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VOL.3 • JANUARY-MARCH 2012

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Focus on Kirinyaga Road

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VOL 3 • JANUARY-MARCH 2012

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Lubes AFRICA

Subscriptions: *Lubezine is free to qualified subscribers who are involved in the lubricants industry as manufacturer's end-users, marketers and suppliers to the oil industry. Lubezine is a quarterly publication of Lubes Africa Ltd.*

EDITORIAL

Welcome to the new look Lubezine Magazine!

This is the third issue of a magazine that continues to quench the thirst for information of the regions lubricants market.

Kirinyaga Road is in no small measure the most significant market for lubricants in Kenya. Over the years,this area situated in downtown Nairobi has gained a reputation for quality products at the most competitive prices. It has also produced some of the biggest distributors of lubricants in the country. Lubezine reporter,Margaret Mwaura extensively covers this area bringing you the reasons that make this area tick.

We welcome on board UK correspondent, Mr. Andrew Monk. When faced with the need to reduce maintenance cost, many purchasing managers opt for cheaper products.But Mr. Monk shows in his article that through lubrication surveys, a plant can drastically reduce maintenance cost by cutting down on waste and utilizing the correct lubricants and lubrication principles. He asks ... "How can anyone involved with maintenance ever get to appreciate that an innovative grease that costs 100 times their currently utilized conventional product, will give them an annual saving in terms of reduced downtime and maintenance costs twenty times what they would spend on this lubricant?"

I must applaud Kenya Bureau of Standards (KEBS) for the initiative it has taken to try and upgrade the minimum oils grades from API CD and API SF to API CH-4 and API SJ for diesel engine and petrol engine oils respectively. The concern that stake holders have raised about the need for strict enforcement of existing standards is quite valid and there is no doubt that KEBS is up to the task. Indeed a journey of 1000 miles begins with a single step and most definitely the country is headed in the right direction, lubricants-wise, that is.

I cannot sign off without giving special thanks to our advertisers who ensure that every quarter this magazine is distributed as a complimentary copy to a wide array of stake holders in the industry. With the magazine now reaching close to 3000 professionals in the lubricants industry, Lubezine advertisers have the most direct link to their desired audience.

Joseph Ndung'u

The concern that stake holders have raised about the need for strict enforcement of existing standards is quite valid and there is no doubt that KEBS is up to the task

WHO IS READING LUBEZINE?

Lubezine is a free magazine to qualified subscribers

The readership includes:

- **Users of lubricants in industrial, transport and aviation sectors.**
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- **Suppliers of lubricants packaging materials.**
- **Suppliers of lubrication equipments.**

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See also Hydraulic Oils-the basics P.22

THE MARKET REPORT

NEWS • BRIEFING • NEW PRODUCTS • TECHNOLOGY

STANDARDS REVIEW

Kenya Bureau of Standards proposes review of engine oil specifications

The Kenya Bureau of Standards has proposed a review of the engine oil specifications upwards. For the passenger car motor oils the minimum permissible grade was proposed to be API SJ up from the previous API SF while for automotive diesel engine oils the minimum is now API CH-4 up from API CD.

Further, in regards to proof of conformance of set specifications, the Bureau has proposed as follows:

'All oil brands marketed shall have to be enlisted in the API directory or licenses or proved that the formulation used conforms to the claimed API classification through a certificate from a reputable additive manufacturer.'

However, many players in the industry felt that the implementation of the current minimum grades was not effective as many lower grades were readily available in the country.

It was felt that the organization needs to strengthen the enforcement function before upgrading the standards further.

Kenya Bureau of Standards though its petroleum and petroleum products technical committee is mandated to set and enforce the minimum permissible grades of lubricants in the country. ■

Kenya Bureau of Standards headquarters – Nairobi

NEW PRODUCT

Total launches four-stroke motorcycle oil

Total has launched a 4 stroke engine oil, special 4T, to cater for the ever increasing fleet of 4 stroke motor cycles in the country. According to the company, the product has been introduced to meet the unique needs of the 4 stroke engines. 'Because the engines of motorcycles have a technology different from that of the engines of cars, TOTAL created a range of successful 2-stroke and 4-stroke engine oils, based on the latest-technology and satisfying all motorcycles and motor scooters brands,' said the Total Lubricants manager, Mr. Julius Kinoko.

Previously, the country's motor cylcle fleet was predominantly 2 stroke but with the advent of 4 stroke engines mainly procured from China, there has been a massive shift towards this type of motor cycles.

In addition, these type of motorcycles are rapidly replacing motor vehicle taxis as the mode of short distance travels especially in the rural areas of the country which has further led to an increase in their numbers. ■

Ken Koskei, right, TOTAL Kenya Lubricants Technical & Training Manager explains the benefits of TOTAL SPECIAL 4T to a rider and members of the public.

Turn to P.20

"Remember happy motoring is not a sprint race it's a lugging marathon and every short cut you take now will come back to you."

Prime Minister Meles Zenawi (Ethiopia), Presidents Mwai Kibaki (Kenya) and Salva Kiir (South Sudan) during the launch of the Lamu port project on March 3, 2012.

DEMAND

Lapsset launched

The government of Kenya, south Sudan and Ethiopia have launched the Lamu port, South Sudan and Ethiopia transport project commonly referred to as Lapsset. This will comprise of a port and a refinery at the coastal city of Lamu, an oil pipeline running from South Sudan to the port of Lamu and a network of railway lines and roads connecting South Sudan and Ethiopia to the Lamu port. For the lubricants industry this means an increase in lubes consumption initially from the construction works and eventually from the maintenance requirements of the port facility and railway transport both of which have huge volume requirements. ■

KSh1.5 trillion

Total cost of the recently launch Lapsset project

For the lubricants industry this means an increase in lubes consumption initially from the construction works and eventually from the maintenance requirements of the Port and Railway facility

NEW ENTRANT

Synergy lubricants launched

The landscape of Kenya's lubricants market continues to change with new players entering the fray for a slice of Kenya's 40 million litres pie. Synergy Lubricant Solutions Ltd (SLS Ltd) has launched diesel engine oils, "DELSTAR". According to the company's Managing Director, Mr. Mohamed Baraka, these are high quality lubricants designed for high drainage intervals with an aim of reducing lubrication cost.

Also launched are Lithium Complex grease Delstar EP3 for wheel bearing lubrication.

Mr. Mohamed Baraka, has been in the lubricant business for over 30 years, and in conjunction with international partners, has been the drive behind the launch of these new products.

'The reception of our products in the market has been overwhelming and we are soon embarking on appointment of dealers in Eldoret, Nakuru, Kitale and Nyeri,' he added. Currently, these products are available through depots in Mombasa, Nairobi and Kisumu.

Other products lined up for launch under the SLS brand include Brake Fluids DOT 5.1 and long life engine coolants from Europe and the Delstar Moly3 Grease. ■

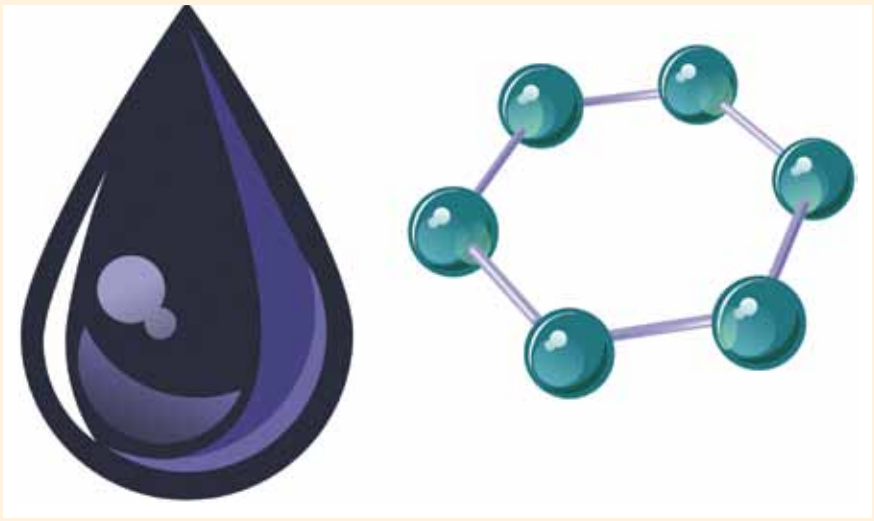
See also The basics of oil additives P.16

QUESTIONS FROM OUR READERS

OUR EXPERTS TACKLE ALL YOUR QUERIES

Q Since additives in a lubricant over time will be depleted, is there any way to replenish them?

