

Research trip to Europe confirms Wearcheck's high tech status

LABORATORY manager Alistair Geach's recent exploratory trip to Europe revealed that Wearcheck's analytical instruments remain amongst the most advanced available in the market.

"The purpose of the trip was to investigate new instrument developments in Europe as part of our ongoing laboratory upgrading plan to ensure that we remain at the forefront of technology," says Alistair. "These visits are also invaluable in reinforcing relationships and establishing new contacts with instrument suppliers."

The instrument manufacturers visited by Alistair include the Tribology Centre at Swansea University in Wales, ISL in France, Fisons UK, Pacific Scientific UK and Biorad UK.

Improved systems

The first stop was the Tribology Centre at Swansea University, home of the Automatic Particle Quantifier (PQ90A) and Rotary Particle Depositor (RPD). These instruments have been used by Wearcheck since mid-1994, the PQ90A having measured the magnetic debris in close on half a million samples to date. The RPD has been in the background until recently but

is now fully operative and is enabling the diagnostic department to evaluate particle deposits more effectively.

At Swansea Alistair was able to access the latest hardware and software improvements for the PQ90A and to explore the possibility of developing a semi-automatic multi-station RPD to meet Wearcheck's future requirements. Of particular interest was a new facility on the



Alistair Geach

PQ90A for multiple measurement on the same sample, allowing particle settling effects to be studied.

Moving on to Fisons, two oil sample dilution systems proposed for use on their Accuris ICP spectrometer were investigated.

"Although the systems would not suit Wearcheck's high volume environment, some innovative features should prove beneficial in designing an improved system more suited to our requirements," said Alistair.

Valuable contacts

Biorad UK impressed Alistair with the sophistication of the oil analysis software for their FTIR (Fourier Transform Infra Red) spectrometer. The system, with its user-friendly windows-based software, measures a variety of oil degradation by-products and oil contaminants on several lubricant types. It may be further calibrated under certain conditions to measure specific chemical and physical properties such as TBN and viscosity.

Valuable contacts were made at both ISL in Caen, France - a leading supplier of an impressive range of automatic petroleum test equipment worldwide - and at Pacific Scientific UK, the source of Hiac Royco particle counters in Britain.

"The manufacturers, all dedicated and highly knowledgeable people in their respective fields, went out of their way to demonstrate their technology and provide in-depth information on the performance capabilities of their instruments. They were also all familiar with the International Wearcheck Group (IWCG) which was gratifying."

Wearcheck builds new offices in Gauteng

WEARCHECK is set to swap its rented offices in Bedfordview for custom-built new premises in Isando.

The modern new office building will be constructed on a 1200m² site at San Croy Office Park which is conveniently situated near the airport, the City Lodge Hotel and Wearcheck's East Rand customers.

A 600m² single storey building will be built initially, comprising offices, spacious customer training facilities and parking for 25 cars. The plans also make provision for a second level to be added if there is a need

to expand.

Says managing director Wally Crawford, "We have been considering building our own offices in Johannesburg ever since we completed our Westmead office and laboratory complex four years ago. We believe that the time is now right for an investment of this kind and see it as a mark of our confidence in the future of oil analysis in this country."

Construction of the new Gauteng building will commence within the next few weeks and is scheduled for completion around November.

Rapid 200% growth for Wearcheck Germany

WEARCHECK GMBH is the only commercial oil analysis company in Germany and has experienced over 200% growth during the four years it has been in operation.

Peter Weismann, technical director of Wearcheck GMBH, explains why oil analysis is relatively new in a technologically advanced country like Germany.

"German companies have historically believed that predictive oil analysis maintenance is redundant for two reasons: firstly, because maintenance practices in Germany are stringent and very frequent; secondly, operators spend many years in the same job - staff turnover in German companies is low - so they become highly attuned to the maintenance requirements of their vehicles and equipment."

Changed situation

"However, since the Berlin Wall came down the situation has changed. There has been an influx of foreign artisans who are often not highly skilled or well trained, with

the result that an increasing number of companies are making oil analysis part of their maintenance programmes."

A mechanical engineer by profession, Peter and his wife Barbara started Wearcheck GMBH in 1992. As a result of its growth the lab recently moved into new premises near the Alps in Brennenburg, south of Munich.

The German lab received a major boost in May 1995 when it was awarded the ISO 9002 accreditation.

