment the generator set will be subjected to. For example locations with extreme temperatures will determine the specifications of the lubricant to use being monograde or multigrade, remote locations that are not easily accessed, a high performance lubricant like synthetic could be used to increase the service interval. If the generator set will be used frequently or subjected to extreme operating conditions, the recommended service intervals should be



## Oil analysis and other predictive techniques like vibration analysis can be used effectively while conducting failure mode identification and root cause analysis.

shortened accordingly.

### Corrective Maintenance

Maintenance is carried out following detection of an anomaly and aimed at restoring normal operating conditions. This approach is based on the firm belief that the costs sustained for downtime and repair in case of fault are lower than the investment required for a maintenance program. This strategy may be cost-effective until catastrophic faults occur. This is a failure based maintenance strategy which works in odd times. It is applied to equipment with low level of criticality and whose faults are not a problem, economically or technically. This philosophy is rarely implemented while dealing with generator sets due to the criticality of the generator sets. Despite lack of implementation, it is always performed in order to restore the failed equipment to return to full working condition and also it provides another advantage as it may uncover problems not otherwise detected.

### Risk based maintenance

Maintenance carried out by integrating analysis, measurement and periodic test activities to standard preventive maintenance. The aim is to perform the asset condition and risk assessment and define the appropriate maintenance program. Maintenance based on the equipment performance monitoring and the control of the corrective actions taken as a result. It's common to treat every piece of equipment within a power plant or generator set equally when it comes to maintenance. A better way is to use a risk-based approach that classifies each piece of equipment in terms of its impact on output.

Oil analysis and other predictive techniques like vibration analysis can be used effectively while conducting failure mode identification and root cause analysis. Various aspects of the generator set operating conditions that have the potential of rendering the generator set inoperable can be identified using this program. Oxidation of the lubricant which can be identified and a failure mode can be due to an increase in TAN (Total Acid Number) can be traced to high temperature being caused by either cooling problem or lack of ventilation for the generator set. Lower value of TBN (Total Base Number) in the oils could be subjected to risk based analysis and one could identify the causes like use of high Sulphur diesel, use of inferior lubricant with low base number or increase in acidity inside the engine. After identification of the probable failure mode causes, a corrective action is taken and a

long term maintenance strategy laid down to mitigate the failure mode recurrence.

### Condition based Maintenance.

Maintenance is carried out when certain indicators give the signaling that the equipment is deteriorating and the failure probability is increasing. This strategy, in the long term, allows reducing drastically the costs associated with maintenance, thereby minimizing the occurrence of serious faults and optimizing the available economic resources management.

Condition monitoring by carrying out oil analysis of lubricants in the generator sets can help improve availability and reliability of the generator set in a great way. Oil analysis examines lubricants properties, contaminants and various kinds of wear debris to determine machine health in terms of which areas have wear challenges. Use of oil analysis and interpreting the various aspects, can help correlate machine issues well in advance. One can compare it to

a blood test on the human body which would correlate the issues in the body. Oil analysis can also be used to check and set up the lubricants drain interval which have far reaching benefits in terms of cost savings and environmental management. One of the benefits of oil analysis is that it detects problems in both the fluid and the machine. It can also detect some defects earlier than other technologies. Oil analysis is often referred to as the first line of defense as far as predictive technologies are concerned.

It clearly goes that lubricants and Lubrication is a critical and vital aspect in the maintenance of generation sets. Lubrication cuts across the four maintenance philosophies as addressed above. There is no clear strategy that can be adopted for the lubrication related maintenance of generator sets but a blend of different respective philosophies as analyzed and dictated by the conditions would ideally be sufficient. ■



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# Group II Base Oil Advantages for Industrial Lubricants in Africa



*In turbines, oil life can be extended as much as 300% when Group I formulations are replaced with Group II formulations.*

## By Chevron Base Oils

Industrial lubricants cover a large variety of applications without defining what an industrial oil actually is. Therefore, for the purposes of this article, we will focus on stationary applications and the oils that lubricate them. This definition includes everything from large power generating plants to sewing machines, in industries from mining to agriculture, and includes operating environments ranging from severe to mild. All operators of all this equipment have two goals in common: increase productivity and reduce down time.

Despite the fact that industrial oils cover such a diverse range of applications, as mentioned above, they only account for 21% of the total global finished lubricant market. Compare that to automotive lubricants where it's close to 60% of the market.

Industrial lubricants are important, but because developing, licensing and certifying automotive lubricants are more complicated and costly when compared to industrial oil qualifications, most lubricant R&D dollars are spent to meet automotive lubricant requirements.”

Many industrial oil formulations characteristically contain between 90–99% base oil, compared to 75–85% for automotive lubricants. Because of the typically low additive treat rates for many industrial oils, their performance is more reliant on the properties of the base oil.

