WEAR CHECK
Condition Monitoring Specialists
THE MONITOR
ISSUE 94

EXTENSIVE EXPERIENCE, EXPERTISE, THE HALLMARK OF OUR DIAGNOSTICS TEAM

The more experienced a professional team is, the more peace of mind a client can have in their services. This is absolutely the case when it comes to WearCheck's team of diagnosticians.

Fun facts:
WearCheck's diagnostics department is made up of nine diagnosticians with a combined 12.5 million samples' worth of diagnostic experience.

Four of the diagnosticians have diagnosed over one million samples, and the diagnostic manager has just diagnosed his three millionth sample.

Together, the diagnosticians hold many degrees and diplomas in a variety of engineering and scientific disciplines, and come from a variety of engineering and scientific backgrounds. This means that there is a huge amount of experience on which to draw when diagnosing an oil sample.

This extensive level of experience means there are very few areas that have not been covered in the combined diagnostic experience of over 200 years.

From back left to front, and then right: Wayne Moodley, Trevor Pillay, Shashay Rampersad, Steven Lumley, John Evans, Lea Bodenstein, Shane Goslin, Quinton Verster.
Centre: Bhupendra Jadhav (front), Ravi Chetty (back)

3 million samples and counting!

This month, we send a big 'shout out' to WearCheck's diagnostic manager, John Evans, who has officially diagnosed 3 million samples.

Says John, 'I started out in the oil analysis world on February 28th, 1983, so it has been a more than 40-year journey in which I have learned a tremendous amount from a variety of truly great mentors. Probably the best part about oil analysis diagnostics is that never a week goes by where you don't learn something new.'

We are incredibly proud of your dedication and outstanding work. Cheers to many more samples, John.

Did you know…
Diagnosing 3 million samples is like checking the health of everyone in a city the size of Durban, which has a population of around 3.2 million people!

TECHNICAL TIP: LUBE SERIES
Anti-wear additives – the metal guardians in your oil

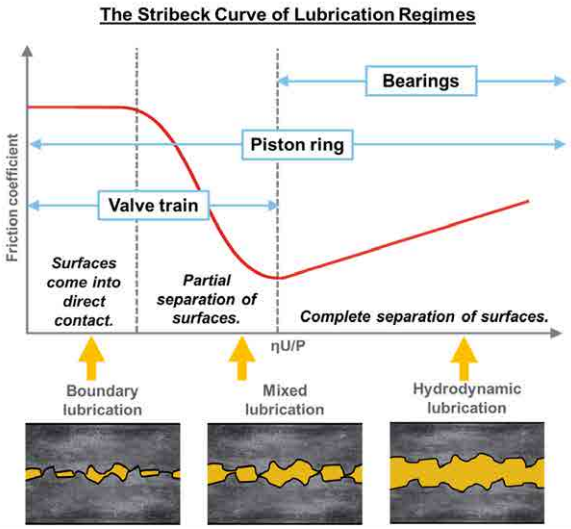
BY STEVEN LUMLEY, TECHNICAL MANAGER

What are they?	Zinc dithiophosphate (ZDP), Zinc dialkyl-dithiophosphate (ZDDP) compounds, organic phosphates, Organomolybdenum compounds
What do they do?	Reduce friction and wear
How do they do it?	Chemical reaction with the metal surface to form a magic tribofilm

During a recent visit to my local library, I asked the librarian where the books on anti-wear (AW) additives were kept. She said they were in the non-friction section. Her response really rubbed me up the wrong way, but I let it slide. If you are laughing, you are a tribologist at heart.

But seriously, folks, in this two-part finale of the WearCheck Lube series, we will explore the adsorbing world of anti-wear additives – the metal guardians in your oil.

Anti-wear additives are used to protect against wear and the loss of metal surfaces during mixed-film and boundary-film lubrication. As such, this group of additives is often referred to as boundary lubrication additives. These polar additives are usually triggered by temperature or elevated loads at the contact surfaces, and work to form a protective film to minimise wear.



Anti-wear additives are among the most commonly utilised additive packages, and generally come in the form of either anti-wear (AW) or extreme-pressure (EP) additives.

Although the terms anti-wear and extreme-pressure additives are often used interchangeably in the language of lubrication, there are notable differences between their chemistries and the way they function.

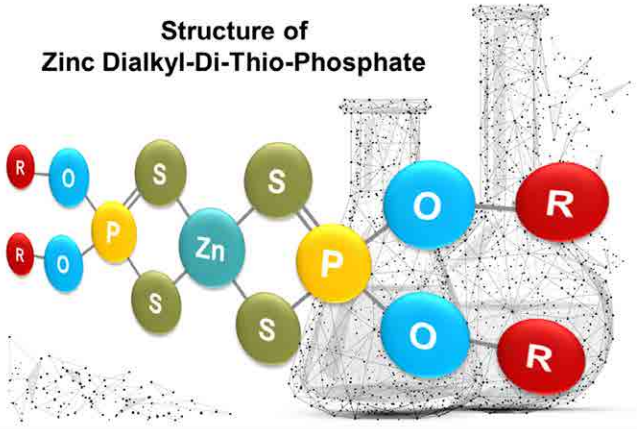
In general, AW additives are designed to deposit surface films under normal operating conditions and reduce the rate of continuous wear. EP additive films are formed by reacting rapidly with a surface under severe stress to prevent more extreme modes of failures. In general, AW additives are used for low-load and high-speed conditions, while EP additives are used for applications that have high loads and low speeds. We will talk more about EP additives in our final instalment, but for now, let's delve into the magical world of anti-wear additives.