— George Owino



Over time, additives are depleted after performing the function for which they were intended, degraded by hydrolysis, mechanical shearing, condensation settling, water washing, particle scrubbing, etc.

The rate of depletion or degradation depends upon the application and the environment. In particular, heat, pressure, shear rate, fuel sulfur, soot, dirt, water, aeration and the presence of catalytic metals (copper, iron, etc.) affect the rate of depletion.

Regarding replenishment, whenever you top-up a system with fresh lubricant, you are in effect replenishing additives. Likewise, you can perform a partial drain and replacement, as done in high volume systems like Marine and power plants. This strategy can work if the base oil is not degraded. If the base oil has been degraded, adding new oil is analogous to sending a healthy person into a room full of sick people with the hope that his or her good health will be contagious. The additives in the new oil might be compromised within the first hours of use, leaving you right back where you started. For small volume systems like automotive engines, it is advised to drain and replace the oil with new fresh lubricant.

Casual addition of additives into formulated oil can be dangerous and should be avoided. When in doubt, consult your lubricant supplier.

Regarding replenishment, whenever you top-up a system with fresh lubricant, you are in effect replenishing additives

Q I checked and confirmed that Automotive gear oil SAE 90 and Engine oil SAE 40 have the same viscosity, can someone mix the two?

— Miriam Kahiga

Common perceptions in many plants and workshops is that "oil is oil" and "grease is grease". However, mixing lubricants is generally not a good idea.

When the Society of Automotive Engineers (SAE) designed its viscosity grading system for automotive oils, it was not accidental that an SAE 40 oil and an SAE 90 oil actually have approximately the same viscosity properties in spite of it being ostensibly a viscosity-grading system. One of the reasons for identifying similar viscosity oils with different indices is to highlight the difference in additive package. If people get used to the fact that a "90" is for gear and a "40" is for engines, then the chances of cross-contamination would be reduced. And that was a great design feature – putting an SAE 40 into a gear component would probably not be very serious, but putting an SAE 90 into an engine requiring an SAE 40 certainly would be.

Q What are the problems I can face due to grease mixing/contamination?

— Abdifatah Ahmed

Contamination is a particular concern with greases. Unlike lubricating oils where contaminants can be readily removed via filtration, once grease is contaminated, it is a virtual certainty that these contaminants will be introduced into equipment if the grease is used. This can result in premature equipment failure due to abrasion and fatigue. Similarly, cross-contamination of different greases through using transfer tools or grease guns for two different products should be avoided. Many different grease thickeners are considered to be incompatible and can lead to excessive softening or thickening once the cross-contaminated grease is put into service. Just like lubricating oils, greases should be stored with pertinent information such as date of manufacture, date of receipt, "used-by" date and product data, including manufacturer and brand.

We encourage technical questions from our readers. Lubezine's team of lubricants specialist will be on hand to answer your queries.

PREVENTIVE MAINTENANCE

Lubrication survey – Why every plant needs one

Eur.Ing. Andrew Monk. C.Eng. M.I.Mech.E., M.E.I.
Managing Director Lubrisolve Engineering Solutions Ltd.
www.lubrisolve.co.uk

PROFILE:

Andrew runs a Lubrication and Engineering consultancy, based in the UK, and has been involved in the application of lubricants for over 25 years in many different parts of the world. He is an experienced professional in all aspects of lubricants, lubrication, and lubricating equipment.

In an industrial plant, no matter what type of business operation there may exist, there will inevitably be a wide variety of equipment to fulfil that process, not just the equipment involved in the production process but all of the ancillary plant that is necessary to keep the entire operation flowing. This can include all of the plant involved in transportation within the plant, including forklifts and maybe AGV's (automated guided vehicles), perhaps even heavier mobile plants.

All components of a plant are integrally linked to the entire process and a malfunction in any part of this intricate jigsaw can lead to the entire operation coming to a standstill, particularly if there is no back up plant.

All management involved in the operation of a plant are well aware of the incredible costs of downtime, which is why maintenance plans must incorporate strategies where unplanned downtime is something to be avoided.

Most of the equipment in a plant will be lubricated in some way, and normally each item of the plant comes with a maintenance manual, which should include the recommended lubricants.

Sometimes the recommended lubricants will be in the form of a specification, i.e. viscosity recommended, and hopefully related to a specific temperature, or a single proprietary lubricant is listed, or there may even be a list of proprietary recommended lubricants.

Perhaps, this particular item of plant is quite old but still functioning correctly, so it may transpire that the recommended lubricants are of an older classification or terminology. Perhaps the lubricant company listed no longer exists. Additionally, much equipment now comes from the Far East and it certainly is the case that the translation can be confusing and conflicting.

It is quite clear that the selection of a lubricant, based on the maintenance manuals can lead to some degree of confusion and, worth mentioning, is that adherence to the recommended lubricants purely according to maintenance manuals can lead to a large variety of lubricants stocked, which has its own problems associated with storage, allocation, and ordering. Naturally, if an item of plant is fairly new and still under warranty the selection of the appropriate lubricant is vitally important so that this warranty is not invalidated in any way.

Some manufacturers of the plant work closely with lubricant manufacturers and the selection of the appropriate lubricants has been derived from rigorous testing procedures in order to select appropriate products, but the end user will not always be aware of this.

Recommended lubricants from maintenance manuals cannot always take into account the many variables associated with an operating plant, and maintenance procedures in place, therefore due regard has to be taken of actual operational parameters and the labour available to actually maintain the plant.

Therefore, this real life situation can, and will inevitably, affect lubrication, not only in the selection of perhaps more advanced lubricants but also in the selection of better and improved ways of applying them to fulfil operational requirements.

For example, a straightforward mineral gear oil of, let's say I.S.O. viscosity grade 220

All management involved in the operation of a plant are well aware of the incredible costs of downtime, which is why maintenance plans must incorporate strategies where un-planned downtime is something to be avoided

A conveyor chain in a bottling plant which was identified during a lubrication survey shows how poorly maintained that area was and how badly worn and misaligned the brushes were.

may be recommended for a gearbox, but in a real life situation that particular gearbox may be in a very inaccessible location and leaking badly. In this instance, if the rotational speed is quite low would a semi-fluid grease be an effective solution to this problem and keep the gearbox operational for longer as the grease would in effect act as a seal? It's something worth considering and has been known to work in similar situations.

It may be the case that the labour employed to lubricate a plant is sparse or even not very diligent, therefore consideration should be given to automating, or centralising many lubricated points so that these points can receive an adequate amount of lubricant at appropriate intervals.

Undertaking this type of strategy will certainly give maintenance management more peace of mind, but the frequent checking of proper operation of such equipment should not be ignored or overlooked. Over-greasing a bearing can be just as bad as under-greasing, if there is no way for the grease to escape.

As with any area of engineering, there is a great deal of equipment associated with lubricants and lubrication available on the market, but how on earth can anybody involved with maintenance ever get to understand what might be best for their plant?

It's an impossible task. Equally, how can these same people ever get to grips with the immense range of lubricants that are available worldwide, and the advances in lubricants and lubrication that are happening all of the time? How can recommendations for lubricating frequencies ever be adjusted without the knowledge of what specific, or different, lubricants can achieve?

Lubrication in a plant is often taken for granted, but it is literally the life blood of a plant. Without it that plant will not function and the use of inappropriate lubricants, or lubricating frequencies, will lead to increased costs

How can anyone involved with maintenance ever get to appreciate that an innovative grease that costs 100 times their currently utilised conventional product, will give them an annual saving in terms of reduced downtime and maintenance costs twenty times what they would spend on this lubricant? Again, it's impossible.

Lubrication in a plant is often taken for granted, but it is literally the life blood of a plant. Without it that plant will not function and the use of inappropriate lubricants, or lubricating frequencies, will lead to increased costs.

There is a simple solution, however. Get a complete assessment of the lubrication of

See also
The importance of service P.20

your plant, which is a document delivered to people responsible for maintenance management, and will go through every item of the lubricated plant, from assessment of maintenance manuals, operational parameters of the lubricated equipment, the storage of lubricants, the dispensing and application of lubricants, and equally as important, an analysis of lubricating history.

This last point can reveal extremely important operational knowledge and should never be overlooked. The compilation of such a document can be quite involving, but the benefits of a complete plant assessment are invaluable and, bear in mind, it will only have to be done once for an existing plant.

Everything involved in the lubrication of a plant should be taken into account, as one without the other is fruitless. Such a comprehensive report should also include ideas for regular condition monitoring as there are many associated technologies that work very well with lubrication, i.e. oil analysis to be able to predict and plan oil changes, rather than waste good oil and waste time changing these systems too frequently, and acoustic emission bearing analysis which can help to extend re-greasing frequencies.

