



MARKET REPORT
Libya Oil now rebrands to Ola Energy P.4



IN OTHER WORLDS
Shell launches its ProAcademy tool P.14

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MAIN FEATURE

ADDRESSING LUBRICATION AND MAINTENANCE OF WIND TURBINES



PLUS: TOTAL UK INAUGURATES 'LUBINSTITUTE' COURSE P.12



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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.



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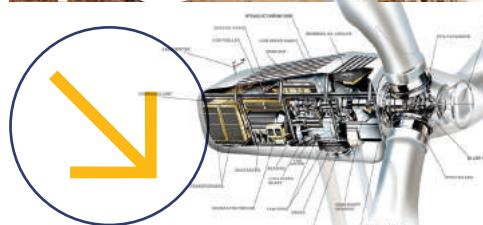
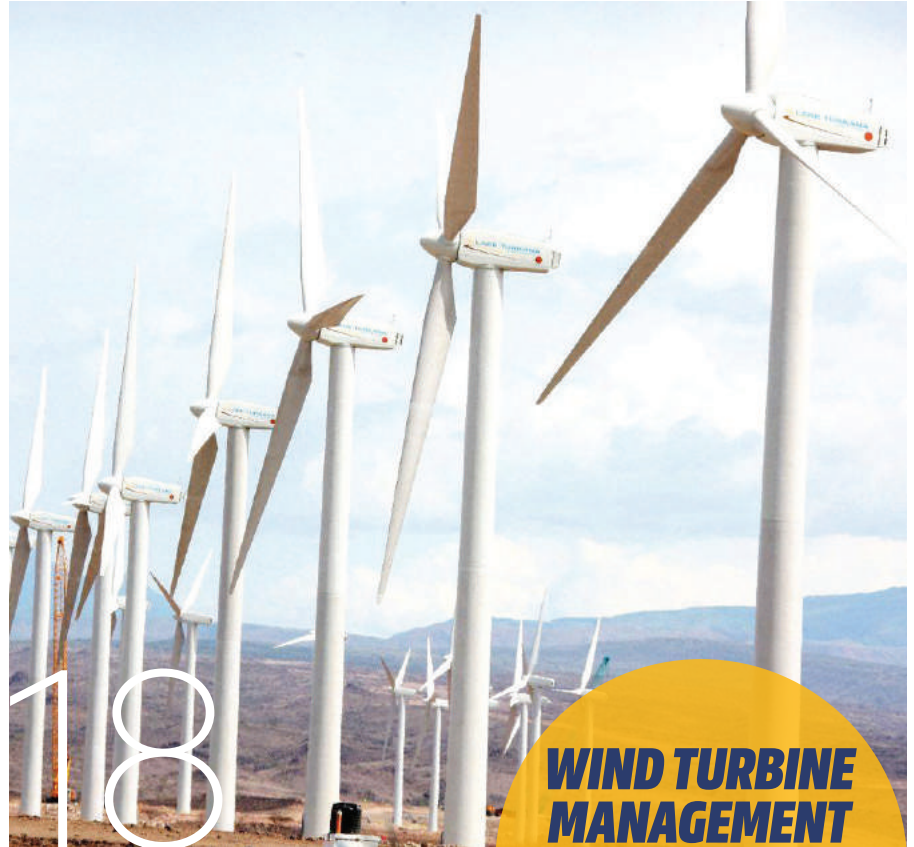
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WIND TURBINE MANAGEMENT

The lubricant used in the gearbox should be able to withstand high thermal stresses while providing high extreme pressure protection simultaneously.

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PROACTIVE MAINTENANCE

Renewable Energy and Lubrication



James Wakiru

Lubezine Magazine
Editor-in-Chief

As we come to close of the year, we must begin by thanking our readers, writers and advertisers for keeping this magazine a relevant source of information for the lubricants industry. We commit to continue informing the industry, even more intensively as we get into 2019 and beyond!

Africa continues to make significant strides in generating power from renewable sources in a bid to address the enormous energy challenge it faces. Among the renewable sources (solar, geothermal and wind), wind power has received marked interest and growth in Africa. Just recently, Kenya commissioned Lake Turkana Wind Power, Africa's largest windfarm with an installed capacity of 300MW.

In this edition, we examine the challenges and solutions for lubrication

and maintenance of wind turbines. For example, wind turbines operate in very remote areas with significant challenges of accessibility and extreme weather conditions. This calls for the use of long drain lubricants such as synthetic based products and application of proactive maintenance techniques notably Lubricant Condition Monitoring (LCM).

Moreover, in our market report, we find good news such as removal of trade tariffs between neighbouring countries of Tanzania and Kenya especially on lubricants business which will go a long way in fostering trade between the two countries. As if taking the cue of this development, Lake Oil Tanzania has officially commissioned its state-of-the-art lubes blending plant in Tanzania as it angles to take a piece of the pie. We also have news of Libya oil rebranding to OLA energy across Africa.

Finally, Polyisobutene (PIB) is one of the most versatile polymers that finds application as a raw material in lubricant additives as well as fuel additives. KEMAT has been supplying PIBs to the EMEA market with presence in over 29 countries. To tell you more about this product we interviewed Simon Mason, the company's Managing Director.

Go on and indulge to much more inside. Enjoy!

Happy new year! ■

_JW



“Wind turbines operate in very remote areas with significant challenges of accessibility and extreme weather conditions which calls for the use of long drain synthetic lubricants and lubricant condition monitoring.”



Publisher:

Lubes Africa Ltd

Editor-in-Chief:

James Wakiru

Assistant Editor

Winnie Were Wanzetse

Design & Layout:

Andrew Muchira
Alex Kamau

Contributors:

James Wakiru
Kanyingi Kuria
Isabella Maua
Chris Johnson
Gilles Van Mol

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

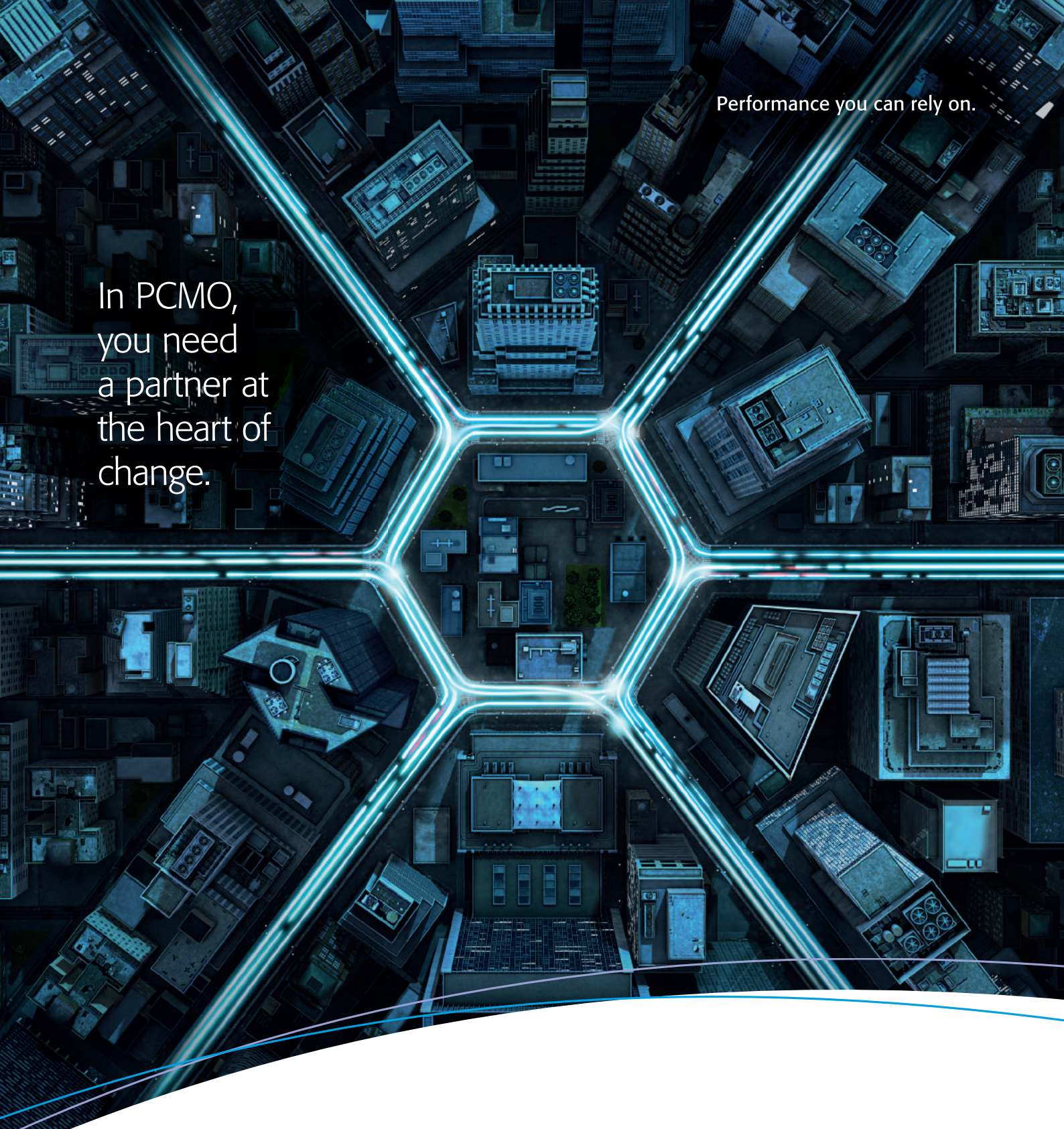
EUROPE, MIDDLE EAST, ASIA

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



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LUBES DIARY: WCX SAE World Congress Experience, Detroit, Michigan, USA | FAQs: What are the lubrication needs for the compressor?



PHOTO | COURTESY

AFRICA

Oil Libya rebrands to OLA Energy

Libya Oil Limited has unveiled a new retail visual identity under the brand OLA Energy. The new brand follows the rebranding of the OilLibya Group to OLA Energy Group.

The new brand will be introduced across the 1100 stations in the Group's 17 countries operating across Africa.

In Kenya, the new brand

rollout will be done in phases across the retail network of 80 stations that will now go by the brand name OLA Energy.

According to the company, the new brand is symbolic of the company's expanding market offering as a modern pan-African energy retailer that seeks to cater to the rapidly changing demands of consumers.



“OLA Energy will allow us to unlock growth opportunities, strengthen our position in new and existing markets, and expand our involvement in the energy sector under a stronger, more modern international brand”

—Libya Oil Holdings CEO, Mazin Ramadan

“This new brand captures the essence of our company as a modern energy player across our footprint in Kenya and Africa; it characterizes our strength and success and expresses the drive and ambition felt throughout our Group in this phase of its evolution,” noted Libya Oil Holdings CEO, Mazin Ramadan.

Ramadan assured that they are committed to working together as one to deliver on the promise of the new brand; by ensuring that their customers always come first.

“OLA Energy will allow us to unlock growth opportunities, strengthen our position in new and existing markets, and expand our involvement in the energy sector under a stronger, more modern international brand,” added Ramadan. ■

KENYA

Rubis set to acquire 75 per cent stake at KenolKobil

French-based company Rubis is set to buy out Kenyan oil marketer, KenolKobil. Rubis Energie has proposed a take-over offer of 75.01 % of issued ordinary shares of KenolKobil as the company delists from Nairobi

Securities Exchange.