Anti-wear additives react chemically with the metal surfaces when metal-to-metal contact occurs in conditions of mixed and boundary lubrication, and they are activated by the heat of contact to form a film that minimises wear.

Anti-wear additives are enlisted to combat wear in engine oils, hydraulic oils, automatic transmission oils, gear oils, greases and many other applications.

They are often phosphorus-based polar compounds with oil-soluble tails and polar heads that have an affinity for metal surfaces. These polar heads physically bond, or adsorb, to the metal frictional surfaces (like iron to a magnet) to form a protective film.

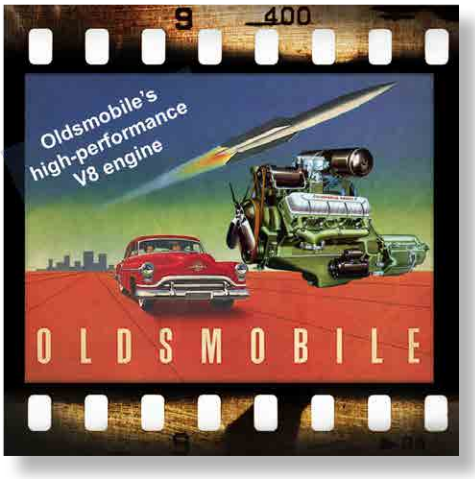
Zinc dithiophosphate (ZDP) compounds are the most commonly used anti-wear additives. Among these, Zinc dialkyl-dithiophosphate (ZDDP) — a specific subset of ZDPs characterised by having dialkyl groups — is the most prevalent form used in lubricants. With an estimated global market size of $2.62 billion in 2023, it's fair to say that ZDDP is a lubricant formulator's best friend.



This marvellous additive also functions as a secondary antioxidant (peroxide decomposer). In fact, that is how they came to be. The history of ZDDP is a story of accidental success. Intended as an antioxidant, their unique strength as anti-wear agents was discovered serendipitously in the early 1940s.

ZDDP made its world debut as a lubricant additive in 1941, when three different companies —Lubrizol, American Cyanimid, and Union Oil Co.— filed patents with claims of corrosion- and oxidation-inhibitors in engine oils. The Lubrizol patent was granted in 1941 and the others in 1944.

However, the anti-wear properties of ZDDP remained mostly un-noticed until the advent of V8 engines with overhead valves and increased compression ratios like the legendary Oldsmobile "Rocket" and Cadillac OHV in 1949. Hoorah! Like many early high-performance V8 engines of this era, these roaring beauties suffered from serious cam and follower wear due to the increased stresses placed on the valve train, but when oils containing ZDDP were used in these engines, less wear was observed than those oils without it, and eureka! the connection was made. As a result, the automobile industry quickly adopted the use of ZDDP as an anti-wear additive in engine oils.

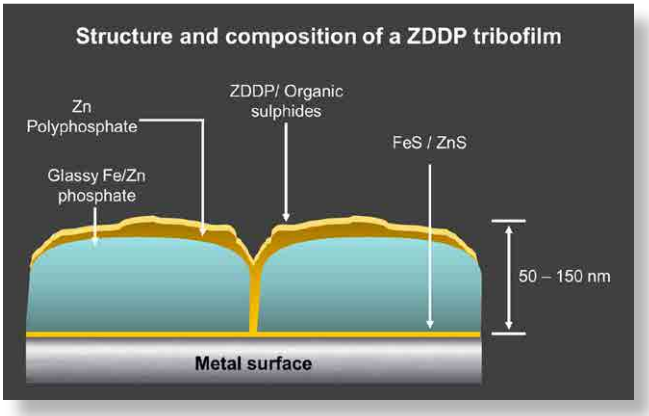


While the lubricant industry at the time recognised ZDDP's effectiveness as an anti-wear additive, the detailed mechanisms of how it worked were not fully understood.
As the decades rolled on and analytical techniques became more sophisticated, researchers were able to study the chemical interactions between ZDDP and metal surfaces, but it was really only in the 1990s that researchers gained deeper molecular insight into the specific chemical reactions involved.

What they discovered was nothing short of molecular magic - ZDDP decomposes to form a glassy, phosphate-based tribofilm on the metal surfaces. This film is primarily composed of zinc polyphosphates, but can also incorporate iron from the metal surfaces it protects. These polyphosphates create a "glassy" or amorphous film that becomes about 50-150 nanometres (nm) thick and somehow self-regulates to stay at that thickness. Just for context, there are a million nanometres in one millimetre.

But wait, there's more! The tribofilm also exhibits "intelligent" behaviour by becoming stronger and more resilient as the load increases, which is particularly beneficial during engine startup when mechanical stress is highest and adequate lubrication may not yet be fully established.

This adaptive response ensures that the film provides enhanced protection precisely when it is most needed, and for this reason, ZDDP has been a mainstay of lubricant formulation and performance for more than 80 years and with good reason - no single additive provides the same benefit as cost effectively.