It is important that an adequately qualified person undertakes such a comprehensive plant assessment, one who understands lubricants and lubrication equipment very well, but is equally familiar with the engineering components and operational parameters of a plant.

Make sure that whosoever undertakes such a task is working for the benefit of the plant in question in order to make that plant more operationally effective, so that costs are reduced and profits are increased. It should be a partnership to progression.

If your car broke down, and you were not very familiar with the workings of a car, wouldn't you want someone experienced to assess its performance to bring it back to the highest operational effectiveness possible so that fuel consumption and running costs were reduced, but ensuring that your safety was intact and that you became more efficient without having to worry about unplanned breakdowns, and whether you were going to get to your destination or not? Then why shouldn't plant lubrication be any different? Do you want an efficient plant or not?

Many industries fall into the trap of considering the proper and complete assessment of the lubrication of a plant to be an added cost.

This is negative thinking as it should be seen as a way of developing lubrication to a more effective level which will always give a payback in respect of reduced lubricant usage, reduced unplanned breakdowns, reduced running costs, and a more effective operation leading to increased profits. ■

LUBRICANTS SUPPLY

Guide to purchasing lubricants

By Joseph Ndung'u
Mr Ndung'u has been working in the lubricants industry for the past 8 years in area of Sales & Marketing and Technical support

A story is told of a once leading public service company who when faced with dwindling fortunes, embarked on cost cutting measures. One area that was targeted was lubricants supply. It so happened that around the same time, an independent ''lubricants ''company had just launched its products which were retailing at an unimaginably low price. This was God sent to the procurement personnel and they immediately switched to this new supplier. A few months down the line, the cheap oil that had been hailed as the ultimate cost saver, became the company's worst nightmare when the engines began breaking down one after the other. This story best illustrates a classical case of 'false economy ' whereby initial savings accrued from purchasing a cheap product, became gobbled up in the future due to non-performance of the product resulting in massive losses. Now, where is this more true than in the realms of the world of lubricants?
What should one consider when purchasing lubricants?

What should one consider when purchasing lubricants?

Manufacturer's recommendation

Lubrication is a design element of every machinery. As such, the equipment manufacturer will specify the minimum acceptable quality of lubricant to be used. This is the called the OEM approved standards and should be the principle guiding tool. Purchasing a lower quality than specified is likely to be cheap on the basis of price but is guaranteed to wreck the machinery either after a few hours of running or over a period of time. Stick to the OEM prescribed specifications no matter the cost of the product.

The technical services offered

A good lubes supplier should be able to provide technical support related to lubricants and lubrication. This includes products recommendations, trouble shooting lubes related problems, fluid condition monitoring, and lubrication surveys and training. The importance of good technical support cannot be underestimated. With staff turnover at a factory, it is likely that a newly employed technician might not be conversant with the lubes application. This can be sorted out by the lubes supplier through training. Additionally, a recurrent maintenance headache could be as a direct result of wrong choice of lubricant. A competent lubes supplier should be able to work closely with the maintenance staff to provide a solution either by way of product recommendation or by suggesting a change in lubrication principle e.g. reducing drainage interval or even changing the method of applying the lubricant.

Guarantee of quality of the product

Each lube supplier should be able to demonstrate the source of his product. Only a fully fledged blending plant will produce quality lubricants. The plant could be a local one or an overseas one for imported products. In both cases, any lubricant produced bears a batch number and each batch has a certificate of analysis showing how the product met the required parameters during production. This guarantees that the quality of product being supplied meets the specifications claimed on its data sheet.

Lubrication equipment

When the volume of lubricants being handled is huge, it makes sense to have lubes dispensing equipments. Many lube suppliers are able to offer good lubrication equipment packages to professionalize handling of lubes. In most cases, they will require that the supply contract runs for several years so that they can recoup the cost of the equipments provided. Typical lubrication equipments include oil and grease pumps.

Stocks availability guarantee

The appointed supplier should be able to guarantee lubes stocks at all times. This is of paramount importance if the operations of the company are not to be interrupted on the basis of non-supply of lubricants. In cases where there is huge consumption, consignment stocking can be a good option of guaranteeing stocks availability. Under this arrangement, the supplier delivers a given quantity of lubes to the customer's

See also P.18

Management of oil contaminated sites

Convenience is determined by factors such as, in what quantities will the product be issued from the stores to the maintenance section, what dispensing units are available and the available storage space

yard and owns this stocks. From this stock, the customer picks products based on their immediate requirement and will accordingly be invoiced for this quantity only. Consignment stocking eliminates the need for the customer to worry about his stocks levels as whatever runs out is quickly replenished from the suppliers stocks on site.

Stocks keeping units (sku)

The supplier should supply products in convenient pack sizes. Convenience is determined by factors such as the quantities in which the product will be issued from the stores to the maintenance section, what dispensing units are available and the available storage space. If for example grease is required regularly for application on wheel bearings of trucks, small pack units say 3kgs would be more convenient than larger packs of 18 kgs as they would allow easier tracking of how much grease each truck consumes. If dispensing equipments are available, the most convenient pack sizes would be drums.

Price and payment terms

In a largely competitive market like ours, it is likely that products meeting the same quality levels would be in the same price range. The competitive advantage of one supplier over the other in terms of prices is thus of minimal benefit. Price should therefore not be accorded higher importance than the other factors highlighted above. What would be more important are the payment terms the supplier is willing to extend.

Once a decision has been arrived at, it is equally important to decide on whether to go for a long term supply contract with one supplier or to do spot purchasing every month from a number of prequalified suppliers. Where supply is to be done through a long term contract with one supplier, benefits such as technical support and equipment installations can be gained. The disadvantage is that incase the sole supplier runs out of key products, the operations of the organization will be affected.

For spot buying, supply is always done on the basis of lowest prices and is based on the immediate needs of the company. For example, if a construction company requires 8 drums, they will consider prices from a number of prequalified suppliers and award to the cheapest.

However, this arrangement rarely comes with a comprehensive technical support or lube dispensing equipment package. Also, in case of a lubricant's related problem occurring in the machinery, it is impossible to pinpoint which lubricants brand were responsible.

Additionally, cases of different lubes brands being mixed in application can occur resulting in some undesirable effects.

The purchase decision for lubricants has many factors to be considered and only by getting the correct mix will the maintenance needs of an organization be met at the most efficient, professional and cost effective manner. ■

SPOTLIGHT

Kirinyaga Road

The lubricants' capital of Kenya

By Margaret Mwaura

Nairobi's Kirinyaga Road is a Spare Parts and garage district. Here, every other shop is either a garage or stocks lubricants and spare parts; oily mechanics take over the narrow swath that separates the shop from the Nairobi River, while the spare parts shops take on the spaces along the streets.

It is common to see vehicles stopped in or alongside roadways, their bonnets opened and mechanics in their oily overalls shouting from one side to the other. One can obviously tell that this area means business.

Looking around are shops of auto parts or lubricants or garages, one cannot fail to notice the tired looks of these mechanics as they go about their work.

With the largest concentration of *Jua Kali* mechanics in the country, Kirinyaga Road provides a vibrant market for lubricants. As you walk down this busy street, you will feel the presence of all the major oil companies like Total, Shell, KenolKobil and Oilibya through the many walls branded with their products, posters donning various spare shops or even mechanics wearing overalls bearing the names of their brands.

The Kirinyaga Road that we all know today began in the late 1960s when small shops dealing with spare parts began to sprout either as dealers or major franchise holders like CMC for VW and Land Rover, Marshalls EA Ltd for Peugeot, Hughes Limited for Ford vehicles etc. Later these dealers expanded their business and started direct importation of spare »

Did you know...

The Kirinyaga road that we all know today began in the late 1960's when small shops dealing with spare parts began to sprout either as dealers or major franchise holders

»
parts from Korea and Malaysia, among other countries. Others opted to concentrate on selling lubricants only.

The heart of Kenya's Lubricants

Kirinyaga Road is the heart of the Kenya's Lubricants market with substantial volume of lubricants sold in the country being done in this area. If you want to know which brands are fighting for a slice of the Kenya's market, Kirinyaga Road is the place to be. Here, you will find over 30 brands of lubricants, some gathering dust on shop shelves, an indication that they have failed to take off, while others rapidly changing hands from the shop owner to the impatient customer, an indication of their strength in the market.

The country's biggest lubricants' distributors are to be found here. They include Sidona Spares, Atlantis Auto Spares, Jesmiras and Mau Summit. These distributors sell lubricants on wholesale to small spare shops and fuel stations drawn mainly from Nairobi, Machakos, Central, Nakuru regions and even as far as Western and North Eastern parts of Kenya. They stock all fast moving brands available in the country with no loyalty to a single brand.

