

HAPPY NEW YEAR



Neil Robinson, managing director

Welcome to 2016! From the whole WearCheck team, we wish you a year filled with happiness, good health and prosperity.

2016 is indeed a very important and exciting year for WearCheck – we proudly celebrate our 40th birthday this year.

From small beginnings as a soil-testing laboratory in the founding director's garage in Durban in 1976,

WearCheck has grown into one of the leading condition monitoring companies in the world, operating eleven laboratories in seven countries across Africa and beyond, with further expansion in the pipeline.

We have been particularly busy just lately; in addition to “business as usual”, we recently revamped our entire Middelburg laboratory, we opened a new office in Witbank, relocated our Cape Town office, and launched our LubriGard division and several new specialised test kits.

WearCheck also joined the Torre Industries family in 2015 – an exciting development with lots of potential for business growth. Our technical staff members have attended many expos and roadshows, where we have showcased WearCheck's condition monitoring products to a variety of industries, met lots of familiar faces as well as new customers. And, our reliability services division introduced the internationally-recognised Mobius training syllabus

The ongoing support from our customers is what enables WearCheck to expand and grow and introduce the latest technology. For this, we are very grateful.

We look forward to celebrating our 40th year with you. Keep an eye out for the exciting initiatives we have planned to mark this auspicious milestone in WearCheck's calendar. – Neil Robinson

40 years of WearCheck Excellence

2016 marks the 40th anniversary of WearCheck. In each edition of Monitor this year, we will bring you a few snippets of exciting moments in our illustrious history...

- 1976:** WearCheck is registered as a company with three directors, Wally Crawford as MD and Gary Brown and Lesley Crawford as technical directors
- 1976:** 69 samples are processed in WearCheck's first month of operation from a spare bedroom in Pietermaritzburg, with three staff members
- 1977:** Our first gas chromatograph is purchased
- 1978:** We take delivery of our first computer



The original founding directors of WearCheck in 1976 were (from left) Wally Crawford, Lesley Crawford and Gary Brown

TECHNICAL TIP: TURBULENT TIMES



Steven Lumley, technical manager for WearCheck

The study of fluids in motion is called hydrodynamics. To understand this discipline as it relates to oil sampling, the concepts of laminar and turbulent flow need to be understood. The word laminar means layered. This describes a smooth fluid flow. Fluids are made up of particle layers that slide over each other and follow a smooth and somewhat consistent path. Turbulent flow describes erratic fluid flow, characterised by small whirlpool-like currents called eddy currents. The Reynolds number is a dimensionless ratio of fluid flow used to determine the transition point from laminar to turbulent flow.

Turbulent flow is ideal for oil sampling because the fluid in this area is turning over

itself. This provides a homogeneous mix of particles of different shapes and sizes, which can be more evenly distributed in the oil sample. The best sampling locations are highly turbulent areas where the oil is not flowing in a straight line, but in a turning and rolling action in the component being lubricated. The turbulent zone can usually be found in an area where the fluid changes direction at high velocity creating a high Reynolds number.

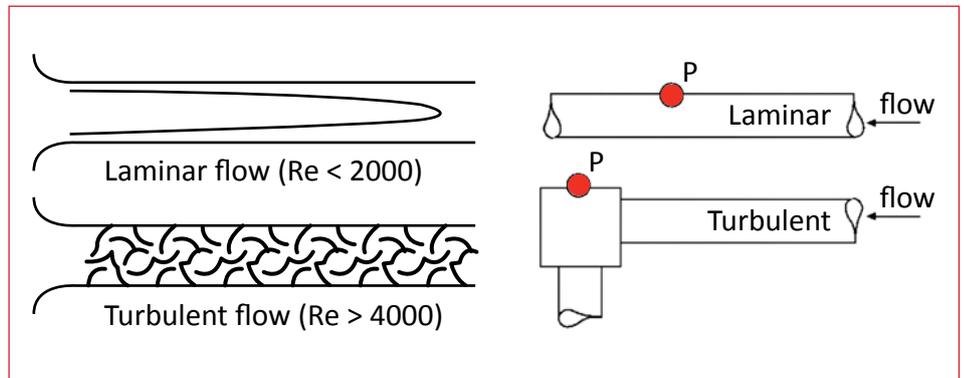
By contrast, laminar flow is quite different in that larger particles tend to flow in the boundary layer of the system (where the velocity is at its lowest) and the smaller particles tend to flow towards the centre where the fluid's velocity is at its highest. The distribution of larger particles in the oil is influenced by the size and shape of the particle itself, so sampling in laminar locations will not provide an accurate distribution of particles (wear particles or contaminants) for analysis. In layman's terms, because the larger heavier stuff sits at the bottom and the lighter smaller stuff towards the middle, the particles are not evenly distributed throughout the oil.

