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Understanding Sulphur’s silent attack on your motor engine
We warmly welcome you to this 12th edition of Lubezine, whose main focus is how contamination control can be used to ward off machinery breakdowns through well-implemented maintenance strategies.

Our lead article this quarter explores the issues to put into serious consideration in developing a maintenance regime that targets the root causes of machinery failures.

Studies have indicated that as much as 60 to 80 per cent of all mechanical failures can be attributed directly or indirectly to lubricant contamination. Our guest writer elaborates how lubricant contamination can be prevented, by developing a plant or corporate-wide contamination policy that entails three simple steps. Maintenance personnel whose daily job is to deal with the health of machinery will find this article quite informative.

We have also spread out our coverage across Africa to bring you insightful information from various corners of the continent. There are a lot of stories from the Eastern African region, where the allure of the 50 million litres rich Kenyan lubricants market continues to attract new investments and international brands. From the West African region, there are stories of how Nigerian market is evolving especially with regard to fighting counterfeit lubricants.

Lubezine staff writer, Mr. Kipruto provides an analysis of the Kenyan lubricants market from the 4P’S of marketing perspective to explain some of the key drivers for success in the region’s lubricants market. He observes that for a new entrant, penetrating a market driven simultaneously by quality of the product as well as the price is not an easy task and requires good strategies as well as patience to succeed.

As always, we appreciate all our loyal advertisers, professional contributors and our firm 3000-plus readers, whose contributions continue to make Lubezine the best source of highlights and insights on the regional lubricants industry.
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Engine oil in Nigeria: an opportunity for large engine oil brands

By Chukwudi Okorie

GfK has mapped the market for engine oil in Nigeria and found that large engine oil brands have an opportunity to gain share in Africa’s most populous country.

A majority of engine oil in Nigeria is sold at gas stations – roughly 70% of total market volumes. If you remove these sales from overall market volumes, though, you see that the car accessories channel is the main sales avenue in disorganized markets. Yet, within the car accessories channel, it is “unknown” engine oil brands that have the most market share.

This means oil majors like Mobil and Total could expand their sales of engine oil in the car accessories channel. In total, Nigerians bought 39 million liters of engine oil between January and August 2014 from sellers who were not gas stations.

According to PPRA, the Public Procurement Regulatory Authority, 70% of total market volumes of engine oil were sold at gas stations. GfK’s recent data show that some 81% of the remaining 30% of overall liter volumes were sold through car accessory specialists. Tire specialists sold 17% (also of the remaining 30% of overall volumes), while battery specialists sold only a tiny fraction. See the figure above.

We see that Nigerians like to buy their engine oil from car accessory shops, if they aren’t buying from a gas station. But why? One reason may be the choice of brands and the possibility to buy as much oil as you want. For car mechanics, this is surely an important point. In addition, shoppers benefit from the selection of car accessories available besides engine oil – e.g. these shops have more of what a mechanic would need.

As part of GfK’s panel for this sector, we have mapped engine oil sales by brand in the three channels mentioned: car accessories, tire specialists and battery specialists.

Within the car accessory channel, we see that – after accounting for “others,” or unknown brands – engine oil made by A-Z is the bestselling brand in terms of liter volumes, while Mobil and Conoil come in second and third, respectively.

Source: Autotalk GfK

Synergy lubes unveils new synthetic transmission fluid

Synergy Lubricant Solutions Ltd has launched into the market their new synthetic ATF-XTP to cater mainly for step ATs in Japanese and Korean vehicles. It is also suitable for European vehicles with Asian manufactured ATs and vehicles with ZF ATS such as Range Rover. It meets Ford Mercon V and General Motors II, IIH, IIIG and VI specifications.

It can be used in commercial vehicles such as MAN, Mercedes, and Volvo. Mr. Baraka, Slusols Managing Director explained that the product is locally blended using imported components and approved formulations. The most common ATFs in the market is ATF IID which people tend to believe can be used in any vehicle. However, newer version of Japanese and Korean vehicles fail when ATF IID is used. Many vehicle dealers import such ATF products from their parent company, but with this introduction most users will now find it readily available and reasonably priced. Tests carried out in Asia showed that this technology out-performs most commercial ATFs on Asia market.

“The user will notice a smooth driving, fuel efficiency and long drain interval” Mr. Baraka added.
Green Lubes EA targets oil industry with BIZOL lubricants

Green Lubes (EA) has established its presence in the regional lubricants market by launching a new lubrication product now retailing under the brand name BIZOL. The oil targets both the industrial and automotive market.

The oil was first displayed to the public at the Auto Expo held at the Kenyatta International Convention Centre (KICC) in 2014, in an event where Green Lubes East Africa was appointed as the BIZOL agent for East Africa.

“Our Mission is to improve personal safety by providing the automotive and industrial customers with an innovative and high quality lubricant brand”, Aseesh Shah of Green Lubes told Lubezine in a recent interview at their company headquarters along Mombasa Road.

Currently, the BIZOL brand retails for motor oils, gear oils, ATF (Automatic Transmission Fluids), additives, car chemicals (coolants / brake fluids), technical sprays, industrial lubricants, and grease for all segments which are now available for Kenyan market. Automotive oils are available for all types of commercial and passenger car segments for new and old engine designs.

“The BIZOL brand stands for consistent German production quality in six global market segments: passenger cars, buses and trucks, motorcycles, boats, agricultural machinery, and industrial applications’ Mr. Shah added.

‘Manufacturing is done in accordance with ISO 14001-2009 and DIN EN ISO 9001:2008 requirements. A complete German quality assurance process guarantees a consistent high quality level of BIZOL products’ he added.

The benefits of consumers using BIZOL in Kenya include less maintenance and repair costs, less fuel consumption, less oil changes with the extended drain intervals and extended engine life provide by the specialized additives, which give the oil its green colour. The lubricant company has received four global awards in the past six months. The IAIR Award 2014 for best company for innovation and leadership, the Reddot award 2014 and IF design award 2015 for most global design, AAPEX award 2014 for best packaging for import cars and trucks ensures BIZOL consumers benefit from an ergonomic packaging with ease of use benefits, good retail display, and a tamper proof product.

Founded in 1998, BIZOL is a German manufacturer of motor oils and technical fluids. Its products are now sold in 65 countries and the firm looks to sell its brand in 100 countries over the next three years. Green Lubes has appointed Frontier Truck and Auto Parts in industrial areas as a distributor for its lubricants in industrial area and Nairobi with more agents being appointed countrywide.

To boost awareness of the product, Green Lubes offers training to the relevant chain of wholesalers, provides personalized sales and marketing support and tailored products for their specific markets and says it will be responding to customer queries with a flexible user innovation model.

“BIZOL addresses a new market for motor oils that seeks to solve the acute problem of engines and safety in city traffic. Market demand for ultimate quality motor oil and automotive lubricants for city traffic will increase rapidly. Further product innovations can be expected from BIZOL in the future in accordance with our vision statement which is: improve personal safety by taking on global traffic challenges’ says the company. ■
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The 4th ICIS African Base Oils and Lubricants Conference
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2nd ICIS and ELGI Industrial Lubricants Conference
11th-12th November 2015
Amsterdam
Environmental management is co-ordinated by the National Environmental Management (NEMA) in Kenya.

