

Nigerian agencies fight to curb counterfeit lubricants P.12

Fully synthetic lubricants can enhance the bottom line P.28

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Focusing on Africa's lubrication needs

VOL.14 • SEPTEMBER 2015



➔ MAIN FEATURE

SPECIAL REPORT: AFRICAN BASE OIL MARKET IN CONTEXT

PLUS: Lubricant requirements for hybrid vehicles P.26



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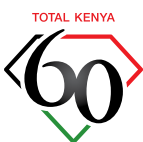
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CONTENTS

VOL 14
SEPTEMBER 2015

NEWS • INDUSTRY UPDATE • NEW PRODUCTS • TECHNOLOGY • COMMENTARY



INSIDE

16 | COVER FEATURE

SPECIAL REPORT: AFRICAN BASE OIL MARKET IN CONTEXT

12 | COUNTRY FEATURE

Agencies step to save Nigeria's lubes industry from drowning counterfeits

22 | MAINTENANCE FEATURE

Understanding failures in cooling system

25 | IN OTHER WORLDS

Total opens largest blending plant to boost capacity in Asia

Klüber Lubrication launches information hub



5 REBRANDING FEATURE



6 PRODUCT LAUNCH



11 E. AFRICA FEATURE

REGULARS

- 2 | **Editor's Desk**
- 4 | **The Market Report**
Total Kenya adds new, advanced coolant
- Morris lubricants secures Kenyan distributor
- Shell Lubricants wins Sub-Saharan Africa Frost and Sullivan Award
- Tide Water Oil eyes African lubricants market
- Engen names Samir as lubricants distributor in Ghana
- Wearcheck boosts lab capacity with new equipment
- 9 | **Frequently asked Questions**
- 28 | **In Other worlds**
- 28 | **Last word**



EDITOR'S DESK

VOL 14 • SEPTEMBER 2015

EDITORIAL

Africa base oil market report - is there a looming shift?



Transitioning into a rapidly growing economy, Africa has become a major center of focus for the many oil dealers seeking outlets for their surplus production. This is especially true for producers of base oil, whose prices now suggest a fresh market dynamic. We welcome you to this edition of Lubezine, which takes an insightful look at this new market trend.

Globally, the price difference between group I and group II base oils has been shrinking substantially, drawing the interest of lube blenders toward use of group II base oils. This has created the hope that – going forward – more engine oils will be blended using group II base oils, a blending shift that will translate into greater use of higher lubricants quality in the region's market.

Meanwhile, the first ever Argus African base oils and lubricants conference went down in South Africa in June. The event provided a forum for players in the industry to make presentations regarding various aspects of Africa's lubricants market. In this edition, we report on the various expert-analyses that were presented during the conference.

West Africa will be holding its second lubricants summit in November this year, courtesy of Nigeria – one of the leading lubricants markets in Africa. Endorsed by the Nigeria Standards Organization and the Department of Petroleum Resources, the conference will come in the wake of data released by the Lubricants Producers of Nigeria (LUPAN) indicating that the country loses \$3 billion annually to counterfeited lubricants.

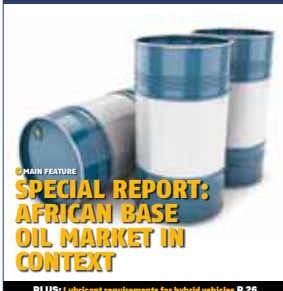
In Kenya, there is an obvious increase in the vibrancy of the lubricants market, characterized by new product launches and relaunches by the top lubricants marketers in the country. There is also an apparent shift to consumption of better quality products, which is likely to continue benefitting end users.

With a readership of over 3000 professionals and growing, Lubezine continues to provide the industry with a platform to exchange information and ideas that can grow the market and bridge knowledge gaps. We thank our loyal advertisers for their continuing support. ■

Joseph Dzung'u

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¹ Based on NOACK Volatility test and equipment manufacturers' requirements. ² Based on ACEA M 111 fuel economy results compared with the industry reference oil. ³ Compared to higher viscosity oils. ⁴ Based on Sequence IIIG performance versus group II and group III Base oils.

THE MARKET REPORT

NEWS • BRIEFING • NEW PRODUCTS • TECHNOLOGY

Total Kenya adds new, advanced coolant

Total Kenya has unveiled a fresh range of coolant, with an aim to fulfil technological obligations and meet the specific cooling requirements set by particular engine Original Equipment Manufacturers (OEMs).

The newly-developed agent also targets to keep pace with the ever-changing engine technology, advancement in design and stringent requirements by engine manufacturers, which lay strict emphasis on coolant specifications.

Now available in Total Kenya outlets the coolant is branded as Coolelf Auto Supra. According to the marketer, the agent employs Organic Inhibition.

Total has said the coolant is pre-mixed and ready for use in two ranges, which are

the Coolelf Auto Supra -260c (40 percent concentration) available in 1L packages and 208L, and the Coolelf Auto Supra -370c (50% concentration) available in 208-litre containers only.

‘Coolelf Auto Supra is a very long life coolant based on mono-ethylene Glycol-MEG and can be used in cooling system of cars, vans, truck, matatus, buses, heavy duty trucks, construction machines and tractors. It can also be used in both cast iron and aluminium engines and radiators made of Aluminium and Copper alloy. Coolelf Auto Supra -370c is the top-of-the range in our coolant product portfolio. Its long life and long drain extends to 650,000kms/8000hrs/5 years when used in trucks and 250,000km/5 years when used in cars,’ Total Kenya announced.

The company added that the coolant



range meets the ASTM 3310/4656/4985 and D-6210 and is officially approved by Mercedes Benz-MB 326.3, MAN 324 Type SNE, FORD, AUDI, VW, DEUTZ, VOLVO 128 6083, SCANIA TB 1451, among others. ■

Morris lubricants secures Kenyan distributor

A leading UK oil manufacturer has ensured the Union Jack is reaching new parts of the world after sealing a new African contract. Morris Lubricants, one of the largest independently owned oil blenders in Europe, has strengthened its already impressive export portfolio by securing a new distributor in Kenya as reported on its official website.

The new customer recently placed their first order for a full container of commercial vehicle and agriculture products. It follows a big push by Morris Lubricants across West Africa, where the brand is already well-known in Ghana, Nigeria, Sierra Leone and Mauritania, and means the Shrewsbury-based company is now exporting to more than 80 countries worldwide. Stephen Dawe, International Business

Director at Morris Lubricants, said: “We have seen impressive growth in the last few years, and our overseas sales have certainly played a big part in that”. “We are opening up new territories and securing new business in countries that were notoriously difficult to break into in previous years”. “The key to our success is high-quality. Consumers across the globe are looking for better lubricants, and when quality is the prime differentiator, pricing issues become less significant”.

“We build and nurture relationships with our export customers and the Union Jack is still seen as an emblem of quality, in virtually every corner of the world.” Mr Dawe said Morris Lubricants’ recent success overseas could be partly attributed to the launch of their latest Versimax brand of commercial vehicle products, together with the growth of

new generation gas engine lubricants.

He said: “Our latest marketing campaigns have been welcomed in all of our export locations, where serious consumers recognise Morris Lubricants as a leading high-performance brand, and have done so for many years”. “In the past, we tried to gain access to different markets with the same suit on. By splitting our products into different brands – such as the new Versimax range for commercial vehicles – it makes it easier for people to understand. Yes, we might do heritage oils, but Morris Lubricants also provides the necessary products for the latest generation commercial vehicles, or for the machinery used in a modern industrial engineering process.

Our recent moves have really changed people’s perceptions. “Another area of expansion has been into gas engines, where Morris has developed a specialist range of crankcase oils. Gas engines have become increasingly important in places like India and the Middle East, where combined heat and power plants are continuing in popularity. “CHP plants utilising anaerobic digestion, are able to biodegrade waste organic materials in order to create lower cost energy, and power everything from air conditioning, to heating and lighting.” ■



East Africa: overview of lubricants industry and growth potential



Libya Oil launches new lubes, rebrands packaging



From left to right Libya Oil GM Mr Dancun Mashariki, ministry of energy and petroleum principal Sec Eng. Joseph Njoroge, Libya Oil regional business manager Elmarimi Kashim and lubricants and specialist manager Mr. Wekesa Mukuusi

Yusuf Kipruto

Lubricants marketer Libya Oil Kenya Limited has revamped its Lubricants Brands Deomax (Diesel Engine Oil) and Accel (Petrol Engine Oil) in the African market. The revamped products, launched in a ceremony attended by Ministry of Energy and Petroleum Principal Secretary Eng. Joseph Njoroge, also saw OilLibya unveil new packaging for all their lubrication products.

Speaking during the ceremony Eng. Njoroge appreciated the fact that the company had undertaken many investment initiatives in the country, and continued to support the local economy directly through employment and indirectly through the support of other local manufacturers.

On his part, Libya Oil Kenya Limited's General Manager, Mr. Duncan Murashiki, acknowledged the remarkable achievement the company and all the stakeholders had achieved in their commitment to pursuing excellence, nurturing leadership, encouraging collaboration and fostering innovation in the

market.

"In line with our commitment to our customers towards fostering innovation and providing sustainable energy solution, today we are gathered here to celebrate the unveiling of our new and improved line of lubricants in the Kenyan market - Deomax and Accel range of lubricants" Mr. Murashiki stated during the launch.

"By launching the new lubricants in the Kenyan market, we are not only demonstrating our strong enthusiasm and commitment to the market but also making a strong statement towards affirming our foothold in the oil and energy industry in Kenya", he added.

Eng. Njoroge said, "I am happy to note that OilLibya has undertaken many investment initiatives here in Kenya to ensure local production of its lubricants. I am made aware that these products are produced under the most stringent international ISO standards at OilLibya's Lubes Oil blending Plant (LOBP) in Mombasa."

Eng. Njoroge further observed that

OiLibya operated in an industry that was of critical importance to the country's growth agenda, saying the industry was central in the development of a well-diversified portfolio of industries.

Speaking to Lubezine, Wekesa Mukuusi, the company's Lubricant and Specialities Manager, said the repackaging idea was about refreshing the packaging, while adding new high performance lubricants for the consumers. He explained that Libya Oil Kenya Limited was a pan African company, positioned among the majors in the continent. He said redesigning the packaging was an initiative to further solidify the OiLibya brand as a major in the lubricants industry, and as a commitment to our consumers, while offering them an attractive product.

"Lubricants are among the fast moving consumer goods, there is the need to give consumers attractive products which are appealing to the eye, and to also differentiate your brand from the rest in the ever increasing competitive market", he stated. ■

THE MARKET REPORT

NEWS • BRIEFING • NEW PRODUCTS • TECHNOLOGY

Vivo Energy launches new Shell oil with PurePlus Technology



Left to right Vivo Energy lubricants sales manager Mr Stephen Gikonyo and the MD Mr Polycarp Igathe pose with models during the launch

Yusuf Kipruto

Vivo Energy Kenya, the official Shell licensee, has launched new Shell Helix Ultra lubricants with Pure Plus technology into the market. Other new products in the Helix range were also launched. They are: the Shell Helix HX3 SAE40, Shell Helix HX5 15W40, Shell Helix HX7 10W40 and Shell Helix HX8 5W30.

Speaking during the launch, Vivo Energy lubricants sales manager Mr. Stephen Gikonyo said the new lubricants introduce a new chapter in region's lubricant landscape in the region.