The mechanics that operate in this area also provide a retail outlet for these dealers.

Over time, there has been a shift by some of the Kirinyaga Road distributors to introduce their own brands such as *Chrisma lubricants* by Mau Summit and *Ocenn lubricants* by Jesmiras. Others such as Atlantis Auto Spares have been appointed as exclusive distributors of imported brands such as *Motorol lubricants.*

Mr. Patel of Atlantis Auto one of the biggest distributors of Lubricants in the country, has been operating from this area for the past 25 years. According to him, good customer services and competitive pricing has contributed to the success of his shop.

"Business in Kirinyaga Road basically started as mostly a spare parts hub hence we saw the need to start selling lubricants," says Mr. Patel. He says that he started as a general spare parts dealer and later ventured into exclusive lubricants distribution due to the increased demand for these products.

According to Mr Patel, the reason why customers prefer to buy lubricants in Kirinyaga Road is because of the good prices since many lubricants distributors in this area buy their products in large quantities from legit companies and sell them reasonably. The availability of both lubricants and spares parts of major vehicle models all on the same street is also a contributing factor to customers preferring to buy from Kirinyaga Road and has led to the growth of this area.

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Mr. Wambugu of Sidona Spares Marts, another big lubricants distributor believes that advice that he offers to customers on correct lubricants application always keeps them coming back.

Another factor contributing to the success of lubes business in the area is its proximity to major matatu termini consisting for matatus plying out of Nairobi routes. This makes it easier for customers to purchase several cartons of lubricants and conveniently transport them to areas outside Nairobi via these matatus. "I supply customers as far as Meru and Western Kenya thanks to existence of public transport means" he adds. Mr. Wambugu has identified a niche in the grease market, and by consistently providing quality products, has managed to establish a loyal network of customers drawn from all parts of the country.

Did you know...

The country's biggest lubricants distributors are to be found here. They include Sidona Spares, Atlantis Auto Spares, Jesmiras and Mau Summit

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1. Mr. Patel of Atlantis Auto spares outside his lube shop.
2. Mr. Wambugu of Sidona Spares inside his lube shop.
3. Vehicles awaiting service at the busy Kirinyaga Road.
4. Kirinyaga Road mechanics service a car.
5. Kirinyaga Road mechanics waiting for customers.

Tucked at the other end of Kirinyaga Road is Jesmiras who has been in business since 2002 and has risen to be one of the main distributors of lubricants in the country. So successful has been this distributor that he has introduced his own brand, *Ocenn Lubricants*, to compliment those of the oil majors he stocks.

Mr. Mwangi, a sales representative working for the company is emphatic that the quality customer service given to customers has been a major success factor, "We always advice customers on the right lubricants to use depending on the make and and on how modern the car is," he adds.

Given the critical role the jua kali mechanics play in lubricants business, many oil companies have come up with comprehensive programs targeting this group. These include promotions, educational seminars and road shows.

The mechanic is the final link between the oil company and the eventual end-users. Most of these end-users have no knowledge on lubricants and rely exclusively on the mechanic for advice on which product to use.

Mr. Michael Munene, a mechanic in this area for the past 3 years, says that the regular seminars that these companies have been conducting in the area have played a big role in enhancing the level of service many jua kali mechanics offer to their customers. He adds that such seminars also help them in understanding any new products that have been introduced in the market.

Business in Kirinyaga Road grows with each passing day; new spare parts shops and garages mushroom in every corner, new lube marketers try to introduce their products and existing major brands dig in to secure their market shares.

For several years this area has been the capital of Kenya's lubricants business, a title it is unlikely to lose any time soon. ■

FORMULATIONS

The basics of oil additives

By James Wakiru
James Wakiru is a lubricants and lubrication specialist and has been involved in lubricants market development activities for the past 12 years

Oil additives are chemical compounds that improve the lubricant performance of base oil or base stock. By utilizing the same base stock, many different oils can be manufactured, each with its distinctive properties. Additives comprise up to 5% by weight of some oils. Additives basically extend and/or reduce the rate at which undesirable changes take place while others improve properties already present in the base oil. Essentially, only the American Petroleum Institute (API) Service SA motor oils have no additives, and they are therefore incapable of protecting modern engines. The choice of additives is determined by the application, e.g. the oil for a diesel engine with direct injection in a pickup truck (API Service CJ-4) has different additives than the oil used in a small gasoline-powered outboard motor on a boat (2-cycle engine oil).

Types of additives

Lubricants additives can be categorized by the functions they undertake. This is done under four main functions as follows:

I) Controlling chemical breakdown

Detergents additives are used to clean and neutralize oil impurities which would normally cause deposits (oil sludge) on vital engine parts. If left to accumulate these deposits cause piston ring sticking and rapid wear as well as blockage of oil flow passages. Detergents additives serve to delay the formation of deposits and reduce the rate at which they accumulate. One main reason why frequent oil is necessary is to remove the contaminants from the oil before the oil's capacity to neutralize and hold them is exceeded.

The measure of an oil's ability to neutralize these acidic by-products of combustion is called the Total Base Number (TBN). It is a measure of an oils reserve alkalinity. The higher the TBN, the better an oil's ability to neutralize acids. A TBN of 7 is typical for an average quality gasoline engine petroleum oil. Diesel oils have higher TBN values due to the increased acidic by-products of combustion created by the diesel fuel combustion process. These values can range from 8-11 up to 12-14 for premium quality diesel oils.

Corrosion or rust inhibiting additives retard the oxidation of metal inside an engine. A corrosion inhibitor is a chemical compound that, when added to a liquid or gas, decreases the corrosion rates of a material, typically a metal or an alloy. There are two common mechanisms for inhibiting corrosion; one involves formation of a coating, often a passivation layer, which prevents access of the corrosive substance to the metal; the other is to actually neutralize the acids so that the corrosive potency is reduced to a level where it cannot do any internal damage. Common additives for these purposes include Zinc, Phosphorus and Zinc Diethyl Dithiophosphate (ZDDP), Calcium and Barium.

Antioxidant additives retard the degradation of the oil by oxidation. Oxidation results in increase of oil viscosity, formation of acids, resins, lacquers and varnish on internal parts, and especially on pistons and piston rings. The effect of varnish, resins and lacquers on pistons and piston rings can cause a decrease in the amount of heat transfer between the piston and cylinder as well as stuck piston rings, leading to severe engine damage over a period of time.

If the temperatures continue to increase to extremes, then these deposits will continue to oxidize into very hard carbon type materials.

When this hard carbon material meets with combustion residues and water, sludge is formed. Sludge can do further damage such as plug and block critical oil passageways and oil pump pick-up screens.

II) For viscosity

Viscosity index improvers are additives that keep the viscosity at acceptable levels, which provide stable oil film even at increased temperatures. They combat the tendency of the oil to become thin at high temperature. The advantage of using less viscous oil with a VI improver is that it will have improved low temperature fluidity as well as being

Only the American Petroleum Institute (API) Service SA motor oils have no additives, and they are therefore incapable of protecting modern engines

viscous enough to lubricate at operating temperature. Viscosity improvers are widely used in multigrade oils, viscosity of which is specified at both high and low temperature. Most multi-grade oils have viscosity modifiers. Some synthetic oils are engineered to meet multi-grade specifications without them. Viscosity of oils sharply decreases at high temperatures. Low viscosity causes decrease of the oil lubrication ability.

Pour point depressants are additives that improve the oil's ability to flow at lower temperatures. Pour point is the lowest temperature, at which the oil may flow. At low temperatures wax crystals are formed in the oil which reduces its fluidity. Pour point depressants inhibit formation and agglomeration of these wax particles thus keeping the lubricant fluid at low temperatures.

III) For lubricity

Friction modifiers are additives that are added to lubricants to reduce the surface friction of the lubricated parts. Friction modifiers alter the lubricity of the base oil. Typical, solid lubricants that are used as friction modifiers include Graphite, Molybdenum disulfide, Boron nitride (BN),Tungsten disulfide (WS_2) and Polytetrafluoroethylene (PTFE).