In the early 1990s, Chevron introduced ISODEWAXING® technology. That technology enabled cost-effective production of API Group II and Group III mineral oil base stocks. Compared to solvent refined Group I base oils, these new catalytic dewaxed base stocks offered high purity and excellent low temperature performance. In the years afterward, the increased availability of Group II/III base stocks resulted in improved performance for many types of lubricants. The better lubricants performed, the more OEMs (Original Equipment Manufacturers) and users expected from their lubricant products. Higher-performance machinery was developed that required lubricants which could hold up to tougher operating environments (higher

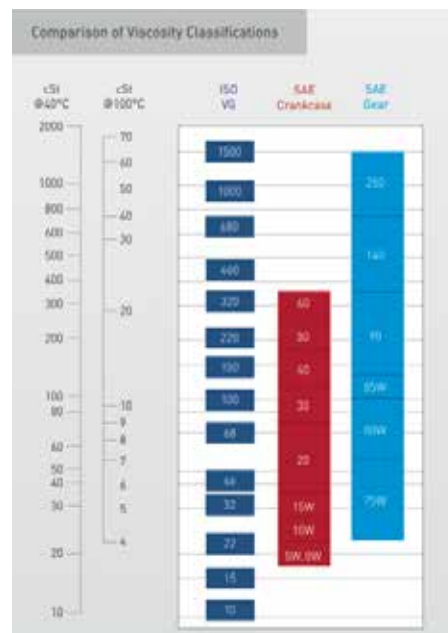


Figure 1 - Industrial oils are produced in a broader viscosity range than automotive lubricants.

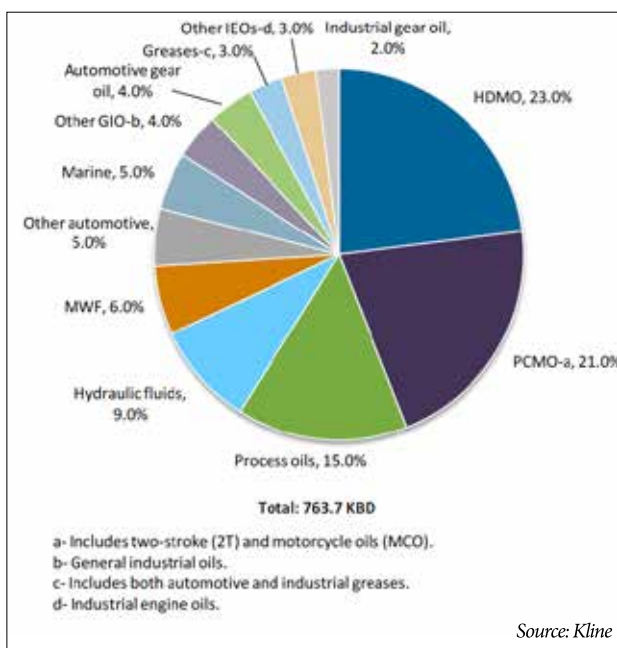
operating temperatures, smaller sumps, higher power densities, longer drain intervals, lighter materials, and more compact designs).

The increased use of premium mineral base oils led to impressive performance improvements at minimal costs. For example, it is well known that compared to Group I, turbine oils made with Group II base stocks can extend life by up to 3 years in some applications.

**There are five key attributes of Group II base oils that improve the performance of industrial oils. Viscosity, oxidation stability, water separability, air release and low temperature properties. Following is a description of each attribute.**

## Viscosity

Viscosity, the single most important property of an oil, measures the oil's



Source: Kline



**Many industrial oil formulations characteristically contain between 90–99% base oil, compared to 75–85% for automotive lubricants. Because of the typically low additive treat rates for many industrial oils, their performance is more reliant on the properties of the base oil.**

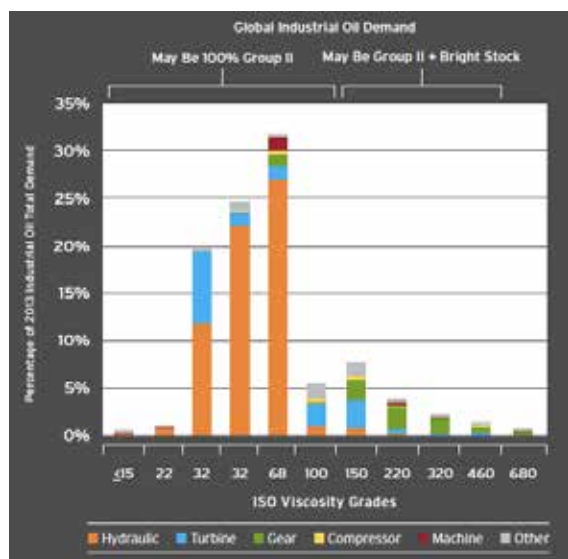


Figure 2 – The majority of industrial oil demand falls within the ISO 32 to ISO 100 range. Many of these oils have improved performance when blended with Group II.

resistance to flow (shear stress) under certain conditions. Automotive lubricant viscosity is defined by SAE (Society of Automotive Engineers), while industrial lubricant viscosity is expressed by ISO value (International Standards Organization), which corresponds closely to the kinematic viscosity at 40°C. Figure 1 shows that industrial oils are produced in a broader viscosity range than automotive lubricants.