"Lubricants with this technology are made from natural gas. We all know that majority of the base oils are derived from crude oils, which has impurities in it. The Gas To Liquid technology ensures that we get crystal clear base oil which is 99.5% pure" he said.

Speaking during the launch Vivo Energy Managing Director Mr. Polycarp Igathe lauded the innovation, saying the constantly changing business environment demands that companies use innovation to stay ahead of the market.

"Today marks a great day for Vivo Energy since our entry into the country three years ago. The company's belief in the promise and potential of the country has enabled us make great strides into the industry," he said.

"This new products made from an industry revolution from Shell global now available in the market. They offer great value to our clients and encourage our distributors, retailers, and business partners to embrace these products," he added.

"Some of the benefits derived from using these lubricants are improved engine cleanliness because the base oil is 99.5 percent pure. Research has actually shown that while using the Shell Helix Ultra gives a consumer a 3 percent fuel economy, while allowing easy cold start and low oil consumption," said Mr Gikonyo.

This observation was further echoed by Shell technicians during their launch in 2014, who said that the Shell PurePlus Technology base oils have consistently lower viscosity at cold temperatures (-25° to -40C°) so they start lubricating an engine straight away from a cold start. These properties translate into important performance benefits for the engine, including improved cleaning, wear protection, and fuel economy. Mr. Igathe also took the platform to encourage the government to encourage local blending of lubricants in the country to boost the economy.

"Shell has one of the largest Lubricant Oil Blending Plants in the region and employs many Kenyans in our plants. It is a pity that finished lubricants are imported as base oils through the watch of relevant government bodies," he said.

"Policy enforcement must be made to ensure that only virgin base oils are imported and local blending encouraged." He added.

"The economy is growing, industries are opening, infrastructure is developing, machinery is being imported from Asia, Europe and America, all these equipment need to be lubricated and we have the local capacity to adequately supply these industries and further develop the lubricant industry in Kenya," said Mr. Igathe. ■

Shell Lubricants wins Sub-Saharan Africa Frost and Sullivan Award for product leadership

Frost and Sullivan has recognized Shell Lubricants with the 2014 sub-Saharan Africa award for product leadership. Frost and Sullivan said the award was conferred on the firm in recognition of the strides that Shell had made in the base oil production using its Pearl gas to liquid plant in Qatar since 2012.

In 2014, Shell announced that all of its premium motor oil brand Shell helix Ultra with PurePlus Technology was made using Shell PurePlus technology base oils from Pearl. These base oils used to blend motor oil are cleaner, more effective, offer better performance than typical group III and are cost comparable with other fully synthetic lubricants.

"The Shell PurePlus Technology is based on their proprietary Shell Middle Distillate Synthesis (SMDS) process," said Frost & Sullivan Programme Manager, Avril Harvey. "Through this process, natural gas (methane) is piped from the ground and mixed with pure oxygen to create synthesis gas, which is catalytically converted to liquid form known as 'syncrude'. The syncrude is then cracked into the product ranges and distilled to create Shell PurePlus Technology base oils, which are completely clear and colourless base oils,"

Due to its purity, improved viscosity, and volatility, the product ultimately requires consumers to top-up less often, even on the longest OEM oil drain intervals. This reduces the consumer's overall maintenance costs and helps extend the longevity of the vehicle and vehicle parts, according to Frost and Sullivan.

"Shell credits its success in continuous innovation to its matrix structure. Although it has large technology, marketing and supply chain teams, they operate as a single team," noted Avril Harvey. "Furthermore, the large volume of production from the Pearl GTL plant allows the GTL base oil to be distributed globally from Pearl to distribution hubs, and is then re-distributed from there. As a result, the formulation is consistent globally."

Source Frost and Sullivan ■

Tide Water Oil eyes African lubricants market

Tide Water Oil, an associate of Andrew Yule group, is eyeing the African markets for its lubricants manufactured under Veedol brand. “We are looking the African markets seriously. To start with the company will start with South Africa where the products will be sold by the distributor based in the UAE”, chairman of Tide Water Oil, Kallol Datta told PTI an Indian based news agency. After South Africa, other African markets would also be explored, he said. The Veedol brand is also sold in Europe, North America, Latin America and the Middle East

through third party manufacturing, Datta said. The consumption pattern of the lubricant industry has undergone substantial change in the past few years. Though the automotive industry had witnessed a positive growth, the growth in the lubricant industry remained subdued, he earlier told shareholders at the company’s AGM. Tide Water had also entered into a JV with JX Nippon Oil & Energy Corporation of Japan to form JX Nippon Tide Water Oil Lubricants India to manufacture ENEOS brand of lubricants in India, Bhutan and Nepal for Japanese and Korean cars. ■



Engen names Samir as lubricants distributor in Ghana

Engen Petroleum and Samir Engineering and Trading Co Ltd (SETL)/Quantum Petroleum have announced SETL’s appointment as the official distributor of Engen’s full range of lubricants in Ghana according to a release by the Ghana News Agency. Engen Petroleum is a subsidiary of PETRONAS, the National Oil Company of Malaysia and one of the world’s leading integrated energy companies.

A uniquely African energy multinational, Engen has independent operations in 18 sub-Saharan African and Indian Ocean Island countries, and indirect representation in seven more. Engen Ghana L, established in 1998, operates a network of 25 retail service stations and further supplies fuels and lubricants to commercial customers.

“We are very pleased about the appointment. SETL has an extensive market presence and a dedicated marketing arm, and is in a strong position to deliver excellent service to our joint lubricants customers,” said Henry Akwaboah, Managing Director of Engen Ghana.

In addition to Samir Engineering’s distribution strength, he said the partnership has strategic importance as it would increase Engen’s lubricants footprint to a total of 54 retail

service stations with the addition of SETL’s/ QUANTUM lubricants operation.

Engen Petroleum manufactures and markets a full range of lubricants under the Engen brand in addition to marketing lubricants under licence from PETRONAS Lubricants International. The company has built up globally-competitive product development expertise over many years through PETRONAS’s relationships with leading global automotive manufacturers. It has gathered extensive regional know-how in the development of product lines, which it believes can withstand harsh African operating conditions.

Kamil de Villiers, Lubricants Business Manager for Engen’s International Business Division, said SETL will distribute the full range of Engen’s automotive and industrial lubricants and greases, as well as selected PETRONAS Syntium engine oils and PETRONAS marine lubricants.

Drikus Kotze, General Manager in Engen’s International Business Division (IBD), said Ghana was a very important regional market, and through their relationship with SETL they hope to significantly increase their market presence in the country.

Samir Engineering, part of SAMIR GROUP,



a national conglomerate based in Accra, has been servicing the Ghanaian Automotive market since 1963, and boasts a significant client base.

Nazem Khaled Karroum, Managing Director and Chairman of Samir Group, said the company has a significant presence in the automotive market in Ghana and will be marketing Engen and PETRONAS lubricants through its 32 Quantum Petroleum branded retail sites countrywide.

“We consider the link with Engen and PETRONAS to be one of our most prestigious alliances, and trust it will further enhance our brand visibility in Ghana. Together we can move forward and reach the milestones we have set ourselves with passion and joint endeavour.”

He said the company will target its dealer and customer network to reach consumers. Engen products have been available through Quantum Petroleum sites as well as Samir appointed distributors since 19 June 2015. ■

Wearcheck boosts lab capacity with new equipment



WearCheck has announced an upgrade of its laboratory equipment, in an investment aimed at adopting advanced technologies to ensure continued accuracy and reliability of sample analyses results and diagnoses.

The more than two million Rand equipment update includes a new Gas Chromatograph (GC), a new Inductively Coupled Plasma spectrometer (ICP) and a new High Performance Liquid Chromatograph (HPLC), according to a statement released by the organisation in April.

“While the company has already invested extensively in GC, ICP and HPLC technology over many years – the laboratory capacity has been significantly boosted with the addition of the latest testing equipment,” the statement reads, adding that the new laboratory equipment will benefit customers across all industries, and particularly transformer analysis.

WearCheck provides analysis services to a wide range of sectors, including earthmoving, industrial, transport, shipping, aircraft and electrical industries by scientifically analysing used oil from mechanical and electrical systems. Additional services include the analysis of fuels, transformer oils, coolants, greases and filters.

The firm’s expansive network now includes ten WearCheck laboratories spanning the continent and beyond, including Gauteng, KwaZulu-Natal, Mpumalanga Province, and international laboratories in India, Dubai, Ghana, Mozambique and Zambia - at Lumwana mine and Kitwe - with a presence in Cape Town, Rustenburg, Steelpoort, Port Elizabeth, Zimbabwe and Namibia.

ICP spectrometry analysis provides high-speed detection and identification of trace elements at very low concentrations in oil to determine the levels of wear metals, contaminants and oil additives in lubricating oils. This technology has been installed in WearCheck’s Middelburg laboratory, according to the press release.

On the other hand, HPLC separates compounds within a transformer oil sample, revealing the presence and quantity of trace degradation products, which in turn provides information on the operation of the transformer and whether there has been any breakdown of insulating material.

The GC separates and analyses compounds that can be vaporised without decomposition, revealing critical information about the presence of contaminants via the composition of the oil sample. According to Wearcheck, the new GC and the HPLC are in operation in their speciality laboratory (WSL) in Johannesburg, and have enabled more samples to be processed in a faster turnaround time.

The concept of analysing oil samples from a machine or component, according to Wearcheck’s Managing Director Neil Robinson, is similar to that of taking a blood sample from a person - the results determine the health status of the unit.

“WearCheck’s highly-skilled diagnostic team then analyses the results and recommends how to rectify any abnormal findings,” he said.

Meanwhile, Wearcheck has reiterated its commitment to providing quality services, noting that all their laboratories are now largely automated and integrated with the latest technology. ■

Gulf Petrochem plans expansion in East Africa

Oil product trader Gulf Petrochem plans to focus on East Africa for growth and is increasing its storage capacity in the region to take advantage of double-digit growth for some products, executive director S Thangapandian said in an interview with news agency Reuters.

Gulf Petrochem, whose main trading activities are in fuel oil and bunkering, started talks about three months ago to take up storage capacity in Dar Es Salaam in Tanzania and Mombasa in Kenya, Thangapandian said in an interview.

A deal to lease storage of about 100,000 cubic metres to store mainly gasoil and petrol in East Africa is expected to be finalised by December, while the company also plans to tap the bunker fuel and liquefied petroleum gas (LPG) sectors.

“Next decade belongs to Africa because that’s the market which is short. Tremendous opportunities are available there and assets are available at cheap rates ... things are slowly stabilising there,” Thangapandian said in an interview during the Asia Pacific Petroleum Conference in Singapore.

African demand for gasoil and petrol is increasing at seven to eight per cent, while LPG demand is rising in double digits, he said.

Gulf Petrochem has already applied for licenses in Kenya and Tanzania to market LPG, used mainly for cooking, while taking baby steps to increase the number of its fuel stations to eight from the current three.

In addition to expansion plans in East Africa, Gulf Petrochem is also planning to enhance its presence in the Middle East by investing US\$60mn in storage facilities at Fujairah. Part of the capacity would be ready by December 2016, with the remainder completed by March 2017, Thangapandian added. ■



Frequently Asked

Questions

FAQS



Q How do I find out what type of coolant is in my car?

If the type of coolant in a vehicle is unknown it is not easy to identify it without the use of sophisticated analytical procedures. The colour of the coolant does not prove type or quality of the product. The best course of action is to drain and flush the system and refill it with the recommended type of coolant at the correct dilution level.

