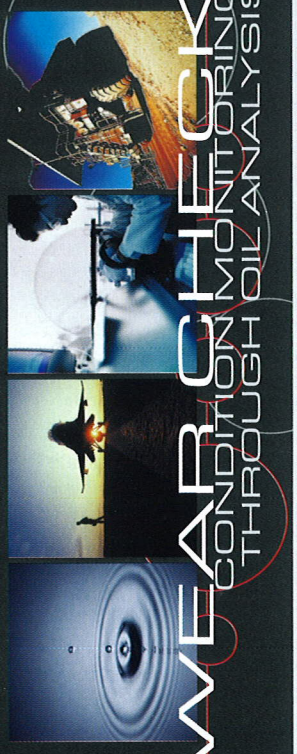
WEAR CHECK® AFRICA
A member of the Set Point group

MONITOR
ISSUE 45
WEARCHECK CONDITION MONITORING THROUGH OIL ANALYSIS



WEARCHECK ACQUIRES LEADING TRANSFORMER ANALYSIS LABORATORY

Karen van Staden, Wearcheck's financial and human resources manager, discusses the relocation of Rowan Tree transformer analysis laboratory to Wearcheck's Isando offices with Gert Nel, former owner of Rowan Tree and now diagnostician for the recently purchased Wearcheck laboratory.

The Set Point group has bought Rowan Tree transformer analysis laboratory in Boksburg. The laboratory has been incorporated into Wearcheck Africa and will be relocated to Wearcheck's Isando premises where it will be operated by former Rowan Tree owner, Gert Nel and his team of experienced employees.

'This acquisition takes Wearcheck Africa one step closer to being a one-stop fluid analysis company and a total solutions provider in the fields of condition monitoring, lubrication and training,' said Wearcheck managing director, Neil Robinson.

'Whilst we outsourced transformer analysis for our customers in the electrical industry to Rowan Tree in the past, they now have access to the full range of Wearcheck's services, including the support of our customer service team and our sample taking and collection service. In the near future they will be able to benefit from our advanced client software that connects them to our mainframe and provides numerous useful options for the management of their maintenance programme.'

Transformer oil analysis can play a vital role in preventing unscheduled outages in electrical transmission and distribution equipment by determining the condition of the equipment itself, as well as other vital components, including the condition of the oil and the cellulose paper insulation. By accurately monitoring the condition of the oil, many types of faults can be discovered before they become serious failures and outages can potentially be avoided.

The laboratory will continue to offer a range of tests, amongst others:

- Gas analysis
- Moisture content
- Dielectic strength
- Acidity
- PCB analysis

'We are fortunate to retain the services of Gert Nel and his skilled staff,' Neil said. 'Gert has more than 16 years of experience in transformer analysis and Rowan Tree was acknowledged as an industry leader.'

The laboratory will be integrated into Wearcheck's quality and environmental systems. Wearcheck is currently the only oil analysis laboratory in Africa with ISO9001 and ISO14001 registration.

TRANSFORMER ANALYSIS KITS

Wearcheck's transformer analysis kits can be ordered and submitted in the same way as regular oil kits.

Product code: WTAK

ENVIRONMENTAL SUCCESS

It's now official! Wearcheck has been granted ISO 14001:2004 registration for its environmental management system.

Says quality administrator, Melanie Hynd, 'The system makes it possible for environmental concerns to be an integral part of our day-to-day business operations and ensures that all legal requirements are met as a matter of course.'

' We are proud of our record as an environment-friendly company which is reflected in many different ways.'

- Oil analysis is, in itself, an environment-friendly process. It helps improve the combustion efficiency of engines by monitoring and optimising fuel system efficiency, thereby decreasing harmful emissions into the atmosphere.
- All of the laboratories were built specifically to provide a healthy environment by international standards.
- The use of solvents in the laboratories is kept to a minimum and most solvents used are recycled.
- All plastic sample bottles are recycled and cores are reused.
- A high degree of automation has resulted in virtually paperless laboratories.