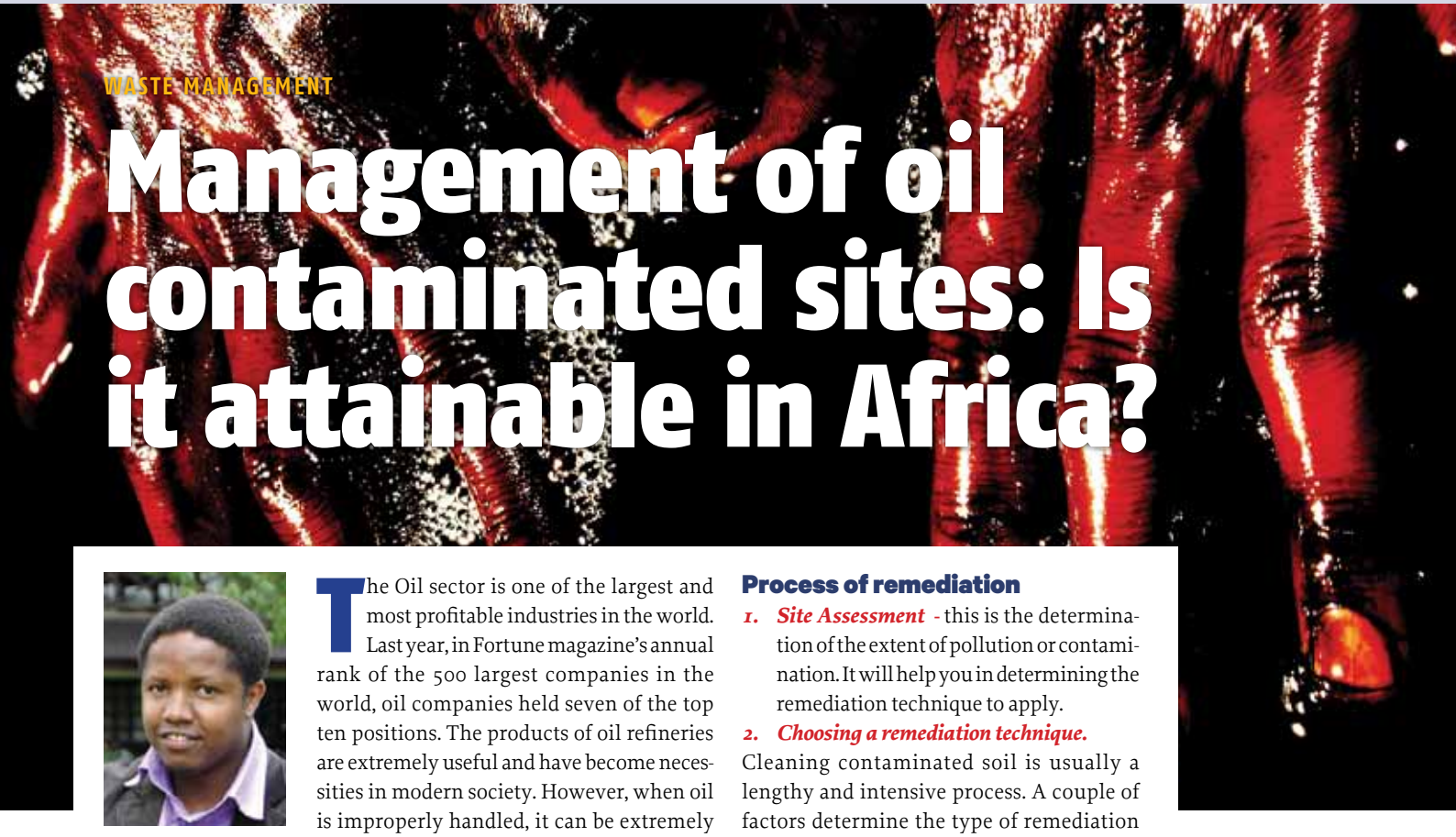
Extreme pressure additives or EP additives are additives used in the formulation of gear oils whose role is to decrease wear of the parts of the gears exposed to very high pressures. They are also added to cutting fluids for machining of metals.

Antiwear additives or wear inhibiting additives cause a film to surround metal parts, helping to keep them separated. These anti-wear additives primarily act as friction reducers that prevent metal-to-metal contact. Zinc dialkyldithiophosphate (ZDDP) is a popular antiwear additive.

IV) For contaminant control

Dispersants are additives that keep contaminants (e.g. soot) suspended in the oil to prevent them from coagulating. Dispersants keep the foreign particles present in a lubricant in a dispersed form (finely divided and uniformly dispersed throughout the oil) and by so doing prevent these particles from blocking oil passageways in the engine.

Defoamer or an anti-foaming agents are chemical additives that reduce and hinder the formation of air bubbles and foam in lubricants. Air bubbles and foam in the oil can cause a loss of lubrication, pitting, and corrosion where entrained air contacts metal surfaces. ■



WASTE MANAGEMENT

Management of oil contaminated sites: Is it attainable in Africa?

By Daniel Kiige

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The Oil sector is one of the largest and most profitable industries in the world. Last year, in Fortune magazine's annual rank of the 500 largest companies in the world, oil companies held seven of the top ten positions. The products of oil refineries are extremely useful and have become necessities in modern society. However, when oil is improperly handled, it can be extremely hazardous to the environment and dangerous to human health. Oil spills and careless waste management of toxic byproducts from the refining process lead to extreme health problems for humans and animals and contaminates the environment. Oil spills are often unintentional and in most cases difficult to prevent. On the other hand, careless waste management is controllable, but sometimes oil companies choose not to take preventive measures because it may be costly and time-consuming to do so.

To limit environmental impacts, governments need to enforce tighter restrictions on oil waste management and, more importantly, any sites containing oil pollution need immediate remediation.

Remediation has not been strictly enforced by governments in Africa. Since most countries lack strict oil development regulations and enforcement, the polluting effects of careless oil development are far more apparent. However, most oil companies in Africa are multi-nationals and are internationally pressured by their mother companies to enhance environmental sustainability in the oil sector.

What is remediation?

In this context, it is the removal of pollutant/contaminant (hydrocarbons) from an environmental media – soil, air or water.

Process of remediation

1. ***Site Assessment*** - this is the determination of the extent of pollution or contamination. It will help you in determining the remediation technique to apply.
2. ***Choosing a remediation technique.***

Cleaning contaminated soil is usually a lengthy and intensive process. A couple of factors determine the type of remediation technique used at a specific site. The first factor is the type of contamination that is present. Soil contamination and water contamination can require different remedial techniques. Furthermore, it is important to discern whether the problem strictly relates to surface water contamination or if the pollutants have seeped into the groundwater. Also, the weight and other physical properties of the contaminant greatly affect the technique chosen. The second factor in choosing a remediation technique is the location of the contaminated site. This will greatly affect the type of remediation chosen because remediation techniques are only feasible if the site can be reached by the needed equipment. If the contaminated area is easily accessed by remediation technology, an onsite technique may be preformed. If the site is hard to reach, offsite remediation techniques must be used and the contaminants must be transported to another location.

A combination of methods may be appropriate if effective techniques can be identified and the decision is made to implement them. For example, some mechanical tilling may be necessary to enhance biodegradation.

The most appropriate technique is obtained through evaluation of these methods against factors for effectiveness, implementability and operations. ■

Since most countries lack strict oil development regulations and enforcement, the polluting effects of careless oil development are far more apparent

On site (In-situ) Techniques *(Can effectively treat the contamination of soils and groundwater at the location of the contamination)*

1. **Natural Recovery:** Oil is left in place to degrade naturally. No action is taken, although monitoring of contaminated areas may be required. Most effective with low residual oil concentrations.

2. **Soil vapour extraction:** insitu volatization whereby a vaccum is created in the contaminated ground allowing air flow. Pollutants extracted in gaseous form.

3. **Sediment Reworking/Tilling:** The oiled sediments are roto-tilled, disked, or otherwise mixed using mechanical equipment or manual tools. The objective is to break up the oiled sediment layers, increasing their surface area and decreasing the oil concentrations, thus enhancing the rate of microbial degradation through aeration.

4. **Degradation:** There are two main types of degradation remediation.

   (i) **Chemical degradation:** During this remediation technique, chemical reagents that effectively speed up the process of neutralizing the contaminant or transforming it into a state that is less harmful are introduced to the contaminants. Chemicals may be added to the soil to increase oxidation in metals, reduce the oxidation state of a contaminant, or cause a dechlorination reaction with the contaminant

   (ii) **Biological degradation:** Related to chemical degradation, biological degradation relies on naturally occurring organic compounds that will cause the same reactions as the chemical reagents used in chemical degradation

5. **Bioremediation:** Is an ecologically friendly alternative to some very intensive chemical remediation procedures. The injection of microorganisms that are already existent in the soil speeds up the natural remediation process.

6. **Chemical Oxidation:** While bioremediation focuses on the introduction of pre-existing microorganisms to the soil, chemical oxidation focuses on injecting stable chemicals into the vadose soil layer. These chemicals usually include ozone (O3), hydrogen peroxide (H2O2), hypochlorite ions, chlorine (Cl), and chlorine dioxide (ClO2). The process of oxidation is one of the four main methods of chemical degradation, along with substitution, dehydrogenation, and reduction.