**FAQs**

The best oil analysis programmes

See also

P12

Is it okay to mix brake fluid of different DOT ratings?

DOT has become a common name for brake fluid. The abbreviation itself means the US Department of Transportation (DOT). Brake fluid exists in different forms meeting the US Department of Transportation specifications. These specifications are DOT 3, DOT 4, DOT 5 and DOT 5.1.

In general DOT 3 can be mixed with DOT 4, while DOT 3 and DOT 4 can also be mixed with brake fluids of the DOT 5.1 rating. DOT 5 (silicone based) is incompatible with the other DOT brake fluids therefore can not be mixed.

What exactly does API SM/CF and SL mean on the oil bottle?

API stands for American Petroleum Institute. In this case, API sets the industry standards for passenger and commercial vehicles. These standards are recognized, and in many cases, developed in conjunction with car and lubricant manufacturers. The letters next to API, such as SM, refer to the quality level of the motor oil. In the case of SN, it’s the highest available standard for passenger vehicle. CF is a diesel engine or commercial vehicle standard and the highest current one is CJ-4. More information is available at the API website: www.api.org.

There are many additive supplements in the market for different enhancements of the lubricants.

Should I use these products?

This is a question that has mixed reactions. You should use the recommended oil for your vehicle. One should ensure the oil he/she uses meets high API specifications for his/her engine. Lubricants are formulated with an additive package to meet the operating requirements of your engine. The oil should be changed at the recommended interval as documented in the owners manual or as experience has shown in ones fleet.

For supplements, if used incorrectly they can result in engine damage.

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Lubezine edition 11 feature 10 Questions for a lubricant professional interviewed Mr. Robert Kimaile of Libya Oil Kenya Ltd. Lubezine referred to Mr. Kimaile as the lubricants sales manager of Libya Oil Kenya Ltd. We wish to clarify that Mr. Kimaile is a Lubes Engineer and NOT the lubricants sales manager Libya Oil Kenya Ltd.

We apologize to Mr. Kimaile and Libya Oil Kenya Ltd. for any inconvenience the publication might have caused.
The lubricants sub-sector of the economy has been described by experts as the salient but core area of the downstream industry that is complementary to the fuel business. They are technology-driven products with value-addition to one of the refined by-products called base oil.

But stakeholders worry that despite the obvious contribution and potential to the nation’s economy, Nigerian lubes market is also a dumping ground for sub-standard and off-specifications imported lubes of questionable quality. They contend that these infractions are indeed a threat to the survival of the lube manufacturers in Nigeria.

At the 1st Nigerian Lubricants Summit organised by the Lubricant Producers Association of Nigeria (LUPAN) entitled: “Nigerian Lubricants Industry: Opportunities and Challenges,” which held in Lagos last year, lubricant manufacturers agree that there was the need for the government to re-stream and approve the existing base-oil unit at the Kaduna refinery and petrochemical plant for new refineries to use the heavy crude oil sand reserves for 100 per cent sourcing of base oil.

LUPAN had also sometime in March last year, petitioned the Minister of Industry, Trade and Investment, Dr. Olusegun Aganga, for what it perceived as the impending collapse of the lubricants sub-sector.

LUPAN raised the alarm that investment estimated at over N680 billion may soon go down the drain because of the upsurge in the importation of sub-standard lubricants into the country, adding that over 300,000 jobs were at risk unless the federal government curbed the menace.

The petition signed by its chairman, Mr Anthony Enukeme, and executive secretary, Mr Obidike Emeka, lamented the high tariff on base oil, which it puts at 10 per cent.

The association said: “This situation sets the lubricant manufacturers at a disadvantage in the sense that after the payment of the 10 per cent tariff, importers of finished lubricants sell their products directly to the consumers without extra costs.

LUPAN also observed that Nigeria remained a large importer of lubricants since the fire incident of 1995 at the Kaduna refinery's base oil plant.

It further noted with dismay that sub-standard and adulterated finished lubricants from Dubai, Turkey and other countries have been on the rise despite the fact that laboratory analysis report of most of such imported lubes revealed non-compliance to specifications and standards, both local and international.

While describing the lubricants as outright recycled oil with little or no additives in them, the association further alleged that the lubricants imported with undervalued invoicing, deluge the markets and were sold at a cheaper rate than genuine locally-produced ones this is despite the fact that locally-produced genuine lubricants go through further process of manufacture; consequently, selling at a higher cost than their foreign counterparts.

The cries of the stakeholders in the sub-sector on the need to curb the activities of the perpetrators of fake products in the industry received a boost recently when the Department of Petroleum Resources (DPR) Abuja uncovered and sealed up an illegal lube oil-blending plant.

The plant was being operated by one IMN Auto Parts Ltd in Usibu village, near Kontagora in Niger State. Zonal public relations officer, DPR, Muhammed Saidu, who led a team of the Nigeria Security and Civil Defence Corps (NSCDC) briefing newsmen at the end of the exercise, said the company was operating without licence and in an unsafe environment.

Way Forward

Experts contend that the backward integration policy which has worked so well in other critical sectors of the economy where the nation depends on heavy importation to boost local production and create more
jobs like the sector should be replicated in the lubricant sub-sector.

“There are opportunities if we can push through the backward integration policy in other sectors. It opens up the space for local investors to come in,” president, Dangote Group, Alhaji Aliko Dangote, said, in reference to moves by the Group to key into the backward integration policy in the sugar sector.

According to him, the policy has helped the Group to produce cement to meet domestic consumption and also export. According to Mr Kayode Sote, an engineer and principal partner, Lube Services Associates: “The cumulative asset base of the blending plants is about N20 billion, generating about N45 billion profit margin in 2013, employing over 5000 Nigerian workers but with a potential to generate over 50,000 additional workforce if they are working at full installed capacities.”

Sote therefore called on the government to review the aspects of the country’s laws that deal with the purchase, storage and sales of lubricants. Also, chairman of Lubcon Group, Jani Ibrahim, was of the view that sustainable growth of the sector could only be achieved if government reduced import tariffs, implement sound fiscal and stable monetary policies and maintain stable and lower interest rate regimes. He also stressed the need to eliminate multiple taxation.

But stakeholders said with the signing of a Memorandum of Understanding (MoU) by a local firm, Ammasco Oil and the Nigeria Automobile Technicians Association (NATA), manufacturers of lubricants in the country have achieved one of their objectives.

NATA is a national professional body of micro, small and medium scale auto-repairers in the informal economy.

The MoU, which was signed by both parties recently in Abuja, gives Ammasco Oil the sole right to produce customised lubricating oil for use by members of NATA nationwide.

For LUPAN, it was a major feat as Ammasco Oil belongs to their fold and under the MoU, members of the association would now aim to mutually collaborate in the advancement of their respective trades.

Apart from the right to produce customised engineering service products for NATA, the two organisations also agreed to collectively work to upgrade the standard of lubricating oil produced and used by automobile engineers and technicians in the country.

Experts said that considering the development in the industry in the last few years, which has on several occasions forced LUPAN to confront federal government on the need to check fake products and recognise local lubricants, the new development could be described as a major breakthrough.

The NATA president, Chief Micheal Omonayin, said the organisations agreed to work together to revolutionise oil lubricants market with a view to taking it to a global standard.