The viscosity requirement for an industrial oil depends on the film thickness required to prevent wear, and the correct flow properties to deliver additives to lubrication sites. Industrial oil viscosities can range from ISO 10 to greater than ISO 3200, though a large majority of industrial oil demand falls within the ISO 32 to ISO 100 range. Even though Group I base oils can be used to manufacture a wide viscosity range of industrial oils, Group II base oils can provide complete coverage for ISO 32-100 fluids, which encompasses the majority of the industrial oil volumes (See Figure 2). And, Group II base oils, when blended with Group I brightstock, can make up a significant portion of ISO 150 and ISO 320 industrial oils, improving the fluids' performance over a 100% Group I formulation and thereby expanding the viscosity range for Group II usage. Group III base oils, on the other hand, provide the narrowest viscosity range because the heaviest Group III stocks are only 35-45 cSt at 40°C. (See Figure 3)

## Oxidation Stability

Oxidation and thermal degradation are the key effects of reduced oil life that can occur when high temperatures, sometimes in addition to oxygen, create unwanted compounds through polymerization and condensation reactions. These compounds react with other components in the oil to form soluble and insoluble products. The soluble acidic products may increase the viscosity of the oil, as well as contribute to system corrosion. The insoluble products, such as sludge and varnish, can increase wear and lead to plugged lines and valves which could eventually lead to catastrophic failure. **Group II base oils have excellent oxidation stability**, though a small amount of antioxidant is frequently used in almost all lubricant applications to extend oil life even more.

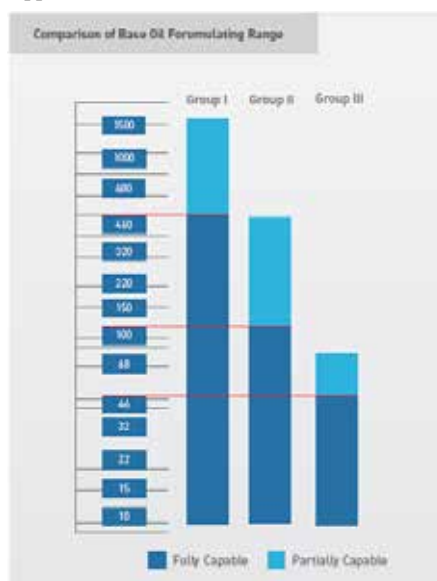
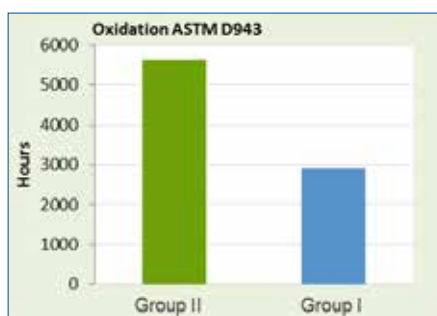
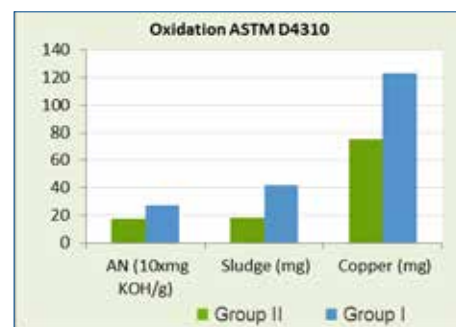


Figure 3 – Viscosity grade coverage varies by base oil group. Fully Capable is the ability to hit a viscosity grade target without blending in another Group of base oil. Partially Capable is when an additional base oil group is needed to hit the viscosity target.



ASTM D943 is the Standard Test Method for Oxidation Characteristics of Inhibited Mineral Oils



ASTM D4310 is the Standard Test Method for Determination of Sledging and Corrosion Tendencies of Inhibited Mineral Oils

## Water Separability

The ability of an industrial oil to separate from water is essential in applications where potential water contamination of the lubricant is very high, such as in steam and hydroelectric turbine oils, circulation oils and hydraulic fluids. In these applications, the oil must be able to separate water quickly and efficiently. Being able to separate and drain water out of an application allows operators to extend the life of the lubricant and help prevent rust and corrosion from occurring. Because Group II base oils are highly saturated compared to their Group I counterparts, they do not contain compounds that will stabilise emulsions, and will separate water more rapidly from the oil.

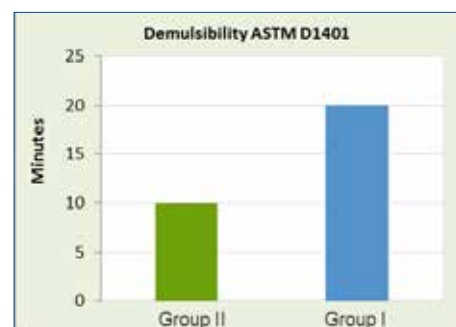


Figure 4 – Hydraulic oils blended with the same additive package and treat rate show longer life, less acid formation, less sludge, less corrosion and better demulsibility for Group II.

## Air Release

Air entrainment is a dispersion of tiny air bubbles throughout the lubricating fluid during normal use and agitation. Hydraulic systems depend on the oil being incompressible – a property that is compromised if air bubbles are present. Therefore, the ability of oil to separate entrained air is critical. Air release is also important because circulating excessive air can cause pump cavitation, poor compressibility and erratic movement of machine parts.

## There are five key attributes of Group II base oils that improve the performance of industrial oils. Viscosity, oxidation stability, water separability, air release and low temperature properties.

Premium base oils like Group IIs tend to have lower air release times, as measured by ASTM D3427, Standard Test Method for Air Release Properties of Hydrocarbon Base Oils.

### Low-Temperature Properties

Group II base oils have excellent low-temperature properties, and respond well to pour point depressants (PPDs), though, as with Groups I and III base stocks, it is important to select the correct PPD in fine tuning the final formulation.