FORGING INTERNATIONAL LINKS IN AUSTRALIA

Seen at the annual meeting of Wearcheck International in Sydney, Australia in July are Peter Jordan of Australia, Zahir Shamsi of Australia, Bill Quesnel Senior of Canada, Bob Cutler of the UK, Greg Lewis of Australia, Larry Baddock and Neil Robinson of Wearcheck Africa, Jesus Terradillos of Spain, Nick Thomas of Australia (many customers may remember him when he was a diagnostician at Wearcheck in Pinetown), Keith Scott and Tim Vann of the USA, and Bill Quesnel Junior of Canada. Representatives from Germany, Belgium and Hungary were unable to attend this meeting.

Managing director Neil Robinson and IS manager Larry Baddock attended the annual meeting of Wearcheck International (WCI) in Sydney, Australia at the end of July – along with representatives from six of the other nine WCI member companies.

Says Neil, 'This is always a useful forum for sharing insights on international trends impacting on the oil analysis industry. There were also valuable technical lectures and discussions on practical issues such as advances in diagnostic techniques and software development. The prospect of greater global co-operation and shared programmes between member companies was another positive outcome.'

'Overall the annual WCI meeting and the ongoing interaction between the different member companies provides fresh perspectives on the industry which aids strategic planning and helps shape the long term development of the company.'

MAKING HEADWAY

DIAGNOSTIC SPECIALIST

Ravi Chetty

Junior technical consultant Ravi Chetty has been promoted to fully-fledged diagnostician.

Ravi has been with Wearcheck for almost twelve years, progressing through the main laboratory, data processing and the debris lab to his current position. He has been accredited by Honeywell Aerospace to diagnose oil and filters from Honeywell jet engines.

TECHNICAL SUPPORT

Isaac Mabaso, formerly driver and assistant trainer, has been promoted to training consultant and is now responsible for customer support in the field. He joins the technical support team who visit customers to offer advice and help ensure that oil analysis programmes are running smoothly. He also assists with sample taking and the completion of submission forms.

Isaac worked for CMS International for eight years before starting at Wearcheck as a driver in 1998. In 2001 he was appointed as on-site training assistant, demonstrating the correct techniques for taking good quality samples.

Danny Nkomo has taken over as driver for the company, responsible for sample collection and the delivery of orders. He joined Wearcheck in March.

Danny Nkomo (left) and Isaac Mabaso take a breather next to the new Toyota Yaris that Wearcheck has bought to replace a 5-year old Mazda that has served the company well. With 237 000 on the clock, this workhorse has collected a quarter of a million samples and is still going strong (although it has now been placed in semi-retirement and will be used for less exacting duties!).

MORE OIL ANALYSIS COST SAVINGS FOR US MAINTENANCE MANAGERS

This is the last in our series featuring some of the responses received by US magazine, Tribology and Lubrication Technology, when they asked members of the Society of Tribologists and Lubrication Engineers to relate an experience where oil analysis saved a piece of equipment or system, and estimate the savings.

- Oil analysis on a gearbox predicted premature failure before vibration analysis indicated future failure. Downtime estimated at $10,000 an hour. Failure would have forced plant down for a minimum of 48 hours.

- Prior to implementation of our lube oil and inventory test and reconditioning program, journal bearings for some of our most important auxiliary steam turbines, fans and pumps often were changed out during annual outage periods. Most problems were due to excessive moisture and debris. At the onset of our program we rotated two lube oil purifiers on/off about 12 pieces of equipment as deemed necessary by in-house oil analysis, and I haven't lost a bearing because of moisture or debris problems. Also, our lube oil usage has decreased about 85% annually. Over the last seven years of the program, we've probably saved 25 sets of bearings and 10 000 gallons of lube oil.