Q My coolant reservoir liquid has turned brown, what does it mean?

There are very few things that make coolant turn brown. Rust is one thing. If you have air in the system, or if you have mostly water rather than the correct mixture of coolant and water, rust can form in the system and turn the coolant brown. It will also plug up

the radiator and cause your car to overheat. Another thing is oil. If oil is getting into the coolant through a blown head gasket or some other internal leak, it will sort of mix with the coolant and turn it brown and foamy. A third way is exhaust getting into the cooling system through a blown head gasket, cracked block or cylinder head, or a compression leak between a cylinder and a water jacket.

Q What is the difference between coolant and antifreeze?

Antifreeze is a concentrated product, normally based on glycol and containing inhibitors. It has to be diluted at a suitable concentration for use. The diluted liquid is usually called coolant

Q Does Antifreeze Break Down?

Engine antifreeze does break down, forming corrosive organic degradation

products. Antifreeze buffering agents inhibit this corrosion. Since most antifreeze leaks out of the vehicle, most systems are “topped off” with fresh antifreeze, extending its life somewhat. How much depends on the type of antifreeze added.

Q Can You Mix Antifreeze Technologies?

The one universal coolant that all agree on is water. For best performance, water needs a little help. What happens when antifreezes are mixed? A lot of the confusion about mixing coolants stems from early work with carboxyl coolants. In an American Society of Testing and Materials (ASTM) test, mixing IAT and OAT coolants resulted in more corrosion than either antifreeze alone. Subsequent tests revealed a testing error: the corrosive environment occurred because the coolant was too dilute. ■



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East Africa: overview of lubricants industry and growth potential

By Nyakundi H Nyagaka

East African lubricants market is set to grow in the coming years, buoyed by a vibrant economy that has been registering impressive growth over the past decade. This is according to a presentation made at the 1st Argus Africa Base Oils and Lubricants Conference by Mr Ohana, who is the Managing Director of Kenya-based oil marketer KenolKobil.

The region comprises of Kenya Uganda Tanzania, Rwanda, Burundi and South Sudan. With a combined population of 153.3 million people over a land area of 1.82 million square kilometres, the agricultural sector in the region contributes over 20 percent of the regions GDP added Mr. Ohana.

‘The average unweighted economic growth for the region for the last decade has been an impressive 6.4 percent,’ observed Mr. David Ohana, noting that the manufacturing and service sectors have been growing steadily over the last decade.

‘Going forward, infrastructural developments, service industry, mining, oil exploration and mechanized agriculture will act as catalysts for development. The East African Community common tariff and free movement will also enhance growth through

the trade benefits of economies of scale,’ he said.

Currently, the East African region consumes over 100,000M3 of oil per annum, out of which 80 percent is blended within the region while 20 percent is imported. All the blending plants operating in the region, says the overview by KenolKobil, utilize group I base oils, with group II base oils expected to gain interest as the price difference between group I and II base oils keeps on reducing globally.

According to Mr. Ohana, there is no single base oil refinery in the region, forcing the blending plants in the region to depend on base oil imports from major refineries in Europe and Middle East. These are supplied via co-chartered vessels by various LOBPS. Some base oils are imported in flexi tanks especially by smaller Plants.

Further, he said there is no additive production facility in the region as most additives are sourced from major world producers like Lubrizol, Infineum, Afton and Chevron Oronite.

Only Kenya and Tanzania have blending plants with Kenya’s installed annual capacity being 110,000M3 with a utilization of 40 percent while that of Tanzania is 114,000M3 with a utilisation of 50% added Mr. Ohana.

‘95 % of the grease used in the region is

imported from the middle east with only small portion being blended locally in Tanzania at the regions only grease blending plant owned by fuchs petrolube “said Mr Ohana.

Like any other region in the world, the East African community is also beset with some challenges that are likely to impact negatively on the growth of the region’s economy. Some of these as identified in KenolKobil’s presentation include political instability in countries such as Burundi and South Sudan, inability of governments to stamp out substandard imports, risk of environmental degradation through unsafe used oil disposal, corruption and import tax evasion resulting in unequal playing grounds, and the withholding of donor funding in Rwanda, Burundi and Uganda.

But even with these challenges, there is high hope that the region’s market prospects remain promising as the member countries continue to experience more investment and demand for base oil and finished lubrication products.

KenolKobil’s report says the factors that have been identified with the growth of the lubricants industry in Kenya are political stability, a stable macro economic environment driven by higher private sector investments and increased exports. The recent discovery of Oil, Gas and coal in the country are also expected to revitalize economic vibrancy on exploitation. The opening of the country’s Northern Corridor project including a new port, railway and new roads is also expected to open new frontiers of economic growth, increasing lubricants consumption.

Similarly in Tanzania, increased mining activities and industrial output coupled with rehabilitation of the railway and port, are the key contributors, added the kenol kobil report

Uganda’s sustained fiscal and monetary policy focused on containing inflationary pressures ideal for microeconomic growth and increased manufacturing activities enhancing exports of value added goods to the region has been associated with growth while in Rwanda a growing manufacturing sector, investment in power sector and infrastructure are contributing towards growth of the Lubricants industry, concluded Mr Ohana. ■

Table showing overall lubricants volume for four years in East Africa

	2011	2012	2013	2014
KENYA (M ³)	43,947	40,138	46,668	42,312
UGANDA (M ³)	10,202	10,127	11,030	*11,800
TANZANIA (M ³)	26,614	27,448	29,939	*32,040
RWANDA (M ³)	1,020	1,104	1,140	1,200

Source: PIEA/PIPECOR, LNG EMEA, OMC RWANDA, EWURA data, Assimper

NOTE: Tanzania data for 2012 & 2013 is based on locally blended volumes

*Data estimated

Agencies step to save Nigeria's lubes industry from drowning counterfeits



People selling unbranded lubricants in bottles in Nigeria

By Olaolu Olusina – Lagos

Nigeria loses more than \$3 billion annually to counterfeited lubricants despite spirited efforts by authorities in the West African country to contain the problem. This is according to a paper presented by LUPAN Chief Executive Officer Emeka Obidike during the Argus lubricants conference that was held in South Africa in July, which also said problem had become a major challenge for lubricants producers in Nigeria.

In his presentation, Mr. Obidike expressed concern that on account of the rampant malpractice a considerable number of lubricants producers had resorted to undercutting each other, indiscriminately selling their base oils to unauthorized dealers in a bid to sell off their products and make profits, with the sole aim of just avoiding production costs.

‘Counterfeiting practices such as imitation of color, name or illegal packaging of preferred brands; packaging plain unblended base oil and selling it as blended lubricant blending below set importation of low quality base oil; outright sale of base oil in plastic bottles that are unlabeled and unpackaged; blending in drums instead of plants and importation of substandard finished products is common the country’, he said.

‘To many of these traders, the practice is a

smart way of avoiding high production costs and the attendant taxes and levies by government regulatory agencies, difficulty in securing licenses and permits as well as unfavorable policies, indiscriminate issuance of permits by agencies and high cost of importation of raw materials such as base oil and additives’, he said.

With a combined total installed capacity of existing blending plants, if operating at full capacity, estimated at over 600,000 metric tonnes per annum, the current total blending capacity is just about 350,000 metric tonnes per annum. Mr. Obidike said most African countries blend 60 percent of their base oil while the rest goes into the market unblended.

He said the substandard products are usually sold for less, creating unfavorable market situation for genuine products. He noted that breakdown of machinery, closure of existing plants, increase in unemployment rate, increasing cases of accidents and environmental pollution were some of the consequences of fake oils circulating in the market.

The government agencies tasked with ensuring compliance to standards include Department of Petroleum Resources (DPR), which is the statutory body with the responsibility of granting licenses to blenders and import of petroleum products in Nigeria, including base oil.

Others include the Standards Organization

of Nigeria (SON), which is responsible for the enforcement of standards and products specification; and the Petroleum Products Pricing Regulatory Agency (PPPRA), which is responsible for price control of petroleum product in Nigeria.

According to Mr. Obidike, between 2010 and 2011, stakeholders in the lubricants sector in Nigeria made several efforts to sanitize the industry, including placing series of adverts in various national newspapers to enlighten the public of the dangers of tolerating substandard lubricants.

‘Between 2003 and 2004, the Standards Organization of Nigeria and the Department of Petroleum Resources sought intervention of stakeholders to sanitize the industry and some level of success was recorded, but sustainability remains a snag for such initiatives’, he said.

‘On individual levels, the DPR has on occasions embarked on market sanitization, by inviting companies to make presentations of their operating license, product branding and packaging, evidence of quality control amongst other requirements. On the other hand, the SON also commenced monitoring at seaports, airports, taking samples from vessels, paying visits to plants and taking samples for testing, as well as random sampling and testing on the open market’, he said.

continued on pg 14 »



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Theme:

**QUALITY LUBRICANTS:
KEY TO TECHNO-ECONOMIC AND INDUSTRIAL DEVELOPMENT OF NIGERIA.**



About the summit: The summit, in its second edition, is packaged and endorsed by the Standards Organisation of Nigeria (SON) and the Department of Petroleum Resources (DPR) as an International Conference and Exhibition on the nation's lubricants market and related industries.

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“Between 2003 and 2004, the Standards Organization of Nigeria and the Department of Petroleum Resources sought intervention of stakeholders to sanitize the industry and some level of success was recorded, but sustainability remains a snag for such initiatives,”

« from pg 12

“In order to stem the tide of substandard products in the Nigerian lubricant sector, LUPAN is supporting more aggressive approaches by regulatory agencies including adverts in newspapers, sponsored articles in mainstream newspapers, newspaper editorials, road shows, posters and bill boards in strategic positions; radio adverts in all languages and vernacular, in particular the local variation of English language, TV adverts and mini TV series sponsored by agencies and regulatory bodies on their own or in collaboration with the private sector,” he said.

He however suggested ways in which government could tighten industry practice and regulation, saying regulatory bodies must step up their act as watchdogs in the sector. This should be done by stimulating collaboration and cooperation among regulatory agencies, especially in the issuance of permits and clearance for the importation of base oils, noting that in some countries, it is imported as a petroleum product and also a chemical, and as such permits are issued by different agencies.

He also said that base oil should be strictly monitored right from the point of entry to the point of blending, to curb sales of base oil in the open market, stressing that only licensed blenders should be authorized to import base oil, adding that more collaboration with law enforcement agencies was needed, and more parliamentary support by way of legislating on how to penalize act of counterfeiting and prosecuting offenders. He said that importers and manufacturers should be held accountable for every base oil sales and production by making record of same in a chart.

Some of the benefits of tightening industry practice he listed included boosting employment generation, encouragement of technological transfer and development, reduction in environmental pollution and degradation, reduction in motor accidents as well as checking capital flight. The LUPAN chief executive also highlighted inappropriate handling of waste oils as one of the industry malpractices.

“Waste oils are one of the major contributory factors to environmental degradation. Most people that handle waste oils are illiterates (some auto technicians) and educated but unenlightened technicians. Some of these oils are sold for

re-use in heavy duty vehicles, or in some cases even passed off as raw crude. Oil recycling lessens the likelihood of used oils being poured on the land and in waterways, thereby polluting the environment,” he said.

He however noted that recycled motor oil could be used as fuel in blast furnace or plant boilers, suggesting that the government could create a special unit to handle oil collection in the waste disposal department of the Federal Ministry of Environment.