The properties of Group II base oils have significantly contributed to the performance of industrial oils. The following is a highlight of some of the performance improvements benefiting hydraulic oils, power generation turbine oils and natural gas engine oils.

### Hydraulic Oils

Group II base oils are a good fit for hydraulic oils, because most hydraulic oil volumes fall within the ISO 32-68 range. Potential advantages of Group II based formulations over Group I formulations include improved oxidation stability; increased water separation and decreased foaming tendency.

1. **Higher oxidation stability** extends the life of hydraulic oils. In the RPVOT test (ASTM D2272 - Rotating Pressure Vessel Oxidation Test) hydraulic oils utilizing Group II base stocks showed considerably longer oil life than Group I formulations (See Table 1).
2. **Enhanced water separability.** Moisture that enters the hydraulic system,



Hydraulic Oils		ISO 32		ISO 46		ISO 68	
Test	ASTM #	Group I	Group II	Group I	Group II	Group I	Group II
Sulphur		--	--	--	--	4,980 ppm	630 ppm
RPVOT, min to 25 psig drop	D2272	360	449	323	419	388	398
TOST, hrs to 2 TAN	D943	2,520	5,917	2,016	6,460	--	--
Foaming, Seq I, II, III	D892						
Sequence I		10/0	0/0	0/0	0/0	--	--
Sequence II		30/0	0/0	30/0	0/0	--	--
Sequence III		50/0	10/0	10/0	0/0	--	--

Table 1: Comparison of Group I vs Group II in hydraulic fluids – Same additive package and treat rate

whether through contamination or condensation, may emulsify leading to rust formation which can increase friction and wear. Group II based formulations help minimise emulsions as well as resist foaming, therefore usually requiring little or no addition of demulsifiers to the final formulation.

3. **Lower sulphur** Group II base oils contribute to less corrosion and less corrosive wear. The ISO 68 Group I hydraulic fluid shown in Table 1 has almost 8x the amount of sulphur as the Group II fluid with equivalent oxidation performance

### Power Generation Turbine Oils

Gas and steam power generation systems utilise turbine oils that provide clean and cool lubrication to bearings, and they're also often used as the functioning fluid in associated hydraulic systems. Many power generation turbine oils range in the ISO 32 or 46 viscosity grades. A lower viscosity turbine oil may be needed for high-speed shafts, while an ISO 68 or ISO 100 fluid may be used for geared-turbine applications. The industry recognises that turbine oils with Group II base oils have a much longer life than those formulated with Group I. As with hydraulic oils, Group II based turbine oils separate more rapidly from water or air with no or minimal assistance from demulsifying additives or anti-foaming agents.

Turbine engine OEM's have strict oxidation-related qualifications for turbine oils used in their applications. Two of those oxidation tests are the RPVOT (Rotating Pressure Vessel Oxidation Test) and the TOST (Turbine Oil Stability Test).

Higher RPVOT values indicate that an oil will have a longer in-service life, or drain



interval. TOST results correlate to the relative lifetime of an oil. A longer TOST time generally equates to better oxidation stability, and hence, a longer drain interval. When turbine oils are formulated using Group II-base oils, it can be common for TOST test results to triple. Varnish formation has become an issue in some turbine oil systems, developing into undesirable deposits that can harm the operation of servo valves, bearings, filters and other components. Varnish in turbine oils is a very complicated issue that can vary from one application to the next, and many causes are currently under investigation in several labs. Multiple root causes for varnish formation have been postulated, including microdieseling, certain additive types, electrostatic discharge and over-extending oil drain intervals. The additive companies have been addressing this issue and have developed formulations that inhibit varnish formation. This can be achieved through the development of a robust turbine oil formulation combining the right additive



## Natural gas engines operate at high temperatures, so deposits can be a problem if ash levels are not kept low in the gas engine lubricant.

technology with the right base oil, together properly balancing the sometimes opposing requirements of oxidation resistance and low varnish tendency (See Figure 5).

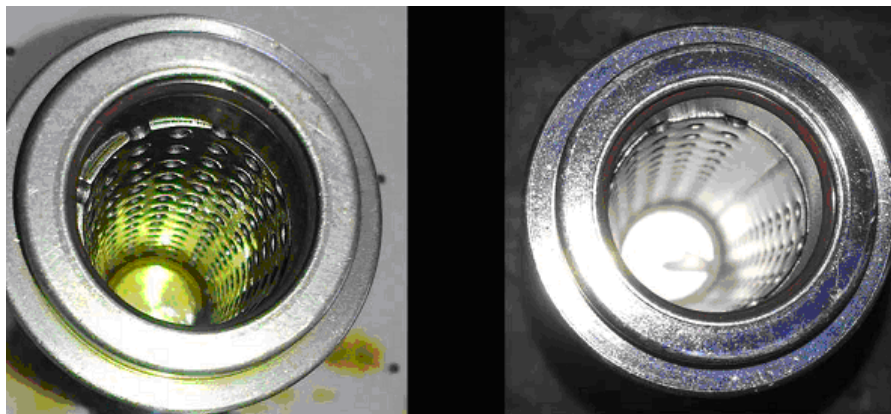


Figure 5 – Field trial on two GE Frame 7FA gas turbines. Last Chance Filters (LCF) after 14 months of service; traditional turbine oil (left) compared with Varnish Deposit Inhibiting (VDI) turbine oil formulated with Group II base oil

Source: Lubrizol

### Natural Gas Engine Oils (NGEOs)

Natural gas engines used in industrial applications operate at high loads, high temperatures and for long periods of time, while exposing the oil to severe oxidation and nitration conditions. Often, these applications are in remote locations and operate with minimal attention. This means engine reliability is crucial. Performance evaluation of NGEO's is accomplished through OEM approvals because of a lack of industry wide tests for evaluating their performance. Group II base oils have shown to be an outstanding, economical fit for NGEO's.

