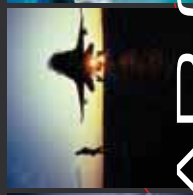
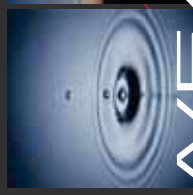
WEAR CHECK® AFRICA
A member of the Set Point Group

MONITOR
ISSUE 55

WEAR CHECK
CONDITION MONITORING
THROUGH OIL ANALYSIS





## COMPLIMENTS OF THE SEASON

The global recession has presented companies throughout the world with many challenges over the past twelve months. We wish to thank you, our valued customers, for your support in these difficult times and wish you all a peaceful festive season and prosperity in the year ahead.

# MIDDLE EAST JOINT VENTURE TAKES OFF

WearCheck has formed a new company, WearcheckPM, in Dubai in joint venture with engineering company, Precision Machinery (PM), which is also based in Dubai and has been WearCheck's partner in the United Arab Emirates for some time.

WearCheckPM has a full laboratory, which operates on the same basis as WearCheck's other remote laboratories, such as the laboratories at Lumwana Mine and Middelburg. The analysis of samples will be conducted in the Dubai laboratory and all results will be diagnosed by the diagnosticians at WearCheck's Pinetown office. It is also here that the database will be managed and all the reports generated.

The WearCheckPM team will be headed by Deepak Bahl as general manager, Sailee Sanjay Vanjare analysing samples, Violetta Livchenko responsible for sales and Burnon Croucamp providing technical support and assisting with sales.

One of the new company's major customers is Aggreko, the world's biggest supplier of fuel-fired power generators, whose head office is also in Dubai. Volvo has also shown interest in expanding on the service agreement they have with WearCheck in South Africa to cover their operations in the Middle East.

'The Middle East is an exciting market with huge potential,' says WearCheck managing director, Neil Robinson. 'Oil analysis is relatively unknown in the region so the scope for growth is considerable. Although there are other laboratories in the area, we believe they cannot match the quality of our products and service or our depth of experience in this specialised field, and we are confident that WearCheckPM is well placed to play a key role in developing this market.'

The WearCheckPM team in their new Dubai laboratory: Sailee Sanjay Vanjare, Violetta Livchenko, Burnon Croucamp, WearCheck Africa's Trevor Pillay and Deepak Bahl.

## DID YOU KNOW?

WearCheck offers a test to determine the amount of alcohol in petrol to complement its biodiesel in diesel test. For more information about the method and at which labs it is available, email paul@wearcheck.co.za.

## TECHNICAL BULLETIN TOPICS?

Is there a particular subject you would like to see featured in a Technical Bulletin? Simply email your suggestion to melanie@wearcheck.co.za. Before you do this, why not check out the 45 titles already available on the web site: www.wearcheck.co.za/bulletins.htm

# IT'S A SMALL WORLD

WearCheck receives compliments about its technical publications and queries about oil analysis and the company's training courses from all over the world on a regular basis. The most recent were sent by:

- A laboratory technician working in a used engine oil analysis lab in Harare, Zimbabwe and studying towards his Bachelor of Chemistry degree.
- A lubes technical engineer at Petronas Marketing Sudan Ltd in Khartoum, a sister company of Engen Petroleum Sudan.
- An engineer from ANCAP in Montevideo, Uruguay's state-owned petroleum company.
- An engineering supervisor working for Ethiopian Airlines at their headquarters at Bole International Airport.
- A commercial manager for Horizon Agencies & Commercial Services, a leading service provider for the energy sector in Yemen.
- A veteran oil researcher at the Industrial Technology Center of Southwestern Illinois College in Granite City in the USA.
- A mechanic on an oil rig in the Libyan desert.

This bears testimony to WearCheck Africa's status as a globally respected company in the field of oil and fuel analysis.

## MEET THE MIDDELBURG LAB TEAM

The Middelburg lab is going from strength to strength. A new ICP instrument was recently installed and the lab is now fully integrated with the Pinetown laboratory. Making up the team are (from left) Chris Hattingh (technical sales and support consultant), Annelien Rietvelt (office administrator), Dudu Mbatha (lab assistant), Leanne van Niekerk (lab assistant with experience of thermography, oil and vibration analysis), Julia Motshwene (housekeeper) and Jaco Stapelberg (thermographer and technical field support consultant). Customers in the area can deliver their samples to this lab and may also phone to ask for a collection from their offices. WearCheck Middelburg can be contacted on (013) 246-2966.

