

ANALYSIS RANGE BOOSTED BY NEW LAB EQUIPMENT

Oil analysis... condition monitoring... reliability solutions – these are not static concepts or services; rather, they evolve constantly over time to meet the ever-changing maintenance needs of industry as machinery and components are updated and redesigned.

WearCheck is dedicated to remaining at the forefront of the reliability solutions game, and invests regularly in new laboratory equipment and training for our scientists.

The latest addition to the Pinetown laboratory is a brand new air release tester – a sophisticated instrument that measures the ability of an oil to release entrained air by pumping air through the oil sample at predetermined conditions.

Laboratory manager Meshach Govender explains, 'We record the time taken for the entrained air in the sample to reduce in volume to 0.2%. Entrained air that is not readily released from the oil can lead to spongy hydraulic action, inability to maintain oil pressure, incomplete oil films and the acceleration of oxidation of the oil.'

'The air release service was previously outsourced, and is now done in-house. This has reduced the turnaround time for sample results, and is of particular benefit to our customers with turbines and hydraulics, as well as gear oils to a lesser extent.'

WearCheck offers a host of tests, including the scientific analysis of used oil, which forms a complete condition monitoring programme, servicing components in many industries, predominantly mining, electrical, earth moving, aircraft and transport.



WearCheck's senior laboratory assistant Sheila Naidoo operates the brand new air release instrument in which the company recently invested, and which has made sample turnaround time faster

The process of the air release test, as explained by WearCheck diagnostic manager John Evans:

The oil is heated to 25, 50 or 75°C depending on the viscosity of the oil. A sinker is placed in the oil and its density (mass) is measured. The sinker is then replaced with an air inlet tube and air is bubbled through the oil. As air becomes entrained in the oil, the apparent density of the oil will be reduced. After a set period of time, temperature and flow rate, the air source is removed and replaced with the original sinker.

The sinker will now appear to 'weigh' more as the medium in which it is suspended now has a lower density. The time taken for the sinker to return to its original weight is measured. Ideally this time should be less than 10 minutes, while new oils take around about three minutes.

Season's Greetings

2016 was a real mega-milestone on the WearCheck timeline – we celebrated 40 years of condition monitoring excellence this year. I would like to personally thank all the WearCheck staff and customers for your tremendous partnership – with your support, the company has enjoyed four fabulous decades.

It has been a very busy year indeed – the WearCheck family has now grown to 13 laboratories, with two of our newest opening this year in Zimbabwe and in Namibia. The WearCheck web was spun across the African continent, with oil analysis and condition monitoring training courses being run both locally and several foreign countries, and a presence at the major international mining expos in the EMEA region.



Neil Robinson, managing director

LUBE TIP

Appearance and colour provide easy means to detect changes that have taken place in oil. These changes include contamination with other oils, water contamination (often evidenced by haziness/cloudiness when in excess of 200 PPM, depending on oil type) and oxidation (darkening of the oil). The oil should be clear and bright with no visible water (haze or layered) or sediment. Comparing the oil's colour to new, unused oil is useful in the examination process.



John Evans, diagnostic manager

PRESTIGIOUS PEER REVIEW

WearCheck's diagnostic manager, John Evans, who – in his more than 25 years with the company – has had many of his articles published in many scientific journals in several countries, has diagnosed over a million samples, has conducted many training courses and is widely recognised as an inveterate expert in the oil analysis field.

WearCheck, and John, were recently honoured

when John was invited to conduct a peer review on a manual chapter written by two American scientists, entitled "Particle Counting: Fuels and Lubricants" for the ASTM-Books.

The managing editor for Technical Books and Journals for ASTM International, Kathy Dernoga, explains the importance of peer review. 'Peer review is an integral part of the publication process. We select reviewers based on their internationally recognised expertise, demonstrable research abilities and experience, prior review experience and critical judgment of the subject matter.

'Reviewing papers for publication is perhaps the highest mark of respect bestowed upon a researcher. To be asked to review a scientific paper is an acknowledgment of a researcher's superior knowledge and experience.'

Kathy was grateful for John's input, 'Thank you for your thoughtful, educated recommendations.'

Well done, John, you have done WearCheck proud.

MAKING HEADWAY

CHEMISTRY MASTER

Jacques Blignaut has joined WearCheck as the new chemist in the Pinetown laboratory. The capacity for this position developed as the laboratory becomes busier due to WearCheck's expansion around Africa. Jacques, who has gained prior work experience in the catalysis industry, was recently awarded his Master of Science degree (chemistry) from Wits University.