1. • **Correct Viscosity** -- Most natural gas engines use an SAE 40 viscosity grade oil, and in some cases an XXW-40 multi-grade oil. The base oil blend for these lubricants can be made with mostly, or all, Group II base oil.



2. • **High Oxidation Stability** -- Group II base oils allow formulating with the same additive treat rate as would be used with a Group I base oil while

providing increased oxidation stability. Alternatively, an equivalent oxidation stability to the Group I formula can be achieved with a lower additive treat rate.

3. • **Improved Engine Cleanliness**

Natural gas engines operate at high temperatures, so deposits can be a problem if ash levels are not kept low in the gas engine lubricant. Sulphated ash is a characteristic of some additives which may be necessary to protect exhaust valves in natural gas engines. Sulphated ash can be assessed using ASTM test method D874, which measures combusted residue, or ash, left after a certain amount of oil is burned. If sulphated ash is not managed, piston deposits can form and lead to ring and liner wear. If excessive deposits develop

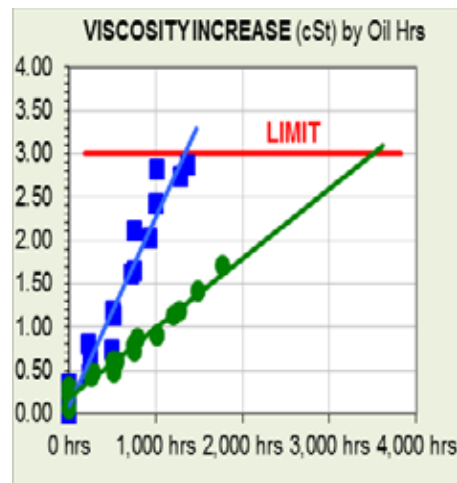
in the piston grooves, they can push the rings against the liner and cause adhesive wear. Excessive deposit buildup on the piston lands can also polish and abrade the liner surface. Improved oxidation and nitration control can improve deposit formation and can be achieved through formulating with a Group II base oil.

Most industrial oils are

advantaged through the use of Group II base oils in their formulations. The industrial oil formulation must be formulated properly and optimised for the application and operating conditions for which it will be used. Every application is different. The following table shows one example of consecutive field tests comparing NGEOs made with Group II and Group I base oils.

### By-the-Numbers – Comparing Performance of Group II vs. Group I in Natural Gas Engine Oils ■

Manu- facturer/ Model	Caterpillar G3516 TALE	
	Group I	Group II
Rated Load	1150Hp @ 1200rpm	1150Hp @ 1200rpm
Load	89.5%	88.4%
Oil Drain Interval	924 hours	1,489 hours
Oil Consumption	0.00035 lbs./HP-HR	0.0004 lbs./HP-HR
$\frac{= [(7.3) \text{ (gal/day)}]}{[(\%) \text{ (HP)} (24)]}$	1.2 gal/day	1.4 gal/day
Applica- tion	Gas Gather- ing	Gas Gathering
Fuel Details	Pipeline Natural Gas	Pipeline Natural Gas
Duration	8,339 hours	8,191 hours
Piston Deposits, demerit	98.22	44.26



## Shell Unveils Ultra Efficient 100 MPG Concept Car

Shell has unveiled a concept city car which, if it were ever to go into production, could deliver material reductions in energy use in the road transport sector. The three seater car is tangible proof of energy efficiency improvements that can be achieved by using cutting edge technology available today through a process of “co-engineering” whereby vehicle body, engine design and lubricants are all created together.

Independent testing and a rigorous life-cycle study shows that Shell's Concept Car would deliver a 34% reduction in primary energy use over its entire lifecycle when compared to a typical city car available in the UK. The Shell Concept Car would use around half the energy required to build and run than a typical small family car available in the UK and 69% less than that of a typical sports utility vehicle available in the UK.

The Shell Concept Car is a total rethink of the Gordon Murray Design T.25 city car produced in 2010 for which Shell produced a prototype oil to improve the vehicle's energy efficiency. The new car is the result of a coengineering collaboration between world leading vehicle, engine and lubricant designers, with each of the three elements of the vehicle tailored to work optimally with each other. It takes a holistic view on energy reduction focusing on design material selection; reduced energy demand via aggressive downsizing, and streamlining while enhancing the efficiency of energy delivery through innovative engine design and lubricant formulation to minimise the impact in terms of overall energy lifecycle use.

The car's gasoline consumption has been measured using a range of vehicle testing protocols covering both steady state and urban driving styles. Sample test results include a steady state consumption of 107 miles per gallon [2.64Litres per 100km] [38km/Litres] [89.1 miles per gallon US] at 70kmph/45mph and an improvement of 4.67g CO<sub>2</sub>/km on the New European Driving Cycle (NEDC) from the use of bespoke lubricants, equivalent to a 5% improvement in fuel efficiency compared to standard lubricants available in the UK.

