WEAR CHECK Condition Monitoring Specialists
MONITOR ISSUE 69
WEAR CHECK CONDITION MONITORING THROUGH OIL ANALYSIS

LAB CAPACITY BOOSTED WITH NEW EQUIPMENT

WearCheck's managing director, Neil Robinson, is confident that WearCheck's ongoing commitment to remain at the forefront of laboratory innovation, will ensure that the company remains at the helm of the condition monitoring industry

WearCheck recently invested over two million Rand on brand new cutting-edge laboratory equipment. The shopping list included a new Gas Chromatograph (GC), a new Inductively Coupled Plasma spectrometer (ICP) and a new High Performance Liquid Chromatograph (HPLC).

All the new equipment uses top of the range technology to continue WearCheck's legacy of accuracy and reliability of sample results and diagnoses. While the company has already invested extensively in GC, ICP and HPLC technology over many years – the laboratory capacity has been significantly boosted with the addition of the latest testing equipment.

WearCheck serves the earthmoving, industrial, transport, shipping, aircraft and electrical industries through the scientific analysis of used oil from mechanical and electrical systems. Additional services include the analysis of fuels, transformer oils, coolants, greases and filters. The new laboratory equipment will benefit customers across all industries, and particularly transformer analysis.

ICP spectrometry analysis provides high-speed detection and identification of trace elements at very low concentrations in oil to determine the levels of wear metals, contaminants and oil additives in lubricating oils. The ICP has been installed in WearCheck's Middelburg laboratory.

The HPLC separates compounds within a transformer oil sample, revealing the presence and quantity of trace degradation products, which in turn provides information on the operation of the transformer and whether there has been any breakdown of insulating material.

The GC separates and analyses compounds that can be vaporised without decomposition, revealing critical information about the presence of contaminants via the composition of the oil sample. In this instance, the detection and quantification of PCB contamination of transformer oils. The new GC and the HPLC are in operation in WearCheck's speciality laboratory (WSL) in Johannesburg, and have enabled more samples to be processed in a faster turnaround time.

WearCheck's Middelburg facility also recently acquired a brand new generator. This helps to bypass any fallout caused by the current power crisis in the country, which has resulted in ongoing and unpredictable load shedding. This now means all of WearCheck's laboratories have backup power supply, ensuring continuous uptime and uninterrupted service to our customers.

Managing director Neil Robinson explains, 'We are committed to ongoing investment in new technology to ensure that all laboratory equipment is state-of-the-art and rivals, often surpassing, our local and international counterparts. All laboratories are

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One of WearCheck's new ICPs (Inductively Coupled Plasma spectrometers) that has been installed at their Middelburg laboratory is operated by laboratory supervisor Salisha Dhanasar

OUT AND ABOUT

Training manager Ashley Mayer recently did some training in Abu Dhabi for the National Drilling Company. The company is situated about 150 km out into the desert from the city.

Pictured here are some of the National Drilling Company staff with WearCheck training manager Ashley Mayer (light blue shirt) and Vinod Athavia (on the right), from WearCheck PM (Dubai)

Diagnostician Quinton Verster recently conducted training for FQM (First Quantum Minerals) near Lumwana, at Kalumbila and Kansanshi, which are on the Zambian copperbelt near the DRC border.

Diagnostician Quinton Verster is seen here, posing with a 'small bakkie' in the Zambian copperbelt

Joburg branch co-ordinator Lorain de Bruin was in Kitwe, Zambia to conduct training on WearCheck's web-based software

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largely automated and integrated with the latest information technology. Research and development plays a major part in WearCheck's commitment to continual improvement.

The WearCheck Middelburg team is proud of their brand new generator, which protects the laboratory equipment from interrupted power supply such as load shedding. They are, from left to right, Caven Selane, Sipho Magcaba, Rufus Mathekgane, Robinson Tshabalala, Salisha Dhanasar, Nelly Dlamini, Pateince Skosana, Julia Motshwene and Randy Mathibela

ELECTRA MINING

As always, WearCheck hosted a stand at the most recent Electra Mining expo in Johannesburg. On display was one of the infrared cameras which is typically used during thermography, to assess the heat of components as part of WearCheck's condition monitoring programme

MINING INDABA

WearCheck warns of critical importance of condition monitoring

'If it rolls, runs, floats or flies, get it WearChecked!'