Jacques Blignaut

MIDDELBURG MOVER

Paul Nhlapo has been promoted to a position where he handles the business development and technical support for WearCheck Middelburg. Paul joined the company in 2014, working initially as an on-site supervisor and sampler at Khutala.



Paul Nhlapo

KATHU CONNECTION

Jacoba Schwartz is WearCheck's new face in Kathu, having taken over from Jennifer van der Merwe. Jacoba covers the areas from Kuruman to Upington and surrounds. She is on hand to develop sales, process quotations and collect filled sample bottles from customers to dispatch to the laboratory. Jacoba also serves as a depot that supplies WearCheck kits to customers in the Northern Cape.



Jacoba Schwartz

LABS OPEN OVER CHRISTMAS

Please note that WearCheck is dedicated to being available all year, and we will therefore remain open throughout the festive season to process samples.

On behalf of the whole team at WearCheck, – wishing you and your loved ones a safe and cheerful festive season, and very best wishes for 2017.

Celebrating 40 years of condition monitoring excellence

1988

WearCheck has grown to 40 employees (now over 200!)

1996

The company is awarded its first ISO 9000 accreditation, which has remained intact for 20 years

2007

WearCheck builds first containerised lab in Zambia

PRODUCT PICK: BYPASS FILTERS

Clean oil, clean fuel save money

WearCheck, has now extended our fuels, lubricants, air and coolants (F.L.A.C) maintenance programme to include unique bypass filters, which minimise contaminants, thereby extending the life of the oil or fuel.

The filters were initially trialled at a chrome mine on three GHH machines running air-cooled motors. Once proven effective, the filters were then fitted to a further 27 machines in the same mine. The mine has already recorded savings of R1.7 million after paying for the implementation of the WearCheck programme.

Also known as depth filters, the bypass filters are bolted externally on each component, and the oil or fuel of that component passes through the filtration system, similar to how an individual dialysis machine would assist a patient to filter their own blood.

Oil or fuel typically passes through three filters – first the OEM water separator, next the OEM diesel filter, and finally WearCheck's depth filter, which is last in line, and which provides extremely fine microfiltration, screening particles between 0.5 and 1 microns in diameter.

Chris Hattingh (operations/technical support for WearCheck), outlines some of the advantages of the process, 'By ensuring the fuel at the injector tip in a diesel engine is super-clean, it protects the moving parts and keeps these within spec for much longer, allowing for better atomisation.

'Cleaner fuel burns with more power, therefore there are less by-products passing into the oil, such as soot. This means that

lube oil can potentially last longer – and the additive packages don't have to work as hard, so they last longer too.

'By using scientific data on the oil's condition, we can advise customers when it is feasible to extend the oil drain interval without risk, thereby saving them money. The filters function best as part of a comprehensive condition monitoring programme.'



Bolted externally onto the machine is one of WearCheck's bypass filters for the transmission. The filters have already saved a mine over R1.5 million during an initial trial process

ABOVE ALL ELSE, QUALITY

WearCheck customers can rest assured – the company's dedication to providing outstanding, reliable customer service, has meant that the company's ISO 9001 quality accreditation has remained intact for the past 20 years.

In 1996, WearCheck was first awarded the ISO 9001 quality management system (QMS) accreditation, ensuring that the company meets the legal and regulatory requirements of the standard.

Our ISO (International Standards Organisation) accreditations are overseen locally by the South African Bureau of Standards (SABS) and are in place to ensure that customers receive the service which they have requested, at the required level of quality.

Maintaining ISO 9001 accreditation for so long is no mean feat – the process is managed by both internal and external auditors and reviewed, documented and audited annually.

Prinda Narasi, WearCheck's quality administrator, oversees the process. She outlines some of the requirements, 'All ISO (International Standards Organisation) requirements are reviewed every five years to keep the processes current and relevant to the marketplace.

Denesh Naidu of the SABS liaises with WearCheck on the audit process. 'WearCheck has undergone many quality audits over the past 20 years, and always retained their rating. Where room for improvement is identified, the company makes the necessary adjustments and complies with all the requirements. With this level of commitment, the SABS is proud of their association with WearCheck', says Denesh.

WearCheck is currently the only condition monitoring company on the African continent to earn SABS ISO 9001 quality certification (since 1996) and SABS ISO 14001 certification for its environmental management programme (since 2005). In addition, Wearcheck has had ISO 17025 laboratory-centric quality management accreditation (since 2012).