Kenol Kobil, which operates in Kenya, Ethiopia, Uganda, Rwanda, Burundi and Zambia, is worth close to \$225 million by market capitalization. Rubis on the other hand has a market value of about \$4.7 billion and

operates in Africa, Europe, Central America and the Caribbean.

KenolKobil has been covering the entire range of petroleum distribution, Aviation fuels, LPG, Lubricants, Bitumen, Commercial and Industrial.

According to statement by Rubis, East Africa has experienced a steady growth in the petroleum distribution segment, driven by demographic development, urbanization and investments in road infrastructure. ■

**Seahorse
Lubricant wins
quality award
in Nigeria**



PHOTO | COURTESY

KENYA

Lukoil Lubricants entry in Kenya

Lukoil Lubricants PSJSC, a Russian publicly traded, vertically integrated Oil and Gas Company with one of its many downstream subsidiaries being Lukoil lubricants is now the new entrant in Kenya's oil market.

The oil company which had its headquarters established in Vantaa, Finland then transferred to Vienna, Austria in February 2014 following the acquisition of OMV lubricants business in Austria has rolled out its products in Kenya having partnered with Fair Deal Energy, a local firm as their sole lubricants distributor.

The company seized the opportunity to venture into Africa by starting at Kenya's capital city, Nairobi.

"This is the beginning of our entrance in Africa and Kenya serves as the key entry for both our petroleum and oil products. We shall be having two service stations in Kenya namely Nairobi and Mombasa," said Hussein Mukarram, FairDeal

Energy Chief Executive while announcing the deal.

Nairobi will now be the hub for Lukoil to venture into the greater East African region since their partnership is anticipated to realize Lukoil Lubricants marketing strategy in the region.

Speaking during the partnership launch in Nairobi in mid-November, Mukarram also said they are not going to price their products like any other lubricants which are still new or coming into the market. "Generally, our price end will be in the same line with Total and Shell; not like the other new entrants in the market," he noted.

Lukoil Global Marine CEO,



Lukoil ventures into Africa with Kenya being its entry point where FairDeal Energy will distribute its lubricants

Victor Zhuravskiy said, "as the 21st-century consumers, governments and industries move towards advanced technology to achieve increased efficiency and reduced emissions, the scope and role of oil manufacturers changes and calls for huge investments in new product developments."

On the other hand, he expressed his optimism in the African market despite fierce competition. He noted that the stiff competition does not scare them instead it makes the business more exciting and better.

"It is a great competition that makes us even more creative and strive to give our customers what they desire," he observed.

Lukoil manufactures more than 40% of all lubricants in Russia. In 2016, the firm produced and marketed 1.2 million tonnes of lubricants.

The company sells over 700 different kinds of oils and greases for the automotive sector, heavy-duty transport, construction and mining, shipping, power generation and general engineering. It has a footprint in 125 countries worldwide. ■

KENYA

KEBS tightens standards for oil importers

The Kenya Bureau of Standards (KEBS) in line with its mandate of imports inspection has warned importers of base oils and lubricants against defying standards set for the said products entry into the country. This comes in the wake of concern raised by stakeholders regarding the quality of some of the products imported into the country.

KEBS stated that imported lubricant products should adhere to the Pre-Export Verification of Conformity (PVoC) route A to be accompanied with a Certificate of Conformity (CoC) and test report. The route A involves testing, inspecting, and issuance of a CoC.

The CoC is a mandatory document for customs clearance and is issued to show compliance.

KEBS also reiterated that all test reports would be verified, sampled and released on meeting the required standards.

The National Environment Management Authority (NEMA) will also be involved in issuing clearance for products made from recycled base oils.

The warning and emphasis on compliance by KEBS are in a bid to curb the increasing entry of sub-standard lubricant products into the country. ■

NIGERIA

Seahorse Lubricant wins quality award in Nigeria



Sea Horse MD, Dr. Ebuka Onunkwo receiving an award from Kenyan High Commissioner to Nigeria Dr Wilfred Machage.

PHOTO | COURTESY

The Institute of Oil and Gas Research and Hydrocarbon Studies, IOGRHS, just recently in Lagos, honoured Sea Horse Industries Limited, with its 2018 Best Manual Transmission oil award, with a charge to the company to maintain its quality.

The award was conferred on the Chairman, Chief Executive Officer of Sea Horse Industries Limited, Mr Ebuka Onunkwo, at the occasion of IOGRHS annual Oil and Gas Product Forum, held at the Sheraton Hotel and Towers, Ikeja, with the theme 'Oil and Gas Product Manufacturing: Prospects, Challenges and Progress'.

The honour according to the organizers was in recognition of the industry's ability to produce local lubricants with good quality, a feat they said was in tandem with the institute's

attempt to develop competent oil and gas professionals that are supporting the rapid technological occurrences in the industry. Receiving the award, an elated Onunkwo, noted that the honour on his company was a call for further dedication, for the good of Nigeria and benefit to humanity.

Dedicating the award to members of his staff, he disclosed that efforts were still on to achieve the target of being the best lubricant industry in Africa before 2028. Noting that the company was presently producing 24 million litres per annual, he, however, expressed hope

» ***"What I am producing in Nigeria today is better regarding quality than what I was importing."***

that it would expand with time.

In an interview with journalists, Onunkwo explained, "The industry has contributed to the nation's economy by way of job creation which has helped to reduce the number of the teeming jobless youths.

According to Onunkwo, the oil is blended locally in Nigeria, in their mega plant in Ozubulu, Anambra state where they have expatriates from Turkey working for them. "What I am producing in Nigeria today is better regarding quality than what I was importing," answered Onunkwo on being asked how Sea Horse managed to pull through in the face of imported lubricants in the country. He added that the presence of the Standard Organisation of Nigeria, SON has helped streamline standards with sub-standard products being tracked. ■

TANZANIA

Tanzania to import Kenyan lubricants duty-free

In June of this year, Tanzania slapped a 25 per cent duty of select goods imported from Kenya which included textiles and lubricants. The move was opposed by the Kenya Association of Manufacturers (KAM) and the Kenya Private Sector Alliance.

According to reports widely circulated in Kenya's media, leaders of both nations were forced to meet in Nairobi in a bid to deal with the stalemate leading to lifting of the imposed duties.

East African Affairs



The terms surrounding the lubricants and textiles trade had been a source of dispute between the two countries

Principal Secretary Susan Koech said

Tanzania had agreed to allow Kenyan textiles and lubricants to access her market duty-free. Further, the Trade Principal Secretary Dr Chris Kiptoo said Kenya and Tanzania had agreed to form a joint trade team to deal with any trade disputes between the two nations.

Trade relations between Nairobi and Dar-es-Salaam have been frosty in the last five years, with Kenya accusing Tanzania of stoking trade disputes by imposing high tariffs on Kenyan goods.

Kenya boasts of several lubricant manufactures with cross border business and lifting of this duties is major boost to them. ■

GHANA

Tema Lube Oil Ghana increases its blending capacity

In the quest to increase its blending capacity, Tema Lube Oil Company Limited (TLOC) a premier lubricant blending company, has constructed two more large tanks on the premises of the company in Tema. The tanks can store up to over 2,840 cubic metres (which is 284 million litres) of base oil at a time, making it one of the biggest tanks not only in the Tema Metropolis but in the whole of Ghana.

Speaking at the launch of the newly constructed tank farm, the Board Chairman of the company, Ing. Kow Abaka Quansah explained that the tanks would ensure regular availability of base oil to facilitate continuous

operations.

The board chairman outlined the company's plans to realign the tanks as part of the company's plant expansion project to be able to store higher grades of base oil to facilitate production of higher grades of lubricants to improve the market share of the company.

He commended the management as well as members of the



Tema's increase in lubricant production makes it the owner of the largest blending tanks in Ghana.



PHOTO | COURTESY

project implementation committee of the company for ensuring a speedy and safe execution of the erection of the tanks.

Lubricants produced by Tema Lube Oil include automotive oils, hydraulic oils, gear oils, industrial oils and marine oil.

The main raw materials used to blend lubricants being imported base oils and proprietary additives are provided by Oil Marketing Companies (OMCs) who constitute shareholders of the company alongside the Social Security and National Insurance Trust (SSNIT). On the other hand, the company also manufactures steel drums for the packaging of the lubricants and other uses. ■

TANZANIA

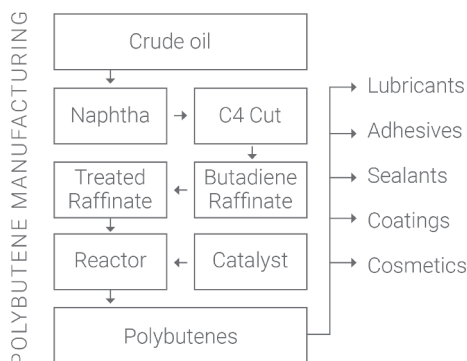
Lake Oil launches lubricants plant

Lake Oil Group has launched its lubricant production plant in Dar es Salaam, Tanzania—a move aimed at tapping into a growing and lucrative market.

Speaking during the launch of the plant, the Executive Director of Lake Oil Group, Mr Ally Awadhi, said the plant has a capacity to produce more than half of lubricant demand in the market.

He said the plant employed 35 local and foreign employees and it is expecting to employ about 250 employees in the future with priority on residents. ■

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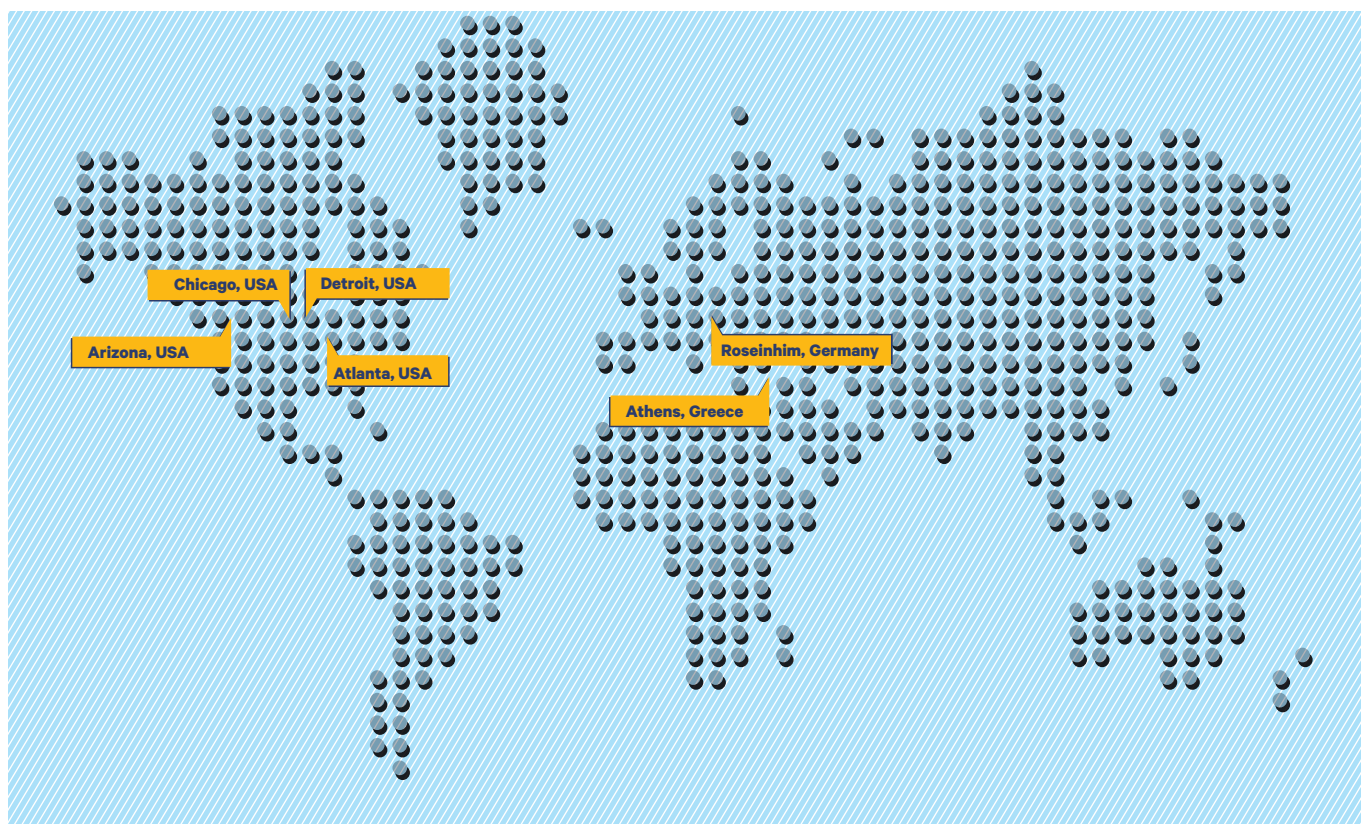
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THE LUBES DIARY