This is the advice from condition monitoring specialists WearCheck, who had a stand at the recent Mining Indaba 2015.

A good condition monitoring programme has been proven time and again to save money and time by preventing catastrophic component failure, instead allowing for planned downtime during which to conduct essential maintenance of machinery parts.

Mining Indaba 2015 delegates were able to inspect a variety of oil samples under an operational microscope at the WearCheck stand, where senior technicians were on hand to answer questions about oil and fuel condition monitoring, and related reliability solutions services such as thermography and vibration monitoring.

Pictured at Mining Indaba 2015 are Roger Bele-Binda (WearCheck's agent based in Abidjan in the Ivory Coast) and Steven Lumley (technical developer for WearCheck in South Africa)

WearCheck welcomed some VIP guests to Mining Indaba 2015, including (from left to right) Mr Daouda Thiam, Advisor to the President of the Republic of Côte d'Ivoire in charge of Mines and Natural Resources, Roger Bele-Binda, managing director of LBCA, and WearCheck and Set point Laboratories representative in Côte d'Ivoire, Kevin Gerber, managing director of Set Point Laboratories, Gerrit Fouché, regional manager of Set Point Laboratories, Jean-Claude Brou, Ministry of Mines of Côte d'Ivoire, Mr Michel Sodjeido Mian, CEO of TD Continental and vice-president of Côte d'Ivoire Chamber of Mines and Steven Lara-Lee Lumley, WearCheck technical development

THE BENEFITS OF GOOD MACHINERY ALIGNMENT

BY ROELF REYNEKE (SENIOR TECHNICIAN)

Roelf Reynecke

The heart and soul of virtually every industrial operation pivots on keeping rotating machinery in good working order. Countless processes are dependent on the successful operation of rotating machines that produce electric power, fuels, paper, steel, glass, pharmaceuticals, the food we eat, the clothes we wear, the buildings we live and work in, and the vehicles that transport us across the surface of the earth. Just about everything you see around you has somehow been influenced by rotating machinery of some kind.

Studies conducted in the early 1980s revealed that 50% to 70% of premature machinery failures were caused by misalignment. This went some way to explaining why industry worldwide is losing billions of dollars a year due to misalignment of machinery. Since then, the development of tests to assess alignment has been a major priority for condition monitoring service providers.

The primary objective of accurate alignment is to increase the operating lifespan of rotating machinery while decreasing the power consumption demand.

As the parts that are most likely to fail are the bearings, seals, couplings, and shafts, the accurately-aligned machinery will reduce excessive axial and radial forces on the bearings to ensure longer bearing life and rotor stability under dynamic operating conditions.

Present day practice has proved that precise alignment will reduce the possibility of shaft failure from cyclic fatigue; it will minimise the amount of wear in the coupling components, alleviate the amount of shaft bending from the point of power transmission in the coupling to the coupling end bearing, and it will maintain proper internal rotor clearances.

In a nutshell, accurate alignment is vital and the key part of making this happen centres on the people who are responsible for installing, troubleshooting and maintaining this machinery.

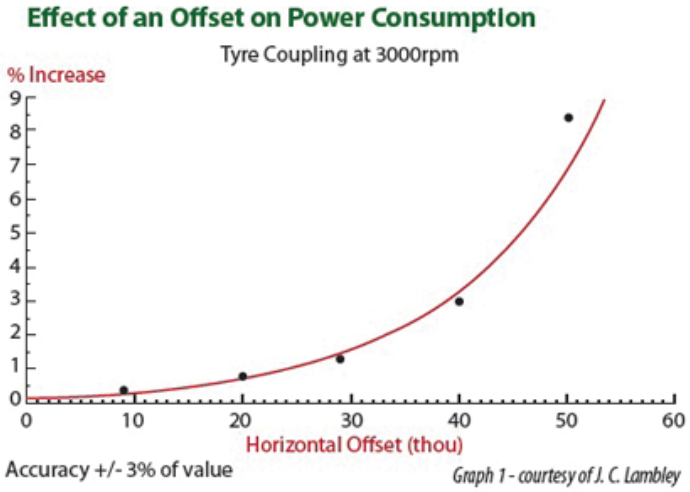
CONSEQUENCES OF POOR ALIGNMENT

Despite popular belief, misalignment can disguise itself very well on industrial rotating machinery. What we witness, are the secondary effects of misalignment as it slowly damages the machinery over long periods of time. Some of the common symptoms of misalignment are as follows:

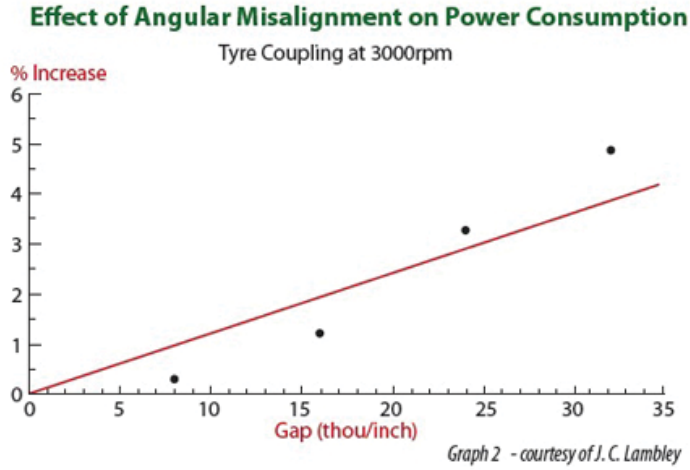
1. Premature bearing, seal, shaft, or coupling failures.
2. Elevated temperatures at or near the bearings, or high discharge oil temperatures.
3. Excessive amount of lubricant leakage at the bearing seals.
4. Certain types of flexible couplings will exhibit higher than normal temperatures when running, or will be hot immediately after the unit is shut down.
5. Similar pieces of equipment seem to have a shorter meantime between failures.
6. Unusually high number of coupling failures, or high coupling wear rates.
7. The shafts are breaking (or cracking) at or close to the inboard bearings or coupling hubs.
8. Excessive amounts of grease (or oil) on the inside of the coupling guard.
9. Loose foundation bolts, typically caused by a "soft foot" condition, are worsened by misalignment.
10. High power consumption demands.
11. An increase in 20% load will decrease the life of the elements in a bearing by 42%.

To calculate the impact on bearing life for other percentages of load change, the following formulae may be used: Ball Bearings: • % Bearing Life Decrease = (1 - (1 ⁄ (1 + (% Load Increase ⁄ 100)))3) x 100 Other Rolling Element Bearing Types: • % Bearing Life Decrease = (1 - (1 ⁄ (1 + (% Load Increase ⁄ 100)))3 1⁄3) x 100

In summary, to avoid the costly consequences of misaligned components, regular alignment-monitoring of components should be introduced as part of your overall condition monitoring programme. WearCheck's reliability solutions division offers this service using a variety of techniques – including vibration analysis and thermography – to monitor the alignment. By proactively conducting laser alignments when opportunities such as outages or maintenance days present themselves, it would further ensure the machine is aligned to specification, thus being able to note the alignment drift over time where an alignment frequency can be formulated.



Graph 1 illustrates the increase in power consumption with the rubber tyre coupling resulting from increasing offset.



Graph 2 illustrates the same for increasing angularity.
Reference: Shaft Alignment Handbook Third edition by John Piotrowski J.C. Lambley

FAREWELL MEL!

Melanie Hynd – a very familiar face to WearCheck staff and customers alike – recently retired after serving 25 years at the company.

Mel, or "Aunty Mel", as she was fondly known to her colleagues, worked as WearCheck's quality administrator for the past 16 years,

Guided by her keen eye for detail, and her penchant for doing things 'the right way first time, and every time', Mel oversaw the company achieving – and maintaining – its status as the only condition monitoring company on the African continent to earn ISO 9001 quality certification and ISO 14001 certification for its environmental management programme, and ISO 17025 laboratory-centric quality management accreditation.