“To this extent, special receptacles could be created (just as is done with medical waste) for collection of such oils. The above option is also open to the oil marketers who are the primary contact of the auto mechanics. Oil marketers can embark on - the - spot education on the hazards of waste oil spillage, during their supply rounds to shops and garages. Customized receptacles can be made and supplied to garages or kept by the wayside,” he recommended.

He also suggested the use of the media to create awareness and educate the public on the hazards of waste oil spillage even as he said advised on the siting of waste oil collection stations in strategic areas of town.

Speaking on current practices of handling used oils and potential of re-refining in Africa, Obidike said in some countries, such oils are gathered to be combusted as fuels, or recycled for general lubricant applications or for automotive, industrial and heavy duty application, or introducing additives with the appropriate detergent and antifriction qualities.

“The government can, through its environmental agencies, contain the situation of waste oil collection as the main issue is recycling.

The government can encourage private individuals to engage in the business of waste oil recycling by making the venture attractive by means of offering varied incentives such as pioneer grants; tax free periods for pioneer companies intervention funds disbursed through industrial development banks; business friendly economic policies,” he said.

“There is a large working arena for any corporate body that wants to venture into the business of waste oil collection, especially when measured against the steady growth of industries thus making the viability of waste oil recycling very attractive, he said. ■

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Connecting Africa to the world: Africa's base oils markets in context

By James Gooder

Africa is the world's fastest growing market for oil products, and has become a focal point for traders looking to identify new outlets for a surplus of production. At this year's first ever Argus Africa Base Oil and Lubricants event in Johannesburg, I discussed some of the trends affecting global markets and mused on how these might have a bearing on Africa.

Bigger picture

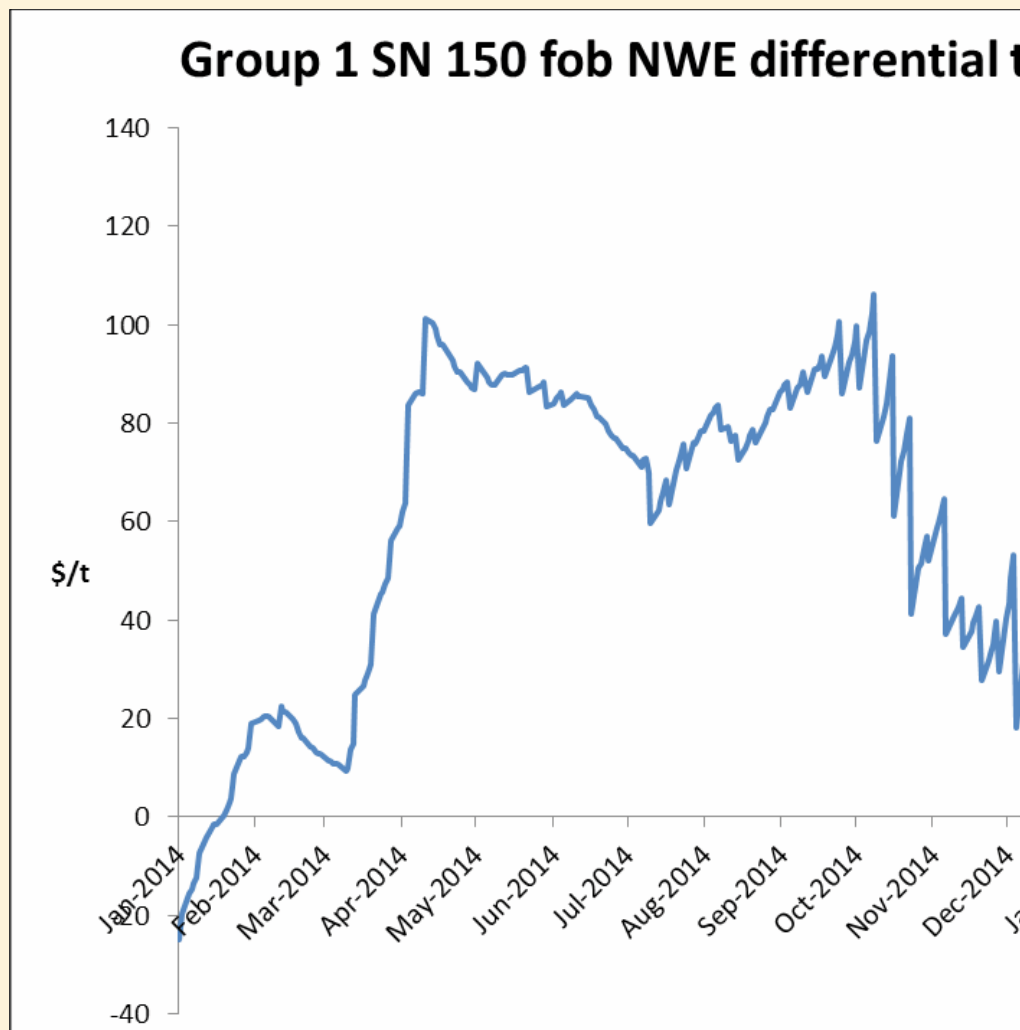
The biggest story in oil markets in recent years has been the huge boost to US crude oil production made possible by advances in drilling techniques that have made oil and gas trapped in shale rock formations accessible on a commercial scale.

US crude production has swelled from around 5.5mn b/d just four years ago, to over 9.5mn b/d now. This has made North America increasingly self-sufficient in energy – a major reverse after years of being the world's largest net importer of oil. Africa's largest oil producing nations, Nigeria, Angola and Algeria, have had to redirect their exports to the growing markets in the east, particularly India and China.

Meanwhile, the group of oil exporting nations, Opec, has chosen to pursue market share rather than higher prices, which has put pressure on the price of crude, which has plummeted from levels around \$110/bl for the North Sea Dated benchmark in mid-2014, to below \$50/bl today. Opec production of around 31.5mn b/d is well above the group's official output target of 30mn b/d.

A large surplus of crude oil has built up in storage and the market is also bracing itself for renewed flows from Iran, if sanctions are lifted at the end of this year. The IEA forecasts that the crude market will be oversupplied by around 2.1mn b/d in 2015.

Abundant crude, coupled with recovering products markets, have boosted refining margins in much of the world, even in Europe where overcapacity has weighed on



the profitability of refining for several years. European refiners have been exploiting this new-found profitability by churning out as much product as possible in the first half of this year, even grades where Europe is oversupplied such as gasoline.

Expensive airline fares – where ticket prices were locked in at higher fuel prices – have led many American holidaymakers to drive instead of fly to their vacation destinations, which in turn has pushed up gasoline demand, giving an outlet for European oversupply.

And despite recent disruptions caused by Nigerian distributors' strike action, West Africa remains an important destination for European gasoline and other refined products, as the region's refineries are unable to meet regional demand.

Africa in focus

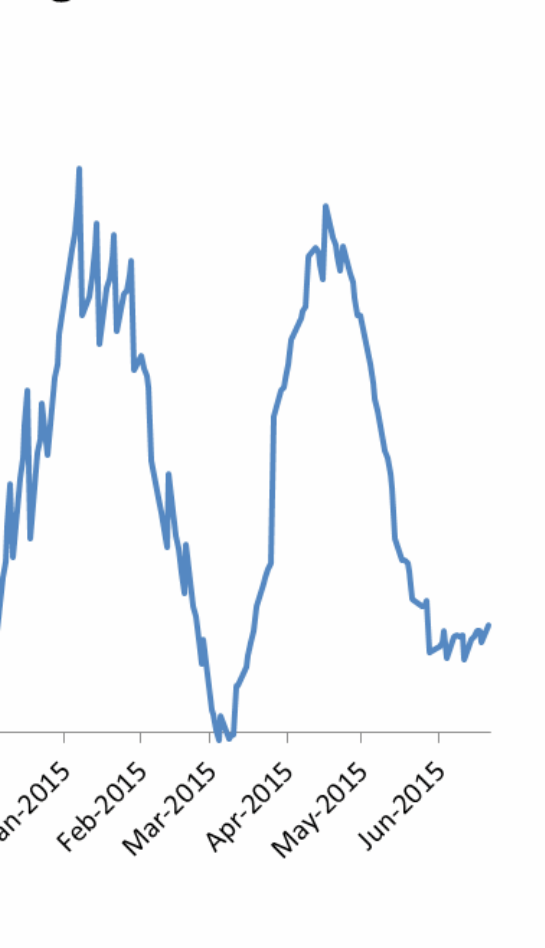
Three factors are driving African demand for oil products: population growth, economic development and urbanisation. In concert these fundamental African trends are boosting car

The biggest consumers of base oils in Africa are Egypt, Nigeria and South Africa, which between them make up almost 60pc of the continent's demand

ownership, road haulage and industrial activity, and thus a need for a steady supply of affordable oil products.

Gradual liberalisation of markets is fostering more trade though much progress remains to be made in that area. From a base oils trader's perspective, the African market is beautifully opaque. Opacity in two regards: price and product flow information. When distributors and blenders further along the supply chain do not have access to the same market data, it is possible for their suppliers to achieve higher prices than might be achievable in an efficient, open market with equal access to information.

to gasoil month 1



It is also possible for traders to offload surplus products into the African market without causing ripples in the more closely watched wholesale markets such as Rotterdam or Singapore.

Argus publishes a weekly base oils report, with price assessments for base oils in key regions including those which supply Africa (Europe, the former Soviet Union and the Mideast Gulf). But we do not yet publish landed prices for base oils delivered to African ports due to the lack of transparency at that point in

the supply chain.

The biggest consumers of base oils in Africa are Egypt, Nigeria and South Africa, which between them make up almost 60pc of the continent's demand. Among regional trends are the continuing dependence of west African importers on Russian supply of heavy grade base oils as lighter grades continue to struggle to find a foothold in that market. South Africa is seeing a gradual switch to Group II base oil consumption as regional production of Group I product dwindles. And east African importers, already heavily reliant on production from the Mideast Gulf, are hoping for an inflow of Iranian product if sanctions are lifted as planned in December.

Price trends

In broad terms, base oils prices have followed a similar rollercoaster to those of crude oil and gasoil, over the past year or so, though a closer look at the relative prices shows a market increasingly responsive to underlying trends and also quicker to establish new relationships when the fundamentals change.

Until recently base oils, and by extension lubricants, markets lagged the gasoil prices with which they tend to be closely correlated, being fellow middle distillate products of refineries. Notwithstanding the comments above about traders exploiting opaque markets, the increasing participation of traders in longer established trading centres has raised liquidity, making those markets more dynamic. Rising production capacity and surplus supplies have also forced prices to respond more rapidly to avoid the creation of a supply-glut.

Reliable spot price signals would allow market participants to gauge the arbitrage economics between different regions more quickly. This should foster more intercontinental flows of products to address market imbalances.

Argus has worked to encourage the opportunities afforded by this increasing price transparency, by ensuring that its assessments of different grades of base oils in different regions reflect the market price at which trading activity will take place, and are not behaving like a posted price or stuck for long periods at the level of the last heard trade. When prices are static for an extended period, those same prices could be attracting producers to maximize output if the feedstock and competing fuel prices are falling, as they are now or vice versa if feedstock prices are rising. The result is increased price-volatility as the market seeks to clear the shortage and gluts it has created.