"This means that our management procedures have to be

transparent and there must be a high level of quality control at every stage of the analysis process," said Peter.

Grease analysis

With about 1 800 small company clients in the industrial and mobile equipment sectors throughout Germany as well as in Austria and Switzerland, Wearcheck GMBH processes over 18 000 samples a year.

One of the company's specialities is grease analysis from large bearings on offshore rigs, which is a highly

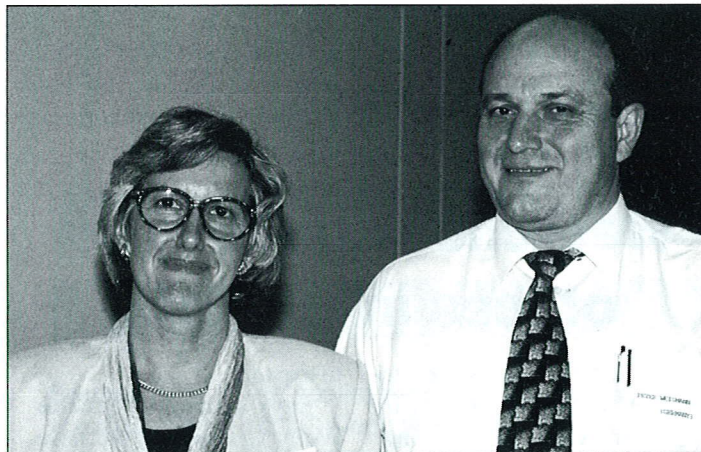
cost-effective preventive maintenance tool considering that replacement costs on rig bearings run to several million US dollars.

According to Peter, oil analysis is up to six times more expensive in Germany than in other countries.

Environment friendly

"In Germany the key selling point of oil analysis is that it extends the life of lubricants. This is seen as a tremendous benefit and companies are prepared to pay a good price for it. The preservation of natural resources is a high priority so the disposal of used oil is strictly controlled and extremely expensive."

Peter and Barbara foresee a successful future for Wearcheck GMBH and believe that as a relatively new lab, it has benefited tremendously from the experience of the other companies in the International Wearcheck Group (IWCG), some of which have been in operation for 20 years.



Peter and Barbara Weismann of Wearcheck Germany

Wearcheck in Technology Top 100 again

WEARCHECK has again earned the right to use the Technology Top 100 logo having qualified for the third consecutive year in Engineering Week and the SA Engineering Association's annual competition to measure the technological strength of South African companies for world markets.



Lorain - caretaker of the database

BEING part of a company which continuously strives to improve its customer service and develop new, more efficient systems is what makes senior systems administrator, Lorain de Bruin find her job as stimulating today as she did when she joined Wearcheck six years ago.

"For example", says Lorain,

"We have just developed and installed a PC and fax package on the database, enabling us to receive on-line oil analysis submission forms from Wearcheck Johannesburg before samples arrive in Durban, greatly speeding up the process."

Reporting to information systems manager, Gary

Wearcheck correlates particle counting

THE three particle counting methods are:

1. Manual counting in which particles are counted under a graticule with the use of a powerful microscope.
2. Using an APC (Automatic Particle Counter) with a light blockage sensor.
3. Using an APC with a flow retardation sensor.

APCs are used most extensively today as the older, manual technique is labour-intensive and prone to human error. Each of the two APC methods has advantages and disadvantages. Wearcheck uses the light blockage technique which has the advantage of being fast but it cannot accurately analyse oils that are contaminated with water.

Two different calibrants can be used to calibrate APCs, using oil that has been contaminated with particles whose concentration and size is precisely known:

1. ACFTD (Air Cleaner Fine Test Dust)
2. LMS (Latex Monospheres).

The dust particles of ACFTD and the synthetic, spherical particles of LMS are both well known in terms of

In the light of research findings that between 70 and 80 per cent of all hydraulic system failures are caused by particulate contamination in oil, the cleanliness ratings of lubricants has become an important issue. However, the subject is complicated by the fact that there are three different particle counting techniques and two different ways in which instruments can be calibrated. Consequently, the results often vary from laboratory to laboratory. In order to standardise results in the industry and because there was no other correlation programme in existence, Wearcheck recently organised a round robin test involving four other South African laboratories, with encouraging results. Wearcheck technical consultant John Evans gives the background to the initiative.

their size and number but again, both present advantages and disadvantages. ACFTD is typical of particles that exist in the real world, while the LMS particles are spherical and therefore not dependent on orientation to the detector, but are not typical of the shape of real contaminants. The same instrument calibrated with LMS and ACFTD will give different results, and there is no easy correlation between the two calibrating methods. At present the International Standards Organisation (ISO) sanctions the use of ACFTD under method 4406, but ISO 4406 is currently under review.