December 9th -13th

ASTM Committee D2 Petroleum Products, Liquid Fuels, and Lubricants

Atlanta, GA
www.astm.org/MEETINGS/

January 22nd -24th

SAE International Powertrains, Fuels & Lubricants Meeting

San Antonio, Texas, USA
www.sae.org/attend/ipfl

January 29th - 31st

OilDoc Conference & Exhibition

Roseinheim, Germany
www.conference.oildoc.com/en/home.html



February 6th -7th

The 3rd Asia, Middle East and Africa (AMEA) Base Oil Conference

Dubai, UAE
<https://www.amea-conferences.com/baseoil/>

February 18th -22nd

ICIS World Base Oils & Lubricants Conference

London, UK
<https://www.icisevents.com/ehome/worldbaseoils/home/>

March 3rd- 5th

Petroleum Packaging Council (PPC) Spring Meeting

Scottsdale Arizona, USA
www.ppcouncil.org/upcoming-meetings.php

March 19th -23rd

STLE 74th Annual Meeting & Exhibition,

Nashville, Tennessee, USA
www.stle.org/annualmeeting

April 9th -11th

WCX SAE World Congress Experience

Detroit, Michigan, USA
www.sae.org/attend

April 11th -13th

ILMA Management Forum

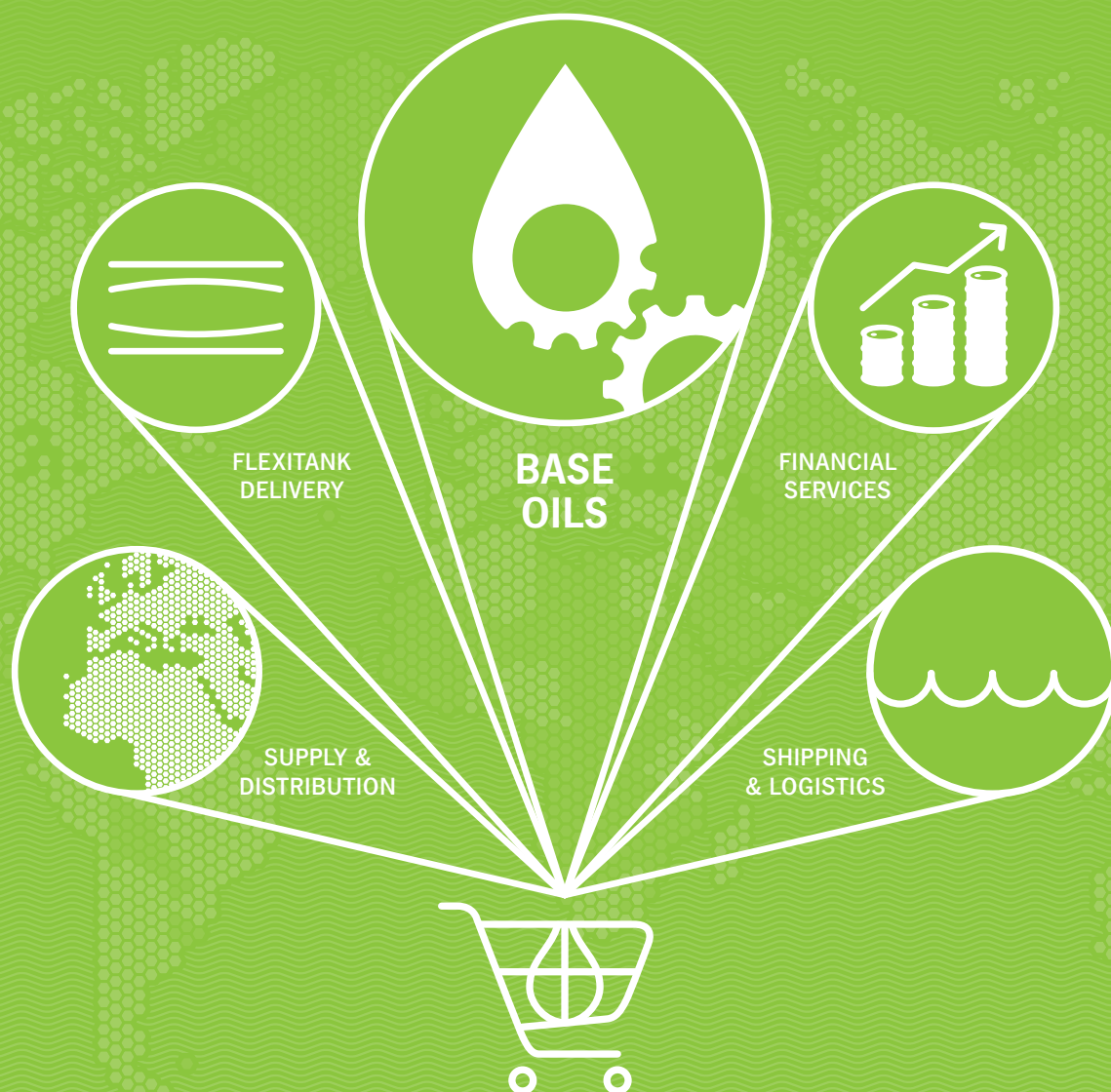
Coronado, CA, USA
[www.ilmag.org/ILMA/Meetings/Meetings.aspx](http://www.ilmag.org/ILMA/Meetings/Meetings/ILMA/Meetings/Meetings.aspx)

April 13th -16th

ELGI 31st Annual General Meeting

Athens, Greece
www.elgi.org

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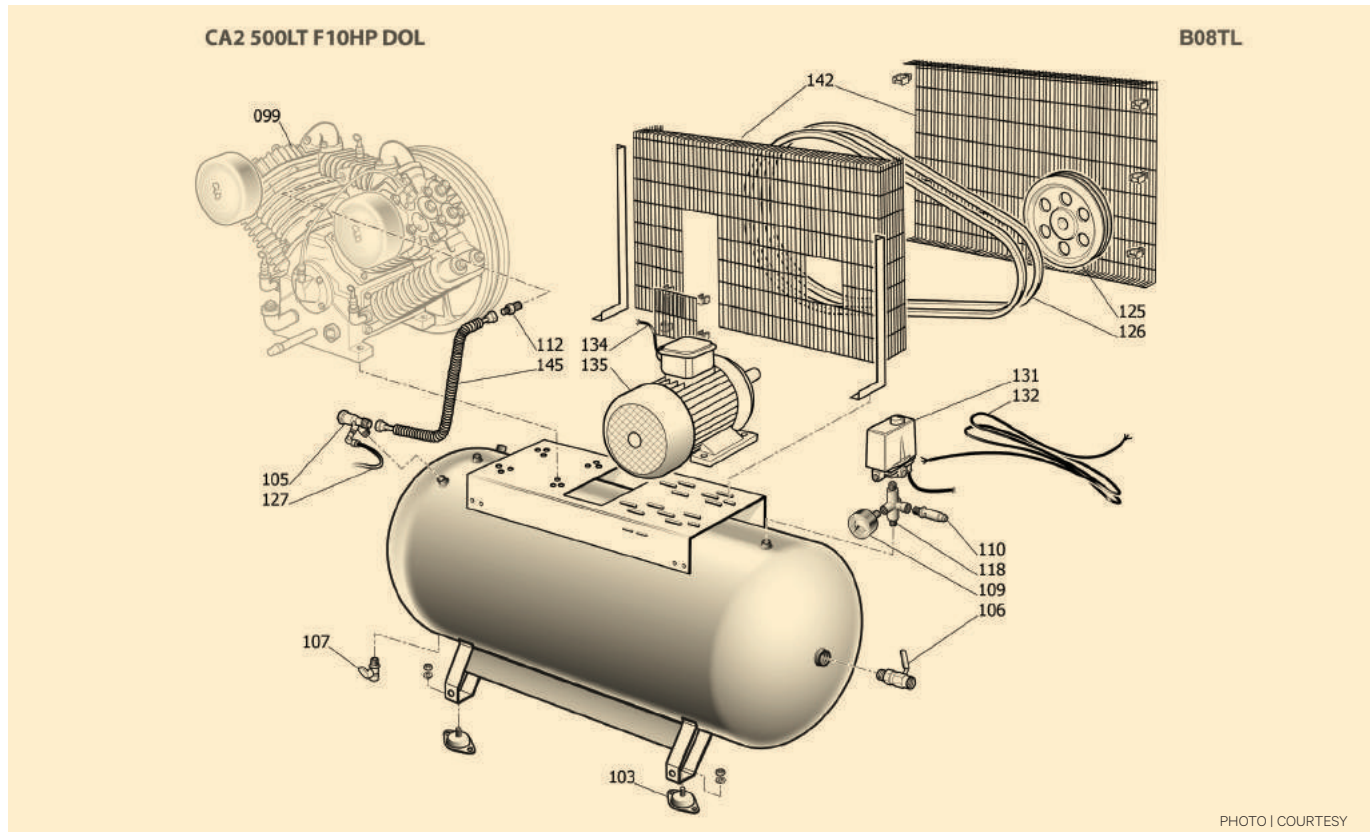
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Air compressors and lubrication

1. Types of compressors
A compressor is a mechanical device that increases the pressure of a gas by reducing its volume. An air compressor is a specific type of gas compressor. Compressors can be classified into 2 broad categories:

- Positive displacement
- Dynamic
- Other types are the Hermetically sealed or semi-hermetic compressors

The positive displacement compressors include: Reciprocating compressors also known as piston compressors, Ionic liquid piston compressor, Rotary screw compressors, Rotary vane compressors.

The Piston compressor basically uses pistons driven by a crankshaft to deliver gases at high pressure. The intake gas enters the suction manifold, then flows into the compression cylinder where it gets compressed by a piston driven in a reciprocating motion via a crankshaft and is then discharged.

2. What are the lubrication needs for the compressor?

Most air compressors need lubrica-

tion to cool, seal or lubricate internal components, and correct lubrication ensures reliable equipment and lower maintenance and operating costs.