- We found a water jacket leak on a gas-recirculating fan. We cleaned the oil with a portable filter skid in the reservoir. After trending the leak rate for a couple of days, we found the rate to be about 5,000 ppm every 24 hours. We kept the portable filter skid on the equipment for about three months, which allowed our 500-megawatt unit to run the entire time without shutting down. Estimated cost if not detected would be about $12,000 for bearing replacement and a forced outage of the unit, which would have exceeded $100,000.

WHY THE SPECTROMETRIC ANALYSIS OF SULPHUR IS IMPORTANT IN OIL ANALYSIS PROGRAMMES

by John Evans, Wearcheck Diagnostic Manager

Perhaps the most well known test associated with oil analysis goes under the acronym of SOAP or Spectrometric Oil Analysis Programme. This involves analysing the oil sample for a variety of elements using a laboratory instrument called a spectrophotometer. The elements that can be detected can all be found in the periodic table of elements which some of you may remember from your matric physical science lessons.

Most oil analysis programmes will analyse at least a dozen elements depending on the sophistication of the spectrophotometer. Wearcheck analyses more than thirty elements on each sample and they can be placed into three broad categories:

- wear metals like copper and iron
- contaminants such as silicon and sodium
- oil additives comprising zinc or phosphorus

One element that is often not analysed is sulphur. This is because the spectrophotometer needs to be specially tuned to detect it. Sulphur is both an oil additive and contaminant.

In oil analysis it is important to be able to identify the oil in use, check that it agrees with that which the customer thinks he is using and that it is suitable for the particular application. Viscosity is probably the most important physical property of an oil but the chemistry (which includes magnesium, calcium, zinc, boron, phosphorus and sulphur) also needs to be known in order to properly identify an oil.

In terms of engine and hydraulic oils, sulphur is part of a series of compounds (called dithiophosphates) which make up the anti-wear and anti-oxidant part of the oil additive package. In gear oils sulphur is reacted with other chemicals (fatty acids) to impart the EP or extreme pressure properties of the gear oil. In the case of gear oils, the level of sulphur can be used to estimate the GL (Gear Lubricant) rating of the oil; the more sulphur there is, the more EP additive is present.

Sulphur is also found as a naturally occurring constituent of most mineral base oils. A typical mineral engine oil might have a sulphur content of around 8000 ppm – roughly half of this will be in the base oil and the other half will be part of the additive package. As a general rule of thumb, higher viscosity base stocks have higher sulphur contents. The oil refineries can remove this contaminant but only at a cost.

Synthetic oils, where the base stocks are manufactured in a laboratory, do not contain any sulphur before additives are blended in. Therefore knowing the sulphur content of the oil can help distinguish mineral oils from synthetic oils, although this method is not foolproof.

Sulphur is also a contaminant found in fossil fuels. After all, diesel and petrol are simply lighter fractions of heavier lubricating oils. The sulphur content of diesel has received much attention in recent months as the government has legislated that the sulphur content of diesel must be lowered from 3000 ppm to 500 ppm. This follows a drop from 5000 ppm to 3000 ppm some years ago, bearing in mind that 1% = 10000 ppm.

Simply put, sulphur is bad for the engine, the oil and the environment. Being able to spectrophotometrically analyse sulphur is a cheap, easy and effective way to determine how much sulphur is actually present in the diesel.

DID YOU KNOW?

- One third of Wearcheck's 97 staff members has been with the company for between 10 and 20 years, another third has between 5 and 10 year's service, and an impressive 10% can boast more than 20 year's service.
- Members of the diagnostics department have exactly 100 years of experience between them.
- Wearcheck has processed just under 6 million samples, with close on 400 000 samples passing through the labs in the past year.
- On average, 41 test results are recorded and stored for each sample Wearcheck processes (the customer doesn't get to see them all). This equates to 16.3 million results for last year alone and a total of roughly 180.8 million in the database (these are purely test results and don't include all the customer and component details which are also stored on the database).