Unfortunately, ZDDPs play havoc on modern emission-control devices like catalytic converters and diesel particulate filters (DPFs).
The operation of catalytic converters like diesel oxidation catalysts (DOC) is altered by the phosphorous present in engine oils that contain ZDDP. The phosphorus can partially volatilise during engine operation and, once in the exhaust stream, it can reduce the efficiency and deactivate these catalysts by coating and building up on the active catalyst sites, causing irreversible damage that accumulates over time. As a result, increased levels of harmful emissions like nitrogen oxides, carbon monoxide and hydrocarbons pass through these catalysts unchanged and into the atmosphere. Catalyst poisoning by phosphorous can also significantly decrease filtration efficiency of DPFs, which also results in reduced soot-regeneration activity.

The sulphur component of ZDDP can also inhibit the effectiveness of Selective Catalytic Reduction (SCR) systems by poisoning these catalysts, which can increase the conversion of sulphur oxides to sulphates, which in turn increases particulate emissions and accumulation of particulate material. And it gets worse, because the zinc component of ZDDP contributes to the formation of ash when the oil is burned, and this ash accumulates in the DPF, increasing backpressure and reducing the efficiency of the filter.
To mitigate these effects, the industry is moving towards low-SAPS (Sulphated Ash, Phosphorus and Sulphur) oils and alternative additive chemistry to provide the necessary anti-wear protection without compromising the efficiency of emission-control systems.

Be sure to catch the final instalment of the Lube Series in the next WearCheck *Monitor*, where we will take an in-depth look at an additive that thrives under pressure.

WORLD OF WATER: overview of the water-treatment processes

Innovation plays a key role at WearCheck Water, where new technologies and refined testing methods are embraced. The company's latest offering is a comprehensive diagnosis of the effectiveness of water treatment.

Moses Lelaka, WearCheck Water's technical water laboratory manager, explains the water-treatment process. 'Conventional water treatment refers to the treatment of water from the surface - for example river or dam water - using a series of processes to remove suspended solids and colloidal matter, disinfecting the water and stabilising the water chemically. This approach effectively removes practically any range of raw-water turbidity, along with harmful bacteria, including E.coli.

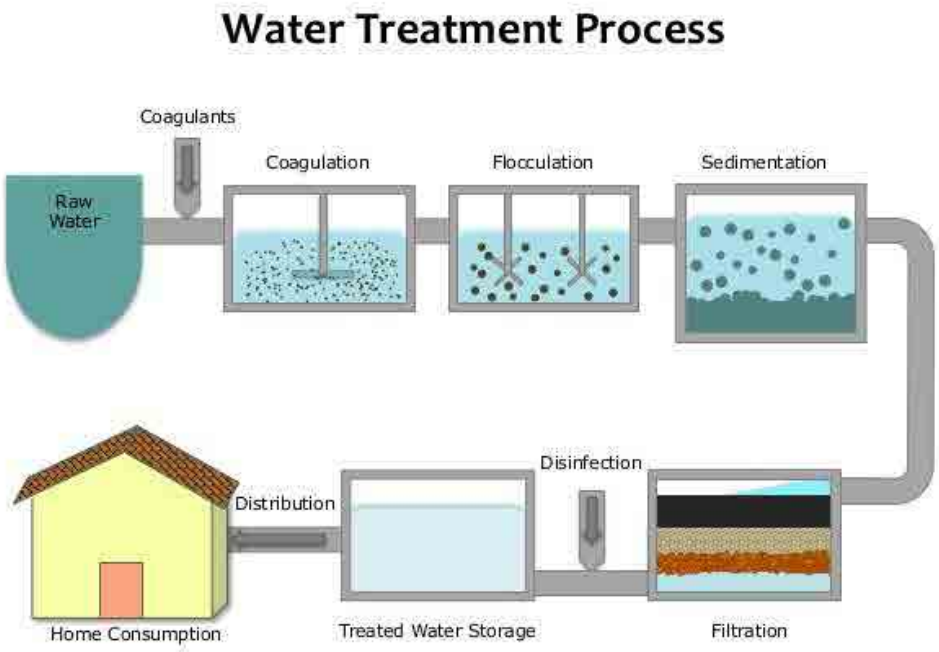
'For domestic use, the conventional treatment of water involves several treatment steps that aim to achieve the following objectives:

- Removing of suspended solids and colloidal matter (turbidity) to an acceptable level by means of coagulation-flocculation, sedimentation and sand filtration.
- Disinfection to produce water that is safe to drink.
- Chemical stabilisation of water to prevent corrosion of pipelines (indicated by The Langelier Index - the difference between measured pH and calculated pH), chemical attack on concrete pipes and structure, or the formation of chemical scale in distribution systems and fixtures (indicated by total hardness).

'Conventional treatment methods for removal of suspended or colloidal material from water include:

- Chemical coagulation of small colloidal particles - chemicals (coagulants) are added to the water to bring the non-settling particles together into large, heavier masses of solids called flocs. Aluminium sulphate (Alum) is the most commonly used coagulant in water purification.
- Flocculation of the small particles to form large flocs or aggregates,
- Followed by sedimentation - this happens naturally when the water is still, because gravity pulls the heavier sediments down to form a sludge layer.
- Sand filtration.