However, several factors are to be considered when using lubricants for air compressors such as viscosity requirements.

The lubricant used should have the following benefits for the compressor:

- Non-foaming characteristics.
- Demulsibility properties to effectively separate from water.
- Excellent rust and corrosion protection.
- High oxidation stability to maintain viscosity and long life.
- Filterability without additive depletion.

Lubricants have a vital role to play in sealing, preventing corrosion, preventing wear and protecting internal metal parts.

For instance; Atlas Copco's ALTAIR 150 oil is specifically created to offer sustainable lubricant properties even under demanding operating conditions and in return the compressor becomes durable, cost efficient and sustainable to

all types of environments.

Apart from the basic functions of lubrication and heat absorption, the lubricants prevent corrosion, contamination and premature wear

3. Application of the wrong lubricant brings with its dangers to the compressor.

The wrong lubricant can increase several risks, such as a shortened equipment lifetime, the formation of deposits in the oil circuit and on moving parts, and insufficient lubrication of vital parts like the element.

A non-genuine lubricant may degrade the sealing and can corrode metal parts due to oil oxidation.

Foaming can cause oil carryover, resulting in poor air quality because of oil particles in the system. ■

FAQ Courtesy of Atlas Copco Eastern Africa-Atlas Copco Eastern and Central Africa Ltd, leading dealers in importation, distribution, sales and aftermarket support for the following products: Industrial compressors, Portable Compressors, Generators and Construction tools.

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group II base oils

this is what progress looks like

Non-conformance from 28% to zero

Deojay, a dynamic independent lubricant company in Durban, South Africa, struggled with losses. Non-conformance averaged 28% due to the high variance in quality of imported Group I base oils.

The technical director at Umongo, their additives supplier, recommended that Deojay switch to Chevron Group II across the board.

Today Deojay has zero non-conformance, a 19% growth in sales, and a hydraulic oil recognized as the cleanest in Sub-Saharan Africa!

Let's talk about your business.

We can be reached at Chevronbaseoils.com



Jackie Le Roux
Managing Director
Deojay Petroleum

PARTNERSHIP

Honda and MAK Lubricants partner in engine oil venture



Honda and MAK executives at the launch. PHOTO | COURTESY

Honda Motorcycle & Scooter India Pvt. Ltd. today announced the launch of exclusive co-branded 'MAK Honda Power' Engine Oil in association with MAK Lubricants—a subsidiary of Bharat Petroleum Corporation Ltd.

Branded as 'MAK Honda Power', the oil according to Honda has been tested & recommended by Honda Motor Co. Ltd. Japan. The engine oil

is specially formulated for Honda 2Wheelers vehicles.

The two exclusive grades are 'MAK Honda Power 10W30 MA' for Honda motorcycles and 'MAK Honda Power 10W30 MB' for Honda scooters. The co-branded oil has recently been made available in the open market.

Speaking on the occasion, Mr Pradeep Kumar Pandey, Senior Vice President – Customer Service, Honda Motorcycle & Scooter India Pvt. Ltd. said,

"Customer satisfaction is the core of Honda 2Wheelers India. With the aim of providing quality products & services to our customers, we have joined hands with MAK Lubricants (BPCL) to launch a new product 'MAK Honda Power' Engine Oil". Kumar continued to observe that the



The oil is available under brand name MAK Honda Power

engine oil has been specially developed & recommended by Honda Motor Co. Ltd Japan for Honda 2Wheelers engines. According to Kumar, this strategic step will help them make the engine oil available at all BPCL/MAK lubricants outlets to customers, enhancing their ownership experience.

Speaking during the product launch, Mr V. Anand, Executive Director – Lubes, Bharat Petroleum said, "New co-branded product offering will be made available across the country through BPCL extensive distribution network of Retail outlets and Bazaar channel partners. I wish huge success to this association of Honda & BPCL."

MAK Lubricants from Bharat Petroleum Corporation Ltd. is one of India's leading lubricants Brand. Having worked with Honda R&D, the product is a result of a long-trusted association between the two organizations.

Noteworthy, the growth of lubricants has been driven by the growth of two-wheeler demand in the market. Honda reported having taken a 28% share in the engine oil component market, and this move is aimed to lead Honda's growth further. ■

TRAINING

Total UK inaugurates 'LubInstitute' course

Total Lubricants has launched LubInstitute, a certified training course designed to improve industrial operational efficiency and reduce costs.

The initiative which has been devised and developed in-house by Total aims to help businesses enhance and improve capabilities of employees who are involved in lubricants across all market sectors.

The course will benefit a

range of professionals, including: lubrication and maintenance managers, condition monitoring specialists, operations managers, plant managers and individuals involved in purchasing, stocking and dispensing lubricants.

The tailored and interactive course is delivered by Total Lubricants' technical experts and contains a foundation module focusing on lubricants' composition, application and issues related to their use.

LubInstitute is the brainchild

of Total Lubricants' technical key account manager, Gautier Perrin who has rapidly become an expert in lubricants, winning the 2016 UK Lubricants Association's Young Employee of the Year Award and the 2017 Total Innovation Award.

"The LubInstitute course is aimed at anyone working with lubricants who wants to keep their machinery operating at optimum efficiency while reducing costs and developing best practice," said Perrin adding that

by learning how to choose the appropriate lubricant and how to monitor the health of industrial equipment, LubInstitute will help businesses eradicate costly failures.

To further optimise productivity and efficiency of customers' equipment, Total is seeking to offer a range of value-added services; including ANAC (Analysis Compared) and its oil analysis service that helps identify and prevent engine health issues. ■

Hyundai Thailand and Shell unveil co-branded motor oil



A Shell-branded Hyundai motorcar at a showcase. PHOTO | COURTESY

Hyundai Thailand and Shell Lubricants Thailand announced the launch of Hyundai and Shell Co-Branded Passenger Car Motor Oils. The co-branded motor oils, which are designed to cover all engine types for Hyundai Thailand, are manufactured by Shell and will be exclusively recommended in more than 30 Hyundai workshops nationwide. A similar range of co-branded motor oils is being made available to the Hyundai aftermarket in more than 70 countries around the world.

Shell has been the exclusive recommended lubricants supplier to Hyundai Motor Company's aftermarket network globally since the collaboration began back in 2005. Veethara Trakulboon, Executive Director – Lubricants Business, The Shell Company of Thailand Limited, said, "Shell has been innovating for more than a century to produce energy products in more efficient, reliable and sustainable ways. As a result of our efforts,

we are pleased to offer motorists worldwide many advanced technologies, including Shell's gas-to-liquids (GTL) technology that converts natural gas into the main component of motor oils."

The GTL technology, available in Hyundai and Shell Co-Branded Passenger Car Motor Oils, will help enhance fuel economy, enable better engine cleanliness, and support Shell's more and cleaner energy ambition—according to Veethara.

"These offerings from Shell to Hyundai customers will allow us to create value for both parties through deeper collaboration – whether in products and aftermarket support. By leveraging the strengths of our two global brands, we aspire to offer Hyundai customers the best

aftermarket care and experience," added Veethara.

The collaboration covers a full range of Hyundai-Shell Helix products including the latest Shell Helix Ultra with PurePlus Technology. The Hyundai Co-Branded motor oils are also available in key Asia-Pacific markets such as China, India, Indonesia and Malaysia.

The two players have also announced that they will also be sold in most key European markets, as well as in Brazil.

According to Toshihide Ano, President of Hyundai Motor (Thailand), the launch supports the needs of their aftermarket supply chain and also lays the groundwork for new technical collaborations and joint marketing initiatives.

Moreover, Shell and Hyundai are also collaborating on the race track. Shell and Hyundai Motorsport have announced a three-year extension of their technical partnership in the FIA World Rally Championships (WRC) as the co-title sponsor. ■

A similar range of co-branded motor oils is being made available to the Hyundai aftermarket around the world

Tata Motors and Gulf Oil launch co-branded lubricants

Tata Motors and Gulf Oil Lubricants India Limited (GOLIL), have signed an agreement to launch a range of co-branded lubricants for its Indian passenger vehicle segment. The companies will be selling co-branded Tata Motors Genuine Oil in the high street bazaar market under this partnership.

According to Mr. Mayank Pareek - President, Passenger Vehicle Business Unit, Tata Motors they have always worked towards creating a delightful experience for their customers through various aftersales products & services.

"With the strength of GOLIL and our commitment to provide customers with best lubricant technology expertise and support in the competitive market, we are happy to announce this new relationship. We guarantee our customers will receive the finest quality of product and best performance out of their engines."

"We are extremely honoured to partner with Tata motors as this will give us an excellent opportunity to leverage our brand and other strengths for the passenger vehicles segment. It will furthermore leverage our extensive distribution network for our customers," said Ravi Chawla, MD, Gulf Oil. The products launched under this range would cover the entire gamut of requirements by the company, which would also include: engine oil, gear oil, coolant and brake oil. ■

TRAINING

Shell launches web-based training tool

Shell has launched Shell ProAcademy, a web-based training tool to help fleet managers educate and train technicians on the importance of proper grease and lubricant programs.

“Properly managing and maintaining a lubricant program can be one of the biggest challenges for fleet managers,” said John Walters, global fleet sector marketing manager for Shell Lubricants. “Only a minority of fleets truly understand how their fleet lube programs impact their bottom line. We are partnering to educate and be a part of the solution and fix problems that lead to unplanned downtime.”

Shell ProAcademy offers five training modules that are accessible on both desktop and mobile platforms. Core module topics include maintenance, lubrication products & applications, safety, fuel economy and management. Shell customers



PHOTO | COURTESY

who register get immediate access to all five modules and non-customers get access to two modules and can talk to a Shell representative to unlock the others.

“At its heart, [Shell ProAcademy] is about changing behaviours that contribute to a technician being able to

improve skills and performance and lower the total cost of operation for the fleet,” said Walters.

According to a recent Shell survey of its customers, fleets who reported having more lubricant-related training also reported less downtime than the rest of the survey

participants. Overall, 89 per cent of respondents reported unexpected downtime, and more than half said lubrication misuse or misapplication was a contributing factor, and 75 per cent of respondents didn’t know the extent of contaminants’ effects on maintenance costs. ■

CAPACITY EXPANSION

BP downstream expansion in China

British Petroleum (BP) has started the construction of a new lubricant blending plant in northern China’s port city of Tianjin, in line with an announcement made towards the end of the year 2017. With an investment of 1.5 billion yuan (\$214 million), the project is BP’s largest investment on a single lubricant blending plant globally, the company said. The plant will specialize in producing grease and diverse kinds of lubricants for

automobile, manufacturing, navigation and aviation. It will be put into operation by the end of 2021, with an estimated annual output of 200,000 tonnes.

Covering 150,000 square meters, the projected plant will be in the Nangang industrial area in Tianjin’s Binhai New Area. “We have full confidence in the development of Binhai New Area and will further enhance cooperation with the local authorities to achieve a win-win outcome,”



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» **\$214m**
At a cost of 1.5 billion yuan (\$214 million), the project is BP’s largest investment on a single lubricant blending plant globally

said Yang Xiaoping, president of BP China.

The plant, upon completion, brings to three the number of lubricant plants owned by BP in China. ■

ENOC Group expands its marine lubricant footprint to Europe



ENOC's stand at a past exhibition. PHOTO | COURTESY

ENOC Group signed an agreement with BALUCO GmbH, an international marine bunkers and lubricants consulting company, BALUCO, at SMM Hamburg, the leading maritime trade fair.