This year, base oils prices have fluctuated as the spot markets have sought to establish fair

value in response to a market anticipating a supply-glut caused by the start-up of a wave of new production capacity. It has instead faced unexpected supply-tightness in markets like Russia, US and Asia-Pacific, especially for heavy-grade Group II base oils. Refiners' focus on prioritising output of diesel and gasoline to tap their high margins has added to the drop in base oil production. Weak base oil margins have added to refiners' incentive to boost fuel output.

Even with such price-support, margins have remained weak relative to crude and competing fuels. But margins have risen strongly since July as base oil prices fell more slowly than slumping crude prices. Signs of weakening gasoline and diesel premiums to crude could boost further the attraction of producing more base oils (see graph). Such a move would coincide with a seasonal slowdown in demand because of slower finished lubricant consumption during the summer months.

Base oils margins: a dynamic relationship with other oil markets

As the year continues, it is likely that margins will face more pressure, especially if refiners respond to the firmer values in July and August and boost output. Demand typically gets a boost in September-October, the second mini-peak season of the year, before oversupply takes hold again and buyers seek to destock as the year comes to a close. The weakness in crude oil prices will exacerbate buyers' preference to hold minimum stocks and replenish inventories on a more regular basis.

In addition to the base oils market report and fundamentals database, Argus now also publishes a base oils price outlook for the coming year along with an analysis of the market drivers – we encourage all Lubezine readers to drop us a line if they are interested in sampling this publication and giving us some feedback.

For all the challenges faced by African lube blenders and distributors – market opacity, supply bottlenecks, competition from unscrupulous rivals selling off-specification or contaminated product more cheaply – it is an exciting time to be involved in this market.

The energy and enthusiasm of domestic firms and international suppliers wanting to grab a piece of the rapidly expanding action was palpable at our Johannesburg conference and the level of professionalism and ambition in the sector is impressive. We at Argus will continue to do our part in bringing the industry together and providing the very best information and services to help connect Africa to the wider markets more efficiently and fairly. ■

Group I Base Oil alternatives for the African Markets

Prof. Thomas Norrby

Due to swiping changes in the technology landscape, an appetite for significantly larger volumes of paraffinic base oils of API Group II and Group III is growing, fuelled by ever-increasing demands on automotive engine oil performance. This has led to a massive expansion of Group II and Group III capacity during the last 15 years. These modern base oil production units are more often than not of world-scale capacity, and these products are traded extensively around the world. Group II and Group III base oils are, of course, also increasingly offered to the African market.

Mineral base oils differ in production process and properties. Also, the differences in production process lead to differences in production cost and yields. The traditional solvent refining utilized to manufacture "Solvent Neutral" Group I base oils is especially cost sensitive, compared to e.g. modern hydro treatment methods employed in the manufacture of Group II base oils.

A combination of production considerations and evolution of market requirements drives the profound changes that are re-shaping the global base oil industry.

Economies-of-scale and new capacity investments in Group II and Group III production worldwide has brought a sea change to Europe's previous role as swing producer and net exporter of Group I base oils. Considerable economic pressure is likely felt by the remaining African base oil refiners. African lubricant blenders, on the other hand, will find themselves competing for ever-scarcer Group I base oils for import into Africa. World-wide, 70% of Group I fluids are utilized for industrial lubricants, 30% for engine oils. In Africa, though, the remaining need for Group I for engine oils will remain high, due to several reasons: many older generation road vehicles in the fleets, challenging logistics and the need for low-cost and robust solutions, and customer habits.

The European Group I base oil production landscape is changing rapidly, with closures of Group I production base oil trains announced

for 2015 from Shell (Pernis, the Netherlands, 370 kt/pa), Total (Gonfeyville, France, 480 kt/pa), Colas (Dunkerque, France, 290 kt/pa), and by Nynas at the former Shell site in Harburg, Germany (165 kt/pa). This leaves Europe well over 1 200 mt/pa short of Paraffinic Group I supply, oil which finds use across the industry as lubricant base oil and as process oil. Grades affected are of type SN 70, SN 100, SN 150, SN 500, SN 600, SN 650, Solvent Bright Stock (SBS), Residual Aromatic Extract (RAE) and Mild Extract Solvate (MES). As Europe long has been an exporter of Group I base oils, the pinch will be felt across the regions that used to be able to source Group I from here.

Furthermore, a significant part of this deficit is not readily substituted by the more highly refined paraffinic Group II and III, which indeed are available globally in ample supply. This is due to two main root causes: limitations in viscosity range, and to rather significant differences in chemical composition which affect the solvency properties.

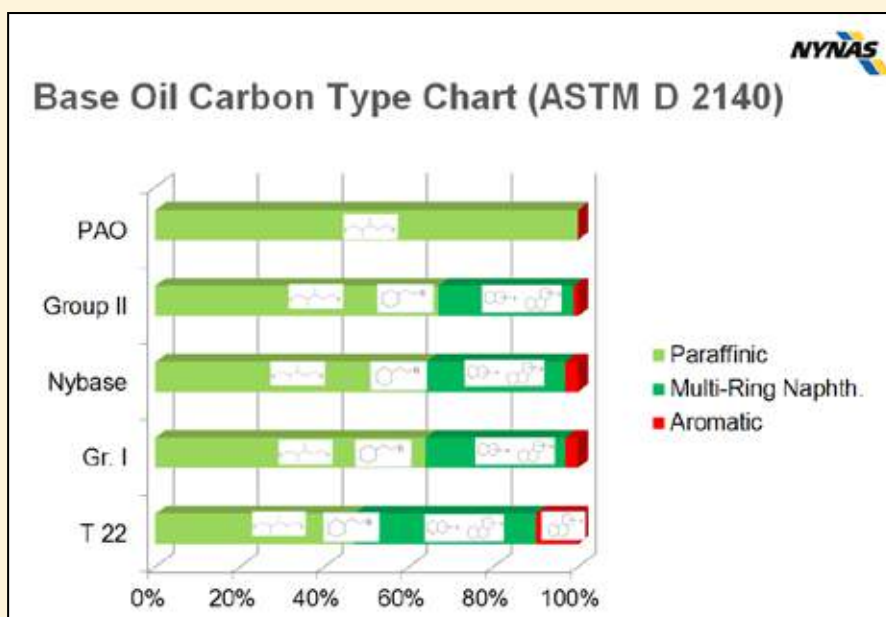
The latter is of paramount importance in core segments of industrial lubricants, metalworking fluids and process oils.

The viscosity ranges offered by Group II is limited, and in the case of Group III severely limited, compared to the wide viscosity range offered by Group I base oils.

Especially the so-called Heavy Solvent Neutrals, ranging from 100- to 500 cSt, corresponding to SN 600 to SBS 2500 (Midpoint viscosity SUS @ 100 °F/ 40 °C equal to 600 to 2500) are not readily available from Group II nor Group III. The highest widely available viscosity in Group II is SN 600 (with a KV@40 °C of ca. 100 cSt), and for Group III the highest available viscosity corresponds to a SN 300 (with a KV@40 °C of 50 cSt; slightly lower than SN 300 SUS)

Thus, suitable replacement Group I base oils are needed across a wide viscosity range.

The requirements of such replacement grades are, for the lower viscosity range to supply higher



In Africa, though, the remaining need for Group I for engine oils will remain high, due to several reasons: many older generation road vehicles in the fleets, challenging logistics and the need for low-cost and robust solutions, and customer habits

API group	Light neutral	Medium neutral	Heavy neutral	Bright stock
Group I	38%	13%	33%	16%
Group II	55%	25%	20%	none
Group III	80%	20%	none	none

polarity, aromaticity and sufficiently high solvency; and in the higher viscosity range “heavy solvent neutrals” to supply high enough viscosity, and solvency needed in lubricant formulations, and as process oils.

At this point, it serves well to remind ourselves of that the parameters specified in the API Groups relate to the chemical composition, and properties, for the different base oils utilized to manufacture engine oils. The main objective of the API Base Oil Classification system is to serve as a handy reference for base oil interchange (BOI) and engine testing read-across guidelines.

Crude oils and base oils are categorized as either naphthenic or paraffinic; however, there is no sharp distinction, rather a sliding scale from the “very Naphthenic” to the “very Paraffinic”. Oils with a paraffinic carbon content (CP) of 42-50% (e.g. as measured by FT-IR) are considered to be Naphthenic base oils; the rest of the carbon content being naphthenic (CN) 35-50%, and aromatic CA 5-15 %.

Naturally occurring Paraffinic crudes have

a paraffinic content up to 67% (CP), but more importantly, both API Group II and III have (CP) content well beyond that, with saturates (CP) +(CN) (i.e. non-Aromatic) content often above 99%. The naphthenic content in Group II base oils is in the range of (CN) 30-40%, with a negligible amount of aromatic CA. Thus, the solvency gap is readily explained and understood from the principal analysis chemical composition differences.

The solution to the Group I deficiency in most cases, i.e. where retention of both viscosity and solvency properties are required, is thus not to be found by switching to Group II or Group III base oils, as the chemical and physical property differences simply are too great.

To help mitigate this, Nynas has created a new specialty base oil product line; with key properties very similar to Group I base oils (from SN 70 to SN 600). The key design criteria was to closely match the Kinematic Viscosity (@ 40 °C) and Aniline Point of a representative reference base oil range of Solvent Neutral (SN) Group I paraffinic base oils. Carefully

preserving these key properties allows industrial lubricant manufacturers to maintain key properties of their products, and to allow for as easy reformulation work as possible. Nynas supplies the Nybase range that is able to replace conventional Group I use, in many cases without needing significant reformulation efforts. The Nynas range is available as base oil for lubricants and greases, and as process oil for the chemical and rubber industry.

Applications include:

- Metalworking Fluids (Neat oils and emulsions)
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- Carrier oil for Anti-foam additives
- Leather industry
- Coldset offset printing inks
- Anti-caking solutions for NPK type fertilizers
- Spray oils for Agriculture protections
- Explosives : ANFO, Heavy ANFO, Emulsions and Watergel
- Plasticizers for rubber and tire industry
- Mould release agent
- Drilling muds, mineral oil based. ■



Lubricants in Africa: a market and technology perspective



By *Darrell Taylor*

Taylor has a background in European motorcycle product development for Yamaha Motor Group and for Triumph Motorcycles. He is now a marketing manager for Lubrizol corporation.

It's no surprise that the automotive sector of emerging markets in Africa vary greatly from the more developed regions of the world. In terms of car ownership, it has been observed that only 2 percent of the population own a car, which compared to other countries and continents falls below global averages. For example, 40 percent of the population in Japan own a car, in Europe 48 percent of the population own a car and in the USA nearly three quarters of the population (74 percent) own a car.

Although Africa's rate of 2 percent vehicle ownership appears small, it translates to a large

car parc, especially when considering that Africa has a population of nearly 15 percent of the entire world's population. With around one billion people living in Africa currently (a figure set to rise to two billion by 2050). Africa's passenger car vehicle parc thought to be approximately 20,000,000 vehicles.

In addition, there is an entire network and infrastructure of commercial vehicles that transport goods and people throughout Africa — a continent covering more than 30 million square kilometres, approximately 20.3 percent of the world's land mass.

If a lubricant needs to be replaced or topped-up, then in many situations the most readily available lubricant is used, whether it is the right oil for the application or not



Attempting to estimate the commercial vehicle parc is no easy task because clear and reliable data can be difficult to confirm. However, conservative estimates suggest that the commercial vehicle parc in Africa is in the region of 5,000,000 to 10,000,000 vehicles. This creates a total African vehicle parc in the region of 25,000,000 to 30,000,000 vehicles – yet little is understood of this business or industry outside of Africa.

