THE MARKET REPORT

Forte Oil partners with Chevron Lubricants P.5

THE MARKET REPORT

Petronas Lubricants signs deal with Gomeju Oil P.6

Lubezine®

Focusing on Africa's lubrication needs

VOL.25 | JUNE 2018 | WWW.LUBEZINE.COM

MAIN FEATURE

KEEPING IT COOL

COOLANT TRENDS & TECHNOLOGIES

PHOTO | TIGERSTOCK'S/SHUTTERSTOCK

PLUS: CÉLINE BOUTIER: LEADING SHAMROCK'S WAY INTO AFRICA P.24

TOTAL
COMMITTED TO BETTER ENERGY

TOTAL QUARTZ PETROL ENGINES OIL: Available in Mineral technology, semi-synthetic and Synthetic Technology: The range includes Quartz INEO specifically formulated for latest technology engines fitted with pollution control devices, Quartz 9000 for best engine performance, extended oil change intervals and highest level of protection.

CONTENTS

VOL 25 | JUNE 2018
www.lubezine.com
facebook: Lubezine Magazine
twitter: @lubezine

NEWS • INDUSTRY UPDATE • NEW PRODUCTS • TECHNOLOGY • COMMENTARY

REGULARS

INSIDE

COVER IMAGE
PHOTO | TIGERSTOCK'S/SHUTTERSTOCK

KEEPING IT COOL

Between 40 and 60 per cent of today's premature heavy-duty diesel engine overhauls are related to cooling system performance.

18

ExxonMobil to buy Indonesian motorcycle lubricant blender 15

12

22

COOLING SYSTEMS

Who controls the coolant business in Africa's market?

James Wakiru
Lubezine Magazine
Editor-in-Chief

Dear readers, nothing energizes me more than penning this piece as we prepare to run the press to publish yet another exciting edition of Lubezine. This being our 25th edition is testament of just how much can be written about the exciting Africa lubricants market.

From the lubricants hubs of Aspanda Market in Nigeria, to Kirinyaga road in Kenya to Mashamba Complex in Uganda to the good old Kariokoo in Tanzania, one gets the curious impression that coolant business is not within the scope of the well known oil companies operating in these countries.

This is because more than any other maintenance fluid, coolant business has the highest number of "unknown brands", doing a brisk business here. Price and colour rule, with quality or brand name appearing to play a minimal role.

We have therefore found it prudent to highlight coolant usage in Africa. We start with the technologies behind modern coolants courtesy of Wear Check South Africa, then move on to examine market trends in Kenya where as Kanyingi Kuria opines in his *Last Word* article, that while as the major oil companies dominate the lubricants business of the Kirinyaga Road, the coolant market is firmly under the grip of non-oil companies.

Motor cycles will continue to be an important part of mobility in Africa and the world over. As a result, global oil companies are acquiring motorcycle oil blenders as is the case of Exxon Mobil and FKT. On the other hand, governments are placing restrictions to curb emission forcing additives companies to focus on the delicate balance of fuel economy and motorcycle oil performance. This is well highlighted in an article by Infineum.

Shamrock MD, Céline Boutier graces our *10 Questions* segment for lubricants professionals. Based in Cyprus, Shamrock has been serving Africa with base oil for close to a decade in more than 15 countries.

As she explains, this market has been evolving very fast with new regulations, new players, new demands all of which require successful suppliers to keep abreast of the changes and adapt quickly.

Allow me to end on this note by thanking all our partners and let you read on. Your unwavering support inspires the team to doing this again in the next issue. ■

Enjoy!
JW

> ***While the major oil companies dominate the lubricants business of the Kirinyaga Road, the coolant market is firmly under the grip of non-oil companies***

Publisher:
Lubes Africa Ltd

Editor-in-Chief:
James Wakiru

Assistant Editor
Zeddy Sambu

Design & Layout:
Andrew Muchira

Contributors:
James Wakiru
Kanyingi Kuria
Neil Robinson
Mohammed Baraka
Infineum

Photography:
Media Agencies
Lubezine library

Art Direction:
Zeus Media Ltd
info@zeusmedialimited.com

Advertising & Subscription:
AFRICA
Kanyingi Kuria
kanyingi.kuria@lubesafrica.com
info@lubesafrica.com

EUROPE, MIDDLE EAST, ASIA
David Jeffries
djeffries@onlymedia.co.uk
Only Media Ltd, United House
39-41 North Road, London
N7 9DP, UK

info@lubesafrica.com
www.lubesafrica.com
www.lubezine.com

Lubes AFRICA

Subscribe

TO OUR NEWSLETTER THE

Lube Post

LOG ON TO

www.lubezine.com

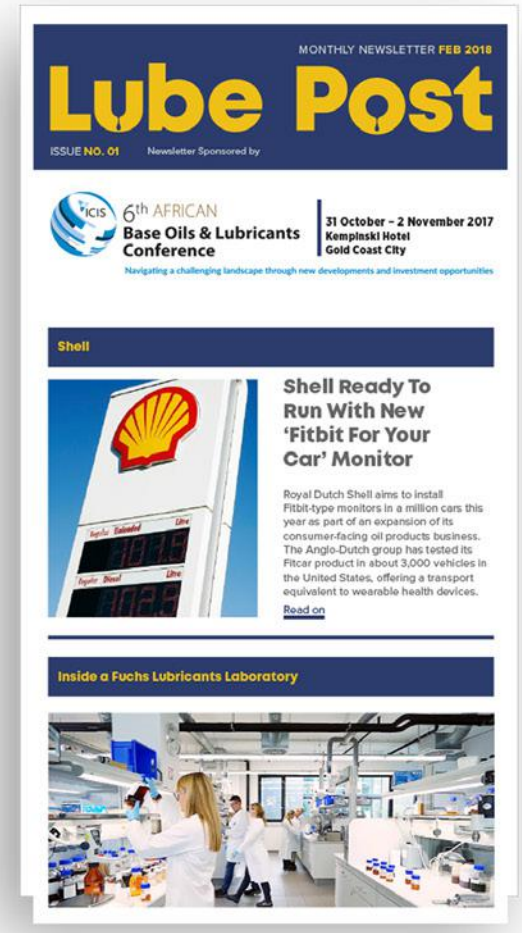
NOW!

AND SUBSCRIBE

TO READ

THE LATEST

ISSUE!



JOHANNESBURG

Fuchs opens new grease plant in Isando

FUCHS Lubricants South Africa has opened a R125 million grease plant expansion at its factory in Isando. Paul Deppe, managing director of FUCHS Lubricants South Africa, said the state-of-the-art grease plant- that took three years to complete, will manufacture a large variety of specialty grease grades.

"FUCHS sees the importance and demand for specialty grease growing significantly and want to be in a position to support the increased demand from our customers.

"Apart from capacity, the plant will also inject new levels of process excellence and quality into our grease manufacturing."

"As one of the most automated and advanced grease plants in the FUCHS organization, and indeed the world, we will be looking to export grease from this plant across Africa and to other parts of the world," added Mr. Wright.

He allayed fears of staff cuts and disclosed that some staff would be lined up for further training.

"There are no staff redundancies as a result of the automation of the plant. Instead, the plant creates the need for staff with higher skill levels. We identified existing staff comprising grease makers, a supervisor, maintenance engineer and production manager who were all sent to Germany for training."

Fuchs SA MD, Paul Deppe and Fuchs Petrolub CEO Stefan Fuchs. PHOTO | COURTESY

The project is a collaboration between South African and German engineers, system and component suppliers. Technical teams from the two business operations designed the plant.

DRA was responsible for the design and its construction of the plant while automation of the plant was contracted to a FUCHS supplier from Germany.

"This is the start of significant investment in upgrading our plant and equipment to meet the demands of our customers for ever-increasing quality and responsiveness," said Mr. Deppe.

Up to 30 different greases are planned to be manufactured in the plant.

The plant also consists of autoclave and open reactor technology to manufacture grease soap which is then finished in a number of finishing kettles.

"The plant design and automation conforms to FUCHS latest standards worldwide and ensures that the quality of grease produced is of the highest standards. The plant will enable FUCHS Lubricants South Africa the ability to consistently and repeatedly manufacture standard and complex thickener greases to meet future needs of our customers," said Mr. Deppe.

Future expansion in capacity as well as future grease technologies, which are under development in the FUCHS Group's R&D laboratories, were also considered in the plant's design. ■

PHOTO | COURTESY

DAR ES SALAAM

Tanzania to implement lubricants import permits

In an effort to prevent sub-standard products from entering Tanzania, lubricants importers will be required to obtain import permits from the Tanzania Bureau of Standards (TBS) commencing May.

Minister for Industry, Trade and Investment Charles Mwijage ***(pictured)*** made the announcement during his official visit to three lubricant blending plants in Dar es Salaam.

Mwijage said there has been an influx of sub-standard lubricant products in the local market; thus TBS is compelled to implement a mechanism to stop this. "In the previous years people were importing oil lubricants without any permits from TBS, something which has brought us here, from today onwards anyone who wish to import must get permit from TBS," he said.

Pointing out that the use of sub-standard lubricants could potentially harm equipment and cause vehicle breakdown, Mr. Mwijage also urged mining and other industries to use locally produced lubricants as this would create more local jobs. ■

Source: F+L Daily

P.6

Petronas Lubricants International signs deal with Gomeju Oil

DURBAN

ExxonMobil appoints Zestcor distributor of its base stocks

Exxon Mobil Refinery plant. PHOTO | COURTESY

ExxonMobil recently announced it has signed a new distributor agreement with Zestcor, an experienced sales, procurement and supply chain management company in South Africa.

The agreement is designed to support an efficient and reliable supply of high-quality base stocks in South Africa and the sub-Saharan region.

Zestcor has a distinct local business footprint in the South African petrochemicals industry as a Broad-Based Black Economic Empowerment Company.

This commercial relationship will expand ExxonMobil's global presence and provide local customers additional access to base stocks capable of meeting a broad range of blending needs.

"We are committed to providing a reliable supply of high-quality products to our valued customers around the world," said Julia Ruessmann, EAME Basestocks and Specialties Sales Manager at ExxonMobil.

"Zestcor not only complements ExxonMobil's position in South Africa by providing local supply chain solutions, but supports our long-term commitment to meeting customer demands in country."

Zestcor is uniquely equipped to receive bulk ExxonMobil shipments and handle both truck loading and delivery, as well as pipeline transfers, with their strategically placed bulk onshore tank storage facilities at Bidvest Tank Terminals in Island View, Durban.

> ***"At Zestcor, product integrity and quality control are at the forefront of what we do,"***
> *– Nic Dunn, Director at Zestcor*

"At Zestcor, product integrity and quality control are at the forefront of what we do," said Nic Dunn, Director at Zestcor.

"Partnering with a global leader like ExxonMobil, who not only shares these values, but promotes them as a pillar of their business operations, makes perfect sense for us. We also believe that South Africa will benefit by having additional local access to high-quality base stocks."

From its website, Zestcor sources Group I base oil direct from major refineries in Europe, as well as Group II base oil sourced direct from the SK refinery in South Korea and SK Yubase Group III base oils (3, 4, 6 & 8). ■

LAGOS

Forte Oil partners with Chevron

Forte Oil, an indigenous player in Nigeria's downstream sector, has signed an agreement with Chevron Lubricant in Europe, Middle East and Africa to make Texaco branded lubricants available at Forte Oil filling stations in Nigeria.