'When water contains a large amount of suspended material, large, suspended particles, such as sand particles, can be removed by means of settling without coagulation and flocculation. Other possible methods include slow sand filtration, flotation, micro-filtration and ultra-filtration.



Says Moses, 'Selecting the best combination of processes to treat water from a particular source depends on a number of factors. These factors include the following:

- The amount of suspended solids
- The turbidity of the water
- The nature of the suspended material

- The chemical properties of water (pH and alkalinity)
- The volumes of water to be treated
- The availability of facilities, trained operators and supervisors

'Simple settling of water is often used as a pre-treatment step to remove larger, suspended particles from water without coagulation-flocculation. Settling requires that the water remains stagnant for a period of time to allow the larger particles to settle to the bottom of the tank or holding reservoir.

'After settling of the particles, clear water can be decanted from the container. Settling can be performed as a batch process (filling of the tank with water, allowing sufficient settling time, then decanting clear water) or as a continuous process. In a continuous process the water flows through the reservoir at a slow rate that allows time for settling, while clarified water is drawn continuously.

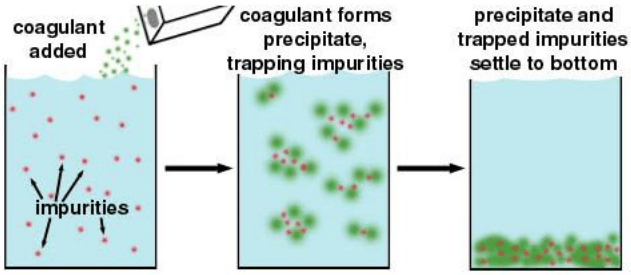
'Once water has undergone these treatments, samples can be sent to WearCheck Water to assess the effectiveness of the water-treatment process. Different treatment processes and levels are used for water that is used for different purposes, such as for medical, agricultural or industrial use, or human consumption. Our testing processes can confirm whether the targeted levels of treatment are sufficient for the water's purpose.'

Useful water-treatment terminology

Coagulation is the process whereby the colloidal particles in water are destabilised (i.e. the nature of the colloidal particles is changed) so that they can form flocs through the process of flocculation, and can be readily separated from water. Destabilisation is achieved through the addition of chemicals (coagulants) to the water.

Flocculation follows coagulation. The main objective of flocculation is to cause the individual destabilised, colloidal particles to collide with one another to form aggregates that can easily be removed by means of sedimentation or flotation.

So, flocculation involves the stirring of water to which coagulants have been added at a slow rate, causing the individual particles to collide.



Sedimentation is the process whereby the aggregates that have been formed during coagulation and flocculation are allowed to settle in the water.

Filtration is the process where the solids are removed from water after they have accumulated on the top surface of the medium.

Disinfection is when most of the bacteria and micro-organisms are removed during filtration. However, many bacteria and viruses still remain in filtered water, even at low turbidity levels. So, disinfection of water entails the addition of the required amount of chemical agent (disinfectant) to the water and allowing enough contact time between the water and the disinfectant. Physical methods of disinfection include irradiation with UV light and boiling. The most common disinfectant is chlorine gas. Other disinfectants include Ozone, chlorine dioxide, calcium hypochlorite (HTH), sodium hypochlorite (bleach) and monochloramine.

CUSTOMER SURVEY 2024

We reach out to you, our valued customers once a year to get your input about where we can improve, what is working well, and generally how things are going with our service to you. This feedback is an important part of our quest to offer outstanding customer service. Your replies to our questions also help us to meet our ISO compliance obligations.

Two minutes is all it takes to complete the online survey. This year, as a token of our appreciation, each respondent who completes the survey before the end of August will receive a limited-edition mug, and three lucky respondents will win a set of mugs!

Please click here to take the two-minute customer survey https://forms.gle/RZFvaqobpaZsPzyb7

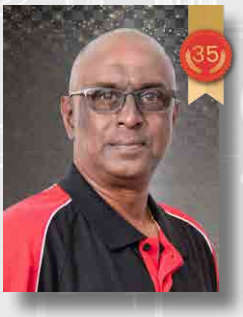
There are eight industry designs from which to choose. Sets of four mugs are available to purchase for a limited time! Please visit the info tab on our website from 1st September for more info

MAKING HEADWAY

LONG SERVICE VALUED

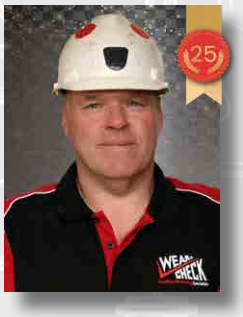
Dedicating many years to one company gives employees and their employer many benefits – customers are reassured by continuity and staff gain confidence and are highly familiar with their roles, enabling them to perform tasks quickly and reliably, thanks to extensive experience in the industry.