Looking back on an illustrious quarter century with WearCheck, Mel reminisces, 'I joined in 1990 to work in sales, and in 25 years, I have reported to four different MDs – Wally Crawford, Lesley Crawford, Gary Brown and Neil Robinson.'

Following a promotion in 1995 to head of customer services, where she spent about three years, Mel then moved across to quality administration.

She expressed her gratitude to all the staff who volunteered to serve as internal auditors, to assist her in her quest to implement and maintain the excellent standards for which WearCheck is renowned.

'Putting the quality systems in place was such a HUGE job, no one single person could ever have done it solo, and I am so grateful to the internal auditors who help make this a smooth process every year.'

Says Mel, 'The way WearCheck has grown over 25 years is amazing and phenomenal. It was so exciting when WearCheck became part of the International Group, and we met lots of fellow "WearCheckers" from overseas.

'In a nutshell, my time with WearCheck was a wonderful learning curve for me, and "one hell of a ride!"'

And how does Mel fill her days now that she no longer has to rush to the office every morning? 'I am catching up on lost time in the bridge-playing world, spending time with my family, and I'm also learning Thai Chi art movement and really loving it!'

From all of us at WearCheck: 'Farewell Mel, we wish you everything of the best for your well-earned retirement, we salute you and we all miss you!'

Quality administrator Melanie Hynd recently retired after 25 years with WearCheck

LUBE TIP

Understanding the difference in synthetics

There is no minimum quantity of synthetic base oil required in order to call a blend a semi-synthetic lubricant. Because Group III and Group IV base oils are both considered synthetics, any oil labelled as a full synthetic would contain either Group III or polyalphaolefin (PAO) or both. Any oil that is labelled as a partial synthetic, semi-synthetic or synthetic blend would contain Group I or Group II (mineral oil) plus some amount of Group III oil or PAO (synthetic).

WINDABA

On hand to greet delegates to the WearCheck stand at the recent Windaba Expo in Cape Town were (left) Steven Lumley (technical development) and Philip Schutte (reliability solutions)

WIND TURBINE TRAINING

Steven Lumley was invited to conduct wind turbine training in the Eastern Cape recently. The training was kindly hosted by a company called 3energy, and was held at The Blue Horizon Bay Community Centre in Port Elizabeth.

Delegates who attended wind turbine training are pictured at Metrowind Van Stadens wind farm with Steven Lumley (technical development for WearCheck)

NEW ADDRESS NOTIFICATIONS

WearCheck Mozambique is now located at:
Bairro Chitata, Vila de Moatize, Tete, Mozambique.
Their other contact details are:
Telephone: +258 846-977006
Email: supportmz@wearcheck.co.mz

WearCheck Cape Town has moved to new premises, and is now situated at:
The corner of Viking & Odin Drive, Thor Gardens, Thornton, Cape Town (Opposite the Epping Market) For more information, please contact them on telephone: (021) 531 4540 or 076 050 6807, or via email: support@wearcheck.co.za

Meet the new WearCheck faces

Ernest Moremedi has been appointed technical sales consultant, covering the Johannesburg and Rustenburg areas

Annemie Willer is the new reliability solutions lubrication consultant, based in Middelburg

Shane Goslin has been appointed as field/mini-lab technician at WearCheck Pinetown

Familiar faces . . . new places at WearCheck

Ashley Meyer has been appointed training manager – a new position – based in Johannesburg, but travelling to all corners of the globe to conduct WearCheck training courses

Salisha Dhanasar has been promoted to laboratory supervisor at WearCheck Middelburg

Prinda Narasi has taken over as quality administrator from Melanie Hynd, who retired recently

SMALL WORLD

Technical queries from around the world are directed to WearCheck in South Africa. A few recent examples include:

- A request for analysis of gas engines in Moscow
- An OEM required WearCheck to run tests for trial in Dubai, Saudi Arabia and Oman
- Request for a quote as well as description of the test methods used to analyse diesel fuel from an industrial company in Pudong Shanghai, in China
- An enquiry about oil samples in Muscat / Oman

SAMPLES FROM AFAR

Many of these enquiries from faraway places generate proper leads and new customers. For example, some of the other countries from which we have received oil samples recently are:

Afghanistan, Angola, Argentina, Bahamas, Bahrain, Bangladesh, Botswana, Cameroon, DRC, Ethiopia, Ghana, Greece, India, Iraq and Israel.