Omonayin said that Ammasco lubricants had continued to dominate the Nigerian market.

According to him, a critical market survey conducted by NATA and others also confirmed Ammasco’s market position. He explained that positive responses from various customers, many of which were members of the association informed NATA’s decision to sign the MoU.

The Chairman of Ammasco, Alhaji Mustapha Muhammad, represented by Mr Abdurazaq Sabo, Administration Manager of Ammasco, promised to ensure that NATA derived adequate satisfaction from the customised product. “Our business is to do for NATA what we know how to do best. I want to say today that what we are doing here that is, the signing of this MOU is a step in the right direction,” Muhammad said.

The management of the company had earlier given NATA mobile workshop vans which were intended to help boost the activities of the association across its various zonal offices.

On assumption of duty, the director-general of the Standard Organisations of Nigeria (SON), Joseph Odumodu, promised that his regime would pay serious attention to the influx of fake products, which seemed to have reached its climax.

Although SON has recorded some level of success, the problem has continued to be a major challenge facing local manufacturers and consumers of lubricants especially artisans and companies that rely on it for lubrication. But industry insiders agreed that the new relationship between Ammasco and NATA may be the opportunity the local manufacturers need to position their products as the preferred choices of the end-users.

Source: www.leadership.ng
By Yusuf Kipruto

The Kenyan business landscape is evolving, with more products and services becoming increasingly available to consumers. These advancements have increased competition for a market share, among new and existing brands. Market dynamics come into play in line with the four Ps of marketing paradigm acting as a major determinant for any product.

While many scholars and marketing experts have expanded the marketing forces to seven Ps, majority of them still revolve around these four: Product, Price, Place, and Promotion. The lubricant business is no different from other industries in terms of marketing and sales, hence the fact that all these market forces play a critical role. The lubricants industry is currently comprised of approximately 60% automotive, with the rest being industrial and specialty products.

Despite industry stakeholders seeing a great potential in the industry with the increased automotive sales from car dealers and importers, the market is a bit changing to new entrants into the market. Taxes play as one of the key issue as importation of raw materials of base oil and additives are taxed at 10% while finished lubricants are taxed at a maximum of 25% depending on the various EAC HS tariffs.

**Price and market**

The African market is keen on product pricing. With over 30 different lubricant brands sold in the country today, price plays a big role in the choice of a lubricant. This preference has led to importation and production of low quality lubricants. The lowest lubricant standards set by Kenya Bureau of Standards in 1980 for petrol and diesel engines is SE and CD respectively. According to the American Petroleum Institute, these standards are obsolete. These grades require frequent oil changes, ranging from 1000 kms to 3000/5000 kms. With OEMs gradually using synthetics as factory fills, industry stakeholders will have to revisit lubricant standards to more quality blends in the country, which might be priced higher.

Consumers are now enlightened on the issue of quality due to being involved in maintenance and savings initiatives and it is visible that most lubricants users are keen on the product though with some bias on price commanded. More emphasis on generally high quality lubricants is vividly being seen in the market which is diluting the aspect of price slowly by slowly.

**Product vs. market**

Despite the industry being price-driven, the lubricant brand also plays an important factor on sales. Major brands enjoy more than 60% of the market share among themselves. This poses a challenge to a new lubricant marketer entering the market with a new lubricant brand. They face a tough task of convincing the consumer market to leave their known brands to use their own new lubricant brand.

In most cases, when a consumer does not know which oil to use in their car, they turn to their mechanic for advice. A quality brand despite the price will gain sales through creating confidence with the consumer on performance and enhanced vehicle protection. The current API standard for 2010 is SM/SN for petrol engines and CJ-4/CI-4 for diesel engines becomes the main products to promote in the market.

These types of lubricants are only blended from high quality base stocks or synthetics base stocks and high performance additives. Engine design is constantly evolving with lubricants expected to meet SAPS, energy saving, CO₂ emissions and extended drain
intervals requirements as recommended by international set standards and OEMs. However, these standards are strictly enforced in Europe and North America where the sulphur content in fuels is less 10 ppm as opposed to Kenya 50 ppm. These regions also have good infrastructure, which allows them to extend drain intervals. With modern European automobiles finding their way into the Kenya, OEM requirements come into play that in this case requires high quality lubricants, and the lubricant marketer who caters for them will find a market.

**Place impact on market**

Product availability is a key factor in any industry. The product must be made available to a customer at the right time otherwise, the market is lost. Lubricants are no different from other products. Seventy percent of lubricants are sold in auto spare shops along garages in Kenya. These shops are placed strategically and stock only the fast moving brands for major brands. These spare shops are serviced directly through authorized distributors of lubricants in the country, or sales representatives of respective lubricant companies who sell to them directly at wholesale prices.

New lubricant brands entering the market find it hard to break this market hence depend on direct sales through their sales representatives. Lubricants marketers also appoint authorized distributors who are tasked with marketing and product distribution countrywide. Two notable authorized distributors are Africa Fuels and Lubricants (AFAL) who market Caltex brand, Riva Petroleum who sells Shell.

Service stations also acts as point of sale for lubricants for oil companies. With Total Kenya boasting 178 service stations, shell with 138 and Olibya, Kenolkobil, Engen, Gulf Energy, Hass Petroleum, Hashi and National Oil also expanding their networks, lubricant sales are made through these stations. Service stations enhance the image of a brand and builds trust among consumers for product availability. The retail network acts a distribution point to reach out to the market.

**Boosting lubricant availability**

Marketing is simply to make a product known to consumers. The first line of promotion of a lubricant is through service stations availability. Most petroleum companies have lubricants available in their retail networks. This assists consumers to have their oil checked while fueling, and top up or service their engine all together.

A new lubricant company can use both traditional methods and new media promotions methods. Product giveaways are a common feature in the industry with mechanics receiving overalls to promote a brand and motorcycle riders receiving branded jacket reflectors. Despite all these, getting endorsement from key industry stakeholders presents a major boost in lubricants sales.

For new lubricant marketing companies, placing advertisement in industrial publications amplifies product brand to stakeholders who matter. Constant reminders on products availability allows a sales representative easily present their sales pitch to client who is already aware of the brand, as opposed to a sales representative approaching a commercial client who may not have heard of the brand before.

The lubricant business in Kenya is very lucrative. A company wishing to enter the lubricant market needs to find the right balance and patience. Penetrating a quality product and price driven industry is not easy. Also getting the right people to support and sell the brand is good. A new lubricant company needs to set realistic sales targets to meet operational costs and breakeven then grow steadily from there. The focus should be on building trust with employees and clients, as the aim is not to get a one-time buyer but a long term client.
The best oil analysis programmes start with a good sample (Part II)


Part two of this article follows on from part one, which appeared in edition 11 of Lubezine. Previously, we discussed the importance of correct sampling procedures and the fundamentals of hydrodynamics, or the subject of fluids in motion. In Part Two, we will discuss the various sampling methods.

DRAIN PLUG SAMPLING

Samples taken from the bottom of the sump will show higher and unrepresentative concentrations of bottom sediment and water (BS&W) as compared to live zone sampling. The first problem with this method is that, unless stated, the analyst will assume that the well mixed overall concentrations are being measured and are not concentrates from the bottom of the tank. This can lead to an overreaction from a diagnostic point of view. For this reason it is important to inform the laboratory that working with hot oil.