When you take an oil sample to determine the health of a component it is important to obtain data that is not only consistent, but accurate as well. The way to ensure this is by selecting a sampling point that can provide turbulent flow for an accurate, data-rich sample.

Now, at this point, you might be asking yourself why all the fuss about how to take a sample? Simply put, proper sampling procedures build the foundation of an effective oil analysis programme. Without good sampling procedures, time and money are wasted, and incorrect conclusions are reached based on faulty data. This undermines the value and – more importantly – confidence in an oil analysis programme.

So what do we want? We want an oil sample that effectively represents the body of oil about which we require data in order to increase the effectiveness of oil and machine decisions. The bottom line is to maximise data density and minimise data disturbance.

In the next technical tip we will discuss what is meant by maximising data density and minimising data disturbance.



Internal auditor awards

A hard-working team of voluntary internal auditors works behind the scenes to ensure that WearCheck's systems and processes continue to run smoothly. These dedicated workers are recognised for their contribution to the company, over and above their normal duties.

In 2015, the recipients of the Internal Auditor of the Year were Salisha Dhanasar (supervisor of the Middelburg laboratory) and Lyn Gengan (customer support assistant) in Pinetown



Lyn Gengan received the 2015 Internal Auditor award for Pinetown



Salisha Dhanasar was awarded the 2015 Internal Auditor award for Middelburg

WELCOME WEARCHECK WITBANK!

Witbank is the site of the newest WearCheck office, which is entirely dedicated to reliability solutions services.

The team is dedicated to the optimisation of plant performance management, and offers local customers all the latest reliability solutions, including

- The Station Thermal Efficiency Program (STEP), Coal Accounting and Plant Performance Monitoring Services.
- Plant Performance Monitoring of Boiler, Turbine and Auxiliary Plant.
- Routine testing and verification of raw data from plant used in the STEP system or similar programs to produce thermal performance results.
- Investigations and report with recommendations on the plant failures or incidents.
- Advice on the plant performance tests, including the load lines, clean air curves, plant inspections, air flow test, air heater leakage tests, O₂ verification tests, temperature traverse tests, gas velocity tests, condenser tests, dew point test, pulverised fuel sampling tests, generator H₂ leak test, HP & LP heater performance tests and any other performance and testing tests required for the plant optimisation.
- Assistance with the following during outages: air heater shoe gaps and seals settings, pulverised fuel burner settings, mills settings, draught plant settings, zeroing of coal conveyor mass meters and any other settings that may be required during the plant outages.
- Weekly plant walk-downs and liaison with the operating department for any deviations that are visible on the plant for



WearCheck Witbank opened recently, and is entirely dedicated to reliability solutions services.

corrective action to be taken. The activities are performed on the whole station, including turbine, boiler, mills and outside plant.

The Witbank Office is situated at Harest Park Shop, Unit 4, Langa Crescent, Corridor Hill, eMalahleni.

WearCheck Witbank can be reached via telephone on 082 878 1578 or via email on denniss@wearcheck.co.za



WearCheck staff and the orphans of St Vincent's in Mariannhill enjoyed a wonderful, fun-filled annual Christmas party

Christmas Cheer

Every year, particularly over the Festive Season, WearCheck makes sure to bring some cheer into the lives of children who need a little extra smile in their lives.

St Vincent's orphanage in Mariannhill, near Durban, is WearCheck's charity of choice, where over 100 homeless children are housed.

When the WearCheck team arrived to set up their annual Christmas party for the children, there certainly were lots of extra smiles beaming from their happy faces. They enjoyed a fun-filled day with jumping castles and games, gifts, lunch and sweets.

For most of these special children, WearCheck's gifts are the only ones they receive in the entire year.

The money to pay for the party was raised by WearCheck staff from their own salaries. The company then matched the donated money Rand for Rand, bringing the total to R9 000 for the party.

While the gifts and treats made the children feel special, the participation in the project and the gratitude of the children has, as always, left a reciprocal warmth in the hearts of the WearCheck staff.

As a long-term benefactor of St Vincent's, WearCheck has helped with several other projects at the orphanage, including the donation of a computer learning centre, and the installation of a sustainable vegetable gardening system.