Chevron Lubricant is the owner of the Texaco brand.

The collaboration seeks to open new opportunities for Nigerian motorists to purchase high quality engine oil, according to reports carried by Guardian Nigeria.

Forte Oil's Head of Marketing, Kenneth Otaru said that the collaboration will allow Nigerian motorists to enjoy a wider selection of high quality engine oils.

"This unadulterated quality is guaranteed by both the Forte Oil and Texaco brands. This is an exciting time for the downstream market and for the consumer", he assured.

Otaru maintained that Forte Oil was pleased to join in the initiative to ensure the best available product at its filling stations.

Stewart Wright, General Manager, Chevron Lubricant said introduction of the engine oil would add value to the Nigerian market. "Motorists in Nigeria will now have an increased choice when buying quality engine oil". ■

A Gomeju service station.
PHOTO | COURTESY

ADDIS ABABA, ETHIOPIA

Petronas Lubricants International signs deal with Gomeju Oil

Petronas Lubricants International has signed an exclusive dealership agreement with Gomeju Oil Ethiopia that enables the latter to distribute Petronas lubricants and greases in Ethiopia.

At a launching ceremony held at the Sheraton Addis on 12th March this year, executives of Petronas Lubricants International and Gomeju Oil Ethiopia announced their new partnership.

Yigzaw Mekonnen, general manager of Gomeju Oil Ethiopia, said that Gomeju is proud to partner with a global leading lubricants manufacturer, Petronas Lubricants International.

"Petronas grease and motor oil are of high quality. The price could be a bit higher but that does not mean anything considering the high quality of the products."

Steven Vandenheede, supervisor of Export Sales for Africa, Middle East and Overseas, said that Petronas products have been recommended for new vehicles produced by IVECO and New Holland.

"We work closely with IVECO, CNH and Mercedes Benz. IVECO recommends new trucks to use Petronas motor oil when they come out of the manufacturing plant. As a manufacturer we are the only company who can manufacture recommended lubricants by IVECO and New Holland."

Vandenheede said that there are a large number of IVECO trucks in Ethiopia adding that IVECO was unable to import Petronas products due to legal issues.

"Now thanks to Gomeju we can bring our products to Ethiopia." Gomeju Oil Ethiopia was established by Tewodros Yeshiwas and his wife Genet Gebreigzabher with a registered capital of ETB 53 million (USD 1.9 million) in 2015. The company recently raised its capital to ETB 100 million (USD 3.6 million).

Gomeju Oil started operations in 2016 with 24 service stations. The company was officially inaugurated in May 2017. The number of service stations has increased to 40. The company has invested ETB 1 billion (USD 36 million) on service stations, buildings and fuel tanker trucks, creating 1,000 jobs.

According to Yigzaw, the company will now focus on lubricants, LPG and bitumen supply.

Gomeju Oil is also in the process of building an ethanol and lubricants blending plant. ■

$1.9million
Gomeju Oil's registered capital in 2015 when they started operations

40
The number of service stations it operates, an increase from 24 when they launched

1,000
The company has invested ETB 1 billion (USD 36 million) on service stations, buildings and fuel tanker trucks, creating 1,000 jobs

KAMPALA

Operation "Fagia" aids Police nab fake lubricants

Police have warned the public about the increasing amount of fake goods, among them fake lubricants.

A joint operation by Interpol Uganda, Uganda National Bureau of Standards (UNBS), and Uganda Registration Bureau Services (URSB) and Anti-Counterfeit Network discovered duplicated products. The Internal Security Organisation and External Security Organisation also took part in the crackdown dubbed "Fagia".

Fake products impounded in supermarkets, wholesale and dealer shops from the central business district in Kampala included fake agricultural inputs, motor vehicle oils, lubricants and other consumer products.

Dr Fred Yiga, the director of Interpol and international relations Uganda urged brand owners of genuine products to jealously guard their brands to protect their customers. He said the directorate of Interpol got involved in the operation because it "is responsible of fighting cross border crimes including monitoring product movements."

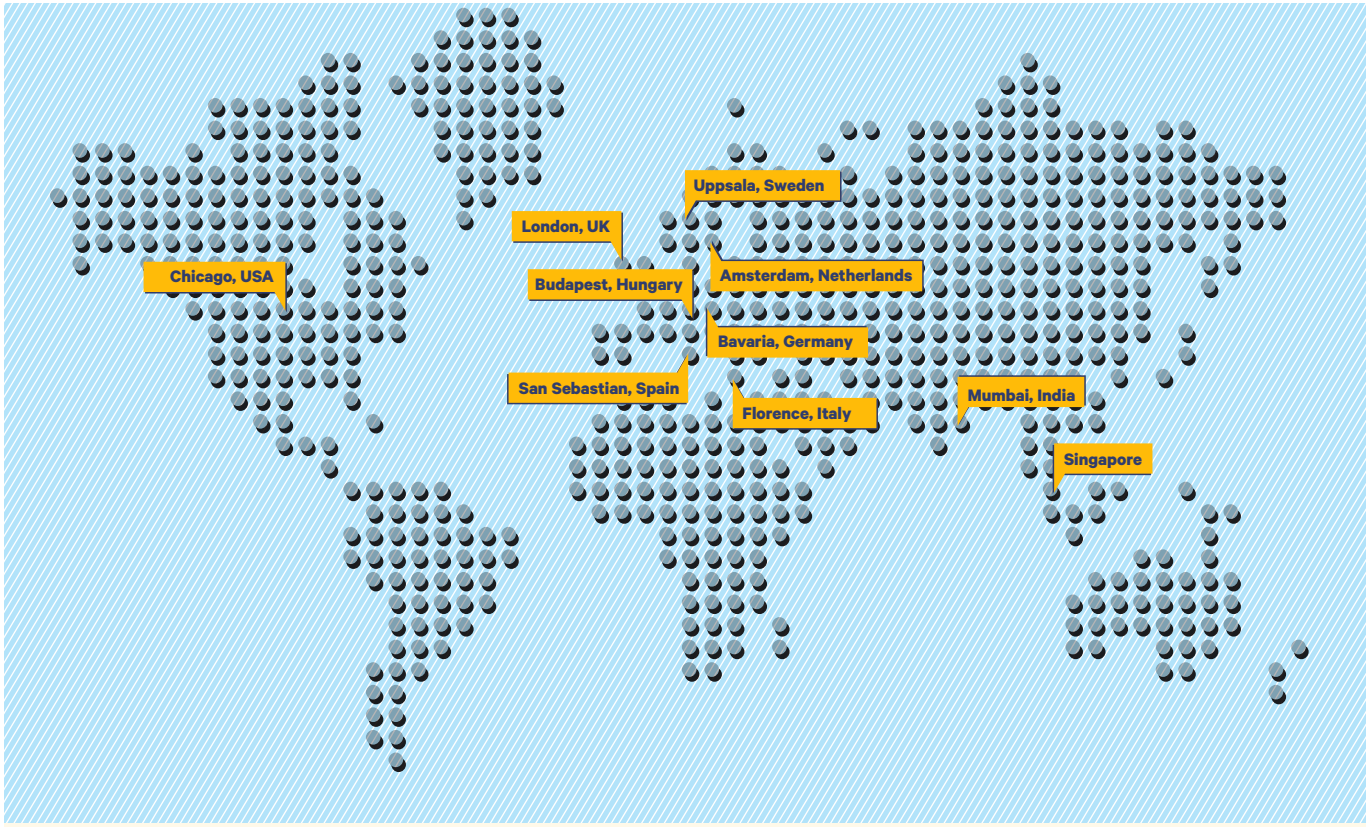
Dr. Fred Yiga addressing the press during the operation.
PHOTO | COURTESY

> ***"We want to dialogue with brand owners and distributors of international brands to come up with mechanisms to protect consumers."***

"We want to dialogue with brand owners and distributors of international brands to come up with a mechanism to protect consumers from counterfeits. Fake products are manufactured locally before leaving the country," Dr Yiga said at a press conference.

Oil giants Total and Shell will work with Interpol in the oil marketing sector. ■

THE LUBES DIARY



June 5–6

LUBMAT 2018
San Sebastian, Spain
www.lubmat.org

June 18–21

NORDTRIB 2018
Uppsala, Sweden
www.nordtrib2018.angstrom.uu.se

June 19-20

5th ICIS & ELGI Industrial Lubricants Conference
Amsterdam Marriott Hotel, The Netherlands
www.icisevents.com/ehome/worldlubricants

June 26-28

12th ICIS Asian Base Oils and Lubricants Conference
Fairmont Hotel, Singapore
www.icisevents.com/ehome/asianbaseoils/home

August 1-2

2nd Asia, Middle East and Africa (AMEA)
The Leela Mumbai, Sahar, Andheri (E), Mumbai
www.amea-conferences.com/baseoil/

September 10-15

IMTS 2018 International Manufacturing and Technology Show
McCormick Place, Chicago, IL, USA, *Email: Elaine Brook, brook@tema.de, www.imts.com*

October 24–26

UEIL Annual Congress 2018
Budapest, Hungary
www.ueil.org/events/2018-ueil-annual-congress/

Oct 31 - Nov 1

Advanced Engineering 2018
National Exhibition Centre, Birmingham, UK
www.easyfairs.com/advanced-engineering-2018/advanced-engineering-2018/exhibiting/