With so many vehicles in use in Africa, and all global vehicle manufacturers actively being represented (including North American, European and Asian manufacturers), the vehicle types and technologies are becoming more varied and diverse, which requires a broader understanding of modern vehicle maintenance and service requirements.

Larger African cities have the luxury of having 'Manufacturers' Service Centres' and 'approved workshops' along with training centres and specialist support to ensure that

vehicles receive the most appropriate care and maintenance.

However, because of the sheer size and geography of Africa, many African vehicle owners in certain regions are unable to access the OEM-approved service centres in larger cities, these vehicles may never receive the dedicated support and preventative maintenance that is required for reliable operation for years into the future. For these vehicle owners, often the only time lubricating oil is changed is after a component failure. Typically, repair work is completed using outdated methods and operating practices which cannot provide adequate support and protection to modern vehicle technology and component designs.

The preventative maintenance model is a foreign concept to many vehicle owners even in parts of the developed world and it's unfamiliar to wide portions of the emerging markets. Yet, this preventative maintenance model is arguably most important to the remotest parts of Africa where vehicles are an important lifeline for communities.

Preventative maintenance and routine servicing is far from reality for many community and individually owned vehicles, especially where unadditised oil or previously used oil is the standard replacement fluid when repair work is carried out. These vehicles may have never been driven on a tarmac surface and are often overloaded.

Operators use lower quality fuel than they were designed to run on and the vehicles experience harsh conditions over severe terrain, without access to proper service. Repair work can be creative and imaginative, as technicians use any means necessary so that the vehicles can continue to be used for another day.

If a lubricant needs to be replaced or topped-up, then in many situations the most readily available lubricant is used, whether it is the right oil for the application or not. An inappropriate lubricant can usually provide some component protection for a period of time, but there is a huge risk. Without the proper lubricant, failure is inevitable; however, the use of an incorrect lubricant may not be identified as the cause of the problem, so the cycle continues and incorrect oil may continue to be used again and again, causing further damage.

With numerous global powerhouses of the lubricant industry already established across Africa, knowledge and understanding of automotive lubricant requirements is increasing outside of larger cities, yet the sheer scale and infrastructure of the African continent makes this task impossible to complete as quickly as

ideally required.

Much of the lubricating oil used in some African regions is either unadditised or formulated with minimal additives that cannot provide many of the performance attributes of a lubricating fluid. Without proper additives, the oil will be more prone to degradation through deposits and sludge formation, which can overheat the oil and an increase its acidity. The level of protection provided by unadditised or poorly additised oil is constantly decreasing as technology and equipment design progresses and the requirements of the lubricating fluid are further and further increased.

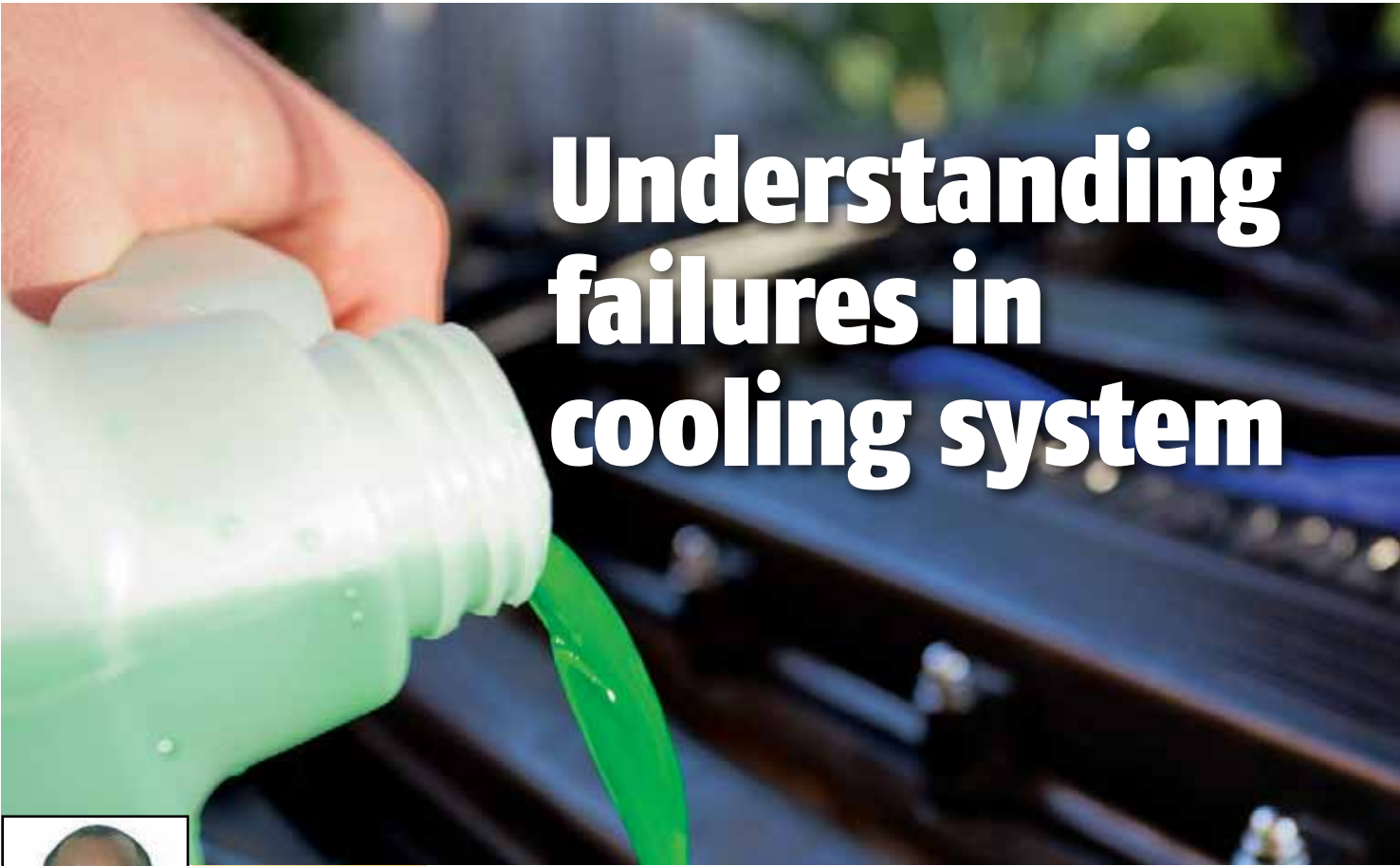
At one time, basic oils may have provided some level of component protection and performance, but that time has passed. Today's vehicles have a far higher requirement of the lubricating fluid, based on increasing power densities, the wider variety of materials used in engines, and complex transmission and axle component.

Automotive developments and advancement over the past 75 years have seen the introduction of higher power and torque being transferred through smaller components, made of a wider range of materials such as steel, aluminium, brass, molybdenum, carbon, plastic, rubber and more, surrounded by less oil, in hotter climates with the oil being used for longer periods of time. Combine those severe conditions with the fact that today's engines operate for far longer than in the past, and the lubricant has to protect more parts for a prolonged duration.

For the vast parc of vehicles in areas within Africa that are utilised beyond what the vehicle manufacturer ever envisaged, an understanding of the benefits of preventative maintenance is desperately overdue. Not only can preventative maintenance help prolong the lives of vehicles but the appropriate lubricants can improve the operation of the vehicle in general, improving performance and maintaining fuel economy, which is especially important in such warm, dry and unforgiving climates.

Many economists believe that Africa will develop and experience significant growth with most countries predicted to be considered middle income countries within the next 25 years. Instilling the right message for lubrication and preventative maintenance within the vehicle parc today will support that economic growth and help to educate the population on the evolving materials and technology which is in use around the world today. Tomorrow's African transport backbone depends on a market that is educated in proper vehicle operation and maintenance. ■

Understanding failures in cooling system



By Oliver Biyogo

Mr Biyogo is the Lubricants technical services manager at Total Kenya Limited

Cooling system failures is one of the most common causes of engine breakdown.

It contributes more than 22% of automotive engine failures. Some of these breakdowns can be through;

corrosion,

- cavitation in the water pump, cylinder head and liners
- Deposits that can cause blockage and abrasive wear
- Damage of the water pump impeller due to coolant starvation resulting in overheating
- Incompatibility with seals which leads to seal porosity and hardening which manifests itself in form of cracks that eventually cause leakages
- Overheating that can have detrimental effects
- Component failure due to coolant freezing (for winter environments)

Cooling system failures contribution to engine breakdown is not easily discernible because it effects manifests themselves

indirectly. It calls for a thorough root cause analysis techniques by the maintenance personnel.

A coolant formulation requirement should:

Allow for Heat Transfer, provide boiling or freezing protection, and provide material protection of the components. This functionality is provided by a combination of 45%-70% Demineralised water, 25%-50% Glycol (MEG-Mono-ethylene Glycol or MPG-Mono-propylene Glycol) and 3%-8% additives respectively.

Traditionally, pure water was used for cooling purposes because of its ability to "carry" heat. This property is defined in physics as the heat or thermal capacity. Water possesses excellent specific heat capacity. Other liquid substances with high heat capacity include ammonia (Used as a refrigerant), hydrogen etc.

However, water has its drawbacks. It boils at 100 degrees and freezes at Zero degrees. This can pose a serious problem depending on a vehicle operating environment. Also, components exposed to plain water are susceptible to rusting and corroding. No wonder radiator repair is big business in Kenya.

In some applications i.e. rail locomotives,

ability to dissipate heat has a higher precedence than boiling or freezing protection. Glycol in itself as compared to water, exhibits lower thermal conductivity-ability to transfer heat (between 0.2-0.3 compared to 0.6 for water). In essence the technical reasoning against glycol for rail application, is it will form a "thermal insulating layer" around the components thus jeopardising its ability to transfer heat and subsequent overheating problems. It is not strange for such application to use plain water and dosing it with a corrosion inhibitor in the cooling system.

In automotive application both on-road and off-road, no OEM recommends use of water.

Coolant technology is mainly classified either as mineral based or organic based. The technology could function either through formation of a protective layer on the metal surface or through oxidation which is a chemical reaction resulting in oxide formation on the metal surface. The choice of technology is dependent on technological constraints (i.e. high temperature engines, material evolution of the components, and volume reduction of the engine) and environmental constraints

Mineral inhibitor technology coolants are cheaper but exhibit high additive depletion, poor thermal and oxidation stability, loss of heat

Depending on the OEM requirement, some heavy duty engine types demand use of a fully formulated coolant that meets ASTM D-6210 specification



deposit/optimum heat transfer, longer drain interval/life time and excellent aluminium corrosion protection. However, they are more expensive than mineral based and are not compatible with mineral inhibitors.