WearCheck's quality administrator Prinda Narasi is the custodian of the company's ISO accreditations and certifications – a process that has been in place for the past 20 years. Here, she holds up the original ISO 9001 certificate from 1996

TECHNICAL TIP: How to react to a WearCheck sample report

by John Evans, diagnostic manager



John Evans

For oil analysis to be at its most effective, samples must be taken at regular intervals. There are two main reasons for this: firstly, regular samples ensure that if anything does start to go wrong then it will be detected early and corrective action taken promptly. Secondly, no two machines ever behave in quite the same manner so it is vital to have a sample history for trending purposes. The current set of results needs to be compared to how the machine has been behaving in the past.

All diagnoses of oil samples follow a very simple logic path. Wear and contamination levels are assessed, the cause of any abnormality is determined, corrective action is recommended and the condition of the oil is commented on. This thought process is applied to all samples. One further thing needs to be assessed and that is, if there are

any abnormalities, how serious are they? This assessment will naturally answer the question, "how quickly should I attend to this problem?"

All reports have a severity rating. The ratings are labelled, in increasing severity: normal, borderline, urgent and critical. The actual names are arbitrary but it does give an indication as to how serious a problem might be. It is important to note that even with a critical sample, a recommendation for a strip down is given in less than 1/10th of one per cent of all samples. Unless there is a very obvious and very severe problem, a first actionable report on a component will never have more than a few, very basic checks that any workshop can carry out quickly and simply. The purpose of these checks is to determine whether the problem actually exists or not.

As a general rule of thumb, borderline problems are indicated when there appears to be a deviation in trend or when a defined parameter has just been exceeded. In effect, the report is saying, the readings are not following their normal pattern but there is no firm evidence that a problem exists. The recommended action will be quick and simple to carry out and its primary function will be to determine if any further action needs to take place. Borderline samples can be attended to at the next regular service. In these situations, doing nothing more than taking a check sample may be a perfectly acceptable reaction to a borderline report.

If the check sample still shows the presence of a problem or that it has worsened, then some action will definitely need to be taken. Any repeat problems, no matter what the severity, should be treated seriously. So, should borderline even be commented on? Yes, it is far better to attend to minor problems before they become major ones.

Repeat problems will occur when *the same type of problem* appears in consecutive samples. Problem types may include dirt entry, overheating, fuel dilution, internal coolant leak for example (there are about 20 different categories). If the same problem occurs on consecutive samples, the problem category will show FUEL*2, for example, if fuel dilution is still apparent on the next sample then FUEL*3 will be displayed and so on. Once the problem has been corrected and the evidence has disappeared then the counter will be reset to zero.

Urgent samples indicate that there is a very strong likelihood that a problem exists. Again, the report will only recommend some confirmatory check to be carried out. With urgent samples these checks will usually be greater in number and may require more time and effort to carry them out in order to supply more information about the condition of the component. Urgent samples should be attended to as soon as it is convenient to do so.

Critical samples definitely indicate that a problem exists and that it is quite severe in nature. These problems, ideally, should be attended to immediately. It is important to note, that even at this point, it would be extremely unusual for a strip down to be recommended. The first action that should take place following the receipt of a critical report is to read what the diagnosis says.

The important things to remember are that oil analysis is not an exact science and the vast majority of reports are either normal or precautionary (borderline); in fact, less than 10% of all samples are urgent or critical. Repeat problems, even borderline ones should be treated seriously as this shows that a problem has been confirmed and is not going away. The other things to remember are: read the report and do not over-react.

CHRISTMAS CHEER FOR CHILDREN

For many years, WearCheck has supported the children of St Vincent's in Mariannahill, through a variety of projects. One of the favourite events for everybody is the annual Christmas party at the orphanage, which houses over 100 homeless children. Money is raised through personal donations by the WearCheck staff, and the company matches the amount donated by the staff, effectively doubling the donation.

The money goes towards treating the children to a wonderful party with water slides, yummy food and gifts. This year, the party will be hosted on 7 December, and so far, an amount of over R6 000 has already been raised. Watch this space in the next *Monitor* newsletter for pictures of the shared happiness.

WearCheck staff members from various branches have clocked up some big air-miles lately, attending conferences, meetings and expos in several countries to stay abreast with the latest technology and to learn more about the evolving needs of industry.

WACA

The annual West and Central African Mining Summit & Expo (WACA) takes place in Accra, Ghana. This year, the WearCheck guys who were on-site to meet prospective customers and to talk condition monitoring, included Daniel Boakye, manager of WearCheck Ghana, and Pierre de Villiers, senior technician.