Mark Gainsborough, Executive Vice-President of Shell's global lubricants businesses which backed the project said, “This is a



significant automobile engineering milestone. I'm very proud of what Shell's scientists and their partners at Geo Technology and Gordon Murray Design have achieved. Insights gained from this project could be transformational in terms of how we address energy use in the road transport sector. Energy use and climate change are major issues for society. This project shows that if we use the best of today's technology, including cutting edge lubricants science, we could potentially have a major impact on energy use and reduce CO<sub>2</sub> emissions. The improvement in economy derived from the collaborative design of engine and lubricant is impressive and highlights the enormous benefits achieved from close relationships between design partners. It also shows the powerful role that lubricants can potentially play in helping achieve CO<sub>2</sub> reduction targets.”

The Shell Concept Car was independently tested at a UK certified automotive testing facility alongside a range of other cars under comparable conditions to measure fuel economy and CO<sub>2</sub> emissions. In the formal NEDC test the Shell Concept Car produced lower CO<sub>2</sub> emissions than both a typical petrol-powered city car (28%) and a hybrid car (32%).

Shell provided all the fluids for the car, specially “designing” the motor oil to complement and enhance the overall efficiency of the vehicle, principally by minimising friction. Shell's Lubricants technology team created bespoke engine oil, based on its premium product Shell Helix Ultra with PurePlus Technology. In parallel, engine guru Osamu Goto's group at Geo Technology optimised the three cylinder petrol engine by re-designing and optimising many of the internal engine components associated with friction. On the cold portion

of the NEDC, these fluids reduced CO<sub>2</sub> emissions by 7.1% and on the combined cycle by 5.0%, compared to standard lubricants available in the UK, again highlighting the value of co-designing engine and fluids.

Built around Gordon Murray Design's patented iStream platform, the Shell Concept Car represents a radical rethink on the way in which cars are designed, developed and produced. It combines cutting-edge lightweight technology - the car weighs just 550kg - and is built using carefully chosen materials which have a low energy and CO<sub>2</sub> footprint. Gordon Murray's experiences in Formula One racing have been used to develop the car, particularly its crash worthiness and lightness. A number of the car's components were created using 3D printing to accelerate the construction of this prototype vehicle. The car also uses recycled carbon fibre for its body that can be assembled for a quarter of the price of a conventional steel car and almost the entire car can be recycled at the end of its life. The car makes use of a modified version of Shell's Drive App via a smartphone. This App provides the driver with real time feedback via an on-screen graphic which emphasizes the fact that fuel consumption is highly dependent on driver's behaviour.

From a styling perspective, the Shell Concept Car offers a new take on the “tall and narrow” look, and dials up the fun factor with its sporty central driving position and two passenger seats behind. The design produces an extremely novel seating arrangement allowing three people to be carried despite the car's diminutive exterior dimensions and gives it a turning circle smaller than that of a London taxi, making it ideal for urban driving.

Dr. Andrew Hephner, Vice President, of Shell's lubricant research team said: “Our car may be small, but it's packed with potential. We want to accelerate the conversation about how we make road vehicles more energy efficient and less carbon-intensive. In the coming weeks and months, we look forward to sharing our research insights from this project with engine designers, car manufacturers, academics and other experts across the automotive sector.” ■





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# Brand building for industrial lubes



**Milind Phadke**

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**S**kyrocketing crude oil prices. Increasing standardization of product attributes. Significant overlap among product offerings. As these forces converge to create a perfect storm driving commoditization and competition in the industrial lubricants market, lubricant marketers are beginning to rethink their once-effective product-centric sales approach.

Seeking new strategies to differentiate their company and their products to maintain market share, many lubes marketers are finding that brand building is not just for tennis shoes and soft drinks anymore. This begs one important question: What is branding?

Branding is that invisible yet powerful force that drives consumer behavior, sometimes unbeknown to the consumer. Bombarded with brand messages nearly every minute of every day, many consumers may not even realize the influence these messages have on their day to day purchasing decisions. Yet many industrial lubricant marketers are struggling to determine the importance or relevance of brand management to their products.

However, in an industry where (not unlike tennis shoes and soft drinks) product attributes are becoming more standardized and significant overlap among competitive offerings is developing, branding can be an extremely efficient and effective competitive tool in the industrial lubricants market space.

While there are fundamental differences between industrial and consumer markets, the branding concept remains the same: determine the best brand message and communicate this to all audiences, both internal and external. When a product-centric approach becomes ineffective, a high-impact branding strategy can lead to significant competitive advantages (including internal benefits) for those with a well-defined, well-articulated, and well-managed brand strategy.

Without it, industrial lubricant marketers could be leaving money on the table by failing to maximizing the investments made in developing superior products.

## Build-a-Brand Budget

One barrier to brand building and management in the lubes market may be the perception that it's a costly and cumbersome process. But in reality, branding doesn't have to be exorbitantly expensive, since many of the mechanisms for brand communication are already in place.

As with any product, a customer's perception of an industrial lubricant brand is mostly based on day-to-day impressions: interaction with sales, customer service, accounting, technical service staff, and others. Certainly, exhibition displays, public relations efforts, write-ups in trade journals, OEM recommendations, trade advertising, and other factors also play a role, but more so with non-customers.