SAFETY WIN FOR WEARCHECK



Safety has always been key at WearCheck, and proof of this is the latest award which WearCheck has won – the Makrosafe Trophy for having the highest compliance percentage in 2015 out of all the members in the previous Set Point Group.

Makrosafe is an independent health and safety compliance consultancy, which conducts an annual audit on the Set Point Group companies

The winner of the trophy, an annual award, is selected based on the company's audited compliance percentage over the year.

Proudly receiving WearCheck's Makrosafe trophy are (from left to right) health and safety representatives Shashay Rampersad, Samesh Pillay, Michelle Padayachee, Prinda Narasi and Meshach Govender, with Wendy Randall (centre) and Neville Parmesar (right) of Makrosafe

MAKING HEADWAY

The WearCheck family has once again enjoyed expansions and promotions to foster increased capacity, faster sample turnaround times and services in new regions and within new areas of speciality.

STEVEN LARA-LEE LUMLEY

Steven holds an N6 mechanical engineering diploma (HND N6). She joined WearCheck in 2008 as a diagnostician, and worked her way up to the position of senior diagnostician, and was then promoted to the position of Lead – technical development.

Steven, who diagnosed her millionth sample during 2014, has run customer training courses on oil analysis for WearCheck customers in Dubai and India, and one of the recent focus areas of her work has been the development of condition monitoring programmes for wind turbines.



Steven Lara-Lee Lumley has been promoted to technical manager

Some of the latest new recruits are:



Sharon Pieterse is now part of the WearCheck team in Rustenburg. Her position is Business development and technical sales



Riaan de Beer is a Reliability Solutions technician based at the Springs offices

LUBE TIP

The advantages offered by synthetic oils are most notable at either very low or very high temperatures. Good oxidation stability, higher viscosity index and a lower coefficient of friction (some synthetics) permits operation at higher temperatures. The higher viscosity index and lower pour points permit operation at lower temperatures.

From the book "Oil Analysis Basics"

Small World

WearCheck often receives unusual condition monitoring enquiries from many off-the-beaten-track places. We recently received our first ever enquiry from Nepal, regarding the testing of samples from aircraft engines.

VIGIE REACHES 40 YEAR MILESTONE

Four decades, 40 years, 14 600 days... whichever way you view it, it's a jolly long time...and that is how long our stalwart WearCheck lab supervisor, Vigie Manikum, has been with the company

On reaching the big milestone in November 2015, Vigie received congratulations from colleagues and friends both locally and around the globe, in recognition of her dedication and outstanding service to the company.

Managing director Neil Robinson summed it up in his note to all staff, 'Vigie, it has been a pleasure working with you all these years. Your contribution to the ever-smooth running of the laboratory has been immeasurable and I know there are a significant number of current employees, including myself, whose careers started in the lab, who appreciate the support and guidance you offered during their time there.'

So how did it all start for WearCheck's longest-serving employee?

"Well, says Vigie, 'I finished matric at 16, and was one of eight siblings. At 17, I started helping my dad in the laboratory where he worked, at Natal Canvas. In 1975, my mom saw an ad in The Mercury one day. We called, I was interviewed by Gary Brown on the Thursday, and by Friday, I had the job at WearCheck!'

Vigie's career at WearCheck began as an office worker, back in the pre-computer days, where reports and test results were manually typed up on a typewriter. With only Vigie, Lesley Crawford and Gary Brown in the office, everyone had many tasks to do to keep the then McCraw Laboratories going.

1976 saw the company name change to WearCheck. Vigie has seen WearCheck grow from a one-room operation to the multi-national operation it has become today.

Rising through the ranks, Vigie became junior



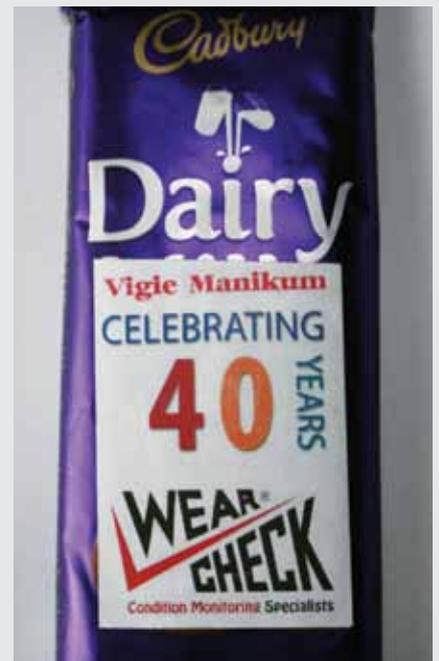
WearCheck's laboratory supervisor Vigie Manikum has worked at the company for 40 years

laboratory assistant (1978), a senior lab assistant (1982) then laboratory co-ordinator (1992) and finally laboratory supervisor (2000).