We recognise our teammates who have spent many years as part of the WearCheck family, in this issue of *Monitor*:

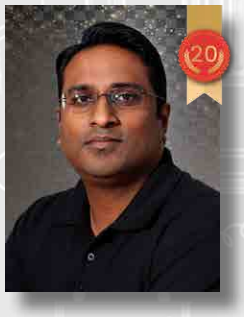


Trevor Pillay
snr mini-lab technician

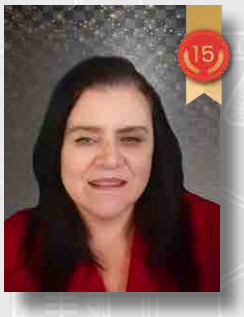
Chamaine Pillai
bookkeeper



Paul Musgrove
AFS operations manager

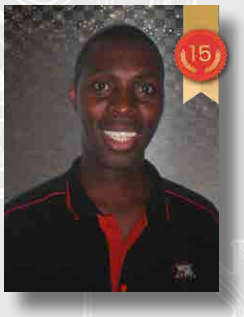


Eddie Perumal
IT manager



Christene Smal
RS administrator

Jaco Venter
snr NDT technician



Boniface Yuwama
WearCheck Zambia

Thelma Namwinga
WearCheck Zambia

Mateyo Goma
WearCheck Zambia

Phillimon Nyirenda
WearCheck Zambia

The WearCheck family is growing again, to service our expanding customer base. We welcome three new customer support assistants, who handle all customer-support functions (including sales, after-sales and general enquiries), as well as general office administration duties.

Welcome, Mercia!

Mercia Vermeulen has over 15 years of admin working experience across various industries, and loves watching F1, MotoGP and rugby, visiting the salon and listening to country and pop music.

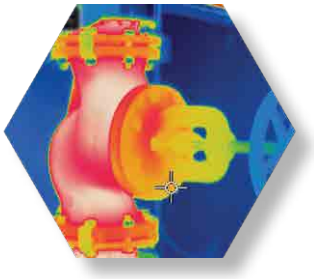
Welcome back, Saskia!

Saskia Coetzee has rejoined the WearCheck team in Cape Town, after a 10-year stint at the ARC division. She enjoys travelling and exploring new places.

Welcome, Janél!

Janél Mulder, based in Rustenburg, has completed an N5 secretarial & HR/LR diploma, and has 20+ years admin working experience in various industries. She enjoys reading a good book.

Advancing thermography – a focus on practical skills development



Thermography is a key condition monitoring service offered by the WearCheck ARC (Asset Reliability Care) team. To boost the benefit of thermography for clients, the team launched a new course for customers, highlighting the best ways to capture thermographic imagery. The course, called InfraFocus, upskills users of thermographic cameras.

Operations manager for the ARC team, Annemie Willer, discusses the merits of the course, which is mandatory for all WearCheck's ARC technicians.

'In thermography, a thermal camera captures and creates an image (thermogram) of an object by using infrared radiation emitted from the object – this is an example of infrared imaging science. The amount of radiation emitted by an object increases with temperature, therefore thermography makes temperature variations visible. Warm objects, viewed through a thermal imaging camera, stand out well against cooler backgrounds.

'Thermography highlights machinery components that are outside of the "normal" operating temperature, indicating potential problems. Capturing the details in a series of images over time is critical to gain the best insight into a machine's condition using thermography.'

Introducing InfraFocus: elevating industry standards

The specialised, two-day InfraFocus course - developed in partnership with renowned photographer Francki Burger - addresses crucial aspects that are often overlooked in traditional thermography training: focus, composition, and angle.

The importance of focus, composition, and angle in thermography

The precision of thermal images is paramount for accurate diagnostics. Focus ensures that the thermal images are clear and detailed, allowing for precise identification of potential issues. Composition and angle, on the other hand, influence the image's contextual accuracy, ensuring the relevant thermal anomalies are captured consistently.

Without proper focus, even the best thermographic equipment cannot deliver reliable results. Composition and angle further ensure that each image provides a true representation of the component's thermal profile. This is especially critical when comparing images over time to detect changes or trends.

The role of repeatability in data accuracy

Repeatability in thermographic surveys is essential for accurate data analysis. Consistent imaging practices allow for reliable comparison of thermal data across different time periods, enabling the detection of gradual changes that might indicate developing faults. Inconsistent imaging, with variations in focus, composition, or angle, can lead to misinterpretations and incorrect diagnostics, potentially compromising the entire condition monitoring programme.

Why did WearCheck ARC develop this course?

Traditional thermography courses often lack sufficient practical training in critical areas. Many are designed for individuals with advanced technical backgrounds, leaving a gap for technicians who may not have the same level of formal education or familiarity with technical terminology.

Recognising this gap, WearCheck ARC developed a focused photography course tailored specifically for thermographers. Partnering with Francki Burger, a photographer renowned for meticulously capturing images, we crafted a course focused on capturing thermal images with precision.

Francki's photographic expertise has transformed our thermographers' approach to capturing thermal images. Her photographic experience, where precision and consistency are critical, provided invaluable insights into the importance of focus, composition, and angle.

Course impact

'After undergoing this specialised training, our thermographers demonstrated significant improvement in the quality and consistency of thermal images. This has enhanced the repeatability of our data, leading to more accurate diagnostics and more reliable condition monitoring reports.

As we continue to develop and employ machine learning algorithms to expedite our analysis processes, the consistent quality of our thermal images is crucial. The enhanced repeatability ensures that our algorithms can interpret the data accurately, leading to quicker and more precise fault detection. The new course, which is run on site at a customer's premises, or at WearCheck's offices, is in demand - customers in Mozambique and South Africa have already completed it.'