November 6–7

Maintec 2018 Birmingham, UK
www.maintec.co.uk/maintec-home

November 28-29

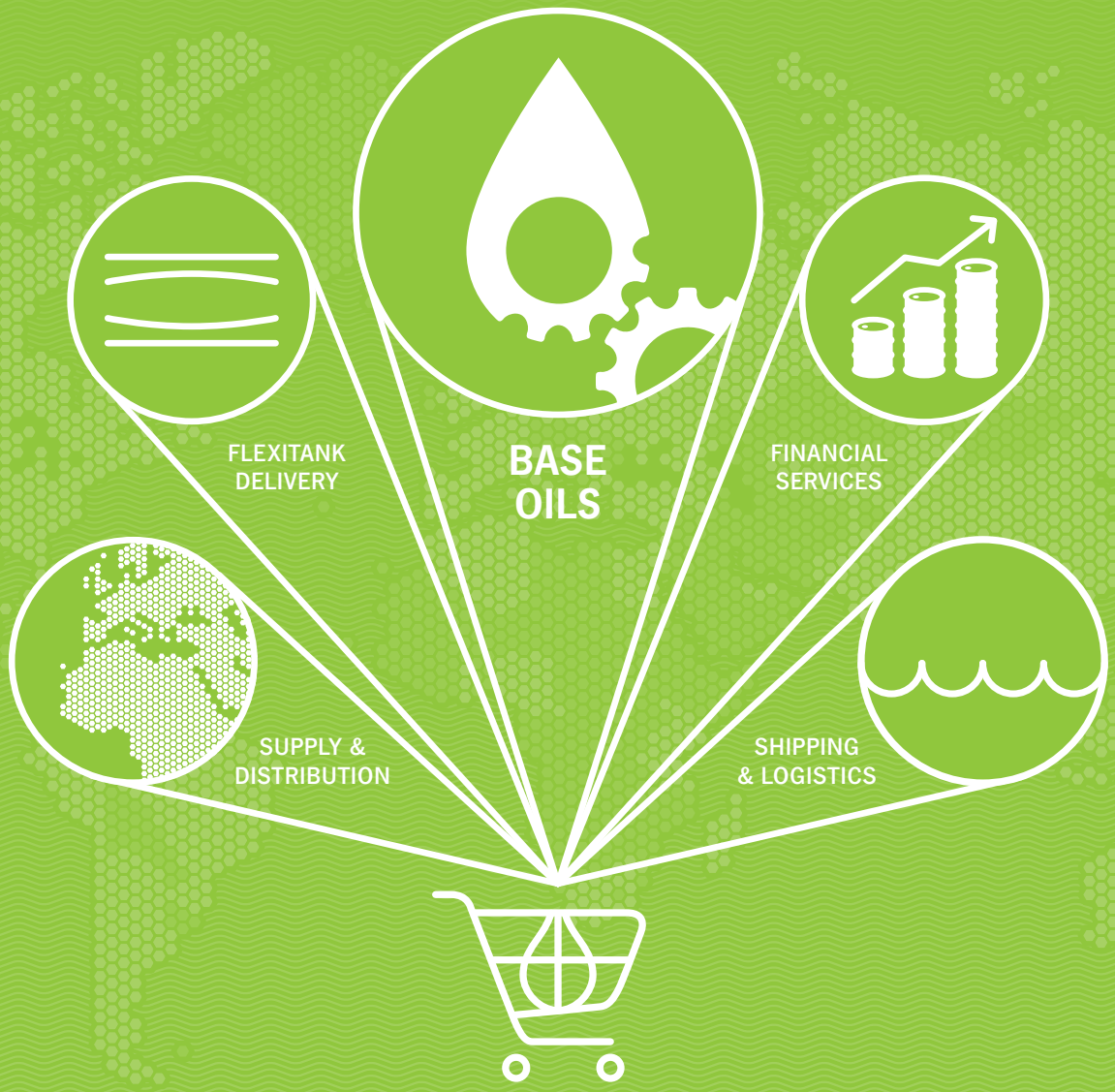
The 2018 European Base Oils & Lubricants Interactive Summit
Florence, Italy
www.wplgroup.com/aci/event/base-oils-lubricants-summit

2019

January 29-31

Oil Doc Conference & Exhibition 2019
Bavaria, Germany
www.oildoc-conference.com

THE ONE STOP SHOP FOR THE LUBRICANTS INDUSTRY



CONNECTING REFINERIES WITH MANUFACTURERS IN A MORE DIRECT AND TRANSPARENT WAY.

We provide bespoke logistics, supply chain management and the most favourable financing options at any stage of the trading process. In-depth market intelligence and excellent service come as standard.

9001:2008 ISO CERTIFIED

Local market knowledge + global expertise
trade@myshamrockgroup.com | +357 25 256 115
www.shamrockoils.com

Shamrock

Basics on Specialty Lubricants

PHOTO | MAXUSER/SHUTTERSTOCK

1. What are specialty lubricants?

High performance lubricants as they are also called are formulated to handle special conditions in a tribosystem. Some of these conditions include high temperature, wet conditions, media e.g. acidic and alkali environment as well as high speed.

A tribosystem can also have a combination of such conditions.

2. Types of specialty greases and their applications?

Usually it's not possible to have a strict classification as the types are infinite depending on the different combinations of base oil, thickness and additive component.

However, we can have 2 broad classifications:

- Type of Base oil
- Type of thickener

The thickener used could be:

- Aluminum Complex – Has good pumpability, Very Good water resistance and corrosion protection, temperature 30 degrees centigrade to 180 degrees centigrade.
- Barium Complex-Mechanical stability, Very Good water resistance, Resistance to weak acids
- Calcium Complex Soap-Mechanical stability, Very Good water resistance, Good corrosion protection and pumpability
- Lithium Complex- Good water resistance and corrosion protection, Very Good mechanical stability, Good load carrying capacity.

Other thickeners used are: Natrium Complex, Bentonite, Polymer and PTFE (Polytraflouroethylene).

According to oil used:

- Mineral Oil- Temperature of -20 to 100 degrees centigrade, Very Good corrosion protection, Excellent seal compatibility and Cheap

Disadvantage of use mineral oils is that they are non-biodegradable

- Synthetic Oils- They have high performance and they do last longer. Some of the Synthetic oils used are:1.
  - I. PAO (Poly Alfa Olefins) which have low evaporation of up to 140 degrees centigrade, Good low temperature properties, Miscible with mineral and silicone oils, some types are food grade (non-toxic), Have good compatibility.
  - II. Ester Oils: Can be used up to 160/180 degrees centigrade, have low residues up to below 200 degrees centigrade, Good viscosity temperature behavior, Miscible with synthetic hydrocarbon and polyglycols, some are rapidly bio-degradable, Partly toxic.
  - III. Polyglycols: They service temperature up to 160 degrees centigrade, very good load carrying capacity, excellent wear protection, some can be used as food grades.
  - IV. Silicone Oils: Usable up to 200 degrees centigrade, excellent low temperature behaviour, neutral towards plastics, seals and paints.

3. What are some of the components used to produce premium specialty greases?

The common components include the ones mentioned above; Silicone oils, Polyglycols, Ester Oils, PAOs.

4. Opportunities in specialty greases applications?

Specialty lubricants demand is increasing by day driven by the new high capacity, efficient and demanding conditions that have new plants or lines/machines demand.

Plants or streamlining production in particular are targeting increased efficiency and machine availability.

There is also Energy Cost Savings. Use of right lubricant can cut energy costs by up to 3%. There is increased awareness in Asset Care (formerly known as maintenance teams).

5. Measures and Identifiers of genuine grease?

- Only purchase from authorized distributors. In the case of Kluber lubricants, the channel partner is Droplex Industrial Systems Ltd.
- Do not buy repackaged grease
- In the digital world era, products that do not have an online presence should be deemed questionable.
- QR Code is a good tool to identify genuine products. Genuine producers have such on all their product labels.
- Avoid middle men.

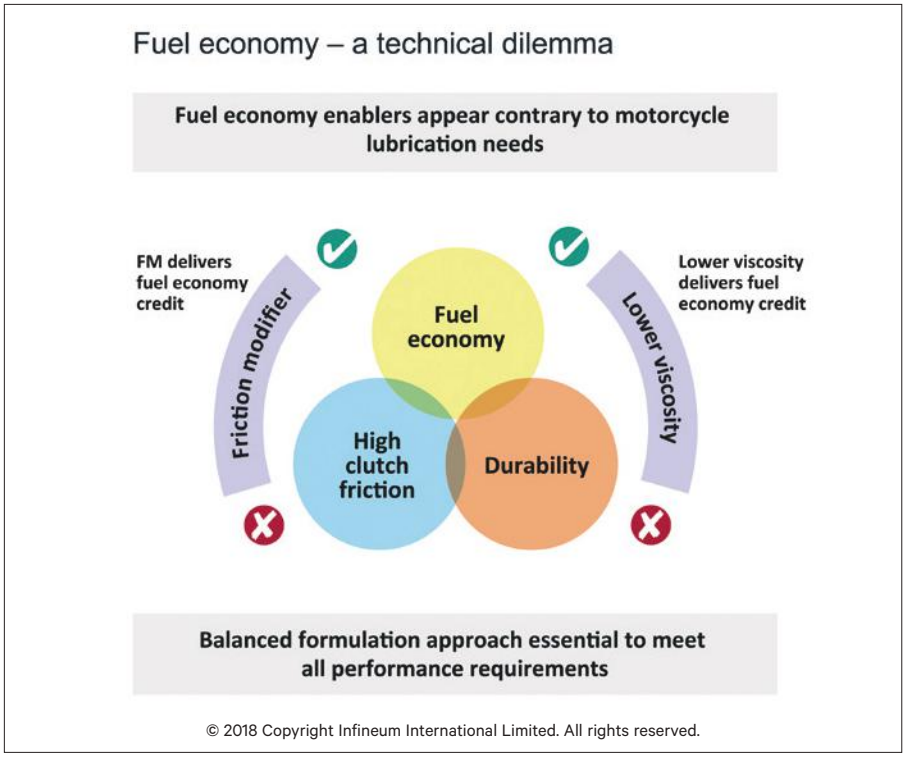
6. Reception of Food Grade Lubricants (FGL) in African countries?

Adoption of ISO standards for instance ISO 22000, BRC, FSSC 22000 by food plants is driving the growth of food grade greases.

New food plants are also adopting GMP hence try to use FGL in cases that can have accidental contact. ■

FAQ Courtesy of Droplex Industrial Systems Limited. Droplex Industrial is a leading provider of automated greasing systems and total lubrication solutions carrying the complete range of lubrication & fluid transfer equipment as well as maintenance and repair services, in-plant lubrication services and machinery lubrication training. Droplex also operates as the authorized Klüber Lubrication Distributor. Contact them via email: sales.ke@droplex.com/sales.ug@droplex.com or visit their website: http://droplex.com/

Next generation motorcycle oils



Tightening emissions regulations combined with a need for improved fuel economy and demands for enhanced user experience are driving change in the motorcycle market. The latest balanced motorcycle oil formulations are being designed to meet these requirements while maintaining hardware durability.

As governments work to cut emissions, regulations are being more widely introduced and tightened for motorcycles. In Europe, for example, Euro V standards will apply to all sales of two-and three-wheeled vehicles from 2020. This means reporting of carbon dioxide (CO_2) emissions as part of the type approval process will be required.

In India – the world's largest motorcycle market with 17.7 million two-wheeler sales last year, change is coming.

Here, a draft notification of Bharat Stage (BS) VI emission standards, equivalent to Euro VI has been issued and will take effect throughout the country for two- and three-wheelers manufactured on or after 1 April 2020.

Future regulations not only limit tailpipe emissions, but also mean bikes will have to pass an evaporative emissions test, run on-board self-diagnostic systems (OBD), and manufacturers will need to prove the bike will still pass the tests after a specified mileage.

OEMs will need to significantly improve engine performance and introduce after treatment systems to comply. However, meeting these emissions limits is only one issue. They will also need to address sustainability requirements and meet demands from their customers for an enhanced riding experience.

In our view, meeting all these requirements by both OEMs and oil formulators could be a very hard balance. In terms of fuel economy for example, reducing engine friction improves fuel economy through the positive impact on engine response and power output.

But it is essential to understand exactly what is influencing fuel economy here. By doing so, additive technology can be developed that ensures the required fuel economy is delivered while maintaining high clutch friction, hardware protection and durability all of which are essential for motorcycles.

Understanding friction

The Stribeck curve broadly categorises friction regimes for lubricated surfaces into boundary, mixed and hydrodynamic lubrication. To improve lubricant derived fuel economy, friction must be reduced by selecting the formulation levers that are appropriate to each lubrication regime.

In the boundary regime, the oil film thickness can be reduced to such a degree that metal-to-metal contact occurs between the moving surfaces. Here, surface-active components such as friction modifiers, detergents and ant wear additives are effective. However, in the hydrodynamic regime, the moving surfaces are separated by the pressure of a continuous oil film. Fuel economy is related to lubricant viscosity, where the viscometric properties of additive components and base stocks have the strongest impact.