CONGRATULATIONS! THE WINNER IS...

We extend our hearty thanks to all the WearCheck customers who took the time to complete our recent survey... we had a record response rate this year, with nearly 200 completed survey questionnaires being filled in.

For the first time ever, it was possible to complete the questionnaire online – this has proved a popular option amongst our customers and we will be offering this during our 2015 survey.

We sincerely do appreciate your feedback – it is via this forum that we can address any issues you raise and continuously improve our service – creating a win-win situation.

As a token of WearCheck's gratitude to customers for taking the time to provide us with constructive criticism (as well as compliments!), a respondent's name is randomly drawn from a hat to win a prize. This year, Fanie Prinsloo of Landrover Constantia Kloof won the lucky draw.

We appreciate these positive words from some of the survey respondents:

- I think it is world class and will recommend WearCheck to any person running a maintenance programme
- Happy with the system and to be honest, WearCheck saved our company a lot of money that would have been spent on a major breakdown
- Completely satisfied – WearCheck definitely walks the extra mile
- Highly professional
- I am very happy with all the service that I obtain from WearCheck and will encourage anyone else to use the facility
- Thanks guys for all your hard work
- WearCheck offers my company the best ever service in analysis
- I would like to recommend WearCheck to all my OEMs

Customer survey 2014 lucky draw winner Fanie Prinsloo of Landrover Constantia Kloof (left) was awarded an Apple Ipad by WearCheck's Phillip Croucamp

CONGRATULATIONS TO OUR INTERNAL AUDITORS!

Congratulations and well done to our internal auditors! Roelf Reynecke was awarded the title of Internal Auditor for Gauteng in 2014, while Samesh Pillay won the equivalent award for Pinetown.

Roelf Reynecke was awarded internal auditor for Gauteng

Samesh Pillay was awarded internal auditor for Pinetown

WearCheck will shortly open a new laboratory at Kibali Gold Mine in the DRC. Equipped with the latest high-tech instruments, the lab offers fast sample turnaround time and highly accurate oil analysis results

GOLDEN OPPORTUNITY FOR WEARCHECK IN DRC

WearCheck's newest laboratory is set to open soon on the new Kibali Gold Mine, potentially the largest gold mine in Africa, which is located North-Eastern Democratic Republic of Congo (DRC).

Offering a wide range of condition monitoring services for the mining sector – including oil analysis, coolant testing, diesel testing and 24 hour sample turnaround time – WearCheck's Kibali laboratory is also available for use by other industries, such as quarrying, industrial, transport and shipping operations.

The Kibali laboratory – WearCheck's eleventh – joins an expansive network that is strategically positioned to support large industry clusters around Africa.

The ten other WearCheck laboratories operate in Gauteng, KwaZulu-Natal, Mpumalanga Province, and internationally in Mozambique (Tete), India, Dubai, Ghana and Zambia – at Lumwana mine and Kitwe - with a presence in Cape Town, Rustenburg, Steelpoort, Port Elizabeth, Zimbabwe and Namibia.

Playing a key role in proactive maintenance through the scientific analysis of used oil from mechanical and electrical systems, WearCheck has become the condition monitoring service provider of choice for large multi-national operations across the African continent.

The instruments in WearCheck Kibali's laboratory comply with WearCheck's strict adherence to international standards, and represent a significant investment in technology for the company.

WearCheck Kibali will be located on the Kibali mine site. They can be reached via email: support@wearcheck.co.za, or visit www.wearcheck.co.za

STALWART TEAM MEMBERS CELEBRATED

Dedicated team members are some of WearCheck's major assets, giving the company many faithful years of service.

Michelle Padayachee, HR manager, applauded the loyalty of staff members who have served WearCheck for many years. 'We appreciate your loyalty and dedication. Your knowledge and expertise is what helps WearCheck to provide top class service to our customers.