Lubes marketers already incur all of these costs, whether they have a strong brand strategy or not. Therefore, the only additional cost is the investment of time it takes to develop a sound and effective brand strategy that validates the overall core business strategy and that can be clearly communicated to all internal and external constituents.

## Low Costs, Big Benefits

What exactly does a lubricant manufacturer stand to gain through branding?

### Brand equity

Far more than just a logo stuck on a 55-gallon drum, a brand can be one of a company's most valuable assets. It communicates the established values of the company it represents and carries with it promises for quality, service, innovation, and performance.

Formulating a sound brand strategy requires careful consideration of the number of brands in the market and in the pipeline, and their value to the overall business strategy. It also requires assessing the potential for new brands to fill positioning gaps and the buoyancy effect that the discontinuation of old, nonperforming brands may have on market position.

For this reason, formulating a sound, logical brand strategy is likely to eventually cost less than having no brand strategy at all by providing a mechanism for tossing dead weight overboard.

## Better management of complex businesses and internal consistency

A well-planned brand management strategy

creates a more consistent and unifying corporate culture. Identifying core values and reinforcing them throughout an entire operating system with an eye toward brand equity can have a direct correlation to overall profitability for the enterprise.

For the industrial lubricant marketer, this approach enables integration and cohesiveness of all brand-related activities around a common vision on a global scale. For some of the industrial lubricant powerhouses that have merged over the past decade, such as BP-Castrol, Shell-Pennzoil-Quaker State, Exxon-Mobil, and Chevron-Texaco, a strong brand strategy has proven to be the most effective way to coordinate a large, complex, global business.

With the recent acquisition of Shell's food business by Fuchs and its metalworking fluids business by Houghton/Gulf, thought leaders inside those companies are surely grappling with brand management issues. Which brands should be retained and nurtured? Which brands should be discontinued? Should region, technology, or application play a role in the branding strategy? Can branding help fill some of the positioning gaps?

## Longevity

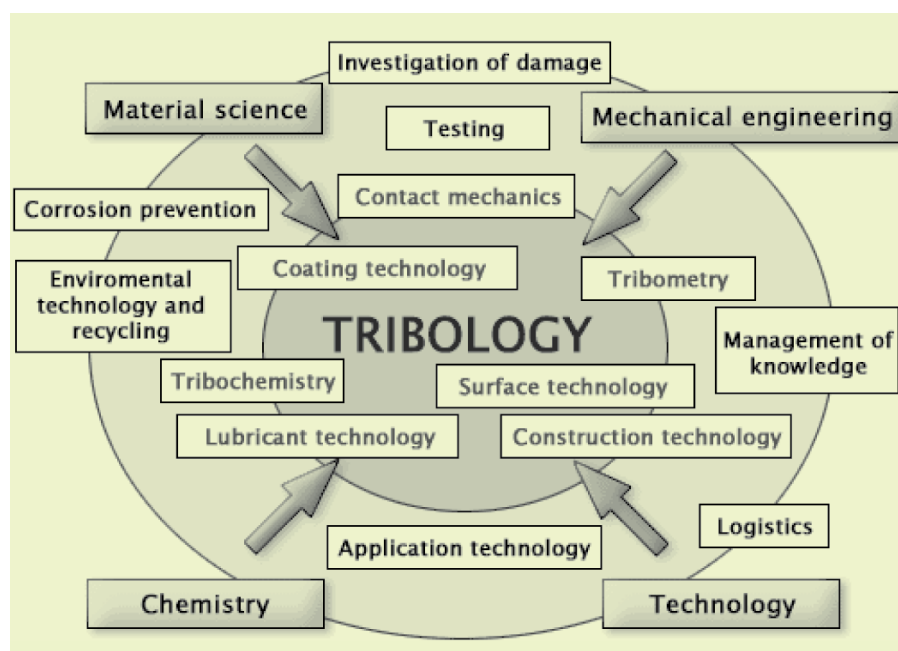
A solid brand can outlive the products. Thanks to instant customer recognition, top-of-mind awareness, and the ability to communicate an inherent set of values, a well-developed brand can generate stronger customer loyalty, and even customer referrals, which can have a positive impact on sales. It can also potentially slow down the degree and rate of commoditization. Competitive pricing and quality notwithstanding, it is clearly harder for a competitor to dislodge a brand from a particular account than it is to dislodge a product. Certainly the high-impact, slick brand marketing tactics of the consumer products industry, with its massive doses of advertising, celebrity spokespeople, and promotions, will not play well in the industrial lubricants marketplace. But the underlying tenets of branding do rightly apply:

Build a strong brand message based on inherent core company values. Ensure that the brand message permeates all communications and interactions, both internal and external.

Foster and protect brand equity to drive profits, gain competitive advantage, and stave off commoditization. ■



# Tribology – the lubricants science needed in Kenya



*By Mohamed Baraka*

Mohamed Baraka is the Managing Director of Synergy Lubricant Solutions Limited based in Nairobi.

In Kenya, there is little advocacy for improvement in the quality of lubricants. Yet, in many countries where more emphasis has been devoted to developing better lubricants, there has been a marked increase in savings, particularly on the economy and increased welfare of the environment. Low quality lubricants jeopardize the life of machinery, which demand heavy investment on spare parts. Inefficient lubrication solutions also lead to lower production as machinery operate below their optimum capacity.