Drain plug sampling is the least preferred method as there is a good chance that the debris on the outside of the plug and sediment at the bottom of the sump will find its way into the bottle, making results appear worse than they actually are.

Pros

- Only a sample bottle is required (and maybe a first aid kit if you spill hot oil all over your hands).
- The flow of oil can be easily controlled.

Cons

- There is always the risk of the sample being taken cold to avoid the hazard of working with hot oil.
- The health hazard of burning one’s hand while trying to take an oil sample that may be at operating temperature as high 100º C.
- As with the first two sampling methods, there is always the risk of cross contamination of sampling tubes and sediment can be picked up.

VALVE SAMPLING

Using a sample valve to take an oil sample is the preferred method as it is easy, clean and simple. If you make things easy, clean and simple you increase the likelihood that they will be done correctly. It is also the best way to avoid contaminating the sample.

The machine has to be running in order to take the sample and the sample will always be taken from the same location. As with the first two sampling methods, the oil also has to be at operating temperature. Remove the dust cover that prevents contaminants from entering the valve body, clean the valve orifice and attach the connector that releases the valve and allows oil to flow.

Allow half a litre of oil to drain into a rinse bottle. This will help purge the sampling tube of previous...
Always sample from running machines, avoid sampling cold systems and remember that the idea behind taking an oil sample is to obtain a snapshot of the system under normal working load and conditions.

oil residue. Disconnect the rinse bottle and attach the sample bottle. Fill the bottle remembering to leave sufficient ullage. Where to position the sampling valve if one is not already fitted? Golden rule: after the component but before the filter. The valves come in different sizes with a variety of connectors with high pressure options.

Pros

More consistent and representative results as the machine has to be running and the sample will always be taken from the same location.

Cons

Requires mechanical modification of equipment if the valve has to be retro-fitted.

Modern oil analysis programmes include tests that can be influenced by environmental contaminants entering the sampling bottle during the sampling process like particle counting and elemental spectroscopy. In situations where there is considerable dust in the environment at the time of sampling, an effort should be made to insure that this dust does not contaminate the oil. High risk environments include mine sites, primary metal industries and pretty much anywhere there is a desert.

This might seem like over-kill but experiments on the influence of environmental dust on particle counts have shown ISO codes to increase 2-3 range numbers when a sampling bottle has been left open for just a few minutes. So how do you take an oil sample without opening the bottle to the environment? I assure you this is not a beer drinking trick.

The method is called “clean oil sampling” and involves the use of a zip-lock sandwich bag. The capped sample bottle is placed in a thin zip-lock sandwich bag and zipped closed sealing the surrounding air along with the bottle in the bag. This part of the process should preferably be done in a clean indoor environment. The accompanying sampling hardware such as vacuum pumps and probe devices should also be bagged until the moment of sampling to avoid environmental contamination.

When ready to sample oil from a system ensure that the sampling valve or vacuum pump and probe have been adequately flushed. Twist the bottle cap off without opening the bag and allow the cap to fall to the side inside the bag. Now move the mouth of the bottle so that it is away from the zip-lock seal remembering not to unzip the bag. Thread the bottle into the cavity of the sampling device (pump or probe or valve connector), allowing the plastic tube to puncture the bag during the process. The sample is then collected in the usual fashion until the correct quantity of oil has entered the bottle. To complete the process, grip the bottle inside the bag and unscrew it from the pump or probe cavity. With the bottle free and still inside the sealed bag retrieve the cap inside the bag and manoeuvre it onto the mouth of the bottle and seal tight. It is now safe to unzip the bag and remove the bottle. Do not reuse the zip-lock bag for further sampling or sandwiches. This simple process effectively allows samples to be taken without exposing the oil or the bottle to atmospheric contamination. This method minimises the risk of dirt entering the bottle.

What follows are few golden rules:

- Always sample from running machines, avoid sampling cold systems and remember that the idea behind taking an oil sample is to obtain a snapshot of the system under normal working load and conditions.
- Flush the sample tubing with the oil from the system you intend to sample from. Avoid flushing sampling equipment with water, diesel or solvent. Modern day oil laboratories employ equipment that can accurately measure concentrations of water contamination below 0.01% and fuel below 2%. Any water or diesel detected in the oil sample might result in an overreaction to what is essentially data interference as a result of poor sampling practices. If diesel or solvent is used to flush sampling equipment, make sure that the equipment is then flushed with the oil that is about to be sampled.
- Ensure that samples are taken at a proper frequency. Factors to take into consideration when deciding sampling frequency should be environmental severity (high dust, load or temperature), machine age (bedding-in/wearing-out) and economic penalty of failure (cost of downtime and repair/replacement). A vital component of oil analysis is trending data received from the oil or, more to the point, trending the rate of change of wear and contamination. In this way one can build up a representative history, essentially a historical mechanical biography of the component being sampled. Having a representative history allows the analyst to spot potential deviations from the norm and alert the customer. It is difficult to build a representative history if the sampling frequency is erratic.
- Sample upstream of filters and downstream of machine components. Filters are designed to remove unwanted debris from the lubricating system so if you take an oil sample after the filter, all the valuable data pertaining to the wear and contaminants will be lost. The exception to this however is sampling before and after the filter as a means to gauge filter operation.
Ensure that all sampling equipment (valves, vacuum pumps) is thoroughly flushed prior to taking a sample. Do not use dirty sampling equipment or reuse sample tubing without flushing out oil residue from a previous sampling. Cross contamination has always been a problem in this regard. Flushing is an important task that is often overlooked. Failure to flush the sample location properly will produce a sample with a high degree of data interference. To obtain representative data, sampling hardware has to be thoroughly flushed prior to taking a sample. This is usually accomplished by using a spare bottle to catch the purged fluid. It is important to flush five to ten times the dead space volume before taking the sample. All hardware with which the oil comes into contact is considered dead space and must be flushed.

Forward the sample to the oil analysis lab immediately after sampling. Do not wait more than 24 hours to send the sample out. Remember you have taken a snapshot of the oil at that point in time. The health of the component and oil can change dramatically in a short period of time. The earlier a problem is detected the less chance there is of catastrophic failure. Oil analysis is a form of predictive maintenance. The whole idea is to detect potential problems before serious consequences arise.

At the beginning of this article I made a statement about how the accuracy of oil analysis is dependent on two aspects of the whole procedure the customer controls. Therein lies the problem: oil analysis is a holistic process. The word holistic can be defined as “emphasising the importance of the whole and the interdependence of its parts”. The way you take an oil sample and the information supplied is part of the whole that is oil analysis. Sending an oil sample to an oil laboratory with no accompanying information is like sending an unidentified blood sample to a pathology laboratory and expecting them to know what to look for in the blood. Sending a poorly taken sample to an oil analysis laboratory is like taking a blood sample from a complete stranger and expecting the pathologist to diagnose what is wrong with you.