This presents a technical dilemma in that using friction modifiers and lowering viscosity which are key fuel economy enablers, contrary to the lubrication needs of a motorcycle.

For example, addition of a friction modifier can lower clutch friction, which could result in clutch slippage in motorcycles using wet clutch systems. Similarly, formulating to a lower viscosity grade may compromise durability and wear protection, especially in high temperature and high shear conditions.

Infineum Insight initiated a research and development programme to assess if these technical contradictions can be overcome by developing a balanced formulation containing the optimal blend of additive components. Initially, a series of bench friction tests were used to screen possible candidates.

The Schwingung Reibung Verschleiss (SRV) and High Frequency Reciprocating Rig (HFRR) tests were used to simulate boundary friction between metal-to-metal contact and the Mini Traction Machine (MTM) was used to simulate hydrodynamic friction regime. The candidates screened included a range of friction modifiers, detergents and dispersants. Friction modifiers and detergents give rise to surface effects, which alter the boundary friction properties, while dispersants are viscosity-influencing and affect hydrodynamic friction.

Following the screener tests, Infineum developed an SAE 5W-30 prototype motorcycle oil using the components that during bench screening delivered the most engine friction credit. This prototype was optimized to achieve JASO SL quality and MA2, which is the highest clutch friction level in the JASO 2016

CONTINUED ON PAGE 15

NEW PRODUCT

Lubrizol launches a refrigeration lubricants brand through CPI Engineering

PHOTO | COURTESY

CPI Fluid Engineering announces the official launch of the Icematic brand aimed at providing compressor lubricant solutions for low GWP refrigerants. Icematic will provide solutions for transitional refrigerants offering lower GWP impacts and long-term sustainable refrigerants that offer the lowest direct and indirect GWP impacts. CPI officially unveiled their new Icematic brand at China Refrigeration (CRH) held in Beijing, China April 9-11.

The Icematic brand solidifies CPI's continued leadership as a lubricant solutions provider in the refrigeration industry. For decades, the Emkarate RL brand has served as the lubricant of choice for HFC systems, offering superior performance and reliability. The addition of the Icematic brand strengthens CPI's portfolio as the refrigeration industry transitions towards a more sustainable future.

Two different product series will be available to serve the needs of the industry. Icematic NXG series is designed for use with today's transitional refrigerant gases to provide lower GWP impacts. Lowering the environmental impact is an important step towards sustainability. The Icematic ECO series is designed for long-term sustainable low GWP refrigerant applications. Icematic ECO enables premier performance, reliability, and efficiency to achieve the lowest direct and indirect GWP impacts.

CPI's launch of the Icematic brand is significant for the organization, as well as the entire refrigeration industry. Flavio Kliger, General Manager of CPI, made a clear statement regarding the significance of the Icematic launch. Says Kliger, "Icematic is a breakthrough for us. It's perhaps the biggest opportunity in a lifetime for CPI to prove how much it can enhance modern life... by supporting equipment manufacturers to switch to low GWP gases." The transition towards more sustainable refrigerants is not without challenges and concerns over efficiency and safety. CPI stands ready to collaborate and guide customers as their Low GWP Navigation Partner™. ■

FACTBOX

About CPI

CPI Fluid Engineering, a division of The Lubrizol Corporation, enhances modern life through fluid engineering. They seek to advance the industries they serve by providing world-class engineered performance fluids, unmatched support, and innovative collaboration. CPI is known as a global expert in engineering fluids for challenging applications in compression and heat transfer.

PHOTO | COURTESY

ENHANCING SERVICE

Shell launches artificial intelligence chatbot

Shell Lubricants just introduced Shell LubeChat, the first artificial intelligence (AI)-powered chatbot tool for B2B lubricants customers. It is designed to give users around the world easy, real-time access to product support, technical services and lubricants data.

Currently available in the United States, China and India, this service will also launch in the United Kingdom in the coming weeks and other markets later in the year.

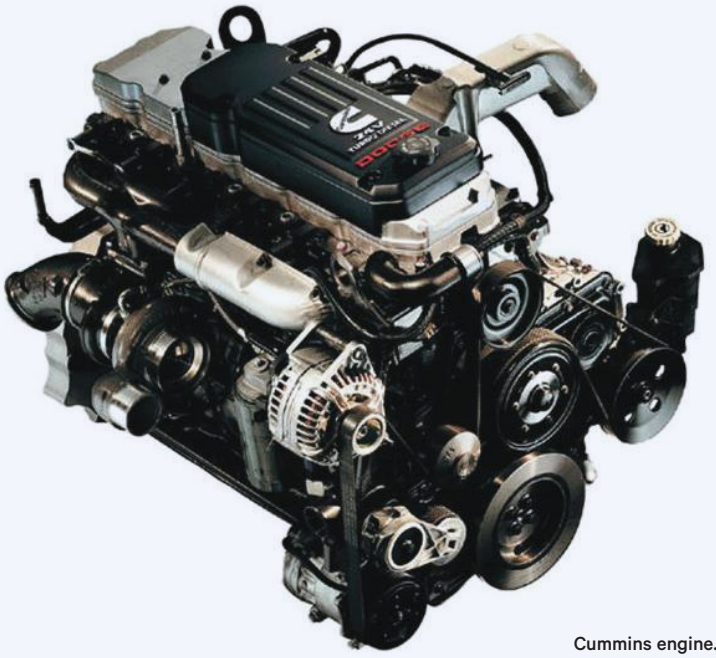
"Customers and distributors are at the heart of our business here at Shell. We are continually investing in new solutions and services that make their lives easier and more convenient, and we expect digital platforms to play a key role moving forward," said Roger Moulding, Vice-President of Shell Lubricants Marketing.

Designed to help optimize efficiency for our customers and distributors, Shell LubeChat can help solve day-to-day challenges like obtaining access to information quickly. The platform is equipped to help users find the right product for their equipment using Shell Lubricants products.

According to Shell, LubeChat is the latest example of a service that goes beyond simply selling or supplying a product. ■

PERFORMANCE LEVELS

Cummins issues new NGEO Specification CES 20092



Cummins engine.
PHOTO | COURTESY

A new mobile natural gas engine oil performance specification has been introduced for stoichiometric combustion Cummins Westport mid-range and heavy-duty engines.

This new specification, referred to as Cummins Engineering Standard (CES) 20092, will provide significantly improved oxidation and thermal stability compared to previous natural gas oils. Cummins Westport (CWI) natural gas engines require specially formulated natural gas engine oil, which has different properties than most diesel engine oil.

In addition to the new CES 20092, there are two natural gas engine oil specifications for use with CWI engines: CES 20074 oils, which are recommended for lean burn engines and CES 20085 oils, which are allowed but not recommended, for engines using stoichiometric combustion.

All CWI engines using stoichiometric combustion are compatible with CES 20092 oils. According to Cummins, these platforms will benefit from a transition to CES 20092 oils, which require a more modern oil additive system than previously used for CES 20074 or CES 20085 oils.

The new specification requires a much stronger antioxidant combination to provide protection at the high temperatures experienced in modern natural gas engines.

The range of allowable ash levels for CES 20092 oils (0.7-0.9%) is like the CES 20085 specification.

Lean burn legacy engines should continue to use CES 20074 oils until further notice, according to Cummins.

CES 20092 is completely backwards compatible with CES 20085. Cummins recommends all customers using CES 20085 oils should plan to transition to CES 20092 oils. Customers using stoichiometric burn engines with CES 20074 oils should also transition to CES 20092.

Cummins recommends the new Valvoline Premium Blue Solution 9200, available in SAE 10W-30 and 15W-40 viscosity grades. ■

NATURAL GAS ENGINE OIL

Valvoline launches Premium Blue One Solution

Valvoline recently launched Premium Blue One Solution 9200, an engine oil approved for use in natural gas, API CK-4 application diesel and API SN application gas fleet engines.

"The purpose of Premium Blue One Solution is to dramatically simplify the fill process for fleet managers, enabling one proven product to be used across a number of engine applications," said David Young, vice president of Valvoline Heavy Duty.

The new product was launched at a press conference in Atlanta, Georgia.

"In our 150-plus years, we have consistently focused on innovation to develop better products and solve the business challenges of our customers," said Heidi Matheys, Valvoline chief marketing officer.

Valvoline Premium Blue One Solution is formulated with excellent high temperature oxidation resistance and can withstand wear as well as deposits. ■

INNOVATIONS

Kluber launches hydro-lubricants

Global specialty lube manufacturer Kluber has introduced hydro-lubricants. With the new Hydro Lubricants, Klüber Lubrication succeeded in developing homogeneous lubricants using water as a functional constituent. This approach offers important benefits both in terms of lubricant performance and sustainability. The high-performance lubricant Klübersustain GW 0-460 for industrial gears is the first product from the innovative Hydro Lubricant series.

"Major advantages of our pioneering lubricant concept are the optimized friction behaviour as well as the excellent cooling characteristics that contribute to lower temperatures in gears and rolling bearings", explained Matthias Pfadt, Manager Application Engineering at Klüber Lubrication. Pfadt noted that new gear lubricant based on water and a synthetic base oil offers a new performance level that is energy efficient.

Klübersustain GW 0-460 has been developed especially for high-speed spur, bevel and planetary gears, as its low foaming tendency ensures uninterrupted operation of components.

The Hydro Lubricants from Klüber Lubrication are based on a modern lubricant design that has the potential to revolutionize the future of specialty lubricants and solve future challenges with regard to performance, energy efficiency and environmental compatibility of lubricants. ■

GP Global offices. PHOTO | COURTESY

ACQUISITION

GP Global completes acquisition of MAG Lube LLC in the Middle East

Integrated energy services provider, GP Global (Formerly Gulf Petrochem Group) has announced that it has completed acquisition of MAG Lube LLC in the United Arab Emirates.

GP Global is acquiring a majority stake of the USD75 million MAG Lube LLC in the global lubricants market.

MAG Lube LLC is a leading manufacturer of lubricants in the Middle East, distributing its full range of lubricants in more than 40 countries across Africa, Asia and the Middle East.

According to Grand View Research, the global lubricants market expanding at a 3.8% CAGR will reach $166.23billion by 2025.

In the deal, MAG Lube LLC CEO Mahmoud Al Theraawi will remain in his position and continue to lead the business in the UAE with the GP Global Lubricant team in UAE integrating into the new structure.

The 100 employees from Africa and the Middle East will also remain in their positions.

> ***As a result of the acquisition, GP Global's lubricant manufacturing business is expected to achieve regional sales of over 60,000 kilolitre (KL) in 2018, up from 12,000 KL prior to the acquisition***

Established in 2013, MAG Lube LLC is reported to record 100% growth year on year which makes it one of the fastest growing companies in the country.

It boasts of 30,000 square metre state-of-the art blending facility in National Industrial Park, Jebel Ali. Its factory has the latest fully-automated blending system technologies and an ultra-modern laboratory on research and development.

Following the acquisition, GP Global's lubricant manufacturing business is expected to grow fivefold to over 60,000 kilolitre (KL) during the 2018, up from 12,000 KL earlier. ■

EXPANSION

Valvoline to build lube blending plant in China

Global supplier of premium branded lubricants and automotive services, Valvoline has announced plans to build its first plant in China. With projected investment of approximately $70 million (RMB 443 million), it will also represent Valvoline's single largest blending plant investment worldwide.