Frequent oil change results in a rise in the volume of used oil dumped into the environment, polluting soils and affecting the quality of water. Low quality oil also releases emissions of heavy particulate matter, which contaminates air, particularly in crowded urban centres or roadside markets. In industrial setups, most gears, bearings and hydraulic

systems' failures – if analysed – could lead to finding better quality lubricants that would give the equipment longer life. This has prompted developed countries to create initiatives focusing more attention on lubrication.

On March 9th, 1966, a UK Government report highlighted the lack of research and education on the subjects of friction, lubrication, wear, and the associated impact on the UK economy. It was estimated that annually, more than £500 million (\$725 million at today's exchange rate) could be saved through better application of the principals controlling friction and wear processes. At the time, this represented 1% UK's GDP. However, subsequent studies suggested that this was a conservative number, considering the material, energy, and the benefits of tackling the world's energy and environment issues.

In order to tackle technological challenges in the areas, the report suggested collaboration among engineers, physicists, chemists and material scientist's to understand the interdependence of these consistent sciences. And since there was no word that could describe the science, the committee met the editor of the oxford dictionary, coining the word 'Tribology'. Derived from the Greek word "tribos" (rubbing), it was given the official definition as "the science and technology of

interacting surface in relative motion and the related subjects and practices". Fifty years after the Jost report, the number of Tribology Societies has grown to 40 countries.

In Africa, South Africa could probably be the only member of the Society, showing how little importance the continent attaches to lubrication. In the 1960s, Britain was more industrialised than we are today. The loss of 1% of GDP was substantial considering that the saving was achieved through improving lubrication practice, without additional investment. Although the amount of resources the country loses through poor lubrication may not be clear, but the figure of 1% of GDP might not be an exaggeration in the Kenyan case. It might be higher since the country imports machinery at a much higher cost than Britain. The cost of spare parts, lubrication and quality labour would be much higher in Kenya. The dependence on one machine in Kenya is also much higher than Britain.

The big question, therefore, is this: should Kenya form a tribology society, or is the country still too low on the ladder of industrialisation to worry about lubrication? If Kenya took the approach of the UK, it could consider establishing a commission to determine the extent of losses incurred through the current lubrication practices. Currently, Kenya neither designs equipment nor lubricants. Even then, understanding lubrication needs can greatly increase the correct use of quality of lubricants, extending the life of equipment and scaling down the energy used.

Some of the challenges facing Kenya involve engine lubrication. Whereas engines in industrialised countries are built to give long drains, they are also designed to reduce particulate matter in the exhaust gases and reduce fuel consumption. For example, the latest diesel engine oils in Europe are low viscosity multigrade oils, which give lower fuel consumption.

In Kenya, the oils used are traditional SAE 40. It is common for a mechanic to look at a multi-grade oil and advice the owner that the oil is too thin. Some operators use fairly low quality oil and common drain intervals are between 3000KM and 5000KM, when there are oils that

**Although many engineers would prefer manufacturers' recommendations, many tend to use higher viscosity oil, believing they will get better protection.**

can give drain at intervals of between 8,000 and 10,000KM in matatus.

The low quality oil gives higher lubrication cost, reduces the life of the engine, damages the environment more with frequent oil changes and the downtime is longer. Fuel consumption is higher. For the marketer, this is good business as he sells more oil and makes more money. For the mechanic, more frequent oil changes means more money paid for his labour. And for the spare parts dealers, more filters will be used, and frequent overhauls mean more sales of overhaul kits.

More studies can be done in the manufacturing industry. Although many engineers would prefer manufacturers' recommendations, many tend to use higher viscosity oil, believing they will get better protection. If a higher viscosity than necessary is used you get better protection but you need more energy to overcome the fluid friction. For example, using industrial gear oil within appropriate extreme pressure properties, results in premature wear and increased fuel consumption.

In the agricultural industry, there is a practice where automotive gear oil is used in transmission. Sometimes, industrial hydraulic oil is used in the transmission and hydraulic system. This, coupled with the use of low quality engine oil and the grease made from recycled base oils, is a sure way of shortening the life of a tractor. If this happens during the cultivation season, it will have a far-reaching impact on the agricultural production for the whole season.

A lot of the misapplication or use of low quality oil happens out of ignorance. The oil industry has done a lot in educating the users and making proper recommendations. Availability of information on the internet also helps in making decisions on the appropriate lubricants to use.

Given the few examples above, it is obvious the country can benefit if the various disciplines could come together to help deepen understanding and propagate good lubrication practices. They can also help in advising on tropicalisation of formulation to meet local climatic conditions. In this, it would be prudent

to include mechanical engineers, chemical engineers, environmentalists, chemists, physicists and many other disciplinary that have interest in lubrication energy conservation and environment protection.

Creating the organisation can also help in measuring the effectiveness of the lubricants on the market. Currently, there is a tendency to quote international standards without means of verifying whether products meet the stated specifications. There is also no means to determine if products meet the performance requirements based on the environmental conditions. It is on account of the lack of these measures that a lot of sub-standard lubricants are being imported into the country, with false performance claims. These end up destroying valuable equipment.

Whereas conditions in Kenya are not the same as in industrialised countries, Kenya has unique lubrication problems that are costly to the economy. While the country aspires to become industrialised, it is better to start now rather than learn by making mistakes. ■

## LUBES DIARY FOR THE YEAR 2016

**13th ICIS Middle Eastern Base oil and Lubricants Conference Dubai UAE.**

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