Through this agreement, BALUCO becomes a key distributor of ENOC's marine lubricants in Germany, The Netherlands and Belgium, boosting the Group's lubricants presence in the three fast-growing European markets.

His Excellency Saif Humaid Al Falasi, Group CEO, ENOC, said: "Over the decades, we have established a strong presence across local and international markets for our lubricants business. Today, ENOC's global marine

lubricants operations span across key European markets, enabling us to offer our customers a diverse portfolio of lubricants and greases across commercial, industrial and marine applications."

"Our agreement with BALUCO is an added milestone to our continued growth, and we reiterate our strategy of expanding best-in-class services to customers overseas, which will contribute to the overall growth of the international maritime

and shipping sector."

The Group's marine products have already established a strong presence across the African markets, covering some of the continent's key ports in Angola, Ghana, Kenya, Djibouti, Mauritania and South Africa. The new agreement sees an additional operation across 17 new ports and three new countries, all in Europe, in addition to its existing operations of supplying marine lubricants to a network of more than 120 ports across the world.

ENOC extensive portfolio of application-based lubricants includes STRATA marine lubricants. In addition to supplying lubricants, ENOC provides technical support services to the international marine industry. ■



The new agreement sees an additional operation across 17 new ports and three new countries, all in Europe



Wilhelmsen to distribute Klüber marine oils

Klüber Lubrication and Wilhelmsen Ships Service have signed a close distribution partnership, with Wilhelmsen becoming a global partner for marine lubricants of Klüber Lubrication. With the deal Wilhelmsen will strengthen its existing product portfolio in a key area, adding high-performance speciality lubricants to its global offering.

"We always had an eye on each other since we both met at the last maritime industry's exhibition, SMM. With mutual admiration we observed the successes and outstanding performances which both parties brought to the market with passion and dedication", said Dieter Becker, Head of Global Business Teams at Klüber Lubrication.



"Joining forces with Klüber enables us for the first time to offer customers market leading lubricants and a wealth of in-depth product specific expertise."



The partnership will see both parties combining quality products, innovation, and dedication to developing environmental and sustainable solutions offered

by Klüber Lubrication with Wilhelmsen's vast distribution network,

Kjell Andre Engen, EVP Marine Products stated, "Joining forces with Klüber enables us for the first time to offer customers market leading lubricants and a wealth of in-depth product specific expertise. A key area previously missing in our portfolio, we are thrilled to also now be able to provide customers lubricants and the world's most sophisticated ones for that matter, through our unrivalled global network". ■

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Addressing lubrication and maintenance of wind turbines

By James Wakiru

According to reports published by World Wind Energy Association (WWEA) and Global Wind Energy Council (GWEC), the overall capacity of all wind turbines installed worldwide by the end of 2017 reached over 539,000 MW, with Asia leading while Africa and the Middle East has just below 5,000 MW. Wind power installation has continued to increase in various regions and countries, such as Denmark whose Wind power contributes to over 43% of the country's power share. Other countries where wind power significantly contributes to the power mix include Germany, Ireland, Portugal, Spain, Sweden and Uruguay.

In Africa, installed wind power capacity in 2016 closed at just over 4.4GW, and saw minimal new capacity enter operations in 2017. South Africa was the only African country to commission wind power projects in 2017, adding about 0.6 GW for a total of 2.1 GW. However, Kenya's Lake Turkana wind farm (300 MW), was connected to the grid this year 2018, and primed as the largest wind farm project in Africa, while Morocco's Khalladi wind farm (120MW), is expected to be connected by the end of 2018. Additionally, 140 African wind farms are in various stages of preparation, totalling over 20 GW of new capacity expected to become operational between by 2020¹.

The significant increase in the reliance of wind power as a source of energy globally and as being experienced in Africa, can be attributed to several factors such as significant policy and regulatory changes introduced by countries to drive increased reliance on renewable energy. Wind energy is a clean source of energy with unlimited supply, whose generation costs have dramatically decreased over the last 25 years due to increased technological innovations. Furthermore, wind energy is less expensive

than existing fossil power in a small but growing number of markets. Increased deployment of wind energy has also been driven by wind energy's cost-competitiveness, its potential environmental and other benefits.

Rapidly falling prices for wind power, both onshore and offshore, have made it the least-cost option for new power generating capacity in a large and growing number of countries.

However, wind energy is expensive to install and connect to the power grid due to various factors such as remote location accessibility and networking, while it requires comprehensive maintenance to ensure it operates with minimal interruptions in the indeterministic operational environment.

The wind turbine, made up of different components, primarily utilizes the wind's energy to drive a generator and hence produce electricity. The tower raises and holds the turbine's assembly above the ground, while the blades spin in the wind to drive the turbine generator. The blade and the hub constitute the rotor, which attaches to the nacelle which is placed on top of the

tower. The two-fold purposes of the Nacelle are first to provide a pivot considering the shifting wind (kept pointing the wind by the yaw drive) and secondly with a cover for protection, the nacelle houses the gearbox, generator, controller and brake.

A disc brake is employed to stop the rotor while the generator is driven to produce electricity. The controller both protects the turbine from wear and adjusts the turbine to optimize power generation at different wind conditions. Finally, the gears connect the low-speed to the high-speed shaft to increase rotational speeds while coupled to the generator.

Many field-operating failures are a consequence of the mentioned components failure. This type of failure is believed to be directly related to inadequate lubrication and lack of routine or scheduled maintenance. However, maintenance and lubrication of wind turbines face various challenges that require to be addressed to ensure the wind turbine's functionality and operability.

- **Accessibility:** Most wind farms are located in remote areas that are not easily accessible for instance deserts and



PHOTO | COURTESY

arid areas. Due to an increasing trend of offshore wind turbine applications, the accessibility of the WT for maintenance is becoming complex. Moreover, maintenance personnel are faced with the challenge of working while high up in the air retaining safety risks as well.

- **Adverse operating conditions:** WT applications are widespread which reflect operating conditions characterized by high to low-temperature conditions and dry to wet environments. The disruptive environmental condition introduces lubrication challenges for instance ingress of salty water (offshore applications) and dust (arid locations) which could drive abrasive wear and contaminate the lubricant in-service hence compromising the reliability of the components considering wear and fatigue failures introduced. Ingression of water drives the selection of hydrolytically stable lubricants, while routine inspection and maintenance could address contamination.
- **Different lubricants:** The wind turbine lubrication points are diverse, each requiring a different type of lubricant

due to their unique operations and lubrication requirements. These points include the gearbox, generator bearings, blade bearings, main shaft bearing, yaw drive and the hydraulic system of the disk brake. The need for different lubricant types exposes the maintenance activities to increased inventory management challenges and risks such as cross-contamination.

- **Variable operating conditions:** Different components of the wind turbine are exposed to unique conditions when compared to each other, which causes extreme torques, pressures which sometimes counter each other or resonate together when they interact. Massive Gears are often required to not only connect low-speed shaft to high-speed shaft but also to increase the rotational speeds to surpass the thresholds required to generate electricity. This increases the ingoing torque significantly. On the other hand, offshore installations encounter rough seas and disjointed wind patterns that eventually retain a challenge to the turbine operations and efficiency. When the winds are light, the lubricant film

breakdown can be experienced due to high load and low-speed conditions exerted, while the bearings are required to carry lower loads but at higher speeds during high winds. The diverse operating conditions place varied demands on both the gearbox and bearings which ultimately affects their performance at different operating conditions.

- **The significant cost of maintenance:**

Any planned or unplanned maintenance of the wind turbines is a costly activity, firstly, due to a remote location, for instance, accessing the desert or mountain locations. Secondly, offshore wind farms demand the use of often chartered helicopters or boats, while for inland turbines, rental speciality cranes are employed significantly increasing the maintenance costs derived from logistics and support. Furthermore, spares, lubricants and other maintenance-related components for wind turbines are costly due to the reliability demand while in use.

Both planned and unplanned maintenance incorporating Lubricant condition monitoring (LCM) are applied separately and sometimes together while addressing WT maintenance. Planned maintenance mitigates the time-consuming unplanned maintenance and eventually renews the components to improve the turbine's availability and reliability. However, due to the unique operational and locational challenges the wind turbines face, proactive maintenance while utilizing LCM is essential. The proactive prediction of the remaining useful life (RUL) of the lubricant and the components of the wind turbine is vital to mitigate unplanned maintenance caused by component failures. This is accurately implemented using the online monitoring of both the lubricant and components conditions.

The highly popular corrective maintenance strategy, which could apply to test and measuring various lubricant parameters such as viscosity could be utilized for root cause analysis. Various lubricant parameters need to be routinely and frequently checked to confirm the lubricant condition is satisfactory. Monitoring the water levels, viscosity changes, oxidation, wear metals such as silicon and lubricant cleanliness offers insights on the condition of the lubricant and the contamination levels. This

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can be performed using either conventional (first line tests) or advanced (investigative and classification) statistical approaches as also corroborated in the various reviews² as diagnostic and prognostic in nature. Despite the advantages of online LCM, it remains expensive and can not detect failures outside the components like gearboxes, hence offline LCM is employed concurrently.

The use of hybrid condition monitoring approaches³ is viewed as an optimal maintenance strategy that harnesses the synergy and different timing of fault detection unique to each approach. For early detection, ultrasonic, vibration, oil analysis, while for later timing thermography and visual inspection approaches can be employed.

Rationalization of the different lubricants used in wind turbines necessitates the need for highly adaptive lubricant. The lubricant for instance used in the gearbox should be able to withstand high thermal stresses while providing high extreme pressure protection simultaneously. Similarly, the lubricant design should address wear of both the bearing and cages, environmentally induced corrosive micro-pitting and or hydrolysis³.