Says Annemie, 'We are excited to offer this training to the industry and look forward to seeing the positive impact it will have on your thermography practices.'

More info? Contact Louis Peacock at Louis@wearcheckrs.com.

OUT AND ABOUT

CBM CONNECT

WearCheck's asset reliability care (ARC) team attended a CBM (condition-based monitoring) conference recently.

Seen here are, standing, from left: Marcel Schoeman, sales manager, Annemie Willer, divisional manager, Louis Peacock, technical/training manager, Philip Schutte, general manager, Reinier Kalp, remote centre analyst, Eddie Pieterse Jnr, deployment manager, Peet Peacock. service manager.

Seated: Jaco Willer, business unit manager - foreign ops & Eben Oberholzer, reliability technologist.

TRAINING IN JHB

Sharing knowledge and information about condition monitoring – this is the responsibility of some of WearCheck's most experienced technical experts. They travel far and wide each month to run training courses, attend conferences and visit customers on site.

Delegates attended oil analysis training in Johannesburg recently. They are pictured here with WearCheck training consultant, Jan Backer (far right)

ENLIT EXPO

A team from WearCheck attended the Enlit Africa 2024 expo, which was held in May in Cape Town.

It was good to meet with the major players in the industry and network with our peers.

Pierre Le Roux, WearCheck's transformer oil and fuel testing laboratory manager, is seen here having discussions with delegates.

ON PAR WITH WEARCHECK

In partnership with *Engineering and Mining magazine,* WearCheck sponsored a hole at the magazine's golf day earlier this year.

Manning the WearCheck table at the golf day were Martin du Plessis - Lubrigard technical support, and Juliane Strydom, WearCheck's national sales manager

Golfers enjoying a refreshment break at the WearCheck hole.

WearCheck employees boost qualifications

Holding down a full-time job and studying in the evenings and weekends is no easy task. However, we are extra proud of three of our employees who recently graduated.

Hearty congratulations to all of you, on your outstanding achievements!

Diagnostician master

Bhupendra Jadhav, a diagnostician based at WearCheck's Chennai laboratory in India, has been awarded the ICML (International Council for Machine Lubrication) MLA III qualification. This means that he is now a certified Level III - Machine Lubricant Analyst (equivalent to category III of ISO 18436-4).

The rigorous ICML course and exam covered many categories, including Lubrication Fundamentals, Fundamentals of Machine Wear, Wear Debris Analysis, Analysing Lubricant Degradation, and Oil Analysis Programme Development and Programme Management.

The examining body, the US-based International Council for Machinery Lubrication, is a vendor-neutral, not-for-profit organisation founded to facilitate growth and development of machinery lubrication as a technical field of endeavour. The ICML offers skills-based certification testing for individuals in the fields of machine condition monitoring, lubrication and oil analysis.

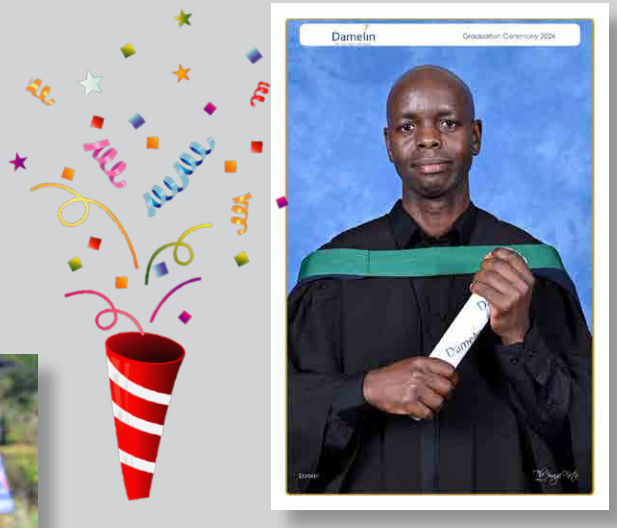
Lorraine graduates

Lorraine Mokgethi recently graduated from MANCOSA, with her Advanced Diploma in Business Management. MANCOSA, the management college of South Africa, is a private higher education institution that offers management and business programmes via distance learning across Southern Africa.

Lorraine joined the WearCheck team in 2011. As a machinery inspector, she is responsible for compiling customer quotations, conducting non-destructive testing (NDT) inspections on site and reporting back to customers. She is leading the way as WearCheck's first female machinery inspector. Lorraine holds a diploma in NDT from Vaal University of Technology, and has done courses in magnetic particle inspection, ultrasonic inspection and liquid penetrant inspection. These, coupled with thorough on-the-job training, and a great rapport with her customers, position Lorraine as a key member of the company's asset reliability care (ARC) team.

In an ongoing quest for knowledge, Lorraine aims to keep on studying. 'This latest course marked the start of my journey towards an MBA. My next step is a post-graduate diploma.'

Bheki graduates



Bheki Mbambo graduated from Damelin recently, earning himself a national diploma in information technology. Bheki has worked at WearCheck's Westville laboratory as a pad co-ordinator since 2010, and has enjoyed being part of the WearCheck family for the past 14 years.

'I am so grateful to my colleagues for the support, motivation and encouragement they have shown, this really carried me through a very challenging journey – thank you so much!', says Bheki.