Here, Pierre de Villiers engages with two potential customers at WACA 2016 in Ghana

MINEX

Iran hosted the 5th annual Mines and Mining Industry Expo (MINEX), featuring the latest mining innovations for Iran and the Middle East. This year, WearCheck was present for the first time. Managing director Neil Robinson and Peter Safadi, manager of WearCheck PM Dubai were on hand to meet delegates. Neil was interviewed by an Iranian TV station, where he talked about condition monitoring.



Seen at MINEX in Iran recently were Peter Safadi of WearCheck PM Dubai, Kevin Gerber of Set Point Laboratories and Neil Robinson, WearCheck MD



MENA

The Middle East Mining Congress (MENA) once again took place in Dubai recently. This expo, which features “everything mining”, was attended by WearCheck for the first time.

On hand to meet and greet delegates at MENA in Dubai, were Peter Safadi (WearCheck PM Dubai manager), Steven Lumley (technical manager), Ingy Elazizi and MD Neil Robinson



WearCheck MD Neil Robinson is interviewed by Iranian TV at this year's MINEX show in Tehran

WINDABA

Wind energy is a burgeoning source of alternative power, and the focus of Windaba, as Africa's premier Wind Energy Conference, dovetails well with WearCheck's wind turbine condition monitoring programme. Attending Cape Town's 2016 Windaba expo from WearCheck were Steven Lumley (technical manager), diagnostician Quintin Verster and reliability solutions manager Philip Schutte.

FAREWELL, IAN

“To live in the hearts we leave behind is not to die.” **Thomas Campbell**

There was great sadness among the WearCheck team with the recent news of the passing of Ian Burford, after a short illness.

Ian first became a customer of WearCheck and a champion of preventive maintenance back in the late 80s, when he was working at Grinaker Construction.

Ian then remained a loyal WearCheck customer for the next 30-odd years of his illustrious career – which included senior positions in South Africa and other African countries – at Liebherr Mining, MCC Mining, DTP Terraces Mine, Western Star Mining Trucks, Quarry Cats/Group 5 Construction, Liebherr Africa and Grinaker Construction.

Ian's dedication to condition monitoring meant that he was instrumental in making oil analysis an integral part of each of his company's maintenance programmes.

From the early days, Ian became much more than just a loyal customer, becoming personal friends with many of the WearCheck staff. WearCheck founding director Lesley Crawford remembers Ian fondly, ‘Ian became a personal friend of all three of us, especially during his Grinaker days. We were so small and struggling and he was such a great support to us – he will be missed.’

Tributes to Ian from other WearCheck staff have been pouring in, all praising him for his professional integrity and dedication to quality. Here are two more:

‘He was always a man who insisted on quality service and who understood the value of oil analysis as part of a preventive maintenance

program. WearCheck will miss his loyalty and his inspiring leadership in the field of preventive maintenance.’

‘With his gregarious nature, Ian will be sadly missed by those who interacted with this technically astute man.’

From all of us at WearCheck, we send our condolences to Ian's wife Elaine and his family. Farewell, Ian.



TRAINING

WearCheck training manager Ashley Mayer conducts oil analysis courses for South African customers as well as those in exotic locations. Recently, he travelled to West Africa and Zimbabwe to offer training courses.



Workers from AngloGold's Ashanti site at Iduapriem in Ghana listen attentively to WearCheck training manager Ashley Mayer



Ashley Mayer (front row under banner, blue shirt) seen with African Mining Services delegates who attended an oil analysis course at a mine site in Zimbabwe recently

Steven Lumley, WearCheck technical manager, travelled to the Middle East to attend a conference and to run some training courses for customers in the region. She conducted a training course for employees of the NDC (National Drilling Corporation) of Abu Dhabi, and a course for Al Shirawi employees in Dubai.



Steven Lumley conducted oil analysis training for delegates of Al Shirawi in Dubai recently. She is pictured here (third from right) with some of her students



Steven Lumley talks delegates through water contamination and oil analysis in Abu Dhabi recently

Customer dialogue improves service

Based on the company's annual interaction with customers regarding many aspects of service, WearCheck alters the way things are done to improve customer service, and implements new suggestions made by customers.

'A hearty thank you to all customers who took the time to give us feedback, we are happy to receive both compliments and constructive criticism as a means to offer the best possible service to our customers,' says WearCheck sales developer Kay Meyrick.