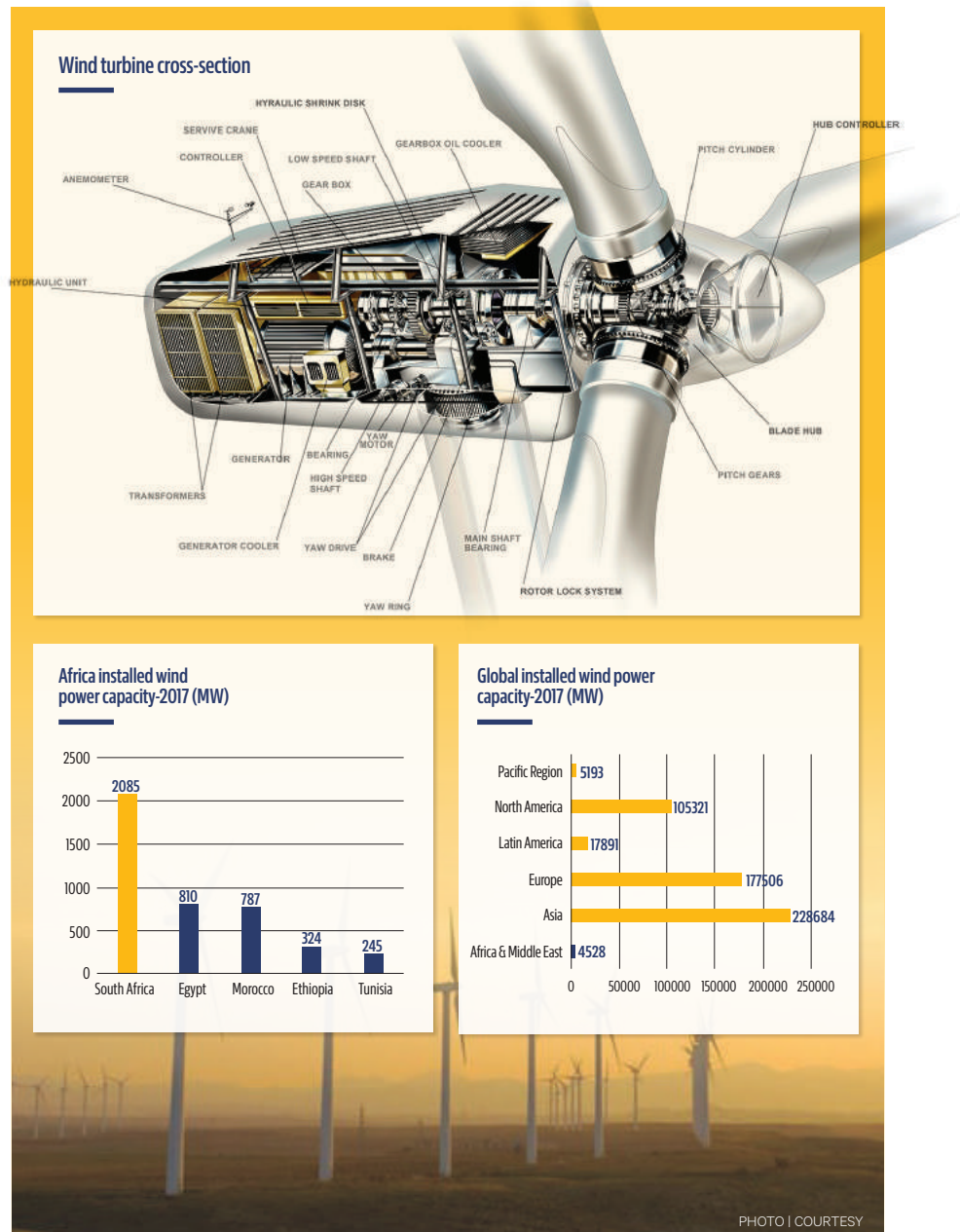
Improved maintenance processes and procedures, address not only the lubricants draining and charging during preventive maintenance (PM) activities, but also the sampling, testing and analysis of the lubricant samples. Identifying the critical lubricant parameters is vital and should be addressed by the OEM and turbine operator corroboratively.

Well documented and followed sampling, sample handling and processing procedures should be adhered to ensure sample integrity, which if compromised, the test analysis results offer sub-optimal decision support.

To address the challenge of the location of the WT, specifically offshore applications, the development of biodegradable lubricants that will not adversely affect the water systems come in handy.

The use of long drain lubricants such as synthetic based similarly addresses not only the challenge of extended preventive maintenance, but also extreme conditions applications demanding high performance and reliability, while the introduction of new generation lubricants ultimately extends the PM intervals.

However, the tradeoff between the drain



interval and the equipment reliability require to be approached cautiously and considered while deriving the optimal preventive maintenance schedule interval.

Due to the accessibility and maintenance scheduling challenges, opportunistic maintenance constituting lubrication and repair/replacement of components not causing a stoppage, by taking advantage of stoppages caused by other factors, becomes a strategic policy while dealing with Wind turbines.

Lastly, the collaboration of the stakeholders, in this case the various wind turbine builders (complete or components level), the lubrication companies, researchers and the end users, will undoubtedly develop important solutions to the lubrication and maintenance of wind turbines.

Such collaborations already exist, for

instance, research for multipurpose lubricants to enhance rationalization of lubricants employed in the WT lubrication and maintenance. ■

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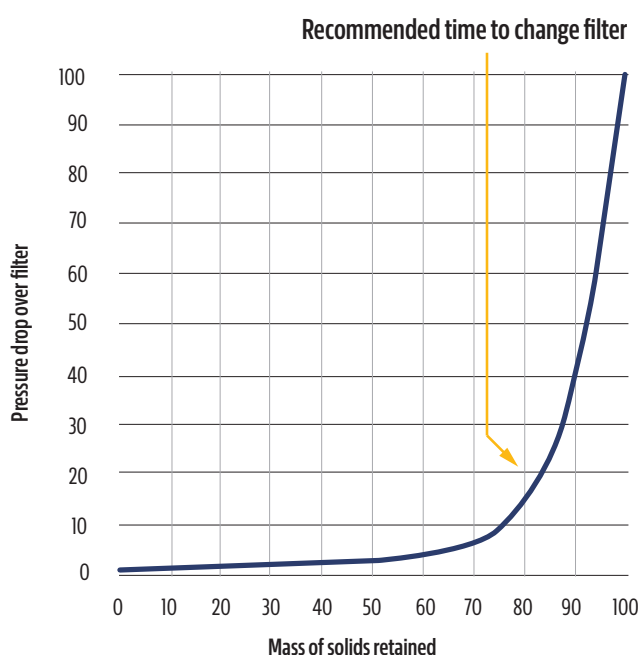
MAINTENANCE

Lubricant filtration – the basics



**Gilles
Van Mol**

Gilles Van Mol, born in Belgium, graduated as a Master in electro-mechanical engineering. Since then specializes in industrial oil management. Gilles founded OilSense in 2013 and works as an independent consultant and worldwide training specialist. He holds all the certifications that are awarded to the International Council for Machinery Lubrication.



'If it ain't broke, don't fix it'. This maintenance strategy is definitely a thing of the past. Better and above all, cheaper is 'proactive machine maintenance'. A maintenance strategy with oil filtration as the protagonist.

When it comes to maintenance of the oil-containing machine, a lot has already been told about terms such as 'oil management' and 'proactive'. The theory is already promising: through proactive management, maintenance costs on industrial oil machines are significantly reduced, and thousands of litres of annual oil changes can be postponed for a longer period of time. This must be good news for business managers and still... a vast majority of oil machine shutdowns are due to contamination in the oil and more than 8 out of 10 cases, the oil in an installation is unnecessarily renewed.

Despite the fact that the importance of

proper oil filtration has been amply demonstrated, this will be the first to make cuts, when the maintenance cost of a machine becomes too high, as it doesn't add value to the system, regarding pure production.

However, an investment in oil filtration is a profitable investment with a high return on investment.

Hard contaminations continuously multiply in hydraulic systems. They flow under



Contaminants enter the oil circuit from outside through poor sealing and from normal and abnormal surface wear on internal machine parts.

high pressure and at high speed through pumps, bearings, valves and cylinders and they 'sandblast' these components. The smallest particles with a size equal to or slightly larger than the critical dynamic clearances are the most dangerous. After all, they can bridge the narrow tolerances and thus cause wear on one or both surfaces.

These particles enter the oil circuit from outside through poor sealing, but they can also be created by normal and abnormal surface wear on internal machine parts. The more wear particles in the oil, the faster new surface wear will be generated.

According to the Massachusetts Institute of Technology professor emeritus and luminary tribologist Ernest Rabinowicz, surface degradation is the most important cause why machines lose their usefulness¹.

It may be clear that particle contamination is undesirable in the oil. Filtering these harmful particles out of the oil is not that simple, as sometimes, they are very small. Particles with a size of only a few microns may already be larger than the thickness of the oil film and may thus damage the internal surfaces of the machine parts. Particles smaller than 40 microns can not be seen with the eye.

Your machine can, therefore, suffer serious damage due to wear particles, so small that we can't even observe them!²

An ideal particle filter offers minimal resistance to the oil flow and maximum resistance to the small and large contaminated particles in it.

Under normal conditions, the percentage of dirt particles that is retained depends on the size of the particles, the filter efficiency of the medium and the quality of the filter as a whole (internal leaks). Particles are mechanically collected in the filter surface or constrictions in the capillary channels by a process called absorption.

An oil filter medium generally consists of millions of small pores of different sizes that are formed by the fibres of the medium. A widely used oil filter medium is made up of several layers of glass fibre.

When the surface of the filter element starts to become saturated with dirt particles, less openings remain where the liquid can

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flow through. The pressure to get the same flow of oil through those remaining gaps increases. In the first instance, the differential pressure ΔP on the element will only slightly increase, as there is an abundance of openings in the surface of the filter element. The blockage of openings through the dirt particles therefore initially results in little pressure loss. It is after a while that the further blockage of the openings will drastically reduce the number of free gaps still open. It is on that moment that the pressure difference ΔP will increase exponentially, and the filter element needs to be replaced.

Filter elements can be built up in different ways. Here, we discuss an obvious model.

- a. In most cases, there is a kind of skeleton, a supporting part. This has the function to hold the actual filtering material in place in case of flow fluctuations and pressure differences.
- b. Construction of the media filter: each layer of materials fulfils as a specific function. All layers together must then be able to form an optimum balance in filter efficiency, maximum dirt retaining capacity, low-pressure drop, etc. The fact the filter material is pleated in this figure (and in most cases) is intended to increase the filter surface.

To check whether the filter effectively removes the dirt particles from the oil, it's important how the particle contamination in the oil is quantified. An important method is ISO 4406:1999, Method for coding the level of contamination by solid particles.

The particle counting here is cumulative, i.e. particles $> 4 \mu\text{m(c)}$, particles $> 6 \mu\text{m(c)}$, and particles $> 14 \mu\text{m(c)}$. It usually happens by using automatic particle counters based on the light blockage principle.

The results are assigned to a specific reference.

An ISO 4406:1999 class 17/13/11 means that in 1 ml of the oil sample to be examined, the following has been found:

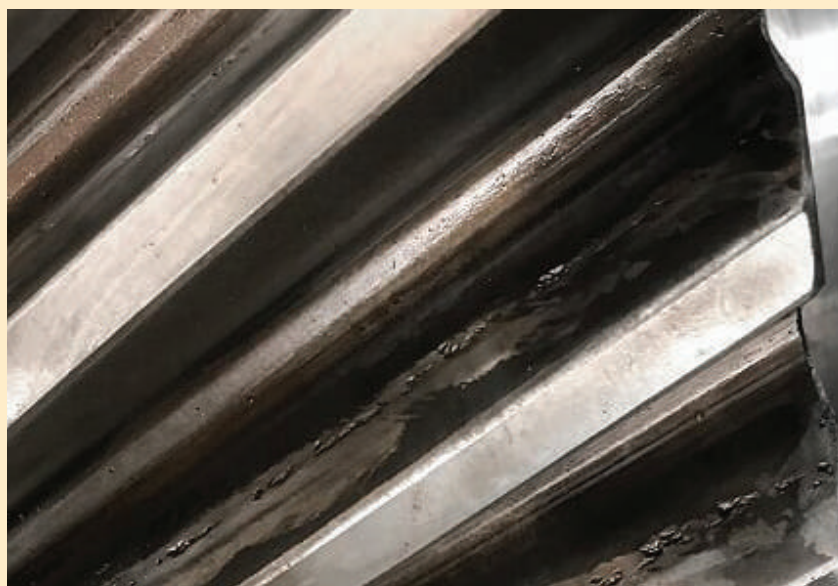
- 640 – 1.300 particles $> 4 \mu\text{m(c)}$
- 40 – 80 particles $> 6 \mu\text{m(c)}$
- 10 – 20 particles $> 14 \mu\text{m(c)}$

References

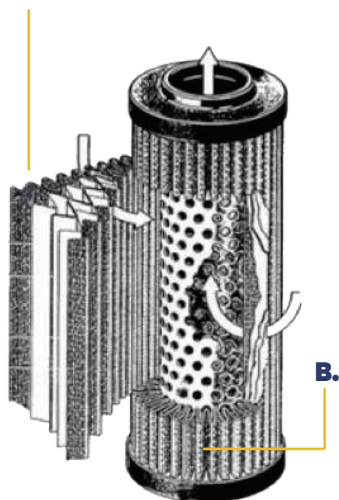
1. *How and Why Machines Wear Out*, Jim Fitch, Noria Corporation
2. *Managing Fuel Supply Chain Cleanliness*, Christian Bauer, PhD
3. Picture: <http://www.synlube.com/oilfilters.htm>

Surface damage of gears caused by particle contamination in the lubricating oil

PHOTO | COURTESY



A.