'I would like to acknowledge those who have reached important milestones recently. Our longest-serving employee is laboratory supervisor Vigie Manikum, who has devoted the last 40 years of her life to WearCheck! Congratulations and thank you Vigie!

'Well done to Patricia Ncibilika, who has reached 30 years' service with WearCheck. Congratulations as well to quality administrator Melanie Hynd, who recently retired after 25 years at the company.

'Karen Govindsamy, Nomusa Mdlala and Edna Mthembu, all reached their 15 year milestone this year. And also, more team members who recently reached 15 years' service are Josephine Rakolota, Gustav Lourens, Chamaine Pillai, Aaron Mchunu, Cowboy Manana, and Quintus Mosiya. Thank you everybody, for your dedication and support over many years.'

Laboratory supervisor Vigie Manikum has worked at WearCheck for 40 years

Sample room assistant Patricia Ncibilika has worked at WearCheck for 30 years

Set Point Cyclists conquer The 94.7

Standing proudly (some nervously!) at the starting line of the recent 94.7 cycle race in Johannesburg were fourteen intrepid cyclists from the various Set Point sister companies.

All fourteen Set Point team members who started the race, also crossed the finish line and earned medals.

Congratulations to all the team members who put in a big effort to complete their training and grind their gears to climb the inclines on the new course, which was much hillier than previously.

Thank you and well done to Greg Morse, Set Point Group Health and Safety manager, for a great job as team manager.

Some of the Set Point cyclists who completed the gruelling 94.7 cycle race in Johannesburg recently were, from left to right, Sharon Fay, Greg Morse, Karen Black, Steven Black, Marius de Wet, Stephed Francis, Wian Nortje, Eran Nortje and Pieter Nortje.
(Other cyclists who completed the race but were not in the photograph were: Adrian Budding, Deon Steenkamp, Caitlin van Eeden, Ryan Joshua and Vic Bester.)

2015 TRAINING COURSES

VENUE	Oil Analysis 1 Understanding oil and its analysis (2 days)	Oil Analysis 2 Report interpretation (1 day)
Cape Town	12 – 13 May	14 May
Rustenburg	23 – 24 June	25 June
Bloemfontein	21 – 22 July	23 July
Pinetown	18 – 19 August	20 August
Namibia	15 – 16 September	17 September
Gauteng	20 – 21 October	22 October
Northern Cape	17 – 18 November	19 November

COSTS

Oil Analysis One covers two full days and costs R4 999. Oil Analysis Two and the NetCheck course cover one full day each and each costs R2 500. [Please note that the Oil Analysis Three course will not be run this year]. All courses include course material, refreshments, giveaways and certificates. Prices exclude VAT and are subject to change.

BOOKINGS

For more details on course content, view Training at www.wearcheck.co.za. For bookings phone Kay Meyrick on (031) 700-5460 or email training@wearcheck.co.za.

ON-SITE TRAINING

All courses can also be presented at the customer's premises for a minimum of seven delegates.

WearCheck also offers two more on-site courses:

- WearCheck Practical (in English or Zulu), a half day course costing R600.00 plus VAT per delegate
- WearCheck Customised – oil analysis for workshop technicians, a full day course costing R1450.00 plus VAT per delegate.

For on-site training, there may be an additional charge for the lecturer's travel and accommodation, if needed.

ARRANGE A TRAINING COURSE NEAR YOU

Training courses can also be arranged in any of the following areas:

Bloemfontein
Cape Town
Kimberley
Makopane
Middelburg
Nelspruit
Port Elizabeth
Rustenburg
Steelpoort
Botswana
Namibia
Tanzania (Mwanza)
Zambia (Kitwe)

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 melanie@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 prinda@wearcheck.co.za. Before you do this, why not check out the 59 titles already available on the web site: www.wearcheck.co.za/bulletins.htm

JOINING TOGETHER TO SUPPORT THE PLANET

If you would prefer to receive future issues of WearCheck Monitor and Technical Bulletin via email in pdf format instead of in printed form, please email a request to: support@wearcheck.co.za. This option also applies to printed reports.

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