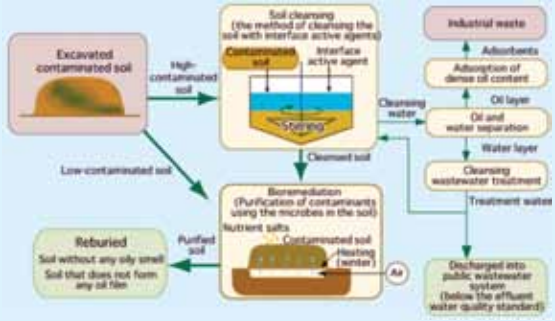
Off Site (Ex-situ) Techniques *(based on the removal of the contaminant from the site through the removal of the contaminated soil)*

1. **Landfill:** The clean surface sediments are removed and stockpiled, and the oiled sediments are excavated and transported off-site for disposal in a landfill.

2. **Incineration:** Similar to physical removal but with treatment of the waste stream by incineration. Incineration uses high temperatures, 870 to 1,200°C to volatilize and combust (in the presence of oxygen) organic constituents. The destruction and removal efficiency for properly operated incinerators exceeds the 99.99% requirement for hazardous waste. Distinct incinerator designs are rotary kiln, liquid injection, fluidized bed, and infrared units.

3. **Landfarming:** Similar to physical removal but with treatment of the waste stream by landfarming. Landfarming usually incorporates liners and other methods to control leaching of contaminants. Contaminated sediment is applied into lined beds and periodically turned over or tilled to aerate the waste. Moisture, heat, nutrients, oxygen, and pH can be controlled to enhance biodegradation. Microorganisms will be added to the soil along with their natural nutrients. The microorganisms will further decontaminate the soil. Once land farming is completed, the soil can be returned to its original location or can be used as construction back fill. This is the most feasible remediation technique for developing temperate countries like East Africa.

Schematic diagram for landfarming



In next edition we shall examine landfarming as a method of remediation in more details.

4. **Sediment Washing:** Similar to physical removal but with treatment of the waste stream by washing of the oiled sediments with biological and/or chemical agents so that the cleaned sediments can be re-used off-site. Equipment requirements for sediment washing include: a truck mounted washing unit, sediment processor, sediment washing unit, hydrocyclones, shaker screens, water treatment equipment, tanks, water blasters, compressors, and earth moving equipment. Treatment and disposal of wash water depends on the agents used.

AUTO SERVICE

Service, service, service!

By Joseph Kitui
Joseph Kitui has been in the transport and logistics sector for close to 20 years

"You know, it makes no sense to service that car of yours so frequently!" the conversation went."On my car, we service once a year and the engine is still standard! And it's even cheaper and easier to change the engine when the rings wear out.. the engine on the new Toyota model is so common you can buy one on the far side of the moon...well if you can drive there!.. I don't know why you worry so much about Service! Service! Service! ... it's far too costly," the heavy set man seemed very comfortable with the plastic bottle in his hand as his very plastic statement.

Unfortunately, this is a common fallacy to most of us drivers. If you stopped ten drivers on the side of the of the road and asked them when the next service for their vehicle is, you'll be lucky to get 3 out of those to answer correctly...and am not just referring to women drivers here! ... the thing is most of us know that the vehicle is due for service when either it losses power or starts overheating or most commonly when we are planning to travel out of town on that yearly cruise to the white sands.

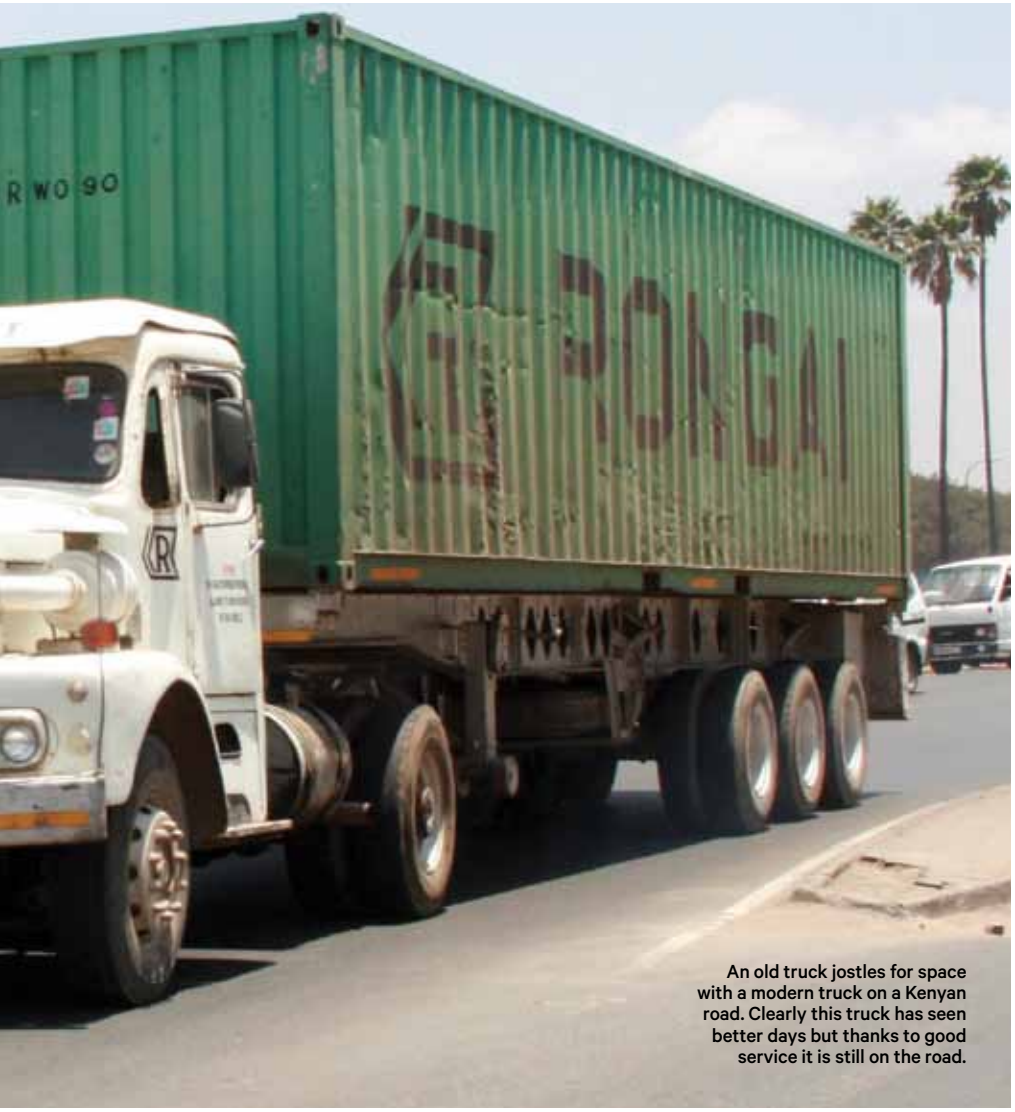
The fact of the matter is that most vehicles, save for some really cheap models coming out nowadays, are quite durable when well looked after. If you doubt this, take a walk on the western part of our beautiful city and you'll see pretty old yellow Datsun 120Ys and small 323s on the road many years after the designers have passed on.

A local logistics company runs a really old prime mover fleet and yet the old KVQs and KSRs arrive in Mombasa at almost near perfect timing leaving many "truck-of-the-year" trucks in their wake.

I know it is hard to imagine that certain Far East vehicles have the same durability with the competition from the shores of the River Rhine but the fact is most vehicles are built quite well (I said most not all) and regular service with good quality oil from reputable lubricant suppliers will keep the vehicle on the road for a long, long time. Service and regular service at that, is the fountain of youth to any engine just like regular exercise is to the heart.

Service and regular service at that is the fountain of youth to any engine just like regular exercise is to the heart

The words of a notable speaker "if you don't make time for exercise, you'll make time for illness" have a huge meaning here. All cars need regular service and when given this regular service they shall give back in savings of time and peace of mind that cannot be imagined nor taken for granted.



An old truck jostles for space with a modern truck on a Kenyan road. Clearly this truck has seen better days but thanks to good service it is still on the road.