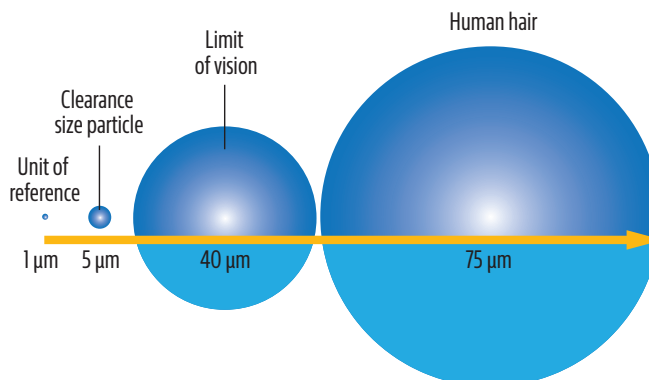


B.

Filter elements can be built up in different ways. Here, we discuss an obvious model.

- a. In most cases, there is a kind of skeleton, a supporting part. This has the function to hold the actual filtering material in place in case of flow fluctuations and pressure differences.
- b. Construction of the media filter: each layer of materials fulfils as a specific function. All layers together must then be able to form an optimum balance in filter efficiency, maximum dirt retaining capacity, low-pressure drop, etc. The fact the filter material is pleated in this figure (and in most cases) is intended to increase the filter surface.

Size comparison of clearance size particle



“You cannot manage what you do not measure”

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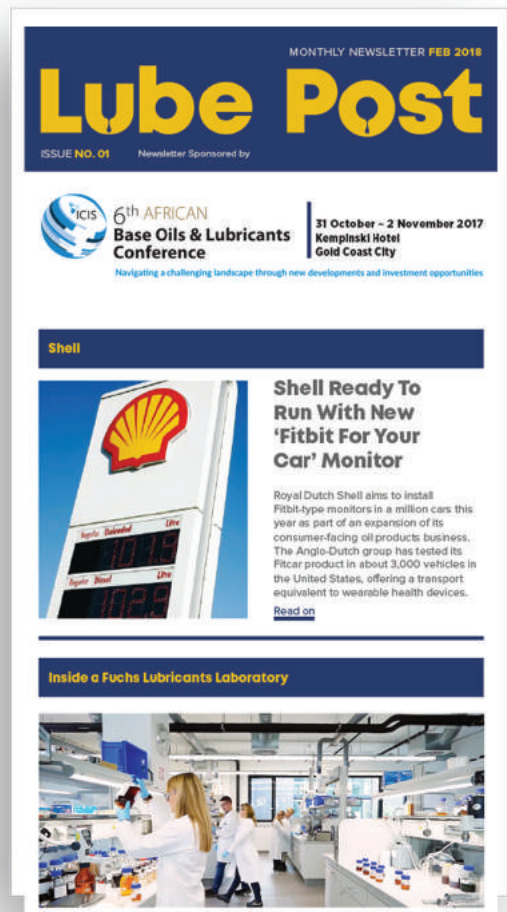
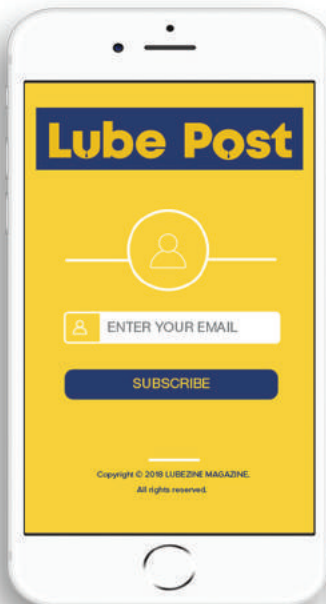
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10 QUESTIONS

FOR LUBRICANTS PROFESSIONALS



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Supplying PIBs to EMEA Region

Simon Mason, Managing Director KEMAT Polybutenes previously served as EMEA Managing Director of the Security Solutions division of Verizon, where he was responsible for leading the organization's security professionals and overall Go-to-Marketing Strategy globally. In addition to several leadership roles at Cybertrust, he also held positions at Ubizen and consulting firms at Kearney and EDS. He is now the Managing Director at KEMAT, the largest independent distributor of Polyisobutylenes and related products in the EMEA region. Using his strong background in corporate management and commercial optimization, he critically screened the business model and is now growing and developing the business, taking it to the next level.

1. KEMAT has been in existence for the past 30 years. Give us a brief history of the company, products it distributes as well as geographical coverage.

KEMAT is a privately held company which was founded in 1989. It is the largest independent supplier of Polyisobutylenes throughout Europe, Middle East and Africa (EMEA) with a global reach. In addition to PIBs, our portfolio includes PAOs, molybdenum disulphide (MoS₂) and 12-hydroxistearic acid (12-HSA), Natural Oils, and Fuel Additives.

KEMAT's unparalleled experience and insights in polybutene markets and applications, together with their 30 years of building strong supplier relationships, have been the foundations on which we have built active sales in 29 countries across the EMEA region and further afield. We continue with our business expansion plans by developing new products, plus we now offer a wide range of services.

2. What factors have contributed to the success of your company?

Our experienced team of highly qualified people from commercial and technical backgrounds; each one with specialist knowledge in their own fields, dynamically unite and blend together to create team chemistry where good relationships flourish in a family environment and a welcoming and pleasant working atmosphere. We all work hard.

We are innovative and pay attention to trends to ensure that we offer real value as well as the best products and services available on the market.

3. Which products do you offer to the lubricants and grease industry?

The lubricant oils and greases industry has been a key market for KEMAT from day one in its 30-year successful history.

Within the EMEA region we offer the broadest portfolio of low molecular weight conventional polybutenes (LM C PIB), spanning molecular weights from 270 up to 4.200 with viscosities ranging from 2 up to 14.000 centistokes (measured at 100°C). These products are well known under the

established brandname Polybut. Over the years KEMAT added complementary products to its portfolio in its ambition to better serve the lubricant industry and our ever-growing customer base.

Polyalphaolefins (PAO) and metallocene polyalphaolefins (mPAO), followed by natural oils, molybdenum disulphide (MoS2) and 12-hydroxistearic acid (12-HSA) were offered alongside our Polybut product series. We also included medium and high molecular weight polyisobutenes to our portfolio, branded as Polybol.

Recently we also launched a new series of low molecular weight high reactive polyisobutenes (LM HR PIB) as Polybut HR to respond to increasing technical requirements in the field of lubricants. PIB is core business for KEMAT, not only can we offer the widest product range, we also pride ourselves to offer our customers logistic and technical support.

4. Please describe PIBs to our readers. What are the typical applications of this product?

PIB must be one of the most versatile polymers around, it is a key raw material in so many products and applications: agricultural film, cabling, coatings, corrosion protection, cosmetics, crop protection, chewing gum, industrial and medical adhesives, road marking paints, roofing, rubber, tyres, fuel additives, sealants to name a few.

The most important market for PIBs still is lubricants in which it acts as a viscosity modifier providing high thickening efficiency, superior viscosity index values, good shear and temperature stability, low residues, hydrophobicity and chemical stability in many classes of lubricants: lubricating oils and greases, synthetic multigrade gear oils, two-stroke engine oils, transmission oils, hydraulic fluids and metalworking fluids.

5. What advantages do KEMAT Polybutenes offer as viscosity modifier compared to the use of bright stocks?

Polybutenes have a superior thickening effect over bright stock and – even more importantly – the residue levels after combustion are significantly lower.

6. As innovations in base oils advance, what do you envision as the next frontier in base oil technology incorporating PIBs?

Environmental concerns have their impact on fuels and lubricants. Producers of lubricants need to develop new products which give lower emissions and longer life cycles. This has an impact on all components of the lubricant. PIB, being a pure and stable polymer, will keep on playing an important role in future lubricant formulations.

7. Polybutenes (PIB) can replace Poly Alpha Olefins (PAO) to meet various user preferences. How do you compare the performance and quality of the two base oils?

PAO and PIB are complementary products, they are used side by side in many lubricants. Polyalphaolefins are classified as synthetic base oils (Group IV), the backbone of the lubricant. Poly(iso)butene is classified as a viscosity modifier, an additive which upgrades the properties of the lubricant.

8. Typically, your customers are manufacturers. What are their most important needs in terms of service delivery?

KEMAT has been and will continue to be a reliable supplier of PIBs across many markets including the lubricants industry. We believe our company values meet our customers' demands and requirements, our continuously growing number of customers is the proof of that.

It is correct that our customers are mainly manufacturers, who rely on us for a combination of KEMAT commitments and values:

- Wide range of high and constant quality products, backed by expert product and application knowledge of the technical sales staff.



PIB is a versatile Polymer used as a raw material in lubricant and fuel additives



- Competitive market prices
- Security of supply both on long and short term thanks to multiple sources and well-balanced stocks
- Tailormade expert logistic services bringing the product in the most suitable packaging in the fastest and most economical way to the customer

All KEMAT employees, from management over logistics, customer service, sales to technical service, are passionate about the PIB business in all its aspects. We often say to our customers that KEMAT is small enough to care and big enough to cope and they agree.

9. Technical support to customers has the potential to create a demand for products offered by a company. This is more so where the products offered are technical in nature. What is your view on this and does your company provide any level of technical support to its customers?

KEMAT takes pride in not only 'selling a chemical' but 'offering a solution'. We deliver a total package encompassing the most suitable product brought to the customer with technical know-how and logistic expertise.

The technical know-how is provided by a team of product managers, 5 in total, all of them with a chemical background and years of experience in PIBs and its key markets. KEMAT also offers an in-house laboratory service to its customers.

10. Are you active in Africa? If so, which industry is most important in this continent for your company?

Today we are serving the African market directly from our sales headquarters in Brussels and logistic hubs across Europe, not only in the lubricants industry but across all markets where PIBs are used. KEMAT however is open for partnerships with local players in Africa.

We welcome African companies with the ambition to market PIB and related products in the lubricants and other industries; distribution or agency agreements can be established where there is a nice fit both ways. ■

BEARINGS

When standard lubrication is holding you back



Chris Johnson

Chris has been in the bearing business for 40 years and he started working in London for Claude Rye Bearings. After 10 years, he set up his own business specializing in miniature bearings and formed a relationship with Sapporo Precision in Japan which they are still working together to date. SMB Bearings had many requests from customers to supply bearings with non-standard military

Imagine rubbing your hands together 20,000 times a minute. The two surfaces would generate an unbearable amount of heat caused by friction unless you were to use a suitable lubricant. Here, Chris Johnson, Managing Director of specialist bearing supplier SMB Bearings, explains that lubricants are just as important in bearings and why, if you don't use the correct lubricant, expensive failure is a very likely result.