Because of the variety of techniques available (none of them bad or wrong) and the variation in results from different laboratories, Wearcheck

decided to try and achieve a level of standardisation to ensure that customers were getting the most accurate particle measurements possible.

In April 1995 Wearcheck instituted a round robin correlation test with four other laboratories - Blendcor, Caltex, Engen (Chemico) and Middelburg Mining Services (Duvha section) - all of whom use a Hiac Royco 8000A counter connected to a laser sensor calibrated with ACFTD. These systems are preferred by Wearcheck as ACFTD is

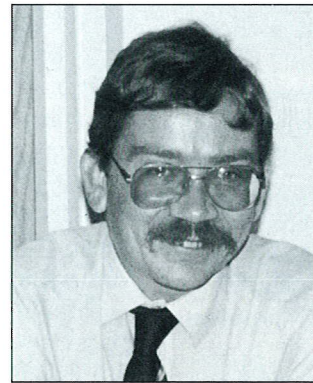
stipulated as the calibration material by ISO, and light blockage sensors are employed to certify the ACFTD fluid used to calibrate the flow retardation instruments.

Results from the April exercise were disappointing, but an investigation by the equipment supplier, Premier Technologies, revealed a number of anomalies. A second set of results on the same sample conducted later in the year showed that excellent correlation between the five partici-

pating laboratories was possible. Alistair Geach, Wearcheck's laboratory manager, recently visited Pacific Scientific, the Hiac Royco supplier in the UK, where he discussed the findings of the round robin exercise. Of

interest was the comment that 'of all the particle counting errors experienced in inter-laboratory comparisons, nearly all of them could be attributed to poor sample preparation techniques'.

The South African Bureau of Standards (SABS) will shortly be initiating its own correlation studies.



John Evans

Dorman, Lorain is responsible for supervising, co-ordinating, monitoring and training six data capture staff as well as managing and maintaining the integrity of Wearcheck's database.

"I am the first line of defence when a problem occurs in the database and enjoy the challenge of finding a solution," she says.

With a BA degree in education and an honours degree in history and research methodology from RAU, Lorain joined



Lorain de Bruin

Wearcheck in 1989 after a four-year stint developing an integrated studies teaching programme at Sacred Heart College in Johannesburg.

Starting as data capture supervisor, she was promoted to handle PC customer support in 1991, with the responsibility of developing Infocheck customer training courses and providing on-line support. She took up her present position in 1993.



Simon Robertson

WINDOWS WIZARD

Making Infocheck easier for you on GUI

CONVERTING Wearcheck's Infocheck package to the more user-friendly Graphic User Interfaces (GUI) system is the task of systems analyst Simon Robertson who joined Wearcheck in January.

The new windows-based system will offer customers a number of benefits.

"It will greatly improve the presentation of reports and, because it is easier to use, customers will be able to enter information more quickly and with greater accuracy," says Simon.

Equipped with a B.Sc degree in computer science and physics from Rhodes University, Simon gained experience in GUI systems as a computer programmer at Vironix Software Laboratories, a Durban-based commercial software development company which consults solely to companies overseas.

Fresh out of university with no knowledge of the Internet protocol or Windows software, he embarked on a rapid

learning curve as part of a team of programmers who developed the Internet suite 'Cyberjack' for Delrina in Toronto, Canada, which is one of the world's ten largest software companies.

"I gained a wealth of knowledge about the Internet and computer networking and was fortunate to have the opportunity to work on Windows '95 for almost a year before it was launched," says Simon.

Interfacing

"At Wearcheck I will not only be able to use my expertise in creating interfaces for users, but will also gain experience in interfacing computer systems with highly sophisticated laboratory equipment."

In his spare time Simon enjoys developing mathematical formulae and conducting physics experiments. He recently enrolled for an honours degree in computer science at Unisa.