The sad truth is that most of us would rather die than change and one need only walk our streets to see that repeated everyday ...vehicles chugging black smoke on the tail end struggling to go uphill... Sorry, what did you think I was referring to? ... We are talking vehicles here! ... Back onto the point ... other vehicles with the bonnet open ... if all drivers would check their vehicles regularly prior to the trip, so many of the breakdowns we see on the roadside would not be there. This check doesn't have to be done at a garage or workshop! Just opening the bonnet or tipping the cab, you will be able to see if the belt is chaffed or the level of coolant is low or distantly important, if the brake fluid level is low.

Asking the right questions at the fuel station will ensure trouble free motoring on that out of town trip you and family are making. In fact, just getting out of the car to chat to the station guy when he/she asks "mbele iko sawa?" will allow you to glimpse on what he/she is doing as well as see that leak, that may or may not be there, but which if left unchecked will leave the cheque book thinner!

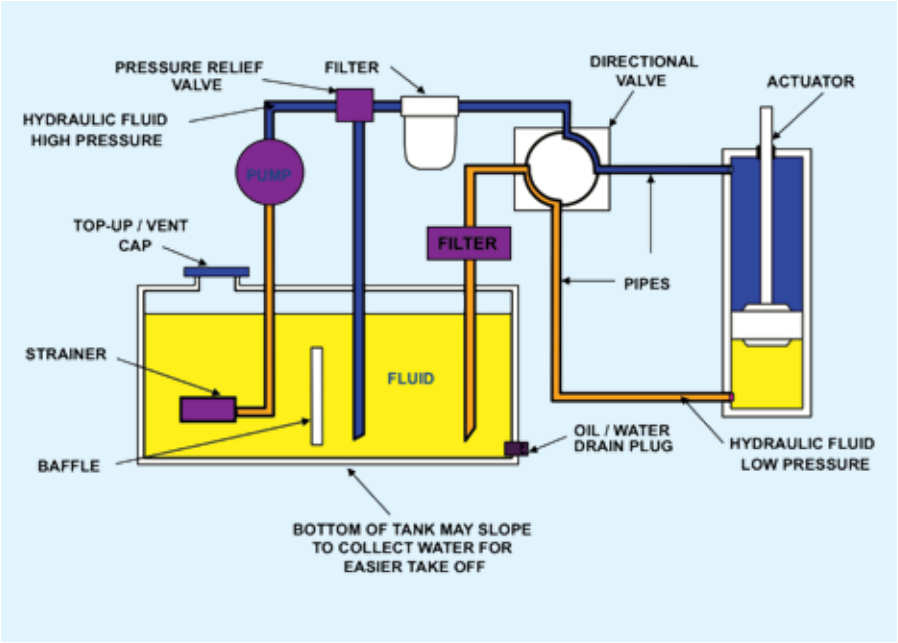
Remember ... happy motoring is not a sprint race, it's a lugging marathon and every shortcut you take now will come back to you. Have a shortcut free motoring! ■

HYDRAULICS

Hydraulic oils– the basics

By Denis Mwai
Denis Mwai is a Lubricants Sales Manager at NOCK

Hydraulic oil is a fluid lubricant used in hydraulic systems for transmitting power. Hydraulic fluids, also called hydraulic liquids, are the medium by which power is transferred in hydraulic machinery. Common hydraulic fluids are based on mineral oil or water. Examples of equipment that might use hydraulic fluids include excavators and backhoes, brakes, power steering systems, transmissions, garbage trucks, aircraft flight control systems, lifts, and industrial machinery.



Schematic diagram of a simple hydraulic system

Common Hydraulic system

A common hydraulic system consists of the following components:

- **Oil tank or reservoir:**

An oil reservoir serves several functions like, storing the bulk of the fluid for reserve, settling and separations and for drainage of contaminants.

- **Hydraulic pump:**

The hydraulic pump is the heart of the system. There are different types of pumps:

Gear pumps – These are the simplest, compact and with low maintenance cost. They run at low pressures between 3,500 and 21,000 kPa. They are noisy with high contamination tolerances

Vane Pumps - These pumps have a good efficiency, compact and low cost. Run at moderate pressures 7,000 to 21,000 kPa. Cleanliness of the oil is critical.

Radial and axial pumps – These pumps have a good efficiency, they are costly and run at moderately high pressures between 21,000 to 70,000 kPa

- **Oil filter:**

Oil filters are essentially for wear protection. There are two major types:

Strainers- Mainly used to protect the pump and is found in the reservoir pick-up line to prevent large particles from being sucked up. Generally, use of coarse wire mesh type filters is common.

In-line filters – Mainly used to protect valves and actuators. They are fine fibrous filters to extract small particles.

- **Control valves:**

Various types of valves work either mechanically or electrically. There are various types that can be found in hydraulic systems:

Directional valves - Used to control direction of flow

Servo valves - controls the amount as well as direction of flow

Pressure relief valves - Controls system pressures

Volume/Flow control valves - Regulates the speed

- **Actuators or Pistons:**

This is the output device that moves the load and generally consists of a piston and cylinder. It varies depending on the job, conditions and power requirements.

- **Pipes, hoses and seals:**

Pipes are usually a mixture of metallic and rubber hoses which need to withstand high pressures. Pipes and seals form the weakest part in the hydraulic system as they have the potential to leakages, can be hazardous due to high oil pressure and hence should always be regularly checked and maintained.

The following characteristics and properties are important for hydraulic oils:

- Low temperature sensitivity of viscosity;
- Thermal and chemical stability;
- Low compressibility;
- Good lubrication (anti-wear and anti-stick properties, low coefficient of friction);
- Hydrolitic stability (ability to retain properties in the high humidity environment);
- Low pour point (the lowest temperature, at which the oil may flow);
- Water emulsifying ability;
- Filterability;

See also
The four-stroke engine P.28

- Rust and oxidation protection properties;
- Low flash point (the lowest temperature, at which the oil vapors are ignitable);
- Resistance to cavitation;
- Low foaming;
- Compatibility with sealant materials.

Hydraulic systems are widely used in industrial machinery, construction equipment, automotive, aircraft and marine applications. Critical areas of lubrication in a hydraulic system

Types of hydraulic fluids

Optimal properties of hydraulic oils are achieved by a combination of a base oil and additives (Anti-wear additives, detergents, anti-oxidants, anti-foaming agents, corrosion inhibitors, etc.).

a) Mineral hydraulic oil (petroleum base)

Mineral based oils are the most common and low cost hydraulic fluids. They possess most of the characteristics important for hydraulic oils. The disadvantages of mineral (petroleum) based oils are their low fire resistance (low flash point), toxicity and very low biodegradability. Petroleum-based oils contain most of the desired properties of a hydraulic liquid.

However, they are flammable under normal conditions and can become explosive when subjected to high pressures and a source of flame or high temperatures.

Nonflammable synthetic liquids have been developed for use in hydraulic systems where fire hazards exist.

b) Phosphate ester based synthetic hydraulic fluids

Phosphate esters are produced by the reaction of phosphoric acid with aromatic alcohols. Phosphate esters based hydraulic fluids possess excellent fire resistance. However, they are not compatible with paints, adhesives, some polymers and sealant materials. They are also toxic.

These fluids will burn if sufficient heat and flame are applied, but they do not support combustion.

Drawbacks of phosphate ester fluids are that they will attack and loosen commonly used paints and adhesives, deteriorate many types of insulations used in electrical cables, and deteriorate many gasket and seal materials. Therefore, gaskets and seals for systems »

Critical areas of lubrication in a hydraulic system

Component	*Concern*	*Property of Oil*
Gear pump	Enmeshed gears	Viscosity, Anti-wear (if required), oil condition
Vane pump	Vanes sliding against the ring	Viscosity, Anti-wear, oil cleanliness
Piston pump	Pistons and shoes run against the cylinder	Viscosity, Anti-wear, Metal compatibility, Oxidation and hydrolytic stability
Valves	Valves can stick	Cleanliness, Demulsibility, thermal stability
Actuator	Low speed, high loads and corrosion	Viscosity, Anti-wear and Anti-rust
Filter	Filter blockages	Demulsibility, Filterability
Reservoir	Low temperature operation, oil conditioning and corrosion	Air release, low foaming, Demulsibility, Anti-rust and paint compatibility
Piping and sealing	Leakages and corrosion	Compatibility

»
in which phosphate ester fluids are used are manufactured from specific materials.

c) Polyol ester based synthetic hydraulic fluids

Polyol esters are produced by the reaction of long-chain fatty acids and synthesized alcohols. Polyol ester based hydraulic fluids are fire resistant and possess very good lubrication properties. They are environmentally friendly but their use is limited by high cost.

d) Water glycol synthetic hydraulic fluids

Water glycol based fluids contain 35-60% of water in form of solution (not emulsion) and additives (anti-foam, anti-freeze, rust and corrosion inhibitors, anti-wear etc.).