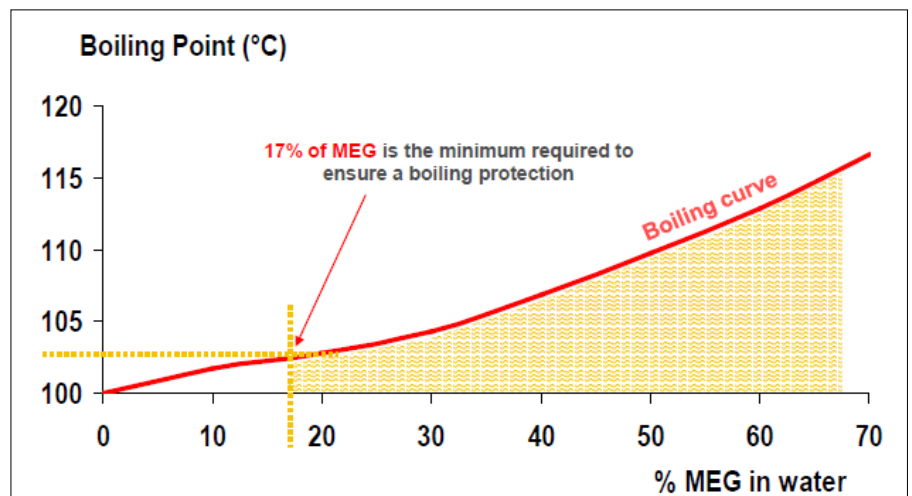
Presently technology advancement has been a bigger driver of coolants trends as shown below:-

One popular question from coolant users is whether different coolants can be mixed. I discourage mixing because of issues with compatibility. Mixing can result to destabilisation chemical equilibrium of inhibitors, compromise corrosion protection

from mineral to organic. This is because organic inhibitors have detergency properties which cloud wipe-off the protective layer formed by Minerals. The metallic surface striped will in turn expose the micro cracks and eventually leakages.

It is recommended that a coolant switch should be done in the following steps:

- Drain the old coolant and fill the circuit with distilled water. Run it a few minutes and drain completely.
- Repeat the process again now with distilled water and 5% of the new coolant. Run it a few minutes and drain



transfer properties, radiator clogging, water pump seal damage, toxic and low aluminium corrosion protection.

Organic inhibitor technology has low additive depletion, better cooling efficiency-no

ability and the risk of deposit formation is higher.

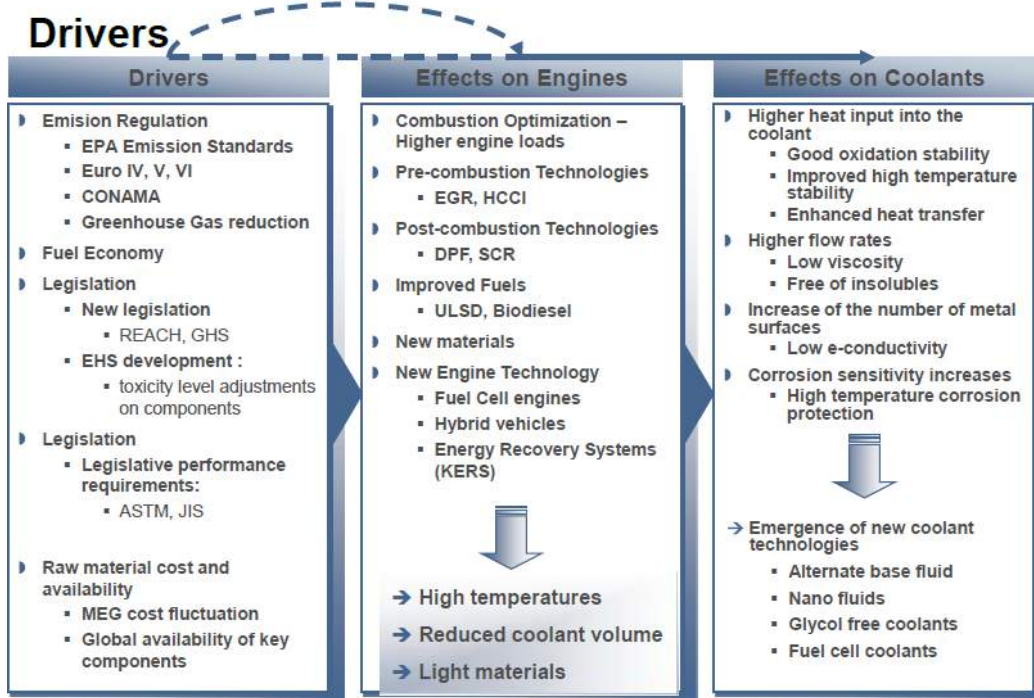
The risk is further elevated when switching

- Finally, fill in the new product. Finally, why should a MEG based coolant be used in hot/warm climate?

MEG provides boiling protection so resist evaporation, avoid top-ups and prevent engine damage. The minimum concentration of MEG required to provide this boiling protection is 17%

What is an SCA?

SCA stands for Supplemental coolant additives. It's a corrosion inhibitor additive that can be pre-charged or post charged into a coolant to boost its corrosion protection ability. Depending on the OEM requirement, some heavy duty engine types demand use of a fully formulated coolant that meets ASTM D-6210 specification. (most recent specs). An SCA may be necessary to upgrade a coolant from ASTM D-3306 or ASTM D-4985. ■





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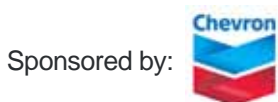
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Total opens largest blending plant to boost capacity in Asia



Oil dealer Total has set up its largest lubricants blending plant in Asia in a move calculated to heat up the firm's growth in the oil-rich content. The new lubricants oil-blending plant (LOBP) is also expected to boost Total's lubricants production capacity in Asia-Pacific so as to accelerate market growth.

This new major hub located in Singapore will boost Total's lubricants supply in the Asia-Pacific region, which accounts to almost half of the world's lube demand. The Launch

Ceremony was presided over by Teo Chee Hean, Deputy Prime Minister of Singapore, who was the Guest of Honour.

At the Launch Ceremony, Philippe Boisseau, Member of the Executive Committee of Total, President of Marketing & Services, showcased Total's strategy in Asia-Pacific and the importance of its lubricants business. "Our new Singapore lubricants hub illustrates our strategy to grow the Marketing and Services segment. It will allow us to expand our position as one of the top global players in the lubricants business. Total aims to leverage its partnerships to outpace market growth in Asia, which is a key region for future energy demand."

Francois Dehodencq, Total Marketing & Services Asia Pacific, Senior Vice President, expressed his gratitude for the strong and efficient support Total has received from the Singapore government and underscored the significance of the event.

"Singapore has long been a strategic lubricants hub for Total, supplying products to customers and markets in the region. Today, we have further solidified the foundation for our robust business growth in Asia-Pacific, focusing on locally adapted products, reliable supply and customer satisfaction. We remain committed to growing in and combining energies with hallmark innovations as a driving force for increased production capacity," he said.

Teo Chee Hean, Deputy Prime Minister of Singapore congratulated Total on the opening of the blending plant saying:

"The launch of the Total lubricants blending plant signifies Total's continuing confidence in Singapore as a strategic hub for its operations in our region. It is also evidence of Singapore's friendly business environment that allows industry leaders to come together and develop new operating models. We look forward to more innovative industry solutions being set up in Singapore."

Total expects to shift all local lubricants production in Singapore to its Tuas lubricants oil-blending plant by end 2015. ■

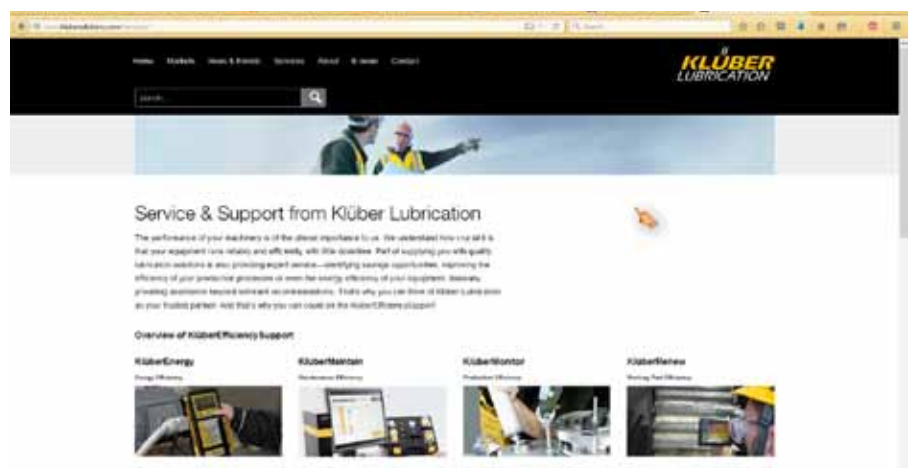
Klüber Lubrication launches information hub

Klüber Lubrication, a worldwide manufacturer of specialty lubricants, has introduced a new content portal to provide information to its clients on how lubricant solutions from Klüber Lubrication can be used to save energy, protect equipment and enhance performance of machinery.

Found at www.klubersolutions.com, the site will provide news releases on the latest developments in lubricant solutions for new applications, government regulations and other timely issues, according to Klüber.

"We developed this unique, content-oriented website to give users reliable, in-depth resources about market trends and best practices, as well as product information. It is a convenient way to see how we provide successful lubrication solutions," said Christine Keyes, marketing communications manager, Klüber Lubrication NA LP.

Covering markets including marine, food and beverage, wind and mining, as well as



general industry, the range of topics will include product spotlights that describe lubricant properties and areas of likely applications – such as couplings, joints, and gears. Blog overviews from a Klüber Lubrication expert on special application issues such as the advantages of using synthetic ester oils, high viscosity index (VI) base oils or high-performance NSF H1

food-grade lubricants will also be found on the site.

'Whitepapers that provide in-depth information about test procedures, lubricant properties and application techniques. Case histories that detail successful application in various industries, climates and hazardous environments,' said Keyes. ■

Lubricant requirements for hybrid vehicles

Hybrid vehicles might account for only a small proportion of the global vehicle fleet but, as consumers look for improved fuel economy, their popularity is growing. Insight reveals the findings of New York City field trials, designed to assess the opportunities these vehicles present to lubricant marketers for specifically tailored lubricants.

As part of their overall strategy to lower fuel consumption and reduce CO₂ emissions to meet current or projected requirements, OEMs have been looking at the electrification of the powertrain and other low emission technologies.

One option is hybrid-electric, where vehicles are driven by a conventional internal combustion engine and by the power from the electrical system. Features of hybrid electric vehicles (HEV), such as regenerative braking or stopping the engine during idle, can significantly improve fuel economy and lower CO₂ emissions - making them increasingly popular with OEMs.

Toyota has been the market leader in this segment for some time. But now a number of large manufacturers are developing and launching HEVs because they see the technology as a good bridge until more advanced diesel and electric vehicles are fully developed. However, the global uptake of HEVs is far from homogeneous, and OEMs still have work to do to gain acceptance of hybrid technology by consumers in many regions.

Market round up

In the US for example, it has been a pretty good year for the passenger vehicle market as a whole, with total auto sales up over 4% for the first half of 2014. But a closer look reveals that while diesel, plug in and battery sales are all up, hybrid sales are down by almost 10% over the same period last year.

In Europe it has also been a good first half of the year, with total car sales growing by 6.2% - reaching over 6.8 million vehicles. Toyota reports sales in Europe of its hybrid models reached 75,623 units for the first half of the year. While this is a 17% increase versus last year, it represents just 1% of the European market.

China is the largest single-country car market in the world, and in the first half of 2014 new vehicle registrations were up 14.5% over the same period last year. China has high green transportation aspirations and to encourage sales the government has exempted hybrid and electric cars from its 10% purchase tax from September 2014 to the end of 2017. But despite these measures and increased availability, electric and hybrid cars together represented just 0.2% of the 11.7 million cars purchased during the first half of this year.