According to Sam Mitchell who is the brand's CEO, the new plant is an investment in China and its rapidly growing demand for high-quality lubricants and coolants to meet the evolving needs of both passenger car and heavy-duty customers. The new Valvoline plant is expected to begin production by the end of calendar 2020. Its annual production capacity is placed at more than 30 million gallons (115 million liters) of lubricants. "This is very exciting news for our customers and partners in China," said Craig Moughler, Senior Vice President, International and Product Supply. Moughler continued to note that the investment demonstrates their commitment to the growth and success of their customers through a more efficient and effective local supply chain.

The new plant in China preceded opening of yet another facility in Thane District, Western India that was completed upon partnership with Cummins India. The plant whose investment is valued at $30 million, will produce Valvoline automotive lubricants for the consumer, industrial and heavy-duty markets. ■

PHOTO | COURTESY

ACQUISITION

ExxonMobil to buy Indonesian motorcycle lubricant blender

A PT Federal-branded motorbike. PHOTO | COURTESY

ExxonMobil is set to purchase PT Federal Karyatama (FKT), one of Indonesia's largest manufacturers and marketers of motorcycle lubricants. ExxonMobil is seeking to strengthen its position in the international market.

The acquisition includes the Federal Oil brand and a 700,000 barrel per year blending plant in Cilegon, Indonesia, a major coastal industrial city in Banten province, western end of Java.

Pending shareholder, government and regulatory approvals, ExxonMobil will acquire 100 percent interest in the company from PT Mitra Pinasthika Mustika Tbk and its affiliates. ExxonMobil expects the transaction to close in the third quarter of 2018, if not earlier.

"Asia Pacific is one of the fastest growing lubricants markets in the world," said Bryan Milton, president of ExxonMobil Fuels & Lubricants Company.

"This acquisition, combined with our existing premium Mobil lubricant brand, will help us continue to grow and better serve customers in Indonesia. The knowledge and experience of FKT employees and distributors will play a key role in achieving that objective."

> **Research indicates that Indonesia is the third largest country market for two-wheelers, behind India**

"Driven by strong economic development and an expanding middle class, Asia is expected to represent 70 percent of global lubricant demand growth over the next decade," said Nigel Searle, senior vice president of ExxonMobil Lubricants.

"We continue to make strategic investments across our lubricant value chain to ensure ExxonMobil is well positioned to meet increasing global lubricant demand."

George Morvey, Industry Manager Energy, Parsippany, NJ-based Kline consultancy told OEM/Lube News "Kline pegs Indonesia as the third largest country market for the consumption of lubricants for motorcycles, scooters and mopeds behind leader India, and #2, China.

In terms of the global 2-wheeler parc, Indonesia is #2 at 17% behind #1 India at 33%. Overall lubricant demand in Indonesia is forecast to grow by a CAGR of 3% to 2022."

Founded in 1988, FKT is one of Indonesia's leading motorcycle lubricant marketers with a nationwide distribution network supported by approximately 40 dealers, 3,200 Federal Oil Centers and more than 10,000 retailers throughout Indonesia.

Subsidiaries of ExxonMobil and its predecessors have been operating in Indonesia for more than 120 years, and since 1979 have invested more than $23 billion in the country.

ExxonMobil has more than 500 employees in Indonesia, 95 percent of whom are Indonesian. ■

CONTINUED FROM PAGE 11

specification.

In bench tests, the oil achieved lower engine friction and similar gear protection performance to a benchmark SAE 10W-30 OEM Genuine Oil marketed as JASO SL and MA performance.

Chassis dynamometer testing

Fuel consumption tests were run under World Motorcycle Test Cycle (WMTC) test conditions in a chassis dynamometer test using a 110cc, air-cooled motorcycle with a manual transmission, a type generally used for delivery purposes. The test oil was formulated to three different viscosity grades -SAE 5W-30, 10W-30 and 10W-40 with a fuel economy viscosity modifier (FE VM) and run against the same benchmark oil. The FE VM was designed with excellent viscosity control at both low and high temperatures to deliver measurable fuel efficiency improvements and wear protection. The new SAE 5W-30 fuel economy oil delivered one per cent fuel economy improvement (FEI) over the OEM Genuine SAE 10W-30 benchmark motorcycle oil. This exceeded the standard deviation of the test implying that the FEI is significant.

Additionally, the SAE 10W-30 and 10W-40 oils also achieved positive FEI. By reducing engine friction, the fuel economy oil offers added power to the engine and at the same time, delivers high clutch friction in motorcycles with manual transmissions. OEMs can also be confident that these performance enhancements have been achieved with phosphorus levels at the minimum limit for the JASO T 903 2016 specification.

Gaining a thorough understanding of all the factors influencing fuel economy in engine oil formulations has made it possible to develop motorcycle oil that offers fuel economy improvement while also delivering other attributes essential for motorcycle performance and protection. ■

Premium range motor oils formulated for **performance**

Our new generation synthetic Diesel and Petrol engine oils are formulated with premium base stocks and additives to deliver excellent engine parts wear protection while providing smooth drive and offering enhanced fuel economy. The oils are recommended for the latest engine models where reduced / low emissions are required. Available at all our service stations and stockists countrywide.

follow us to the future

Gulf Energy Kenya @GulfEnergyKE www.gulfenergy.co.ke

gulf energy

lubricants

COVER STORY

ENGINE COOLANT

KEEPING IT COOL

PHOTO | COURTESY

Neil Robinson

Neil Robinson is the Managing Director of condition monitoring specialists; WearCheck SA. The first WearCheck laboratory opened more than 40 years ago in Durban, South Africa, and today the company operates a network of 15 labs in nine countries across Africa and beyond

Between 40 and 60 per cent of today's premature heavy-duty diesel engine overhauls are related to cooling system performance. During operation, all internal combustion engines produce heat. The temperature of burnt fuel can reach 2000°C. About 33% of this is transferred into power through the crankshaft.

Approximately 30% is expelled through the exhaust while another 7% seven per cent or so is lost through radiation. The remaining 30% must be dissipated through a cooling system.

Additionally, the cooling system also removes heat from turbochargers, torque converters and hydraulic or transmission oil coolers.

While higher engine temperatures can achieve greater efficiencies, the coolant itself is quickly becoming the weak link in this system. Classic cooling system failures causes overheating, overcooling, pitting, cavitation erosion, cracked heads, piston seizures, reduced critical clearances, lower oil viscosity, increased wear and plugged radiators. The coolant and the cooling system keep the engine running at the correct temperature.

Early cooling systems simply used water due its good heat transfer properties and availability. But high freezing and low boiling points as well as natural corrosion on metals, especially at high temperature can limit its use.

A modern heavy-duty diesel engine coolant is a carefully designed and complex mix of chemicals, used for different purposes as follows:

COOLANTS

Various coolants namely SCAs, OAT, carboxylates, ELCs, extenders consist of the same combination of a bulk liquid and additive package.

The liquid

This acts as a solvent and as the main heat transfer medium. Common ones are ethylene glycol/water mix, propylene glycol/water mix and water .Glycols are generally used at a 30- 50% mix with water and impart freeze and boil protection to the coolant and subdue water pump cavitation.

1. *Ethylene glycol* has very good heat transfer properties, but is toxic. At 50% it offers boil protection to 108°C and freeze protection down to -37°C.
2. *Propylene glycol* has less effective heat transfer properties, but is considered non-toxic (however, once unless additives are added, A 50% propylene glycol mix offers similar freeze and boil protection to ethylene glycol.
3. *Water (Deionised or distilled)* has the best heat transfer properties but less desirable freeze and boil protection.

Additives

Antifreeze, a glycol water mixture or pure water can be used on its own.

1. *Antifreeze + conventional corrosion inhibi-*

tor. These products are available as fully formulated, and are commercially available as either a concentrate or as a premix. The premixed antifreeze is ready for use while the concentrate must be mixed with water.

2. *Antifreeze + Organic Acid Technology (OAT) inhibitor.* OAT or carboxylate coolants require less maintenance over the useful life of the engine than conventional coolants. The cooling system should ideally be equipped with a normal filter. These are available as both concentrate and premix.
   They should not be mixed to preserve the long life advantages of the OAT. In this event, the coolant should be maintained as a fully formulated extended service coolant.

3. *Supplemental Coolant Additive (SCAs) + OAT extenders.* The concentration of some of the coolant additives will be consumed during normal engine operation.

SCAs and extenders are designed to replenish the additive concentration of the coolant, allowing it to offer continued protection to the engine. For these products to be effective, it is important that the additive packages are monitored to prevent over or under dosing and avert the following

COOLING SYSTEM PROBLEMS

Most cooling system problems and failures occur due to misinformation and maintenance practices. The most common problems are described below.

Acid/alkalinity balance

A coolant's acidity or alkalinity is measured by its pH. The pH level ranges from 1 to 14 and the ideal pH should be between 8.5 and 10.5. When the pH is too high, the coolant attack non-ferrous materials such as copper and aluminium.

Low pH affects both aluminium and ferrous materials producing 'blooms'. As the metal surfaces react with the acid, deposits build up on exposed edges throughout the system.

These deposits can also be deposited throughout the cooling system, restricting flow and causes overheating. Coolants contain buffering agents to maintain an optimal pH level and to neutralise acids produced by oxidation and blow-by gases.

TABLE 1: COOLANT CHEMICAL COMPOSITION

Chemical	Function
Borates, phosphates	*Buffers* - these maintain the proper pH of the coolant as well as providing some corrosion protection.
Silicones, polyglycols	*Antifoam* - prevent coolants from forming stable foams that can cause pump cavitation and overheating.
Nitrates, silicates, MBT, tolytriazole and some organic acids	*General corrosion* - provide corrosion protection to a variety of different metals.
Nitrites, molybdates, organic acids	*Cavitation protection* - provide cast iron cavitation corrosion protection.
Polyacrylates and various other water soluble polymers	*Scale inhibitors* - prevent mineral and corrosion product deposits on hot surfaces.
Detergents, dispersants	*Anti fouling* - prevents/limits oil and dirt build-up on metal surfaces.

Cavitation erosion (liner pitting)

Modern diesel engines contain cast iron replaceable cylinder liners that can be rapidly corroded through cavitation.

During combustion, the pistons strike the liners as they travel up and down due to the side thrust imparted by the connecting rods as the power is translated from the linear motion of the piston to the rotary motion of the crankshaft.

The clearance between the piston and the liner, and the liner and the block, allows this 'piston slap' to be translated into a high frequency vibration, similar to a bell when it is struck.

As the liner moves away from the coolant it produces a near vacuum for an instant. This low pressure causes the surrounding coolant to boil, forming tiny bubbles. The liner then returns to its position at high velocity forcing the newly formed bubbles to collapse against the wall of the liner at high pressures of 4000 bar.

Collapse of these bubbles blasts small holes in the oxide layer of the liner exposing the bare metal, which is then rapidly corroded. This process is repeated and can dig tiny tunnels through the liner. Eventually the liner wall is penetrated allowing oil and/or coolant to flow and can be magnified when an engine is run cold or the cooling system pressure is low.