In layman’s terms my analysis is only as accurate as the sample and information you give me. Hopefully from this article you will see that developing and implementing effective sampling procedures is one of the most important components of a successful oil analysis programme. The bottom line is: what you put in is what you get out. Happy sampling!
Argus Africa Base Oils and Lubricants Conference

12-13 May 2015 | Nairobi, Kenya

Some of the topics to be discussed:

- Understanding the African base oils and lubricants market in the global context
- Product trade flows and historic pricing trends
- How will demand evolve from different regions and market segments?
- Tackling sub-standard finished lubricants, counterfeiting and other industry malpractice

For more information:
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Most of us have heard of the 80:20 rule: 80 percent of the consequences are caused by 20 percent of the root causes. This rule of thumb is based on a well-known business theory known as the Pareto Principle, reputed to have been hypothesized by an Italian economist back in 1906 who noted that 80 percent of the land in Italy at that time was owned by 20 percent of the population. The Pareto Principle is often cited in various and diverse business practices, such as explaining why 80 percent of sales come from 20 percent of most companies’ customer base, or why 80 percent of customer complaints come from 20 percent of customers.

In lubrication, the Pareto Principle also applies. Studies indicate as many as 60 percent to 80 percent of mechanical failures can be attributed directly or indirectly to lubricant contamination. And while this statistic will vary based on application, machine type and industry, what cannot be disputed is that without precision control of the contaminant, machine reliability can be seriously compromised.

It’s All About the Small Stuff

For the purpose of this article, consider the two primary contaminants found in most plants: particles and moisture, though other contaminants, such as air, chemicals, fuel and glycol, also can have deleterious effects on equipment. Most companies recognize that...
Studies indicate as many as 60 percent to 80 percent of mechanical failures can be attributed directly or indirectly to lubricant contamination.

dirt and moisture are bad, but fail to recognize how small amounts of contamination can have a very serious effect.

For particle contamination, the primary concern needs to be silt-sized particles in the one to 10 micron size range. While small in nature – less that 1/20th the thickness of a human hair – three micron silt-sized particles that are no bigger than a red blood cell are as much as five to 10 times more likely to induce a failure. The reason for this is two-fold: many filters are not designed to remove such small particles and dynamic clearances (the separation between moving parts under operating load, speed and temperature) are typically in the one to five micron size range for most common equipment classes (see Table 1). Controlling contaminants in this range is critical since dynamic-sized particles can easily enter oil-wetted pathways, yet are large enough to cause cutting (abrasive) wear, premature fatigue failure and valve stiction issues.

### Table 1 - Typical Dynamic Lubricated Components

<table>
<thead>
<tr>
<th>Typical Dynamic Lubricated Components</th>
<th>Clearances in Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring to cylinder (engine)</td>
<td>0.3-7 µm</td>
</tr>
<tr>
<td>Journal bearing</td>
<td>1-100 µm</td>
</tr>
<tr>
<td>Rolling element bearing</td>
<td>0.1-5 µm</td>
</tr>
<tr>
<td>Gears</td>
<td>0.1-2 µm</td>
</tr>
<tr>
<td>Servo valve (spool to bore)</td>
<td>1-4 µm</td>
</tr>
<tr>
<td>Hydraulic vane pump</td>
<td>0.3-5 µm</td>
</tr>
</tbody>
</table>

Particle contamination is usually expressed according to the ISO4406:99 standard. This standard reports particle concentrations in hydraulic fluids in three size ranges: particles > 4 microns, particles > 6 microns and particles > 14 microns. Based on the ISO4406:99 standard, Table 2 shows recommended target cleanliness levels for different types of common plant equipment.

### Table 2 - Recommended Cleanliness Levels for Different Equipment Classes

Aside from particle contamination, water is the second most insidious contaminant. Present in most fluids, even in the most pristine environments, water can increase failure rates 10 to 20 fold, depending on the circumstances. Water causes problems in a number of ways. First, any iron or steel surface in contact with water will start to rust. This can induce premature failure due to corrosion, as well as introduce rust particles into the fluid. Second, water performs very differently to lubricating oils under operating loads and speeds.

So how much water is too much? To a large extent, the answer depends on the type of equipment, the age of the fluid and the operating temperature. The reason for this pertains to the form that water takes in lubricants. Most fluids will hold a certain amount of water in the dissolved phase. For the most part, as long as the water remains dissolved, most water-induced problems will be minimal. However, as soon as the water comes out of solution and becomes free or emulsified, it becomes a very real concern. While highly temperature dependent, the saturation point of most conventional oils ranges from 100 ppm to 200 ppm for lightly additized oils, such as turbine oils, to as much as 500 ppm to 800 ppm for more heavily additized oils, such as gear oils. As such, water levels should be set accordingly to try to ensure that any moisture present is below the saturation point at all in-service temperatures.

### Developing a Contamination Control Strategy

For those who believe in lubrication’s own Pareto rule – 80 percent of problems are caused by the 20 percent of contamination issues – developing a plant or corporate-wide contamination policy should be a priority. While more complicated to execute, establishing the policy is very simple.

#### Step 1: Know how clean the oil needs to be

The first step is to know how clean and dry the oil needs to be. This is analogous to setting speed limits on a highway. Depending on ambient conditions and operating context, set target cleanliness and dryness levels that provide a reasonable surety that contamination-induced failures are unlikely to happen. Just like setting lower (tighter) speed targets (limits) in critical traffic zones (e.g., busy highway intersections, school zones, etc.), targets for oil cleanliness need to be adjusted based on the type of equipment, its criticality and the environment in which the machine is functioning. While driving at 5 mph over the limit is unlikely to induce a speed-related accident in a 55 mph zone, the further from the posted limit a car goes, the more likely a failure will occur and, in the case of driving, the greater the likelihood for a speeding ticket! Likewise, the probability of a contamination-induced failure increases dramatically the further away from the optimum target level for particles and moisture.

While Table 2 is a good starting point, targets should be set for each machine class based on the aforementioned factors, with the goal being to not exceed the limits set for particle or moisture contamination.

#### Step 2: Control contamination to levels below the target

Just like having the ability to control speed while driving, having a “brake” to control contamination is vital. To do this takes a two-pronged approach: exclude contamination at the source, then work to remove any contaminants if they get into the machine. To exclude contaminants, look at the total pathway that a lubricant takes from storage to handling and application to the machine. This includes pre-filtration of new oils, lubricant transfers using quick connects to avoid exposure to the ambient plant environment, and tanks and reservoirs that are properly sealed and using appropriate particle and desiccating breathers to prevent contamination ingress from air exchange between the machine head space and the ambient operating environment. Once everything has been done to exclude contaminants, filters and filtration systems need to be evaluated to ensure they are capable of maintaining the contamination control targets established for each machine. In doing so, it is necessary to try to balance filtration needs, making sure vents, breathers and filters are selected to achieve the established targets. Trying to maintain a critical hydraulic system to 15/13/11 or better with a standard original equipment manufacturer vent cap and 10 um filter is never going to happen!

#### Step 3: Monitoring contaminants

Trying to effectively control contaminants without good data from...
oil analysis is like trying to drive within the speed limit without a speedometer. It's simply guessing (or hoping!) that the contamination control strategy is working. Good data requires taking proper oil samples from the correct location and having the lab perform the correct tests capable of detecting contaminants at low levels. This is particularly true for water contamination since many of the common tests used by labs to look for water are not able to detect water down to the levels identified in Table 2. Care should be taken to ensure that sample results indicate compliance with the target levels set and where no compliance is found, corrective action is taken to determine the root cause of the problem.