# PRODUCT PICK

WearCheck offers a number of convenient accessories to help customers take clean and representative samples quickly and effectively. Here is a selection of some of the products available.

### SAMPLING GUN

This sample extraction pump (including rinse bottle) is used to take oil samples from all types of equipment. Available with ¼", 3/16" or 8mm tubing.
Product code: WISP

### HIGH PRESSURE VALVE

This sampling valve connector is used to draw the oil from high pressure systems. It has a 12mm thread.
Product code: WMM

### GEARBOX SAMPLING VALVE CONNECTOR

For use with the gear-box sampling valve for taking samples from industrial gearboxes and pressurised systems.
Product code: WVCG

### FILTER CUTTER

Robust and custom-made for WearCheck to remove the paper element from a spin-on filter with minimal effort.
Product code: WFC

### SAMPLE TUBING AND CONNECTOR

The hard nylon tubing is sold in 1 metre lengths; the connector is used with the engine sampling valves (Metric or Imperial) for taking oil samples from engines and low pressure systems.
Product codes for tubing: WSTN1/4 (1/4" OD), WSTN3/16 (3/16" OD), WSTN8 (8mm OD)
Product code for connector: WVCE

# "BORDERLINE" CHANGES TO "CAUTION"

The terminology for the sample severity status "borderline" will shortly be changing to "caution" on WearCheck reports.

'There are currently four terms to describe the severity of samples – 0 (normal), 1 (borderline), 2 (urgent) and 3 (critical),' says managing director, Neil Robinson. 'We have decided to change "borderline" because it was occasionally misinterpreted by our customers.'

'On the one hand, some customers felt that "borderline" indicated a situation of imminent failure, causing them to take drastic action, whereas WearCheck intended this to indicate a situation where a component might no longer be normal and some minor intervention may be required. On the other hand, some customers ignored the term "borderline", whilst WearCheck's intention was that some action should be taken and that, although it was not urgent, the component should be monitored closely. It was felt that "caution" was a better way of expressing this.'

A full explanation of this can be viewed on the WearCheck web site: http://www.wearcheck.co.za/Bulletin%20Board.htm

## WELCOME BACK, ASHLEY

A warm WearCheck welcome to Ashley Mayer, formerly a diagnostician in the Pinetown office, who has rejoined the company after six years in the USA.

Ashley joined WearCheck as a diagnostician in 1996 after completing his BSc in mechanical engineering at the University of Natal. He then worked as a tribologist for ABB South Africa for almost three years before moving to the USA in November 2003, where he was employed by Noria Corporation.

Noria, which has its headquarters in Tulsa, Oklahoma, is well known internationally for serving the lubrication industry by gathering and disseminating knowledge through training, magazine publications, conferences and consulting. Ashley started off as a technical consultant, becoming a senior technical consultant and later director of applications engineering. Based at his home office in Philadelphia, Pennsylvania, his work took him all around the United States, Canada and the Caribbean, working in factories and mines in many different industries. His focus was improving lubrication-related activities at the plants, including oil analysis.

Ashley presented many training courses for Noria and authored the column "Squeaky Wheel" for both the **Practising Oil Analysis** and **Machinery Lubrication** magazines. He

Ashley Mayer

is a Level II certified Machinery Lubricant Analyst (MLA), a Level I Machinery Lubrication Technician (MLT) with the International Council for Machinery Lubrication (ICML), and a Certified Maintenance and Reliability Professional (CMRP) with the Society for Maintenance and Reliability Professionals (SMRP).

Whilst still in South Africa, Ashley completed the Advanced Business Programme at the Technikon Natal in 1999 and his National Certificate in Datametrics at the University of South Africa in 2006.

In his current position as senior technical consultant in WearCheck's Johannesburg office, Ashley will be visiting customers and helping with technical problems. He will also be responsible for developing WearCheck's training courses and the company's industrial training programme.