WE CARE - WEARCHECK RAISES FUNDS FOR CANCER

WearCheck Namibia answered the call to help raise funds for the Cancer Association of Namibia (CAN), by providing technical support to vehicles entered in the 1,000km Rough and Tough Rally recently. The 200 rally-entrant vehicles had to meet two strict requirements – the vehicle had to be older than a 1990 model and worth less than N$35k.

Jaco Willer, business unit manager for WearCheck's asset reliability care (ARC) team (foreign operations), took up the challenge, leading the group of four intrepid WearCheck technicians, who drove two vehicles - a Hilux and a Fortuner - to assist two of the rally vehicles along the daunting, 3–4-day route.

Says Jaco, 'We provided technical support to a 1976 Ford F250 and a 1962 Land Rover Defender – the oldest vehicle entered. Our mission was to assist in case anything went wrong with the rally team or vehicles.

'The rally started at Goanikontes Oasis near Rossing Uranium and took us through 1,000km of rough and tough routes, including arid, rocky desert, dry riverbeds, sandy expanses and bushveld. The event ended near Uis to the west of Henties Bay, near 'The White Lady' – a well-known Namibian rock painting.

'The Rally winner was the team that raised the most money for CAN. Other prizes were awarded, for example, to the vehicle that broke down the most yet still finished the course. This year, the rally entrants raised N$1,500,000.00 for CAN – a new record.

'We were proud to be able to provide technical (and moral!) support the two vehicle entrants in their quest to raise money to fight cancer. This is in line with WearCheck's We Care mission – the company's social responsibility undertaking, and also reinforces WearCheck's successful operation in Namibia.

The WearCheck team provided support to the oldest vehicle in the rally – this 1962 Land Rover Defender, As well as a 1976 Ford F250.

The intrepid WearCheck ARC team that provided technical support to rally entrants in Namibia are (from back left) Edward Pieterse (ops manager), Jaco Willer (business unit manager - Africa), Marcel Schoeman (sales manager), with Rohan Willer (country manager – Namibia)

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WearCheck's We Care rallies to help tornado victims

On 3 June, a devastating tornado ripped through the Tongaat area in KZN, leaving a trail of death and destruction in its wake. Thousands of people were left homeless, 20 schools were damaged or destroyed, and at least 11 people were killed.

Always quick to respond and help those in need when a large-scale emergency arises, the WearCheck We Care team (the company's social responsibility undertaking) set about collecting donations in the days following the tornado.

WearCheck staff donated much-needed items as well as their own personal money, with the company matching the amount that was raised by staff and adding it to the total. A whopping R18,800 was donated to the Tongaat Relief Fund arranged by the Gift of the Givers non-governmental organisation (NGO).

Michelle Padayachee, HR manager, was delighted with the willingness of employees to assist those in need. "A big thank you to all our staff members who donated money and items to those affected. It is truly heartwarming to know that we have such a caring community within the WearCheck family.'

WearCheck Kitwe hosts engineering student

WearCheck's laboratory in Kitwe, Zambia, is delighted to host a 5th-year mechanical engineering student at the Copperbelt University School of Engineering, Collins Kasonde, while he conducts a lubricant-testing project as part of his final-year studies.

Hosting the student on site is WearCheck's Zambia's Boniface Yuwama, who handles sales and technical support for the company.

'Collins has compiled a range of lubricants for testing. Our lab technicians are guiding him in the intricacies of oil analysis and testing.'

WearCheck Zambia is hosting mechanical engineering student Collins Kasonde (second from left). With him, from left, are Chilala Mwiinga, (lab assistant), Bennet Siyingwa (lecturer), Boniface Yuwama (WearCheck Zambia sales / technical support), Enzoh Langi (HOD mechanical) Chola Mailoni (technician)

New DGA instrument ensures top-quality results

WearCheck's transformer division is excited to announce that the upgrade of the DGA (Dissolved Gas Analysis) instrument in Cape Town is complete, following a significant investment into new technology by the company.

The upgrades include the addition of the latest autosampler, chromatography software, and barcode-scanning capabilities. The new capabilities ensure continued high-quality results and improved turnaround time to our clients.

Gert Nel, WearCheck's transformer divisional manager, explains that the DGA instrument is a crucial tool in the transformer oil analyst's toolbox. It identifies and quantifies gases dissolved in transformer oil. When electrical faults occur, such as partial discharges or arcing, gases are released into the oil. DGA therefore acts as an early warning system, indicating potential faults. In short, DGA instruments keep transformers healthy by identifying hidden problems through dissolved gas analysis.

The DGA instrument has become the backbone for transformer testing in wind and solar-farm power over the years.

Please contact Gert at gertnel@wearcheck.co.za for more information.

TOP TRANSFORMER TIPS

Power transformers play a significant role in the transmission and distribution of electricity. Keeping these high-value assets operating at peak performance is necessary in order to avoid power supply interruptions. WearCheck's transformer division performs a wide range of condition monitoring tests on transformers. In this issue, we focus on transformer oil quality - testing the cooling and insulating properties.

Moisture content is measured using a Metrohm 831.

The moisture content can have a direct influence on the insulating properties of transformer oil. This value can increase or decrease, depending on the temperature and load. In the case of an electrical unit with paper insulation, this is even more evident. There is always an equilibrium between the moisture in the oil and the moisture in the paper insulation. In time, more oxidation can occur within the mineral oil, and this results in the mineral absorbing more moisture.