For the senior managers who mentored Vigie throughout her career, she has nothing but gratitude and respect. And this mentorship has filtered down to Vigie's own subordinates, many of whom wrote notes of congratulations such as this particular one (who now works as a diagnostician at another company):

'Congratulations on reaching this milestone, you have been the backbone of the lab over the years and for many more in the future. You have inspired your staff and motivated them way beyond the working environment. You have been a marvellous mentor.'

Looking back over the decades, Vigie insists she has never once needed an alarm clock, as she is still excited to get to work. 'Although not without its trials and tribulations, I have really and truly relished my career at WearCheck. My brain is on autopilot – when I wake up, it tells me "Go to WearCheck!"; she laughs.



True to her generous spirit, Vigie organised commemorative chocolates to give to every staff member in celebration of reaching her 40 year milestone with the company recently

Introducing Torre Industries

DID YOU KNOW, that Torre Industries (WearCheck's new holding company) is the leader in the tower crane market in South Africa? In addition to this, Torre recently entered the forklift, warehousing and forklift attachment industries, with the acquisition of Manhand (Pty) Ltd and its combination with Forktech and DR Forklifts, to form a materials handling operation with a comprehensive and price competitive offering. The combined business has a distribution footprint across South Africa and trades as Manhand, a division of Torre Lifting Solutions.



Upcoming Expos

WearCheck was present at the African Mining Indaba, in Cape Town in February 2016, and will also be at Electra Mining, Zimec and WaCA.

OUT AND ABOUT

In a quest to remain at the helm of technology and global condition monitoring trends, and to connect with customers throughout our trading footprint, WearCheck staff often travel to attend expos, conferences and seminars, and to provide training courses.

Incredible India

WearCheck managing director Neil Robinson and financial manager Scott Sowman travelled from head office in Durban, South Africa, to visit Nissar Ahmed and his team at WearCheck India.

Pictured here in the laboratory at WearCheck India are (from left to right) Sampath Kumar (company secretary), Nissar Ahmed (national manager - India), Mohammed Sabir (auditor), Mr Mobseen (sales engineer), Mr Mohamed (territory manager), Scott Sowman, Neil Robinson, Mrs Sajidha (application chemist) and Mrs Muji (accounts)



Windaba 2015



The thermal imaging camera and electric microscope at WearCheck's stand at Windaba proved highly popular for school pupils and other delegates who attended the expo



Many condition monitoring queries were fielded by the team at WearCheck's stand at Windaba. Ready to supply answers to delegates are (from left) diagnostician Quintin Verster, technical manager Steven Lumley and reliability solutions manager Philip Schutte

Bauma 2015



On hand to greet delegates at the WearCheck stand at BAUMA were (from left) Julianè De Beer, Steven Lumley and Isaac Mabaso



WearCheck showcased condition monitoring at the BAUMA 2015 expo, as part of the Torre Industries stand

MENA 2015

WearCheck sent a team to the MENA mining expo in Dubai in 2015. MENA is one of the leading mining conferences and exhibitions for the global leaders of the mining, quarrying and construction materials industries, in the Middle East, Africa, Central Asia and the Subcontinent to develop the future of the mining landscape.

The
MENA MINING
Show 2015
معرض للتعدين في الشرق الأوسط وشمال أفريقيا 2015

2016 TRAINING COURSES

Venue	NetCheck: Software Package	Oil Analysis 1: Understanding oil and its analysis	Oil Analysis 2: Report interpretation
Course length	One full day	Two full days	One full day
Namibia	On request	13, 14 September	15 September
Gauteng (Kempton Park)	On request	16, 17 Feb / 18, 19 October	18 Feb / 20 October
Cape Town	On request	10, 11 May	12 May
Pinetown	On request	16, 17 August	18 August
Northern Cape	On request	15, 16 November	17 November
Bloemfontein	On request	19, 20 July	21 July
Rustenburg	On request	21, 22 June	23 June

COSTS

Oil Analysis One covers two full days and costs R5 250. Oil Analysis Two and the NetCheck course cover one full day each and each costs R2 650. [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 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

Makopane

Middelburg

Nelspruit

Port Elizabeth

Botswana

Namibia

Tanzania (Mwanza)