Putting It All Together
Based on the above, contamination control is as simple as 1-2-3, but even this simple approach can have a very dramatic effect on equipment reliability. Using a real-world example from a stamping press in an automotive plant, based on a high level of contamination in the stamping presses, the plant set about creating new targets for particle contamination. By installing proper breathers, sealing up reservoirs and installing kidney loop filtration, the plant was able to reduce overall contamination levels by an average of 93 percent to 97 percent within a few days!

Based on failure reporting, analysis and corrective action system (FRACAS) data, the plant was able to track downtime rates for lubrication-related issues before and after filtration with dramatic results. On average, the plant witnessed a 54 percent reduction in annualized downtime in the first six months after deploying new contamination control measures, compared to its average annual lubrication-related downtime for the three previous years. For this plant, the savings exceed $1 million dollars and getting there was as simple as 1-2-3!

Figure 1: Silt particles in the one to 10 micron size range are only less than 1/10th the thickness of a human hair, but cause five to 10 times the amount of damage as larger particles

This article first appeared in Uptime magazine. www.reliabilityweb.com

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Sepyana Oil – E.A. has entered the East African lubricants market, launching their East Africa oil blending plant in Kenya and unveiling a fresh product branded Sepyana. Established in 2009, Sepyana Oil is among the latest entrants into the East African market, which continues to expand as more marketers seek to establish their presence in the promising lubricants industry. Sepyana officially opened shop in the region in 2013, and finally established in Kenya and COMESA region in 2014.

With a current capacity of 20,000 MT per year, the blender has plans to produce 10,000 MT per year for the Kenyan market, which would be approximate ¼ of the total market consumption that is estimated to be 40,000 MT per year, according to Sepyana Oils Managing Director Mr. Poosti Reza.

“We decided to open a lubricant blending plant for East Africa after a feasibility study results showed a high demand for finished lubricants which stands at 120,000 MT per year” Mr. Reza said in an interview with Lubezine at their headquarters in Nairobi.

“We have state of the art equipment and laboratory to manufacture high quality lubricants for all the markets in the region. With highly trained staff sourced both locally and internationally, we are producing lubricants that meet international standards for the local market”, he said.

With approximately 90 per cent of the lubricants it blends being automotive, the company has launched a full range of automotive lubricants for all types of vehicles and motorcycles, with the automotive range segmented into diesel engines, which account for approximately 60 per cent of the market, and petrol engines estimated to be at 30 percent, and the remaining segment for specialty products.

The company blends both mineral based and synthetic lubricants, which are gaining acceptance in the market. Mr. Reza explained that the company is committed to quality products with all their products having approvals from the Kenya Bureau of Standards and SGS certification. The company is further negotiating to acquire international OEM approvals for their finished lubricants.

Sepyana lubricants contain 30 products in seven categories for the automotive, industrial, specialty and off road machinery market. They have formulated a full range of mono-grade and multi-grade products for diesel and petrol engines.

Their Diesel engine products range named Radix include SAE 40, SAE 15W40 (CT 500, CT 1000), SAE 10W40 (synthetic technology) and SAE 5W40 (fully synthetic). Petrol engine segments include ZoomEX product ranges of SAE40, SAE 20W50, SAE 15W40, and SAE...
5W40 (fully synthetic) ranges. Gear lubricant ranges include GearEX ranges for SAE 80W90, SAE 85W140 and automatic transmission fluids products also available. With the motorcycle industry also known as bodaboda industry growing exponentially, Sepyana SparkEX 4T SAE 20W50 products are available.

Hydraulic oils are available for off highway trucks, and agriculture segment served with AgriEX 20W40 for all types of tractors. High performance greases LithEX are available for all types of applications and bearings. Industrial products include metal working fluids and cutting oils among other ranges. There are also specialty products that include brake fluids (Dot 4), and engine radiator coolants.

To maintain these qualities, the company has sourced high quality base stocks from Middle East and Dubai and high performance additives from an international additive supplier. Group I and group III base stocks are used to blend their mineral and synthetic lubricants respectively. As Mr. Poosti explained, the company launched the wide of range of products to enable them penetrate all the market segments effectively.

The raw materials used undergo vigorous quality control process in the laboratory before approval for manufacturing.

“The main reason for the launch of these products is to produce high quality lubricants at competitive market prices. The strategic location of the company in Sameer Park along Mombasa Road provides access to all areas in the city and country easily. Our products are available are available economically to consumers, and finished lubricants can be made available immediately on demand.” He further explained.

Six months since the launch, the market response according to Mr. Poosti, has been good and consumers are gradually accepting the brand. The company reckons the key to the success of the brand is to ensure that there is no compromise in quality, while offering good prices. Sepyana has currently appointed authorized distributors in Nairobi and Thika and as Lubezine learnt, more distributors would be appointed in the next weeks in Mombasa, Kisumu and Kisii.

Sepyana lubricants will also be made available in all Yana tire authorized distributors countrywide to further strengthen their penetration. The company intends to invest in training sessions for all their distributors, retailers, mechanics, and public on the brand, product standards and importance of using quality lubricants in their applications.

“We signed partnership agreements with local companies to locally produce motorcycle oils at affordable prices while meeting internationally set standards by OEMs. The blender offers toll-blending services for local lubricant blenders in the market to manufacturer their own brand at affordable prices. Backed with a modern day laboratory, the company continually tests their products to ensure that standards are not compromised,” he said.

The firm’s modern laboratory offers oil analysis services that meet KEBs standards. Such tests as material checks and composition, viscosity, flash point, total base/acid number, particle and dust analysis can be done at the laboratory. They are also available for third party affiliates at a cost.

The company has an ambitious expansion programme in East Africa and COMESA regions, with plans to roll out in 2015. Kenya’s strategic location is ideal as the company’s headquarters with easy access to all COMESA countries. Tax incentives in COMESA countries also allow the company to sell their lubricants in the region at attractive prices.

Currently, negotiations are underway with distributors in the regions to sell lubricants in the countries as the company seeks appropriate licenses to enable them sell in markets such as Zambia and Burundi where lubricant demand is high. Low taxation regimes and transportation costs are expected to enable the brand to penetrate these countries while still offering highly competitive prices.

“The company intends to enter the Tunisia market. Tunisia offers a good market for us. There is a low tax regime for exports to Europe that stands at 5% only. This offers us an attractive avenue to further expand internationally,” Mr. Poosti stated.
The 4th Annual Base Oil and Lubes Middle East Conference (BLM 2015) is jointly organized by Conference Connection and Petrosil in Abu Dhabi on 22-23 April 2015. BLM 2015 will continue to provide a good spread of topics, high caliber speakers, quality presentations and premium networking opportunities for the base oil and lubricant industry. Leveraging on strong NOC-MPGC relationships, BLM has enjoyed the patronage and support of the Bahrain National Oil Company, Abu Dhabi National Oil Company, Emirates National Oil Company and in 2015, Abu Dhabi National Oil Company once again as hosts. Continuing its focus on the global base oil business, BLM provides both knowledge sharing and networking opportunities, with participation from leading producers, suppliers, manufacturers, re-refiners, traders and end-users from twenty-five countries.