QUALITY FUEL ANALYSIS

Wearcheck's new fuel laboratory established at the Croydon office in mid-2004, was recommended for ISO 9001 registration during its first audit in May.

'Users of our diesel and petrol analysis service can do so knowing our procedures have been certified to meet the highest standards,' says chemist, Greg Morse. 'Early identification of fuel contamination can be a real cost saver – preventing engine failure and expensive downtime for anyone using diesel or petrol - from plant hire and mining companies to road hauliers and organisations with bulk storage tanks.'

Chemist Greg Morse (pictured) and lab technician Clive Govender worked hard with quality administrator Melanie Hynd to achieve ISO9001 status at the Johannesburg fuel lab.

SPREADING THE WORD


John Evans


Michelle Allis

Wearcheck staff continue to be in demand to speak at technical functions and contribute to the development of the condition monitoring industry.

- Diagnostic manager John Evans, was a guest speaker at a conference for Komatsu's technical managers in Johannesburg in April, that was attended by technical managers from all their depots in Southern Africa.
- John was also invited to do an in-depth three-hour presentation on oil analysis to 30 members of General Motors' technical staff from across South Africa in Port Elizabeth in August.
- Senior diagnostician Michelle Allis presented the oil analysis component of a five-day training course organised by SAIT in Durban in June.
- Both John and Michelle are quoted periodically in the Lube Tips which are distributed internationally by Noria Corporation.

GLOBAL DEMAND

Requests for electronic copies of Wearcheck Technical Bulletin continue to be received from across the globe, the latest being from a municipal fire service in Ireland and the tribology research centre of the Korea Institute of Science and Technology in Seoul.

WEARCHECK IS PREFERRED VENDOR FOR BABCOCK AND DOOSAN

Wearcheck has been granted 'preferred vendor' status by both Babcock and Doosan (formerly Daewoo) for all the earthmoving equipment they distribute in southern Africa.

'This means that their manuals and vehicles will all feature decals in future stating that Wearcheck is their preferred fluid analysis supplier,' said managing director, Neil Robinson. 'We are delighted with this new development which is a measure of the confidence placed in Wearcheck both locally and abroad by these world class organisations.'

MEET WEARCHECK'S RECEPTIONISTS

Visitors and callers to Wearcheck are sure to receive a friendly welcome. Eileen van der Merwe (left) has become a familiar voice and face at Wearcheck's Pinetown office since she took over the reception desk and switchboard 16 years ago. At Wearcheck's Johannesburg office, customers are greeted by Katie-Leigh Auld (right) who joined the company in March this year.

TRAINING STAFF IS A SOUND INVESTMENT

'Wearcheck's training courses help employees think proactively – to address root causes and implement solutions before minor problems turn into major ones – saving on maintenance costs and increasing equipment availability.'
- John Evans, Wearcheck diagnostic manager

The Machinery and Lubrication (MLA) courses are run as a joint venture between Wearcheck and the ABB School of Maintenance. For more information and bookings for the MLA courses phone Lisa-Anne Fairley at ABB on (011) 236-7342. For Wearcheck courses phone Wendy Holiday on (011) 392-6322.

Date	Course	Venue	Cost
2-4 October	Machinery and Lubrication Level 1	ABB Jhb	R5 197 + VAT
5-6 October	Machinery and Lubrication Level 2	ABB Jhb	R4 147 + VAT
16 October	NetCheck: Software	Wearcheck Jhb	R1 500 + VAT
17 October	Wearcheck 1: Oil analysis orientation	Wearcheck Jhb	R1 500 + VAT
18 October	Wearcheck 2: Understanding oil analysis	Wearcheck Jhb	R1 500 + VAT
19 October	Wearcheck 3: Report interpretation	Wearcheck Jhb	R1 500 + VAT
20 October	Wearcheck 4: Management	Wearcheck Jhb	R 550 + VAT

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

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