Nitrite and nitrite/molybdate containing coolants prevent this by reacting with the oxygen at the surface of the liner and, prevents oxidative corrosion of the liner surface. Additionally, it forms a tough thin layer on the liner surface which is continually removed and formed.

For organic acid type coolants, carboxylic acids react with liner surfaces to form an insoluble iron carboxylate layer that prevents corrosion-causing oxygen getting to the surface of the metal. They separate in the coolant to form a hard waxy film, making it resistant to cavitation erosion. With sufficient energy, these films can be blasted from the surface of the iron, and the process will start again.

Optimal liner pitting protection is derived from coolants containing a mixture of organic acids and nitrites. Here, there is a symbiotic relationship. If the cavitation energy increases above the levels that the carboxylates can protect the nitrite can still prevent corrosion by reacting with the oxygen at the newly exposed iron surface.

When plain water is used as a coolant, liners can be penetrated in just 500 hours.

Scale and deposit formation

Deposits similar to those formed on the elements of water boilers and hot water pipes, can also form on the inside of the cooling system. General characteristics of water – including pH level, calcium and magnesium salts, total hardness, dissolved solids and temperature – determines scale and deposit formation.

Common scale deposits include salts such as calcium carbonate and sulphate. They can damage the cooling system because they can block a cooling system's ability to transfer heat, causing it to overheat. Only 2mm of scale can reduce heat transfer efficiency by as much as 40%.

Scale tends to form in specific areas

CONTINUED ON PAGE 20

CONTINUED FROM PAGE 19

on the hot side of the engine causing localised hotspots which, can cause distortion and damage to the engine. Properly maintained coolants contain additives, which can help prevent the formation of scale.

Aeration

Air leakage into the cooling system often results in foaming which promotes pitting, particularly around water pump impellors. Pitting and corrosion increase significantly when exhaust gases enter the cooling system, especially at low pressure, introducing bubbles and foam. Properly maintained coolants contain de-foaming additives that reduce foam stability.

Rust

Oxidation within the cooling system causes rust. Heat and moist air can accelerate rusting which leaves residual scale deposits that reduce the efficiency of the cooling system. Additionally, the rust may flake off, clogging the cooling system, and can accelerate corrosive wear of pumps and hoses.

Electrical corrosion

There are two forms of electrical corrosion: galvanic and electrolytic. Both depend on the ability of the coolant to carry electrical charge which depends on the cleanliness of the coolant and the dissolved solids. Those coolants containing glycols have a lower tendency to carry charge than those that are only inhibited water.

Galvanic corrosion

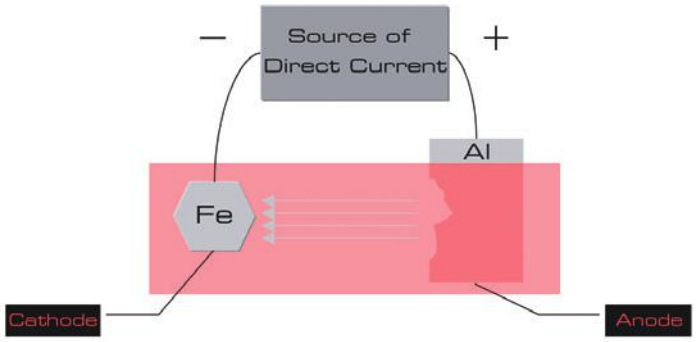
This occurs when two or more dissimilar metals are in contact in the presence of an electrolyte and form an electrolytic cell or battery. Here, the electrolyte will be the coolant. An electromotive force, or electrical 'pressure', exists between the metals such as the iron engine block and the aluminium radiator. In order to re-establish equilibrium, the lower voltage metal becomes the anode and discharges a current into the coolant to complete the circuit, causing corrosion of the aluminium radiator.

Additive loss

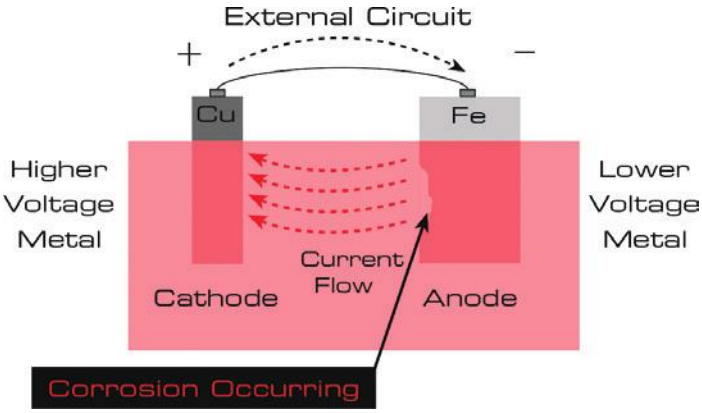
This occurs through three basic chemical processes: depletion, dilution and dropout. ■

» THE PROCESS:
Electrolytic corrosion (electrolysis)

a) Electrolytic Corrosion



b) Galvanic Corrosion



This process attacks radiators and heaters and can destroy the engine fast. Electricity provides energy required to cause otherwise non spontaneous reactions to occur. Electroplating is an example of electrolysis.

This is usually in the form of a defective or missing ground on an electrical device. This causes electricity to seek the path of least resistance whenever the component is energised. As the current draw of the poorly grounded device increases, so does the destructiveness of the electrolysis.

A poorly grounded engine or starter motor can put enough current through the cooling system to destroy a radiator fast depending on how often the vehicle is started. A partially grounded cooling fan may only leak a small percentage of its current through the cooling system with effects over the long term. Evidence of corrosion includes recurring pinhole leaks in a radiator or heater.

Pinholes may can form along the tubes or tank walls but damage is often concentrated at tube to header joints or in the tube walls near the centre of the core where the electric cooling fan mounts come into contact with the core.

This form of corrosion rapidly reduces the protective additives in the coolant leading to copper and aluminium corrosion. ■

AMEA BLW 2018

SAVE 20%
Early Bird Fees!
Register by June 20th, 2018

www.amea-baseoil.com

2nd Asia, Middle East and Africa (AMEA) Base Oil, Lubricant & Wax (BLW) Conference

The 2nd Asia, Middle East and Africa (AMEA) Base Oil, Lubricant and Wax (BLW) Conference themed "Connecting the Dots of an Evolving Global Base Oil, Lubricant and Wax Market" will be jointly organized by Petrosil's Base Oil Report and Rex Fuels in Mumbai, India on August 1-2, 2018.

August 1 & 2 2018

The Leela Mumbai, Sahar, Andheri (E), Mumbai

THE LEELA
MUMBAI

Book now to avail special room rates
@ LEELA HOTEL

Starting at USD 100 per night.

JOINTLY ORGANIZED BY

PETROSIL

rex fuels

EXHIBITORS

INFINITY GALAXY

BlackGold

MEDIA PARTNERS

LUBE REPORT ASIA

LUBES'N'GREASES EMEA

OEM/Lube News

T&G THE OIL & GAS YEAR

Lubezine
Focusing on Africa's lubrication needs

COOLANT USE EVOLUTION

Engine coolant use in Kenya

Mohammed Baraka

Managing Director,
Synergy Lubricant
Solutions Ltd
email: mbaraka@slusollubes.com

Until the late 80's water was used as the coolant in radiators in cars, buses, tractors and trucks. It was common practice to top up water in the radiator every morning before you start driving. Water is still used as a coolant because the operators believe water is cheap but as we say in lubrication and maintenance 'cheap is expensive'. Use of water has disadvantages that increase the operating costs of engine and could result in premature engine failure. If water used is hard and this is common for well water from Coastal and Rift Valley regions, the water scale build up and this acts as an insulator that inhibits the ability of the radiator to cool the water resulting in overheating of the engine.

Both hard and soft water cause rusting of the radiator in the block forming an insulator.

Continuous rusting of the radiator results in radiator developing leaks which require frequent water top up. Over a period of time the rust will build up in the cylinder head of the engine. This will result in irregular expansion and contraction of the cylinder head. The cylinder head will crack and water will start seeping into the oil sump.

One way to notice this is the oil level in the engine will start going up. If you notice oil level increasing it is recommended you take a sample of the oil in-service and drop it on a hot metal. If it has water it will give a crackle sound. If it does, you should immediately remove the cylinder head and have the problem rectified.

If this is not done in time, this will result in bearing knock which will require expensive engine overhaul. And that is why we say although 'God gives you water free, it is not cheap'.

The first engine coolants were used during World War II. During winter the water in the radiator would freeze and if the engine is started it would be damaged as frozen water cannot transfer the heat to the radiator. It was discovered that if glycols were mixed with water, the mixture would have a very low freezing point.

This enabled armies to move their machinery during winter. The same mixture

PHOTO | TOBIK/SHUTTERSTOCK

had a higher boiling point than pure water so in summer whereas engines with water would overheat and boil engines with coolant would not boil.

It was further discovered that if to this mixture active chemicals to prevent rusting and scale build up are added, the radiator would not rust and scale and therefore would be more efficient.

In Kenya, most equipment owners, particularly for commercial vehicles and tractors, do not use engine coolants. Vehicles imported whether new or pre-owned would have an engine coolant in the radiator.

A proper practice would be to top up the system with a similar coolant but common practice is to top up with water. Over a period of time the coolant becomes too dilute and the system starts rusting. The radiator will start boiling.

Most mechanics believe the reason the radiator boils is because of the thermostat. To most of them, thermostat is meant for temperate climates and therefore the thermostat must be removed for the engine to operate efficiently in tropical areas.

They remove the thermostat and hence increase the flow of coolant which increases the rate of cooling perhaps to levels below what the engine is designed for.

This vindicates them and the vehicle owner believes it. With time rust will continue building up and the radiator will start boiling. Little do they realize in northern hemisphere summer, temperatures could be higher than some of our high altitude areas and yet they do not remove thermostats during summer.

The coolants that were discovered during the Second World War were made of phosphates and silicon as the active ingredients. These are referred to as Inorganic Additive Technology (IAT). The problem with this type of coolants is that after one and a half years in-service they start precipitating.

The precipitate acts as an insulator and interferes with the operations of the thermostat. Some of them are so unstable that they precipitate even on the shelf.

It is important to tip the container and check if there is precipitation. On bottles of some of the leading brands, they advise you to shake well before use.

The question is; 'if I use this coolant in my tractor and it stayed idle off season, how will I shake it before the coolant mixes for me to restart my tractor?' The problem with this precipitation is that the additive separate out and radiator starts rusting.

Technology has advanced and the more advanced coolants are made from organic acids mainly carboxylate.

These coolants mix well with water and can remain stable mixture for many years. These coolants are referred to as Organic Additive Technology (OAT). They are the preferred coolants as they can be used for over 5 years or 250,000Km.

These coolants are commonly referred to as long life coolants or extended life coolants. They are slightly more expensive than Inorganic Additive Technology (IAT) but if you consider they give you three times the life of IAT then you see major savings. Many also contain chemicals that prevent cavities forming on the cylinder liner (cavitation).

To make a coolant for use it is recommended 30 to 50 percent neat coolant is mixed with soft or deionised water. This proportion must be maintained throughout usage. It is important that coolant is topped up with the same coolant in-service.