With Participation From:
- Dr Nadim Najim, Deputy CEO Lubricant Division, Al Khaja Holding, UAE
- Mr Samir Nawar, President & CEO, Petromin Corporation, Saudi Arabia
- Mr Ahmed Saleh Al Hamed, Manager, Base Oils & Special Products, Refined Products Division, ADNOC, Abu Dhabi, UAE
- Mr Simon A. T. Mupambo, Technical Services Manager, ADNOC Distribution, Abu Dhabi, UAE
- Ms Geeta S. Agashe, Senior Vice President, Energy, Kline & Company Inc, USA
- Dr H E Henderson, President, K & E Petroleum Consulting, LLC, USA
- Mr Norman Sheppard, Base Oil Development – International Marketing, BAPCO, Bahrain
- Mr T R Kumar, Managing Director, TESLA Lubricants, UAE
- Mr Shaikh Jameeludin, Manufacturing Manager, United Lube Oil Company Ltd, Saudi Arabia
- Mr Eric R. Johnson, Industry Liaison Fuels & Lubricants, General Motors Corporation, USA
- Mr Nabilh Alkarmi, Technical Sales Account Manager - Middle East & Pakistan, Chevron Oronite, UAE
- Mr Mehrdad Vajedi, Director - BAO/PRO/Specialties, Permian Energy L.L.C, UAE
- Mr Ravi Chawla, Managing Director, Gulf Oil Lubricants India Limited

(The above is only a partial list of speakers. The final programme will feature additional names.)

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Booming end-user markets, especially in Asia, are driving the global metalworking fluids market. As industrial production increases in China, India, Russia, Turkey, Brazil and Southeast Asian countries, regulations on waste water treatment and disposal are compelling end users to optimize the use of mineral-oil based metalworking fluids, according to research and consulting firm Frost & Sullivan. This is expected to increase the adoption of semi-synthetic and synthetic metalworking fluids that offer good balance between cost and performance. In turn, the metalworking additives segment will grow rapidly as synthetic-based metalworking fluids require a stronger additive package.

A new study by Frost & Sullivan, Analysis of the Global Metalworking Fluids Market, finds that the market earned revenues of $8.83 billion in 2013 and estimates this to reach $12.09 billion in 2020. Regulations on wastewater treatment will also be a major driver in Europe and North America. In addition, the burgeoning Asian automotive industry, niche applications such as medical machining will boost sale volumes.

“The replacement of metals with plastics and composites in several applications will, however, quench the demand for metalworking fluids to an extent,” said Frost & Sullivan Chemicals, Materials and Food Research Associate Srinivas Venkatesan. “For instance, the automotive and aerospace industries use plastics and composites for lightweighting. Similarly, the preference for cartons over beverage cans is likely to impact the demand for metalworking fluids from the packaging industry.”

In addition, the development of technologies such as minimum quantity lubrication, high pressure machining, and near-net-shape casting could replace conventional metalworking processes thereby reducing the demand for metalworking fluid. Advancements in 3-D printing could further hamper uptake as materials processed through laser sintering technology have good mechanical properties and an excellent surface finish, the study found.

In the face of these challenges, according to the study, product differentiation is essential to succeed in the market. Metalworking fluid manufacturers must undertake research activities in collaboration with customers to develop cost-effective solutions that can satisfy constantly changing end-user requirements.

“Offering differentiated products and innovative customer support mechanisms will help manufacturers stay afloat in the highly competitive market,” opined Venkatesan. “Extending support services such as troubleshooting and periodic reports on health of metalworking fluids will enhance consumer loyalty.”

As established manufacturers look to broaden their portfolios, mergers with and acquisitions of regional vendors possessing specialized capabilities and a strong customer base will gain pace in the global metalworking fluids market.

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Oil sludge or black sludge is a solid or gel in motor oil caused by the oil gelling or solidifying, usually at temperatures lower than 100°C. Sludge appears in different ways ranging from light brown to opaque black, they range from semi-liquid to solid, and they can be formed by different chemical reactions. Sludge is typically soft, but can polymerize to very hard substance. It plugs oil lines and screens, and accelerates wear of engine parts.

Oil sludge can be a major contributor to internal combustion engine problems, and can require the engine to be replaced, if the damage is severe.

**Causes of oil sludge formation**

Many scholars and maintenance specialists have come up with various but similar causes of sludge in engines and other machines.

**Incorrect Lubricant**

It is vital that one uses the correct oil in his or her engine or equipment. Use of a lubricant that is of low quality does not offer the right lubrication at the operating conditions of the equipment. Poor quality or inferior lubricants will not offer oxidation resistance, while highly viscous lubricants will generate internal heat that will catalyze oxidation hence sludge formation.

**Over extended drain interval**

Whether one is using a synthetic or a group three based lubricant which performs like a synthetic, there is always a limit to extend the drain interval. Extending too far will cause uncertainties inside the engine or equipment just in case there is an onset of sludge formation. Over extending the drain interval of a lubricant, will cause a buildup sludge and plug up the pinhole size oil ports and starve for oil resulting in engine damage and failure.

**Driving short distances with many cold starts**

Due to engines being made out of aluminum, plastic and many other parts that heat up and cool fast this causes the oil to build up in layers coating every moving part until it no longer can move freely resulting in engine damage.

**Short trips**

While doing short trips, the engine Coolant and Engine Oil never reach the normal operating temperatures. This will cause sludge formation to start or accelerate the sludge formation in an engine.

**Excessive idling or slow driving**

Slow driving speeds and long idling periods lead to high under engine temperatures due to limited air flow. The average distance per hour run time is low and engines will accumulate many engine run hours for the relatively low distance driven. This exceeds the
safe number of hours which a lubricant is designed to operate hence increase in sludge formation due to extreme heat and quicker break down of the lubricant. Many commercial companies change their oil based on hours driven instead of kilometers driven because of this issue.

**Lack of proper maintenance**

Proper maintenance is key to a healthy engine or equipment. If scheduled maintenance is not followed, the lubricant can be over used to lead to sludge formation. Other consumables in the maintenance of an engine like filters can cause high contamination if not well installed or fixed as well as use of low quality parts.

**Low quality Fuels**

Low quality fuel causes sludge build up and also can easily cause carbon build up. The carbon build up suffocates the engine and wreaks havoc on the fuel system, engine, emissions parts and many other components resulting in service engine lights and unnecessary replacement of parts.

**Additives added to Lubricants**

Additives can dilute your oil, thicken oil and breakdown your oil instead of many of the claims these products make. Thickening of oil or breakdown are common recipes for sludge formation. After sale additives, very rarely do anything close to what they say. Instead they do more harm than good.

**Contamination by coolant**

Glycol-based coolant is another oil contaminant that may accelerate sludge formation. There has been an increase in wet-sleeved engines which pause a contamination challenge, as well as the introduction of alternative but incompatible coolants. Contamination of the lubricant by the glycol based coolant, will cause sludge to build up.

In our next edition, we shall look at how we can deal with sludge as well as avoid formation of sludge.
PETRONAS Lubricants International introduced the industry’s first 0W-20 commercial vehicle lubricant. The global plummeting of crude oil prices has touched off announcements by various oil dealers that they will reduce the costs of their finished products in response to the trend that has also affected fuels.