'I'm really excited to be back home again,' he said. 'You don't know how much you miss it until you're back. I'm looking forward to rebuilding old relationships and making new ones. In the near future, we'll be rolling out some new products in the training, consulting and accessories markets, so watch this space!'

## NEW ANALYTICAL CHEMIST FOR SPECIALITY LAB

Chemist, Mark Govender in WearCheck's Isando speciality laboratory.

Mark Govender has joined WearCheck's speciality laboratory in Isando as chemist.

His job is to ensure the smooth running of the fuel and transformer analysis functions in the lab, including quality assurance. He is also closely involved with the development of new tests and WearCheck's programme to attain ISO 17025 status for certain aspects of transformer analysis by mid next year.

Mark attained his Masters of Science degree in pure and applied chemistry at the University of Natal (Durban). He is a member of the SA Chemical Institute (SACI) and is midway through a B Tech degree in quality management through UNISA.

He comes to WearCheck from the CSIR where he worked for three years, first as a laboratory analyst and later as a researcher in their forestry and forestry products division. Here he was responsible for developing rapid, beneficial and internationally competitive analytical methods for this industry in South Africa. He also supervised their laboratories and ensured that all safety, health, environment and quality (SHEQ) requirements were met.

Whilst at the CSIR, he participated in a research and innovation core skills programme and attended a one-month course organised with the International Atomic Energy Agency (IAEA) on how to identify organic contaminants through water and soil analysis. He also visited Austria in 2008 to develop analytical skills that would be beneficial to the pulping industry in South Africa.

Mark has a thorough working knowledge of a variety of instruments and analytical techniques including size exclusion multi angle laser light scattering (SEC-MALLS), gas and liquid chromatography, mass and infrared spectroscopy and UV spectrophotometry.

He is thoroughly enjoying the dynamic working environment that the speciality lab offers and being part of a team that is dedicated to ensuring that WearCheck remains a forerunner in oil and fuel analysis globally.

# OPERATION GORILLA

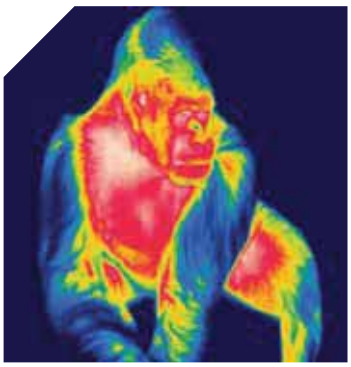
Taking infrared images of a gorilla is all in a day's work for WearCheck's thermography team. Well actually, this is the first time they have received such an unusual request but when the Johannesburg Zoo asked for help in determining what could be ailing their off-colour gorilla, Makokou, they were quick to respond.

The brief was to undertake an infrared inspection of Makokou, a male gorilla, to detect any physical anomalies that could explain his poor health.

'We use an infrared camera that allows the operator to see in the infrared wavelength, not in the visible, as humans see, applying the principle of first service radiation,' said WearCheck thermographer Jaco Stapelberg. 'Because this is not an x-ray, the camera cannot see through an object but the thermal energy emitted from a body is transformed into a visible image that we can see. Thus, what lies beneath the surface can be portrayed as a problem or anomaly such as inflammation, blocked veins close to the skin or poor blood circulation.'

'Thermal imaging, although very effective in some applications, does have its limitations though, particularly when dealing with a mobile gorilla with a thick coat of fur that we could not get too close to and which could not be positioned exactly as we wanted,' Jaco explained. 'We took a number of infrared images of Makokou but not all positions could be inspected.'

'When dealing with a warm blooded body, we identify abnormalities by comparing one side of the body with the other. Any differences could indicate a problem. In Makokou's case, the infrared patterns on the images we took were very symmetrical, indicating that he appeared to be in a healthy condition. However, if there were any "hot spots" underneath the fur, it would have been extremely difficult to detect them and compare them with any low temperature areas and so some problems might have been overseen.'



# NEW TRANSFORMER ANALYSIS COURSE

More than 30 people signed up for WearCheck's new transformer analysis course. Amongst them were Juan Pieterse from ABB's Matimba Site (left), seen here in discussion with Gert Nel of WearCheck.