You should NEVER top up with water. If the coolant is sold to you as Ready To Use (RTU), then do not add water to it. It must be used as is, otherwise addition of water will dilute it to levels it cannot prevent rusting

You should NEVER top up with water. If the coolant is sold to you as Ready To Use (RTU), then do not add water to it. It must be used as is, otherwise addition of water will dilute it to levels it cannot prevent rusting.

You can also buy neat coolant and dilute it in the workshop but you must ensure you have soft water and the blending proportions are correct.

The colour of the coolant does not tell you whether it is the conventional coolant or the long life coolant. In many countries it is specified that conventional coolants are dyed blue or green and long life coolants are either pink or red.

It is therefore important to confirm from your supplier if the coolant is Inorganic Additive Technology (IAT) or Organic Additive Technology (OAT) type. Many pre-owned cars come in the market with pink coolant and this is long life coolant. When one wants to top up he would go to the shop and ask for pink coolant. He is supplied pink coolant which is IAT and yet the pink coolant that he should be using is OAT.

By using IAT it will require that after one and a half years you replace the entire coolant. On the other hand, if he got the proper OAT coolant for top up the coolant will last for over 5 years.

It is important equipment owners appreciate that there is no engine designed to use pure water. It is therefore important they adopt use of long life coolant which will make their engines operate efficiently around the clock even on hilly terrains where water or poor coolants will boil.

The rate of top up with quality coolant is much lower than when you use water or conventional coolant. If one had been using water or low quality engine coolant and would like to change to a better coolant, our advise is you drain the coolant in the system, then flush it several times until the water coming out is clear.

Fill the radiator with water and add good quality radiator coolant and run the engine for 15 minutes. Drain the radiator and flush it until coolant is clean. Close it and fill it with the good coolant.

Given that consumers are confused with colour, it is important that regulatory authorities come up with guidelines that require that IAT coolants are dyed blue or green and OAT coolants are dyed pink or red. ■

10 QUESTIONS FOR LUBRICANTS PROFESSIONALS

An interview with Céline Boutier,
MD Shamrock Shipping and Trading Ltd

PHOTO | COURTESY

From Cyprus, Europe on to an established footprint in Africa

Shamrock has been involved in the trading, shipping and distribution of Petroleum Products over the past 15 years. The globally recognized company has presence in 15 African countries among them South Africa, Ghana, Nigeria, Kenya and Egypt. Known for a wide range of products and services aimed at meeting the base oil needs of specialty blending plants, Shamrock is looking to further maximize on Africa's potential. Kanyingi Kuria caught up with CÉLINE BOUTIER, Managing Director at Shamrock who shared industry insights as informed by her massive experience which runs for over a decade; as well as Shamrock's experience, presence and outlook for Africa.

1. What led you into joining the lubricants industry?

My background is in international trade and business. I started at Shamrock as Financial Manager and I was mainly involved in supply and distribution of base oils from CIS to Europe.

Back then we were a team of 3. Small, but with a grand vision. Today (more than a decade later), we've grown to become a truly global company and a one-stop-shop for the lubricants market. I personally don't have a technical background, but it's my business skills that suppliers and customers seek.

2. What does your work entail and how has your experience been, working in the global lubricants industry as a whole?

My work is very much focused on building long-lasting and sustainable relationships with suppliers and ensuring we're giving our customers the best products at the best value, with logistics and financing as a standard, wherever in the world they are. Working on such a global level, however, has taught me that you cannot duplicate your methods.

Each customer and each market is different and they require a very bespoke solution. It's exciting news for the Shamrock team because we're very much a global team.

We each possess intricate knowledge of our local markets, and of course it helps that between us, we speak 12 languages!

3. What is one key thing you have learnt in your time as a professional in the lubricants industry?

What can I say? It's an amazing industry with amazing people. What I personally love is that it's a fairly small world but very dynamic.

The lubricants industry is evolving very fast with new regulations, new players, new demands. In order to succeed, you need to keep abreast of changes and adapt quickly. This is something Shamrock has been very good at.

4. Shamrock has been operational for over a decade and is now a significant player in the industry. What do you think has contributed to this growing success?

It's again about the ability to adapt quickly to the changing landscape. Shamrock has almost become as dynamic as the market because we have always managed to stay ahead of the curve.

And of course, our services. We are not simply a distributer of base oils; we can also manage the complete supply chain, from planning to operations and develop cost-effective supply chain models.

We organize the transportation of liquid cargo and offer timely and safe delivery, ensuring that our customers' business runs smoothly and without interruption. These factors will always remain the priority for our dedicated and professional team. Overall, our mission is to connect refineries/producers with blenders/manufacturers in a more direct and transparent way.

5. How competitive would you rate the global lubricants industry and what does it take

for a base oil and additives company to find its footing in such an environment?

The global lubricant industry is increasingly competitive. We see many new brands and new plants popping up and so existing marketing players need to find ways to remain relevant in their space. How? Through creative branding, clever costing, strategic market expansion, flexibility and, of course, networking.

6. How do you serve the African market?

We have a very good understanding of the African market – its financial and political instabilities, its logistical constraints and the risks of trade and investment. Our company has been supplying African blenders for more than 10 years and in 15 countries.

Dealing with local customers on a daily basis, at Shamrock we understand not only the potential and power of the market, but also the vulnerability of local business.

With this knowledge and experience we provide bespoke logistics, supply chain management and the most favourable financing options at any stage of the trading process. In-depth market intelligence and excellent service come as standard.

7. Over the last years, there have been many innovations in the lubricants industry. How do you ensure that Shamrock itself and the subsequent African clients especially those that are prime for growth in the sector keep up with these global trends?

It is the job of all Shamrock employees to stay up to date with the latest trends, whether it's by attending conferences, following the industry news or, more importantly, by continuously talking to our partners and customers to develop a deep understanding of their needs.

We use this information to provide our own market intelligence. We provide local market knowledge with global expertise.

8. You have been in the industry long enough to be an expert. There are challenges facing the lube industry, what's that one challenge that continues to clobber the industry and what can be done to address it?

In Africa, there are two major challenges: logistical and financial. In logistical terms, rail and port infrastructure desperately needs upgrading. Landlocked countries require efficient transport links with ports, which at the moment do not exist.

Coastal countries with ports find that they mostly operate at full capacity and experience costly delays due to poor handling, administrative processes and slow clearance.

With regards to financial constraints, in some countries there is a ban on making prepayments, as payments can only be done along with import declaration and related shipping documents.

Most imports are completed through Letters of Credit and blenders rely on local banks with whom they are negotiating credit lines for importation.

African banks also face numerous restrictions in meeting the demand for trade finance, in particular with limited US dollar availability, regulation compliance, and the inability to assess the credit-worthiness of potential borrowers. As we see it, currently Africa faces a funding gap of about $120 billion in trade finance.

Since lubricants blenders mainly rely on the import of base oils and finished lubricants, this is a huge problem. But of course, every problem has a solution and the reason Shamrock has grown to where it is now, is because our customers trust us to help them adapt and compete.

From arranging door-to-door flexitank deliveries, allowing for small volumes and better cashflow optimization, to offering financing solutions at any stage of the supply chain, we really are in the best position to help our customers overcome the challenges faced.

> ***Dealing with local customers on a daily basis, at Shamrock we understand not only the potential and power of the market, but also the vulnerability of local business***

9. What are some of the least explored and untapped opportunities in the African lubricants market?

For me it's not only about exploiting untapped opportunities, but also about finding innovative ways of overcoming existing challenges – like the logistical and financial ones I outlined briefly above.

Customers are suffering because of a lack of infrastructure. That's a fact. There are a number of lubricant blenders located inland and with limited refining capabilities and relying heavily on imports. That's also a fact.

Consequently, one way of overcoming these challenges is the flexitank technology. Flexitanks are a unique, modern, and cost-effective way of delivering liquid goods easier and faster.

Because they're a multimodal form of transportation, they allow for door-to-door delivery, even to landlocked countries and difficult-to-reach destinations.

That means importers can get around the logistical constraints that still plague the continent.

But also, it means they can source the product from virtually anywhere in the world.

Finally, financing solutions are also offered to customers importing by flexitank resulting in real cash benefits, better cash flow and currency fluctuations monitoring.

Ultimately, I don't believe we have to always seek out the new, especially when there is so much innovation that can be done to overcome old challenges.

10. What is your future outlook for Shamrock in Africa?

Of course I want to maintain Shamrock's reputation as a key partner for African lubricant blenders and continue seeing the company expand and flourish in the market. However, it's very important to me to do this in a sustainable way.

Shamrock will continue to uphold the high standards and ethics that will support Africa's growth towards becoming a more developed, trusted and regulated lubricant market player.

As I already mentioned, Africa's potential is huge, and we want to be part of its bright future. ■

COOLING SYSTEM FUNCTIONALITY

Maintaining Cooling Systems

James Wakiru

James is a seasoned industrial engineer with work and research experience in the maintenance and technical marketing field. He can be reached on; james.wakiru@lubesafrica.com

Energy which is the quantitative property that is used to perform work or heat an object is an important aspect in the operation of any asset. The energy is eventually used not only to derive transportation, but also in production where the assets are used for profitable activities. In an engine, on average, 33% of total heat is converted to mechanical energy which can be taken as useful heat energy. Close to 30% is expatriated through exhaust and about 7% into the external environment from engine surfaces. The final approximately 30% is heat that is destructive and should be expelled by the cooling system.

The cooling system's significance is seen by carrying away this destructive energy and further abating failure of the machine or equipment. Heat energy can have detrimental effects to the operation of any machinery or equipment; (a) at elevated temperatures, structural composition of the various components may be affected, leading to failure, (b) the lubricants used may degrade due to oxidation further leading to failure and (c) removal of too much heat would lead to equipment running cold.

In an engine for example, the failures such as cracked cylinder head, piston seizure and cracked cylinder block may be attributed to elevated heat while sludge formation, rugged performance and low atomization hence carbon build up can be attributed to over-cooling.

Due to these challenges, the cooling system of the equipment is tasked to ensure the temperature of the equipment's integral components and lubricating fluid is maintained at the correct and operable level.

However, the cooling system faces more challenges in that the coolant temperature can rise and in some cases boil, where the steam will be released due to high pressure in the system and level of the coolant is reduced that eventually causes overheating.

Similarly, other factors such as type of coolant, concentration of glycol, pressure inside the system and outside in the atmosphere would also cause the coolant to boil either at lower or elevated temperatures.

Four items of importance while addressing the functionality and operability of the cooling system include the coolant in use, type of cooling system, constituent components of the system and finally appropriate maintenance strategies as discussed next.

Coolant:

Most cooling systems utilize coolants either in concentrated or diluted versions. Wrongly formulated coolant and coolant mixtures have the potential of causing challenges such as rusting, where water level is high, hence reacts with oxygen and the metal surface, acidity, scaling, electrolytic corrosion and other effects that impede the functionality of the equipment.

Judicious selection of coolant is significant to ensure an equilibrium state of coolant mixture of glycol, additives necessary and right quality of water.

Cooling systems in use:

Different equipment embraces unique cooling systems that demand different maintenance activities due to their inherent operational and maintenance characteristics.