Chevron, ExxonMobil, Phillips 66, Shell, CITGO, Castrol and Valvoline announced last month they will be decreasing finished lubricant prices in February 2015.

A letter dated January 12, 2015, ExxonMobil Fuels, Lubricants & Specialities Marketing Company announced that effective February 2, 2015, ExxonMobil branded and unbranded lubricants and greases will decrease in price up to 3.5 percent.

ExxonMobil said different price treatment Phillips 66 Lubricants stated that effective Monday, February 2, 2015, it will decrease posted prices up to 4.5% for most finished lubricants products. The letter went on to state that depending on product-specific factors, prices for some products could fall outside this range.

On January 13, 2015, Shell Oil Products US announced it will implement a price decrease of up to 3.5% on finished lubricants effective January 19, 2015.

Shell stated “this adjustment is the result of competitive factors in the marketplace, including the decreasing costs of raw materials used in the production and delivery of our products. In certain instances, the effective date may apply to selected products. Aviation product prices will not decrease at this time. Due to factors impacting the market for aviation lubricants, there will be increases to specific aviation product families effective February 16, 2015.

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Another letter to its Lubricants Marketers dated January 12, 2015, ExxonMobil said different price treatment Phillips 66 Lubricants stated that effective Monday, February 2, 2015, it will decrease posted prices up to 4.5% for most finished lubricants products. The letter went on to state that depending on product-specific factors, prices for some products could fall outside this range.

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Another letter to its Lubricants Marketers dated January 12, 2015, ExxonMobil said different price treatment Phillips 66 Lubricants stated that effective Monday, February 2, 2015, it will decrease posted prices up to 4.5% for most finished lubricants products. The letter went on to state that depending on product-specific factors, prices for some products could fall outside this range. The value retrieved from a reliable, high-performance engine oil makes a lot of sense when operating on a large scale, which makes the investment in the technology partnership with PETRONAS a key success factor,” said Dr. Holmes.

The PETRONAS Urania selection of products is the recommended engine lubricant for Iveco’s full range of light and heavy duty commercial vehicles, and is also used by the Team PETRONAS De Rooy Iveco to compete in the 2015 Dakar – recognised as the most grueling off-road endurance rally in the world.

Brand President of Iveco, Pierre Lahutte, said, “Sharing the same values and passion for quality and technology, PETRONAS Lubricants and Iveco are ideal partners for this challenge, in which both companies will have the chance to offer their own contribution to performance and quality with their respective high-technology products.”
Understanding Sulphur’s silent attack on your motor engine

Mohammed Baraka

Sulphur is present in crude oil to various degrees and the crude with lower sulphur content is referred to as sweet crude while that with high sulphur content is termed as sour crude. We depend on crude oil from the Middle East, which is predominantly sour.

When crude is refined, the molecules containing sulphur tend to have a higher boiling point and that is why the amount of sulphur in lighter products such as Mogas and Kerosene is lower than in diesel fuel and fuel oil.

In refining the sulphur content is reduced in kerosene and diesel by a process called desulphuing. Kenya Petroleum Refineries which used to be the main source of refined products had limitation in its desulphuring capacity. The diesel produced in the refinery had a sulphur content 1% or 10,000 parts per million (ppm). This way the only diesel available in the market.

When Sulphur burns, it produces sulphur oxides (sulphurdioxides and sulphur trioxides). These oxides combine with water to form acids. Acids corrode metal and in a diesel engine they would attack cylinder linings and rings. The acid could also attack the injector nozzles and that is why we called it silent killer. Diesel engines that run on high sulphur diesel will after a short time start smoking. The blue smoke will come from the lube oil that goes over the rings as the rings and liners are corroded.

The diesel engine would also produce black smoke resulting from unburnt fuel. The unburnt fuel was either due to the high boiling point molecules that contain sulphur or poor atomization of the diesel fuel when the injector nozzles are corroded.

The smoke that comes from the diesel engine has a lot of sulphur oxides that will corrode exhaust pipe tail and will spoke the rest into the atmosphere. The emissions are bad for human health as they affect the respiratory systems resulting in respiratory diseases such as asthma and even lung cancer.

The effect on human health particularly in the crowded urban areas is therefore disastrous. In quantifying the cost of high sulphur fuel on the economy we tend to overlook the effect on human health and perhaps it is the biggest cost closely related is the damage on buildings particularly those lined with marble.

The effect of sulphur on lubricating oil is also big. It is important to note that the engine burning high sulphur diesel burns with a lot of smoke. This smoke ends up in the crankcase resulting in oil thickening and thus reducing the drain interval. If the injector nozzles are corroded the fuel will come out in large droplets that will also collect in the oil sump resulting in fuel dilution.

To reduce the effect of sulphur lubricating oils are fortified with alkalinity additives so that the lubricant neutralizes the acids formed before they attach metal parts. In the 80s and 90s this problem was so serious that oil companies were competing in producing oil with high alkalinity. In the mid-80s when Caterpillar recognized this problem they came up with a letter that recommended that the total base number of the lubricant used should be 20 times the sulphur Content.

If the sulphur in the diesel is 1% then the TBN of the oil to be used should be 20. At that time the highest quality diesel engine oil was API CD. API also observed that if any oil with API CD which typically had a TBN of 10, had a TBN boost of 20, it would still meet the API...
CD requirements.

Many marketers made 20TBN oil but many failed to perform as they produced very hard ash that impeded the opening and closing of valves resulting in valve burning.

In mid 90s when the oil importation was partial liberalized we started getting lower sulphur diesel with 5000 ppm or 0.5%. The overall sulphur content was below 1% when mixed with diesel from KPRL. At the end of 2000 the government set up a new standard for imported diesel which set the sulphur content at 500ppm.

This further reduced the sulphur content in the diesel to around 2000ppm and when KPRL closed, sulphur in the entire diesel was below 500ppm. The governments of East Africa has now set the sulphur content at 50ppm which is a major improvement from 10,000ppm.

The sulphur content of 50ppm although a major achievement, it is still high by world standards. Europe, U.S.A and many Asians countries has set their standards at 10ppm. Most diesel engines being built now are intended to use diesel of 10ppm and therefore using 50ppm will make the engine wear out faster than was intended. This however is a major achievement for the operator the environment and human health.

The engines will not corrode and therefore will last longer. The lubricant will not degrade faster as the engines will produce less smoke. The oil will last longer as there will be fewer acids to attach the lubricant. The air particularly in the crowded urban centers will be cleaner and less damaging to human health.

One question people ask is what will this mean for the lubricant. As we said earlier you do not need very high TBN oils that are in the market. From Caterpillars study in the 80s if the fuel sulphur is not balanced with the TBN and the TBN is very high there will be higher ash depositing the engine and on the valve seats. Therefore continued use of very high alkaline oils will see faster thickening from ash deposits.

The conventional engine oils such as the API CI4 are designed for fuels of 10ppm. The drain interval could be extended but this will require an in-service monitoring to optimize on the drain interval otherwise even if you maintained the same drain interval you should benefit from extended engine life.

For us who have lived many years with high sulphur fuel and seen the destruction of sulphur to equipment and human health we cheer those who have brought in the new standard. We say gone is the SILENT KILLER or not quite gone but drastically reduced. ■
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