Zambia (Kitwe)

RELIABILITY SOLUTIONS TRAINING COURSES

Mobius training is offered in 153 countries, and is recognised the world over as the standard for reliability solutions technicians. Mobius courses are run by WearCheck on demand. Costs include the examination fee for CAT I and II, and are as follows:

- One day on-site condition monitoring overview: R15 000.00 (RSA only)
- Four day non-certified basic: R10 000.00 preparation for CAT I (including RSA)
- Five day CAT I: R15 000.00
- Five day CAT II: R16 450.00

**prices exclude VAT, and are valid until the end of 2016.*

Note: the condition monitoring overview courses do not include any training material, and a minimum of six candidates is required for all training courses. There may be an additional charge for the lecturer's accommodation and travel.

To book a Mobius training course, please contact Christene on christenef@wearcheck.co.za or call WearCheck Johannesburg on (011) 392-6322.

NEW Languages

Good news for our foreign customers – a selection of the WearCheck *Technical Bulletins* and other documents are now available in French and Portuguese, and more documents are being added all the time. Please visit our website and click on the relevant flag to access these documents. The web addresses are:



www.wearcheck.co.za/french



www.wearcheck.co.za/portuguese

NEW Connections

ASIAN CONNECTION

Maqsood Ahmed's laboratory (Feasible Solutions) serves as a depot for the drop-off of oil samples in Asia, and he also stocks WearCheck oil sample kits. He serves predominantly the local mining industry, bridging the gap between WearCheck Dubai and India. Maqsood can be reached on telephone +92 0302 563-0900 / BC – 233/a, Madni Chg Baloch, Colony Shaheed-E.Millat Road, Opposite PAF Chapter, Karachi, Pakistan.



WEST AFRICAN CONNECTION

Roger Bele-Binda's laboratory (LBCA Inspection & Analyses) serves as a depot for the drop-off of oil samples in the region, and he also stocks WearCheck oil sample kits. He serves predominantly the local mining industry, boosting WearCheck Ghana's services in West Africa. Roger can be reached on +255 213-60830 / 06 BP 2681, Abidjan, Cote d'Ivoire.



PRODUCT PICK: ADVANCED INDUSTRIAL KIT



John Evans, diagnostic manager for WearCheck, displays the new Advanced Industrial Kit, in which an expanded range of sample types can be analysed for particle counts and acid numbers (TAN)

WearCheck has developed an Advanced Industrial Kit, in which an expanded range of sample types is analysed for particle counts and acid numbers (TAN). We have also introduced a product that includes an image of a debris pad, both normal and magnified, irrespective of whether any serious debris was detected.

Traditionally, particle counting has only been carried out on what are termed 'clean-oil-systems'. Such components include hydraulics, compressors, automatic transmissions and turbines. Particle counting has not been carried out 'drivetrain' components such as gearboxes and drives, as dilution of the sample is required to process high viscosity oils or oils that are badly contaminated. This is time-consuming and difficult to carry out, but WearCheck has created an automated procedure to handle these samples, making it a lot easier process them.

The effect that particulate contamination of oil has on wear rates has been well established for many years. Cleaner oils will reduce the possibility of equipment failure and greatly extend its lifetime. Many customers are now interested in monitoring the cleanliness of gear as well as hydraulic oils, and this new service will allow the assessment of contamination in gear oils, enabling customers to set targets, achieve these targets and improve on them - thus extending the life of gear type components.

Acid numbers are usually only analysed for compressor and turbine samples, but with the introduction of particle counting on all

samples except engines (the oil is too dark), it has been decided to extend this service to include a TAN on all samples as well.

Particularly on industrial equipment, the acid number is about the only means of assessing the health of the oil and is now included on all hydraulics and gearboxes as well as turbines and compressors. The TAN gives customers an extra indication of oil degradation and alerts them to the fact that the oil needs changing before damage is done to the component.

Finally, various screening tests are carried out on all samples (PQ, particle counting, visual assessment, etc.) to see whether debris analysis is required. The MPE or Microscopic Particle Examination is carried out when one or more of these tests fails and the oil is filtered through a fine filter membrane and any debris present is assessed with a microscope. A zoomed in (20 time magnification) and a normal image of the debris is taken and included on the report. The new service will include a full debris analysis irrespective of whether the screening tests have failed or not. This will give customers extra assurance of oil cleanliness or, in the case of severe wear or contamination, two pictures detailing all the gory details.

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 61 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



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A Part of Torre Industries

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