WearCheck presented a new one-day course on transformer analysis at its Johannesburg offices in November.

It was attended by 35 people – mainly customers and associates from Johannesburg and Durban who are involved with maintaining transformers or are working in this field and wanted to broaden their knowledge of the subject. Some of the companies represented included ABB, ASA Metals, JAS Engineering and Micosa Industries.

Said Mark Govender, chemist in WearCheck's speciality laboratory, 'The course was designed to fill a gap in the knowledge of the various tests done on transformers, especially the combination of tests as it is long past the time for M/A/D testing to be sufficient for transformers. Our aim was to give a detailed explanation of the different laboratory tests which are available and their benefits.'

The course was presented by Mark along with Gert Nel, speciality laboratory diagnostician, Werner Buys, who undertakes on site sampling and field support for WearCheck, and Jaco Stapelberg, thermographer and technical field support consultant based in the Middelburg laboratory. It covered:

- Correct sampling procedures
- The different test methods and standards used by WearCheck, including:
  - Furanics
  - DGA
  - M/A/D
  - PCB
  - Tan Delta
- An explanation of WearCheck reports
- A tour of the speciality laboratory

'The course was well received by the delegates who said that they were impressed with the content and the knowledge of the presenters.' Mark said. 'Many requested dates for future courses as they believe others in their organisation would benefit from it.'

WearCheck plans to run four courses on transformer analysis next year, which would be of value to anyone who works with transformers, transformer owners, maintenance managers and engineers. For more information, phone Michelle van Dyk on (011) 392-6322.

# THESE ADDITIVES DON'T EXIST

I'm afraid I have some bad news . . . and no, it's not about the economy. It's about what I often call "imaginary additives". These are the additives that seem to exist in the minds of many lubrication practitioners but don't exist in the physical world of lubrication reality. They seem to provide solace to those who pay the bills of machinery unreliability.

As good as modern lubricants may be, they are never a panacea for bad lubrication practices. Conversely, real additives can be real problem-solvers that enhance the performance and reliability of both the machine and the lubricant. So, there's a difference between the real and imaginary. I want you to know the difference. This column will go down the list of imaginary additives and discuss the many misconceptions that pervade the lubrication community. I hate to be a myth-buster, but reality is reality, so let's get started:

## ANTI-DIRT

The only remedy for dirty oil is a filter or an oil change. Even better is not having dirty oil in the first place (via routine contaminant exclusion). Don't imagine that there is some virulent, dirt-curing additive in your lubricant's formulation. Dirt doesn't care how sophisticated your lubricant's chemistry might be. Whether your lubricant emerged from a backroom or a space-age laboratory, dirt will spare no effort to cut, abrade, dent and score your machine surfaces.

## WRONG-OIL FORGIVER

Lubricants and their additives do not automatically adjust to the environs and needs of the machines within which they are placed. There are thousands of different lubricant formulations on the market for a reason. They are not alike and they don't perform alike and, hence, users will not receive like results. Precision lubrication is about precisely selecting the right lubricant for the target machine and making sure that particular lubricant is always used and then replaced before its life is done.

## WATER ZAPPER

Water exacts an evil curse on lubricants and machines. It accelerates wear, corrosion, microbial growth, friction, additive depletion, aeration, varnish, oxidation . . . and, well, the list goes on and on. Outside of the limited capability of rust inhibitors, additives don't stop the penetration and damage exerted by water. Only controlling the invasion and dispersion of water in our lubricants solves these problems.

## OIL STARVATION PAIN-KILLER

Despite the assertions of some late-night television infomercials, additives are not a solution for starved oil supply or low oil levels. Lubricants service many functions beyond simply controlling friction and wear. As such, they need to be present as an entire formulation, not simply a few chemical remnants clinging to the frictional surfaces of our machine.

## VARNISH AND SLUDGE PACIFIER

Varnish and sludge are produced via many oil degradation pathways. Once they get infused into the oil and deposit on machine surfaces, there is no easy solution to eradicate their presence short of an oil change and flush. Additives may help slow the formation of varnish and sludge precursors, but they will do little to pacify damage after they form.