Water glycol based hydraulic fluids possess excellent fire resistance, they are non-toxic and biodegradable. However, their temperature range is relatively low: 32°F - 120°F (0°C - 49°C). Water evaporation causes deterioration of the hydraulic fluids properties.

e) Vegetable hydraulic oils

Vegetable hydraulic oils are produced mainly from Canola oil. Their chemical structure is similar to that of polyol esters.

Vegetable hydraulic oils possess very good lubrication properties and high viscosity index (low temperature sensitivity of viscosity).

They are non-toxic and biodegradable. The main disadvantage of vegetable hydraulic oils is their relatively low oxidation resistance.

A CAT truck busy at a road construction site. Most of its functions rely on hydraulics.

Viscosity of hydraulic oils

Viscosity of a hydraulic fluid depends on its composition and the temperature. Low viscosity limit is determined by the lubrication properties of the oil and its resistance to cavitation. Upper viscosity value is limited by the ability of the oil to be pumped.

Common viscosity of hydraulic oils is in the range of 16 - 100 centistokes. Optimum viscosity value is 16 - 36 centistokes.

ISO Designation of hydraulic oils

International Standardization Organization (ISO) established a viscosity grading (VG) system for industrial hydraulic oils. According to the system, hydraulic oils are designated by the letters ISO followed by a number equal to the oil viscosity measured in centistokes at 40°C (104°F). Examples include: ISO VG 32, ISO VG 46, ISO VG 68, ISO VG 100, ISO VG 150 etc. ■

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NOCK LUBRICANTS

National Oil goes for lubes market leadership

Corporation seek to attain market leadership in the retail and commercial marketing of lubricants

By Rita Munyiva

National Oil MD Sumayya Athmani.

As part of its current strategic plan, 2008 to 2013, National Oil diversified into lubricants marketing with the launch of its Supa range of motor oils and related motor consumables.

In 2010, National Oil, a state owned oil company, entered into the highly competitive Kenyan lubricants market with a growing range of products and has since positioned itself as one of the leading players. The corporation has managed to keep up with the market by continuously innovating and positioning new product brands.

Over the last two years since the introduction of its lubricants business, National Oil has implemented various market penetration initiatives including mass media campaigns as well as below the line market interaction activities. In 2011 and early this year, National Oil held station level activations in different parts of the country including Mombasa, Eldoret and Kisumu. A major activation is planned for Nairobi some time this year.

National Oil has its focus on the high end automotive lubricants market with a keen focus on growing both the commercial and retail aspects of the business. Currently, the corporation is developing its automotive lubricants range before shifting its attention to industrial blends.

Alongside its investments in motor oils and greases, National Oil is actively growing its non-oil motor consumables and has so far unveiled its branded battery water and acid as well as a radiator coolant.

To give its lubricants a competitive edge in a crowded market, National Oil picked on its Supadel diesel engine oil as is its flagship brand. Supadel is premium lubricant that is fast gaining popularity among its users for its incomparable high performance and durability. Supadel is variously ranked among the top diesel engine oils in the country and plans are afoot to enhance its brand equity going forward.

National Oil lubricants are available to retail customers countrywide at all National Oil service stations as well as with select dealers spread across the country. Currently, National Oil operates 80 beautifully branded service stations and works with eight (8) distributors.

National Oil lubricants display.

Through its stations and distributors, National Oil has been able to service its growing market as well as gather valuable market intelligence needed to stay on top of its game. The strategy for National Oil is to keep innovating market beating lubricants.

A combination of carefully thought out customer benefits including competitive pricing, attractive packaging and an expansive growing distribution network gives National Oil a competitive advantage in the market. As it works hard to enhance its lubricants brand equity, National Oil is aggressively working on growing its commercial lubricants segment by roping in key accounts.

Currently, the corporation supplies a number of key commercial clients and strategies are in place for more clients. To its commercial clients, National Oil supplies lubricants in bulk using properly branded drums, jerricans and pails.

To attain its desired market leadership position, National Oil is stopping at nothing to make sure that its target market is reached and satisfactorily served.

In this regard, one of the areas that National Oil has invested heavily is in the marketing of its lubricants.

During the November-December 2011 period; popular with travelling due to the festivities and holidays, National Oil carried out a major campaign aimed at educating the public and particularly motorists on the need of using the right lubricant blends for their vehicles.

In a market dominated by cheap substandard products, the intensive awareness campaign was an eye-opener to many motorists. The campaign's main attraction was station level car clinics where motorists were given personalized service and guidance on how to take care of their cars.

The problem of counterfeiting lubricants is a major challenge for Kenyans and affects all actors in the business. Cases of unscrupulous

National Oil petrol station.

OTHER BUSINESSES

Alongside the developments in its lubricants business, National Oil is actively growing its various business lines. Currently, the corporation is implementing an ambitious retail network expansion programme that has seen it grow its footprints from 6 stations in 2008 to 80 stations currently. Further, the corporation launched its advanced electronic fuel management system dubbed SupaCard in June 2011.

In 2008, National Oil launched its SupaGas brand of cooking gas into the Kenyan market. SupaGas is found in the standard 6kg, 13kg and 50kg cylinders for the retail clients. Towards the end of 2011, National Oil introduced into the Kenyan market a 3kg cylinder. Plans are underway to have these cylinders available to the consumer.

The introduction of the smallest cylinder in the market is part of a broad strategy that ensures that LPG is accessible to a majority of Kenyans unable to afford the standard cylinder sizes.

business people filling low grade or recycled lubricants in packs of top brands are on the rise. This is a problem that is causing sleepless nights to brand managers.

To counter such business malpractices, National Oil has had to enhance security features of its lubricants packaging. National Oil lubricant packs are fitted with tamper-proof seals complete with batch numbers to enable the monitoring of product movement. Further, National Oil carries out frequent oil analysis for its industrial customers.

Another plus point for National Oil is the presence of trained mechanics at its service stations. The over 50 mechanics stationed at the stations' fully equipped service bays will offer technical support to motorists. The corporation aims at having the mechanics offer the service on a 24-hour working shift.

National Oil continues to seek for growth opportunities for its various products including lubricants.

With the opening up of the counties, National Oil is positioning itself to take advantage of the devolved economies by enhancing its capacity to service the expanded market. ■

MOTORCYCLES

Total's 4 stroke motorcycle oil

By Ken Koskei
Ken Koskei is a Lubricants Technical & Training Manager at Total (K) LTD

Motorcycles have now more than ever become a major mode of transport popularly known as "boda boda".

For a long time, the motorcycles in use have been 2-stroke engine powered and all the major oil companies have been supplying 2T oil for this application. However, of the newly registered motorcycles, an estimated 75 % are 4-Stroke engine powered.

It goes without saying that the lubrication requirements for the motorcycles has changed and so should the lubricant.

Due to lack of a suitable product, most users have been forced to use conventional motor vehicle engine oils instead of motorcycle-specific lubricants.

This poses a challenge because the motorcycles engines are different from the motor vehicle ones in terms of size, power, tolerances and conditions of use. With this in mind, TOTAL Kenya has introduced TOTAL SPECIAL 4T the only 4-stroke motorcycle engine oil in the market with Japanese Automotive standards Organisation-JASO MA2 specifications. JASO MA four stroke engine oils are approved for 4-stroke motorcycle engine and are also suitable for wet clutch transmissions for all types of motorcycles. TOTAL SPECIAL 4T is available in all Service stations and reseller outlets countrywide. ■

4-stroke engine vs 2-stroke engine

Four stroke motor cycle engines differ from two stroke engines in the way lubrication is carried out. A four stroke engine has a dedicated lubrication system while in a 2 stroke engine, fuel and lubricants are mixed together since it lacks a dedicated lubrication system. As a result of this, a two stroke engine has the following disadvantages;

- **Two-stroke engines have a shorter lifespan. The lack of a dedicated lubrication system means that the parts of a two-stroke engine wear-out faster. Two-stroke engines require a mix of oil in with the fuel to lubricate the crankshaft, connecting rod and cylinder walls.**
- **Two-stroke oil can be expensive. When the fuel burns, a portion of the lubricating oil is burned off. Thus the oil consumption per kilometre is very high.**
- **Two-stroke engines do not use fuel efficiently, yielding fewer kilometres per litre.**
- **Two-stroke engines produce more pollution from:**
  - **a) The combustion of the oil in the fuel. The oil makes all two-stroke engines smoky to some extent, and a badly worn two-stroke engine can emit more oily smoke.**
  - **b) Each time a new mix of air/fuel is loaded into the combustion chamber, part of it leaks out through the exhaust port.**

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