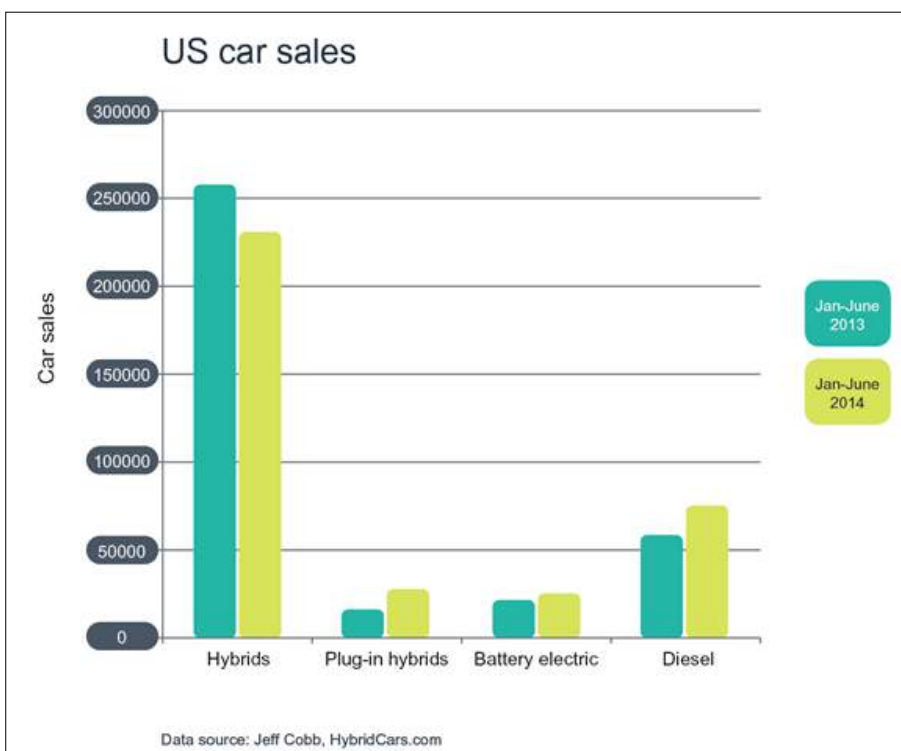
Lubricant considerations

Although as a proportion of total new vehicle registrations HEV sales are still relatively small, every vehicle owner has the right to be sure that the lubricant they put in their vehicle will sufficiently protect the engine.

A distinguishing feature of HEVs is the ability to turn off the conventional engine when the power available from the electrical system exceeds that required to propel the vehicle.

The engine-off feature saves fuel and engine hours but also results in cooler operating temperatures of the internal combustion engine and increases engine stress through the more frequent starts of the engine.

These distinct operating conditions prompted Infineum to initiate a research project to determine the lubrication requirements of HEVs relative to non-hybrid vehicles. This understanding will then be used to assess the opportunities available to lubricant marketers



The engine-off feature that is typical of HEV saves fuel and engine hours but also results in cooler operating temperatures of the internal combustion engine and increases engine stress through the more frequent starts of the engine

to develop specifically tailored lubricant systems.

Infineum research project

In the fact-finding phase of the project, a 2009 Toyota Camry Hybrid taxi from New York City (NYC), with over 260,000 miles on the odometer was inspected for hardware distress or unusual features. Results were compared to those obtained from a NYC non-hybrid limousine after 200,000 miles of operation. Both vehicles were lubricated with ILSAC GF-5 SAE 5W-30 oils.

Average sludge and varnish results and wear on the valve train and piston rings were all slightly worse for the hybrid engine relative to the non-hybrid engine.

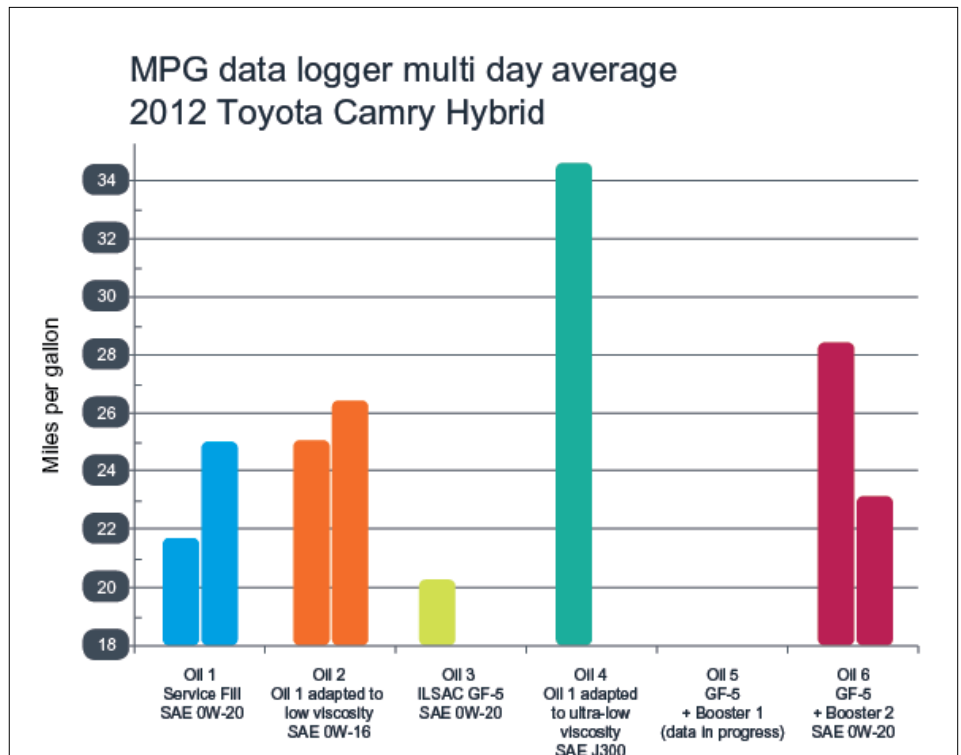
However, it should be noted that the limousine service was less severe than that of the taxi. Some unusual broken 2nd land pieces were found in the hybrid pistons, but these were held in place by deposits and the vehicle was still operable.

Phase-two – 6 oils and 18 taxis

Phase two of the project, which is still ongoing, began in May 2012. In this round of testing we are working with a New York City taxi firm to assess lubricants with varying rheological and performance properties in their hybrid vehicles.

The six test oils have different high temperature high shear (HTHS) viscosities and performance additive technologies, and each oil is running in three Toyota Camry Hybrid taxis. Data loggers are being used to record drive cycle and fuel consumption data from selected units on a rotating basis.

Six different oils are being tested in New York City Toyota Camry Hybrid taxis



Interim field trial results

So far over 100,000 miles have been completed and through regular oil sampling and interim inspections the following observations can be made:

- There is a lack of carbon/varnish on the engine parts.
- Cylinder head decks look clean after 100,000 miles.
- No engine distress has been noted for any of the oils.

total base number (TBN) depletion or kinematic viscosity increase.

- There is minimal fuel dilution.
- A fuel economy credit has been observed with reduced HTHS oil

Infineum International Limited

The final engine tear down inspections will reveal whether the engine oils with HTHS below 2.6 cP were able to provide adequate protection

Test oils	HTHS (cP)	Viscosity
Oil 1. Service Fill	2.6	SAE 0W-20
Oil 2. Oil 1 adapted to low viscosity	2.3	SAE 0W-16
Oil 3. ILSAC GF-5	2.6	SAE 0W-20
Oil 4. Oil 1 adapted to ultra-low viscosity	2.0	SAE J300
Oil 5. ILSAC GF-5 + Booster 1	2.6	SAE 0W-20
Oil 6. ILSAC GF-5 + Booster 2	2.6	SAE 0W-20

Oil drain intervals are set at 10,000 miles - the interval recommended by Toyota for this vehicle type - and oil samples are being taken at 7,500 mile intervals throughout the trial. Interim engine inspections have been carried out at 100,000 test miles, with the final tear down inspections scheduled after the completion of 200,000 miles.

- Higher fuel economy is achieved as engine oil HTHS is reduced from 2.6 to 2.0 cP.
- The average fuel consumption recorded in the test is generally less than 'real world' reported values of 30-33 mpg.
- Analyses reveal low levels of wear metals and oxidation.
- No discrimination among test oils on

to the engine parts throughout the 200,000 mile test. In addition we will learn if any of the test lubricants can deliver improved cleanliness in the HEV engines when compared to conventional ILSAC GF-5 oils.

The full test results should be available to share in early 2016. ■

This article first appeared on insight magazine

Fully synthetic lubricants can enhance the bottom line



By *Tristan Wiggill*

With so many South African goods and services transported by roads, road transport and logistics accounts for approximately 10 per cent of South Africa's Gross Domestic Product (GDP). Therefore, efficient fleet management remains critical for the growth of the economy.

Fleet managers are under significant pressure to deliver profits that reflect the potential of the industry despite being impacted virtually immediately by the fluctuating oil price. According to Raymond Abraham, Commercial Technical Manager of Shell South Africa, oil is extremely sensitive to developments in the Middle East. As a result, local fleet managers' profits are continually under threat due to fuel price volatility, making it difficult to project – and maintain – margins.

Opting for diesel vehicles, he says, is proving to be a smart way to go in many instances, given the relatively lower cost of diesel and the corresponding better fuel economy that can be achieved when compared to petrol engines. According to him, introducing more efficient vehicles is part of the solution, and matching the correct lubricant to the vehicle is equally important.

Abraham says fleet managers are increasingly combining Original Equipment Manufacturers (OEMs) and lubricant technology to improve efficiencies as operators are able to extract 'extra kilometres' from their fleets, as well as reduce maintenance requirements, carbon emissions and smoke.

"A basic understanding between synthetic and mineral oils can give fleet managers the confidence to gladly accept an oil change which will ultimately lead to a cleaner engine that operates more efficiently, delivers more power and consumes less fuel, he says.

The introduction of synthetic and semi-synthetic oils represents a significant change for the heavy-duty transport industry. Thanks to modern refining technology, today's high-quality mineral oils provide adequate equipment protection and offers many benefits over traditional mineral oil-based engine oils.

Traditionally, lubricants have been based on mineral oil, a component of crude oil used in thousands of everyday applications from engines to cosmetics. Mineral base oils, however, are complex mixtures of naturally occurring hydrocarbons that may contain impurities. Synthetic lubricants, on the other hand, are made from chemicals selectively chosen and free of impurities.

An important function of lubrication, for example, is ensuring the engine continues to be protected under extreme temperatures, including cold starts, and at high operating temperatures. High-quality synthetic base oils are engineered for excellent low-temperature flow properties, high resistance to thermal degradation and low oil consumption. When combined with advanced additive technology, this results in products that are well placed to deliver best in class engine protection.

Compared to some mineral oils, this means that synthetic products can help to extend equipment life. The latest generation of synthetic lubricants also fulfils additional functions that can help improve cost efficiencies.

Traditionally, delivering enhanced fuel economy meant lower viscosity (thinner) oils, which helped to reduce friction in the engine but with the perceived trade-off of reduced engine protection. With the latest technologies, this trade-off is no longer a necessary. High-quality synthetic base oils and advanced additive technology used in synthetic products deliver the best all-round engine protection. ■

This article was adapted from transport world Africa www.twa.co.za



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