## GLYCOL NEUTRALISER

Ethylene glycol is mixed with water and used as a coolant in a wide range of machines. When allowed to invade a lubricant, it becomes a pungent contaminant that can wreak havoc in numerous ways. Sadly, the thought that there are lubricant additives that will neutralize the effects of glycol contamination is nothing but a fantasy. As much as 10 percent of all diesel engine lubricants in service have trace amounts of glycol contamination. Many are far more grossly contaminated.

## SOOT TERMINATOR

Soot can be dispersed by additives, but it can't be easily expunged. Even dispersed soot causes wear when oil films become contracted, such as in cam lobe/follower contacts and at the ring reversal area on cylinder walls in diesel engines. Soot can also mop up important polar additives and prematurely remove them from active duty.

## OVER-GREASING ELIXIR

One of the most common root causes of rolling-element bearing failure is over-greasing. This practice damages seals and shields, and causes uncontrolled heat excursions that accelerate wear and lubricant degradation. No additive has the capacity to work as a magic elixir under such distressful conditions.

## CONCLUSION

Reliability emerges from the optimum combination of quality lubricants and best-practice lubrication. Don't spend more money on premium lubricants hoping you can spend less on lubrication. This is a false economy. There is no substitute for vigilant inspection, frequent and thorough oil analysis, and well-deployed (and engineered) lubrication practices.

No question, today's additive technology can serve as a solution-provider across a wide range of potential problems that frequently plague machinery. Yet, they are unable to be miracle cures for numerous other maladies. Practitioners need an arsenal of tools and skills to get the desired reliability results. Begin with training and then follow with programmatic structure and procedures. Develop a culture of lubrication excellence. And remember, reliability is everyone's responsibility.

**This article appeared in the January/February 2009 issue of Machinery Lubrication**

## MICHELLE JOINS THE MILLIONAIRE'S CLUB

WearCheck has a new member of its Millionaire's Club – senior diagnostician Michelle Allis (right) diagnosed her millionth sample on Friday 25 September. She joins diagnostics manager John Evans (seated, centre) and fellow diagnostician Rowan Maartens as the third member of this prestigious group.

## OUT AND ABOUT

WearCheck's quality administrator, Melanie Hynd was invited to make a presentation to SAIT in Johannesburg in October on the implementation of ISO14000.

## 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.

## SOMETHING ON YOUR MIND?

If you have feedback of any sort you'd like to give us – praise, problems or suggestions - there is no need to wait for a customer survey. Feel free to email us at any time on support@wearcheck.co.za. Or complete the survey online on the web site: http://online.wearcheck.co.za/PRODUCTION/anon/survey.aspx

## 2010 TRAINING COURSES

| COURSES | JOHANNESBURG | | | PINETOWN | MIDDELBURG | |
|---|---|---|---|---|---|---|
| NetCheck: Software package | 8 Feb | 7 Jun | 11 Oct | 16 Aug | 8 Mar | 6 Sept |
| Oil Analysis One: Understanding oil and its analysis | 9-10 Feb | 8-9 Jun | 12-13 Oct | 17-18 Aug | 9-10 Mar | 7-8 Sept |
| Oil Analysis Two: Report interpretation | 11 Feb | 10 Jun | 14 Oct | 19 Aug | 11 Mar | 9 Sept |
| Oil Analysis Three: Management | 12 Feb | 11 Jun | 15 Oct | 20 Aug | 12 Mar | 10 Sept |

Oil Analysis One covers two full days and costs R3 400 plus VAT. Oil Analysis Two and the NetCheck course cover one full day each and each costs R1 700 plus VAT. Oil Analysis Three is a half day course and costs R600 plus VAT. More details on the content of each course can be viewed under Training on the WearCheck web site: www.wearcheck.co.za. For all bookings phone Michelle van Dyk on (011) 392-6322.

### TRAINING NEAR YOU

If you would like WearCheck to arrange training courses in any of the following places, please phone Michelle van Dyk in the Johannesburg office or email training@wearcheck.co.za:

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

*If you would prefer to receive future issues of WearCheck Monitor and Technical Bulletin via e-mail in pdf format instead of in printed form, please e-mail a request to: support@wearcheck.co.za*

THE LEADER IN OIL AND FUEL ANALYSIS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