Survey respondents had these kind things to say, for which we are grateful:

- We are very satisfied with the levels of service received
- Carry on with good service
- For the last 12 years I have had no complaints from my own customers. They are very happy with the way we do our reports and lube analysis reports
- Excellent service from staff
- Excellent technical support and advice given by Leon Marshall
- Keep up the good work
- Very happy with the service received
- I am thankful for the service of WearCheck
- Happy and entirely satisfied
- Very good and helpful

To thank WearCheck customers for taking the time to respond to the annual survey, a prize is randomly awarded to one lucky respondent. The 2016 winner is Alain Garbaccio from De Beers



2016 WearCheck customer survey lucky draw winner, Alain Garbaccio of De Beers, (right), receives his prize – a Samsung tablet valued at R6000 – from WearCheck Cape Town branch co-ordinator Quintin Ras

WEARCHECK 2017 TRAINING COURSES

Venue	Oil Analysis 1: Understanding oil and its analysis	Oil Analysis 2: Report interpretation
Course length	Two full days	One full day
Gauteng (Kempton Park)	14 – 15 February	16 February
Middelburg	14 – 15 March	16 March
Cape Town	16 – 17 May	18 May
Rustenburg	20 – 21 June	22 June
Bloemfontein	11 – 12 July	13 July
Pinetown	15 – 16 August	17 August
Namibia	12 – 13 September	14 September
Gauteng	10 – 11 October	12 October
Northern Cape	7 – 8 November	9 November

Oil Analysis One covers two full days and costs R5 540. Oil Analysis Two and the NetCheck course cover one full day each and each costs R2 795. [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.

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 R650 plus VAT per delegate

- WearCheck Customised – oil analysis for workshop technicians, a full day course costing R1 525 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	Rustenburg
Cape Town	Steelpoort
Kimberley	Botswana
Makopane	Namibia
Middelburg	Tanzania (Mwanza)
Nelspruit	Zambia (Kitwe)
Port Elizabeth	

RELIABILITY SOLUTIONS TRAINING COURSES

Mobius training is offered in 153 countries, and is recognised the world over as the preferred standard for reliability solutions technicians. Mobius courses are run by WearCheck and presented either on-site or at the ABB School of Training premises.

Courses include Alignment, Balancing, Awareness, and CAT I to III, and costs (excl VAT) are as follows, when presented at the ABB venue at 2 Lake Road, Longmeadow Business Park, Modderfontein, Johannesburg, South Africa.

Courses can be presented on-site, and will be quoted accordingly.

Course	Cost	Jan	Feb	Mar	May	June	July	Aug	Sep
Vibration analysis awareness	R6 370	23	20	27	29	26	25	28	16
Vibration analysis CAT one	R14 900		13-16			19-22		14-17	
Mobius ISO certification exams	R4 800		17			23		18	
Vibration analysis CAT two	R17 800			13-16					
Mobius ISO certification exams	R5 750			17					
Vibration analysis CAT three	R20 000								
Mobius ISO certification exams	R6 720								
Vibration analysis CAT four	TBA								
Laser alignment	R12 350	24-26			30-1				19-21
Balancing	R10 595		21-23			27-29			

To book any of the above courses, or get course dates for the second half of 2017, please contact Dennis Swanepoel on 082 878-1578 or email denniss@wearcheck.co.za, or contact Christene Fourie on (011) 392-6322 or email christenef@wearcheck.co.za

LONG SERVICE

LOYALTY RECOGNISED

WearCheck is a family of very dedicated and loyal staff members, many of whom have clocked up several decades with the company. HR Manager Michelle Padayachee commended all long-serving staff, particularly those who reached important milestones recently.

'Your loyalty and experience benefits both the company as well as our customers – helping us to continue to run the business efficiently and to offer excellent customer service. Thank you for your loyalty.'



Pinetown lab assistant
Malcolm Govender has
worked at WearCheck for 15
years



Johannesburg-based driver
Danny Nkomo has worked at
WearCheck for 10 years



Springs-based reliability
solutions technician Frank
Nkuna has worked at
WearCheck for 10 years



Isando-based reliability
solutions technician Marcelle
Symons has worked at
WearCheck for 10 years



Ellisras-based reliability
solutions technician Simon
Mosima has worked at
WearCheck for 10 years

UPCOMING EXPOS

Watch out for WearCheck at the **Mining Indaba** expo in Cape Town from 6 – 9 February 2017.

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 prinda@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 63 titles already available on the web site: [www.wearcheck.co.za/info/Technical Bulletins](http://www.wearcheck.co.za/info/Technical%20Bulletins)

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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