FITNESS & FAREWELLS

Keeping fit with WearCheck

Many of our WearCheck staffers like to get out and about for some not-so-technical fun in their spare time.

Completing the 5km Spar Ladies' Walk in Durban recently are Yolene Budhal, accounts assistant at WearCheck Durban, and her daughter Akira (aged 5 years)

Keziah Moodley (accounts assistant), Pearl Joseph (creditors clerk), Prinda Narasi (quality administrator) from WearCheck's Durban branch completed the 5km Spar Ladies Walk

Keziah Moodley (accounts assistant), Preshnie Pather (credit supervisor) and Jeevanka (aged 6 years) completed the East Coast Radio Big Walk

Retiring in style

Thulisile "Patricia" Ncibilika retired from WearCheck after 39 fabulous years. She worked as a sample room assistant, in KZN. At her farewell ceremony, she did a lovely dance in true Patricia style. She will be missed by everyone at WearCheck in Durban. We wish you well, Patricia – enjoy your golden years with your family

The value of training

"Training is not an expense, but an investment in human capital."
— Roy H. Williams

WearCheck's training courses are built with the wise words of the Greek philosopher Socrates in mind – education is the kindling of a flame, not the filling of a vessel. The end result is maintenance crew that are inspired to constantly improve maintenance operations, thereby enhancing a customer's return on investment into condition monitoring

WearCheck's customer training courses include oil analysis courses and condition monitoring training for maintenance practitioners operating at various levels within an organisation.

Customer training courses run by WearCheck, and the duration:

Course	Days
Precision Shaft Alignment	2, incl. practical
Precision Balancing	2
Vibration Analysis ISO CAT I	5, incl. exam
Vibration Analysis ISO CAT II	5, incl. exam
Vibration Analysis ISO CAT III	6, incl. exam
Infrared CAT I	5, incl. exam
Oil Analysis 1	2
Oil Analysis 2	1
WearCheck Customised	2
Asset Reliability Practitioner (3 courses)	6 months
InfraFocus	2

Oil Analysis courses 2024

	Oil Analysis 1: Understanding oil and its analysis (2 CPD points)	Oil Analysis 2: Report interpretation (1 CPD point)
Location	**Two day workshop**	**One day workshop**
Cape Town	August 20, 21	August 22
Johannesburg 2	September 10, 11	September 12
Nelspruit	November 12, 13	November 14
Rustenburg	October 08, 09	October 10

All the public courses listed in the WearCheck training schedule can be presented at the customer's site of preference in South Africa or abroad. Courses are also offered online.

We have the pleasure of offering customised training content to suit your requirements, your dates and your locaton. Customised training on offer includes sampling of lubricating and transformer oils, lubricant storage and handling, introducton to oils and concise oil analysis for workshop technicians.

For more details on course content and prices, click here: https://www.wearcheck.co.za/training.html.

To book the above courses, please contact Michelle van Dyk on training@wearcheck.co.za or call +27 31 700 5460 or +27 82 381 3321

MOBIUS TRAINING

Course	CPD points	Date 2	Date 3
Vibration Analysis – CAT I *	5		Sep 09-13
Vibration Analysis – CAT II *	5		Oct 14-18
Vibration Analysis – CAT III *	5		Nov 11-18
Infrared CAT I			Oct 07-11
Precision Balancing		Aug 12-13	Dec 02-03
Precision Alignment		Aug 14-15	Dec 04-05

MOBIUS INSTITUTE
BOARD of CERTIFICATION

WearCheck has been an accredited training partner for the internationally acclaimed Mobius Institute since 2015, and all the Mobius courses can be attended online or in person. All Mobius courses are presented at various venues throughout Africa, and many of them have an online option.

For more information or to book a Mobius training course, please contact Louis Peacock on +27 82 494 9461 or louis@wearcheckrs.com.

** 6 day course, with the exam written on the following Monday.*

LUBE TIP

Too much grease kills bearings

Over-packing probably accounts for more bearing failures than any other single factor. If too much grease is present, internal friction will cause the temperature to rise beyond its dropping point, causing oxidation of the grease and premature bearing failure.

UPCOMING EXPOS 2024

Electra Mining: 02 - 06 September.

Visit us at stand E30, Hall 6

Nampo Cape: 11-14 September.

Visit us at stand 22 in the Total Energies Hall.

HIGHLIGHT YOUR SUCCESS

If oil analysis has helped prevent a major failure or saved your company money, we would like to feature this in *Monitor*. Our writer will contact you for the details and will write the article for your approval. Simply email marketing@wearcheck.co.za and we will contact you.

TECHNICAL BULLETIN TOPICS?

Is there a particular subject you would like to see featured in a *Technical Bulletin*? Simply email your suggestion to marketing@wearcheck.co.za. Before you do this, why not check out the more than 85 titles already available on the web site: www.wearcheck.co.za

Planet-friendly option

WearCheck no longer prints hard copies of our *Monitor* and *Technical Bulletin* publications. Should you wish to be included on our digital mailing list please scan the QR code or e-mail a subscribe request to: marketing@wearcheck.co.za.

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