Standard lubrication — the generic stuff that is in the bulk of bearings, will do its bit in reducing friction and dissipating heat. However, this lubricant may not satisfy the maximum running speed, torque level and temperature requirements of your application. All is not lost though; plant managers and maintenance engineers can have bearings supplied using bespoke lubrication that is best suited to the specification. This can help avoid expensive downtime by matching the lubricant to the needs of the bearing.

Oil or grease?

Some applications are more suited to oil than grease, although both have advantages. Higher running speeds are possible with oil, but because it tends not to stay in place effectively, continuous re-application is needed. In many applications, grease is more convenient. Simply defined as an oil mixed with a thickener so that it stays inside the bearing for longer, grease benefits from both the properties of the base oil and the added thickener; both affect the performance of the bearing and ultimately its lifespan.

The extent to which you fill the bearings

with lubricant can have huge implications on performance. Lots of free space inside a bearing allows heat to radiate away from the contact area between the balls and raceway and makes for low rolling resistance.

On the other hand, a very full bearing may suffer from greater heat build-up and more rolling resistance yet the higher grease fill will increase the bearing's capabilities in handling higher loads.

High temperature

Lubricants have recommended upper and lower temperature limits that maintenance engineers and designers should abide by. Using a lubricant above its upper limit will cause lubricant breakdown and rapid bearing failure. Standard greases will be rated up to 100-120 degrees Celsius, which is fine for most applications. For hotter applications, there are grease options that are suitable for constant use up to 288 degrees Celsius and short interval use at 300 degrees Celsius.

Low temperature

Extreme low temperatures can be faced in marine, outdoor and cryogenic applications;

the catch is that cold temperatures make oil and grease much more viscous. Below a certain temperature, a grease might become so stiff that the bearing becomes difficult to rotate. At this point, the grease will not lubricate effectively. Ironically, this can generate excess heat which will soften the grease but, before this occurs, the bearing will experience accelerated wear. Choosing the right low temperature grease will allow effective lubrication down to minus 80 degrees Celsius.

Low torque requirements

A bearing with high frictional torque requires more effort to spin; this is sometimes referred to as rolling resistance. Many applications require the bearing to spin easily with extremely low frictional torque without generating excess heat. Dry lubricant is one way of meeting low torque requirements. Despite being in the solid phase, dry lubricants are able to reduce friction between two surfaces without the need for oil or grease.

Using very low viscosity grease with a reduced fill can achieve a similar outcome but will also permit much higher running speeds.

High speed applications

Bearings that endure a large number of revolutions per minute (RPM), and are lubricated with an overly viscous grease, can suffer from excessive heat build-up. As the grease overheats, it becomes too thin and can start to leak out of the bearing, causing further problems. Therefore, low viscosity base oils are desirable in high speed greases, along with smooth thickeners to generate less heat and retain oil better. In addition, the standard grease fill of 25 to 35 per cent of the internal space of the bearing should be reduced for high speeds.

Chemical compatibility

Recently, one of SMB Bearing's customers, a manufacturer of air filtration equipment, was experiencing bearing failure only a few weeks after the equipment rolled off the production line. These bearings had non-removable shields, so they called on us to investigate and diagnose the problem.

We found that the failed bearings had almost no grease left inside them. It transpired that, during operation, the bearings were being exposed to an ethanol mist that was breaking down the grease far quicker than expected. We relubricated the bearings

with chemically resistant PFPE grease, and, six months later, the bearings were still operating normally.

Keep it clean

In applications such as semiconductor manufacture, pharmaceutical manufacture, laboratory equipment or deep space, great care must be taken when choosing the bearing lubricant. In a vacuum or cleanroom environment, many greases will vaporize to an unacceptable level and contaminate the environment. Special low volatility, perfluorinated greases with very low outgassing rates are designed to perform well under these conditions.

Dry lubricants such as molybdenum disulphide or tungsten disulphide can also be a useful alternative in such

applications, eliminating the problems of outgassing, keeping the environment clean and the bearings sufficiently lubricated.

Food safe

Because very strict hygiene controls apply in the food and beverage sector, food safe lubrication is required in all machinery, even if there is no possibility of the lubricant coming into direct contact with food. Of



Lubricants have upper and lower temperature limits. Using a lubricant above its upper limit will cause lubricant breakdown and rapid bearing failure.

course, in this environment, much of the equipment is steam cleaned or washed down which can remove the grease from the bearing.

Therefore, non-toxic, water-resistant, chemical-resistant and heat-resistant lubricants should be used. These lubricants allow the bearings to withstand the cleaning process and reduce the risk of recalling food product due to contamination.

So, there you have it. You can rub your hands together in anticipation of setting up your own equipment for the ultimate success. The right bearing lubrication is the foundation of long term productivity, overall equipment effectiveness and reduced repair costs. SMB Bearings is available to test failed bearings, or relubricate existing bearings to match your application. ■

ADVERTISER'S FEATURE

Total and Lubrilog partnership offers extended life for large open gear drives

By Oliver Biyogo, Lubricants and Specialties Manager, Total Kenya PLC

In 2016 Total and Lubrilog company signed a distribution contract that gave Total exclusive access to Lubrilog's full range of open gear lubricants in most countries of the world.

Lubrilog is a French company specialized in Open Gear lubrication (OGL), with over 40 years of experience in lubricating and inspecting open gears. Thanks to this experience and their close relation to the main girth gear manufacturers, Lubrilog developed a complete range of products covering all possible needs of the customers.

Such needs included installation of the gear (priming and running-in), service lubricants for bath and spray lubrication (tacky greases and translucent viscous fluids) and in-service cleaning lubricant to remove abrasive particles without stopping the equipment.

This partnership comes with the following benefits; Firstly, the OGL retain approvals from major OEMs present in the mining market such as FL Smidth, Alstom, Metso Minerals and CMD. Secondly, to ensure reliability and professionalism, Lubrilog performs inspections on the equipment lubricated by their products. Hence, the open gear performance and reliability are optimized.

Most of the customers that use open gears in the cement and mining sectors value the open gear inspection as it allows them to assess the condition of the gear and anticipate the required maintenance operations or interventions like grinding, cleaning, reverting the pinion, replacing the OGL and checking alignment.

To comprehensively provide this decision support, both dynamic inspections, including vibration measurement, thermal inspection, and on stop inspection including wear patterns checking must be integrated.

For any organization to retain comprehensive gear inspection

and maintenance, critical aspects such as the use of OGL approved by OEMs, cleaning of the gears before inspection, protection of the gears from abrasive particles that are often found in the operating context of the large open gears and professionalism regarding inspection and maintenance skills are required.

For situations that might be challenging for the excellent performance of the open gear drives, LUBRILOG has developed Lubriclean EP which thanks to the partnership, is now available through Total.

Lubriclean EP is an exclusive product on the market, specially designed for cement and mining customers. Free of chlorine, aromatics and volatile organic compounds (VOCs), LUBRICLEAN evaporates slowly at room temperature and leaves a protective film of extreme pressure type readily emulsifiable with water in case complete degreasing is desired.

Hence, Lubriclean EP offers both cleaning and lubrication properties simultaneously. Other

significant benefits derived from using Lubriclean EP include:

- Lubriclean EP offers protection against abrasive wear caused by ingress of inherent abrasive particles during large open gear drives operations such as from clinker, coal, sand, metallic powder and other abrasives.
- Lubriclean EP provides open gear preparation for inspection or other maintenance interventions such as alignment, repair, reverse and replacement.
- Lubriclean EP cleans the gear while in operation
- Lubriclean EP is non-toxic to the environment

Since it is imperative that proper lubrication can only be done on clean surfaces, Lubriclean EP offers the best solution at lower costs with minimal downtime of the large open gear drives of rotary kilns, ball mills and other mining mills.

By bringing this experience to Total, Lubrilog enables Total to address all the needs of Cement and Mining customers regarding lubrication, from the quarry to the plant, including speciality products, to one unique supplier. ■

MAINTENANCE OPTIMIZATION

Enhancing maintenance optimization and equipment life

As a continuation from our previous maintenance optimisation article in Volume 26, apart from the earlier mentioned, there are also other factors which would undoubtedly enhance maintenance optimization and equipment life as mentioned below:

Integration of other condition monitoring techniques such as vibration analysis, ultrasound, infra-red thermography represents a salient factor. Reliance on UOA as the saying goes “too much of something is poisonous”, in many occasions, may not offer comprehensive diagnostic or prognostic analysis. This is a similar case to other techniques, where it is essential to combine synergies, for the maintenance team to be able to visualize all aspects. Some maintenance related challenges can be easily exposed using UOA, while other condition monitoring techniques may offer a faster identification in other cases. Moreover, the progression of different failure propagations can be identified at various stages by distinctive techniques.

Maintenance optimization effectiveness can be attributed to the timely response and adjustment of variables to ensure the optimality of the performance measures considered. An essential aspect here is **automating** the maintenance optimization programs for functionality, accuracy and real-time feedback. This aspect offers precision lubrication which ensures the precise amount, the accurate time and precise place is lubricated, which significantly reduces the costs attributed to waste, numerous inspections and frequent top-ups. Considering lubricants and lubrication, automation of the LCM programs will perform a significant role in maintenance optimization of a plant. Real-time response and adjustment, accuracy and access are achieved, for instance, employing single point and centralized lubrication systems. Introduction of sensors in LCM enhances accuracy and prompt response to making

maintenance interventions.

Filtration systems employed in lubricated equipment, play a significant role in dealing with the contamination of the lubricant by both solid and liquid. Solid contaminations such as dust and other metals cause abrasive wear while liquid contamination compromises with the lubricant's important properties such as viscosity and lubricity. The use of quality recommended filtration systems and units is important to ensure the integrity of the lubricant and lubrication system. Online and offline filtration systems can be used under different operating and equipment conditions. For example, hydraulic systems in a plant may have an offline filter that ensures the hydraulic oil is cleaned as the equipment works.

Training of the maintenance team undoubtedly represents an important variant for any plant envisioning maintenance optimization in the sustained run through LCM. While considered as a motivating tool to employees, training should be planned

and scheduled to ensure reminders and exposure to modern aspects of lubrication in maintenance. Plants should organize for on-site and off-site training, where on-site could be carried out in the real systems or equipment.

Application adjustments such as modification of equipment to meet relevant requirements or mitigate lubrication and other challenges can also be employed to drive maintenance optimization. For instance, **retrofitting** bearings from and all-loss oil system to a grease lubrication system, would significantly reduce the maintenance cost and portended failures in case of oil starvation caused for instance, by the pump failure. Similar studies and analysis using LFMEA, for example, could offer opportunities to reduce leakages, contamination, temperature surges and many other challenges which, if dealt with, would ensure an upward trend in maintenance optimization.

Maintenance **data management** and modern **tools** for maintenance are catalysts for maintenance optimization. Condition monitoring tools, on-site lubricant analysis kits, data recording tools such as portable tablets or phone application, which offer easy inspection and reporting options, and modern technology such as Augmented Reality (AR), could offer more variants toward maintenance improvement through lubrication. Housekeeping, a reliability aspect that should be considered in such programs.

Taking advantage of several or all the various strategies discussed and many others, is essential, hence advocating the use of a hybrid approach is beneficial. The approaches that offer significant benefits should be considered and further a review of their interaction effects reviewed before implementing them in your optimization program. This approach ensures an optimal optimization while harnessing the synergy of the subject strategies. ■



» **Integration of other condition monitoring techniques and automation key to optimization**

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