An example in marine applications, two common cooling systems are used, the first which utilizes sea water directly in the machinery systems via the heat exchangers, while the second is a closed loop addressing the engine and auxiliary equipment in the engine room, which utilizes fresh water.

Such unique characteristics for different equipment must be considered while addressing operations and maintenance of the systems.

Equipment components:

Various components that directly or indirectly interact with the cooling system, will affect the operability and performance of the system, hence their functionality should be maintained with integrity to ensure they do not affect this important system.

The power system should be maintained, correctly insulated and ground connects clean, the relief valves, thermostats, radiator caps should be maintained well and should not be removed from the system.

Maintenance:

The equipment cooling system, like other systems require to be maintained regularly and periodically, where preventive maintenance is recommended for this type of cooling system.

It is worth noting, a well-maintained cooling system could operate at near perfect

How automotive cooling systems work

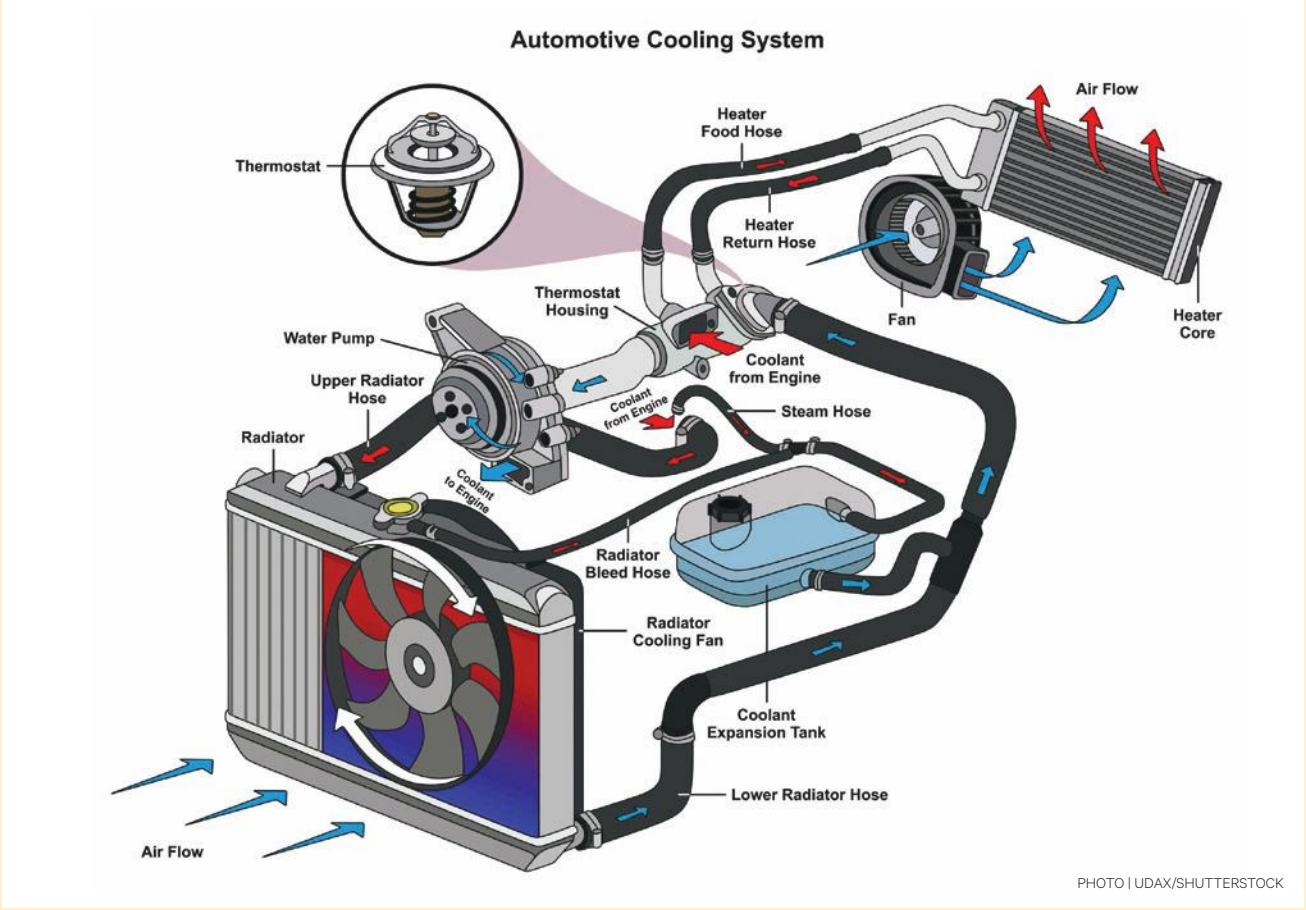


PHOTO | UDAX/SHUTTERSTOCK

state to the end of useful life of the equipment without unplanned downtime due to failure. Most of the systems are designed in a manner that the use of the right high quality and durable coolant coupled with preventive maintenance where coolant draining is done at recommended intervals, the equipment could operate to its full lifecycle time without unplanned downtime.

Periodic inspections with a checklist should be encouraged particularly for critical equipment like engines, gensets, cooling towers and other water-cooled equipment.

The incorporation of testing and diagnostics where predictive maintenance is employed assist in observing trends that reveal patterns offering maintenance decision support to ensure failures are abated and enhancement of life for the system is attained.

Lubricant condition monitoring especially on the engine oils could potentially offer leads for instance; oxidation of the lubricant signifies high temperature operation and further investigations of the cooling system could be advanced, hence both coolant and lubricant analysis complement each other.

One of the known in-service conditions testing for coolants and mixtures is using the pH and the glycol concentration checks. Other significant tests that are of similar importance include conductivity, water hardness and smell/odour.

Other potential coolant tests for acids, contamination, hotspots (using infra-red camera) could be helpful in this regard.

Value addition to the maintenance organization carrying out both preventive maintenance and periodic inspection would include enhancement of other maintenance-related activities and more exposure of operational and maintenance deficiencies that could not only affect the cooling system but have potential to affect the entire systems like the engine.

> ***It is worth noting, a well-maintained cooling system could operate at near perfect state to the end of useful life of the equipment without unplanned downtime due to failure***

Issues such as housekeeping are gaining importance due to blockages of the atmospheric air which affect the cooling system. Coolant analysis offers a complementary aspect for investigation of failures via root cause analysis. The analysis offers the potential to reveal failure causes such as cracked cylinder head, blown cylinder head gasket, blocked cooling system, failed thermostats, hot spots and many others.

Finally, following the original equipment manufacturers(OEM) recommendations can not be over emphasized while involvement of domain experts during the operations and maintenance would ensure your cooling system does not affect your availability by directly or indirectly causing downtime. ■

By Kanyingi Kuria

MARKET OUTLOOK

Price and colour determine who wins the coolant market

The inspection of a car's cooling system is an aspect most motorists tend to ignore and only jump to action when overheating problems occur. Several malpractices are responsible for regular coolant system failure. These include use of plain water, excessive dilution of coolant or use of a poor-quality coolant that is ineffective.

A walk down Nairobi's Kirinyaga road-an area popularly known as Kenya's lubricants capital only revealed more cooling system related problems that mechanics handle on a daily basis. "The most common cooling system problem is overheating of the engine which is caused by a number of factors among them leakages, radiator problems, broken water pumps, blocked hoses, dysfunctional gauge system among other factors", reported Waziri, a middle-aged mechanic who has been operating in the area for close to 10 years now and is well known as a cooling system expert.

Just like any other sector, price plays a big role in coolant selection, sometimes at the expense of quality. We identified two broad price ranges for coolants on Kirinyaga road.

One category of coolants retails at an average price of Ksh250 per litre; which is equivalent of USD 2.47. This category is dominated by brand names such as Tropical coolant and a host of popular imports from the Middle East such as Gulf Max, Aqua among others.

Tropical coolant is a locally manufactured product by Joframic E.A Agencies Ltd. Going by the number of empty containers of this coolant that we found in almost all the garages on Kirinyaga road as well as the number of spare shops stocking the product, this coolant is arguably the most popular coolant brand in Kenya's informal auto service industry.

The other category of coolants retails at an average Ksh400 per litre; which is equivalent of USD 4.00. In this group brands such as Cool elf, Premium coolant , Cooling AF and Max are to be found. These brands are produced by Total, Shell, Kenol Kobil and Valvoline respectively.

According to spare shop dealers and mechanics we spoke to, these brands, although not moving as rapidly as the cheaper grades, they are favoured by motorists who demand quality. "Sometimes the car owner in need of coolant will state the price for what he is willing to spend. There are cases where the car owner is willing to pay more for higher quality and in such cases we automatically recommend the known leading brands'', said Evans- a mechanic who claims to let the driver use only what they can 'afford'.

The colour of coolant seems to be a big determinant of what coolant type to use. "Most motorists are keen on the coolant colour in selection of coolant to use. Colour should not really matter as long as the coolant product is quality" quipped Gitau, another mechanic operating in the area.

The commonly available colours are pink, blue and green coolant colours. Low price category coolants are mostly green and red in colour while the high priced coolants are either blue-green or pink in colour.

Price and colour appear to drive choices on Kirinyaga road. But what about quality? How conversant are mechanics, motorists and distributors aware about coolant quality? It cannot escape one that some of the products being passed off as coolants, are indeed products of questionable quality if not coloured water, and obviously these ride on the back of end-user ignorance.

> ***Most motorists are keen on the coolant colour in selection of coolant to use. Colour should not really matter as long as the coolant product is quality***

Listening to one mechanic explain on how to identify a quality coolant further indicates how much work is required to bridge the knowledge gap. "A coolant that is quality is mediumly dense and even when you touch it's not light while a questionable one is overly light and may almost look like coloured water", advised Evans, a 'skilled mechanic' plying his trade on Kirinyaga road .

The oil marketers in the country rate the knowledge of coolant use among users as dependent on their knowledge or period of interaction with their vehicle and or mechanics. Moreover, they conduct training across the regions they do business.

According to Elvis Kahi, Lubricants Territory Manager at National Oil Corporation of Kenya (NOCK), mechanics are a potent force in the consumer market.

"We are keen on training them in as much as we educate end-users. There is no ignoring that most end-users gain knowledge from mechanics". He went on to state that there are motorists who are technically well informed and as such they insist on using quality coolants.

Ultimately if more could be invested in awareness creation targeting motorists especially using social media channels and mechanics using training workshops, then the quantity and quality of coolant usage would increase.

Some companies such as Unifilters are already doing this in earnest. "We seek to educate car owners to move beyond coolant colour as a determinant of a quality product. Most of the coolants in garages have been diluted with water then a pink, red or green dye is added to deceive the customer", said Sunny Tarandeep, Operations Manager at Unifilters Kenya.

One clear conclusion that one makes is that while the major oil companies dominate the lubricants business of the Kirinyaga road, the coolant market is firmly under the grip of non-oil companies. ■

Check Out OUR NEW WEBSITE!

www.lubezine.com

Subscribe
NOW! to read
the Latest Issue!

Oilibya your **Trusted Lubricant partner** just achieved **ISO 9001:2015 Certification** at the Mombasa Lube Oil Blending Plant

This ISO certificate is awarded by SGS.

SYSTEM CERTIFICATION
ISO 9001:2015 SGS

OiLibya
Feel Africa's Energy