Lance Mansfield takes over the financial reins

LANCE Mansfield, who joined Wearcheck as operations manager in September last year, brings to the company broad management experience of industry which will prove valuable as Wearcheck taps into new markets.

After completing a B.Com degree through Unisa and his articles at Ernst & Whinney (now known as Ernst & Young), Lance joined clothing retailer, Scotts, as a financial accountant.

World class

Three years later he was appointed administrative manager at Sappi Novobord, responsible for financial and strategic management, and the day-to-day running of the company's Springfield Park factory. The company's importing and exporting activities gave him a keen insight into world class manufacturing and the standards required to

compete internationally. This has led Lance to believe that Wearcheck's potential for expansion into new industrial sectors is considerable.

"Increasing numbers of South African manufacturers are gearing themselves to enter overseas markets and they are realising that, to meet stringent international standards, they will need to maximise productivity and get the most from their plant and equipment. Part of this process is a growing awareness that oil analysis can add enormous value to condition monitoring programmes."

Another of Lance's priorities is to use his computer skills - honed while doing part-time information systems consulting for his father's management consultancy - to assist with the total integration of Wearcheck's financial and laboratory systems.



Lance Mansfield

Oil Analysis helps keep Pretoria's buses on the Road

Hansie Engelbrecht, foreman of the Pretoria City Council's service bay section, believes that oil analysis is a cost-effective preventive maintenance tool.

Significant effect

WEARCHECK's oil analysis programme has had a significant effect on the operation of the Pretoria City Council's fleet of 350 buses over the past fourteen years. Besides generating substantial savings on repair costs, the municipality has been able to reduce the size of its fleet whilst still providing a quality service for the public.

According to Ruard Nel, projects and systems engineer for the Council's Logistic Services Department, the major benefit of the Wearcheck programme is that it allows a higher availability of buses.

Major benefit

"In striving to perfect our preventive maintenance programme over the years we have been able to decrease the number of buses making up the fleet through reduced downtime. In 1985, we projected that we would need 1000 buses to service the city in the year 2000. Our revised forecast is a maximum of 350 buses, the size of our current fleet. Considering that a single decker bus costs R 450 000, and a double decker bus is priced at R 750 000, this is a major benefit."

Early warning

Savings on repair costs are also an important factor. The two major problems picked up by oil analysis are metal parti-



cles in the oil indicating worn bearings, and dust in the oil due to poor filtering on the air intake system which causes excessive wear on the moving parts of the engine.

"Being made aware of these problems early enables us to take corrective action before a major breakdown occurs," says Mr Nel.

Higher availability

The department's buses are serviced every six months and the engines - which operate in constant heavy traffic - now last up to 500 000 km without major repairs.

Another spin-off of the oil

analysis programme has been a dramatic cut in the quantity of oil used.

"In the past it was standard procedure to change the oil at every 10 000km service", says Hansie Engelbrecht, foreman of the service bay section. "Now, with careful monitoring by Wearcheck, the life of the oil is being extended to up to 60 000km before an oil change is recommended. This saves us about R 190 000 a year."

Pretoria's Logistic Services Department is on Wearcheck's Infocheck programme, giving the department planner immediate access to all reports and historical data. This operates in parallel with a computerised

maintenance system which was developed in-house.

"We have developed a good working relationship with Wearcheck over the years," says Mr Engelbrecht. "The average turnaround time on samples is 2,7 days and we know that we can always discuss a problem sample with their diagnosticians if we need to."

Saves money

"At the end of the day our main interest is results, and there is no doubt that oil analysis is helping us to streamline the bus service and save money."

INFOCHECK training courses

WEARCHECK will be offering several courses on Infocheck in the coming months:

One-day refresher course:

7 June (Pinetown)

16 August (Johannesburg)

Existing Infocheck users who want to brush up on the system will find this course useful. It costs R 450 and covers:

- ◆ reporting (an in-depth study)
- ◆ utilisation of master files, i.e. oil, make, component codes, sites and parameters.
- ◆ transactions - problems with submission, feedback entry, the service meter section
- ◆ scrap/transfers - problems experienced
- ◆ transmission menu options
- ◆ backups/recons/reorganising
- ◆ any customer queries

Three-day in-depth course:

14 - 16 May (Johannesburg)

4 - 6 June (Pinetown)

13 - 15 August (Johannesburg)

8 - 10 October (Johannesburg)

This is the official training course for the installation of Infocheck at new sites.

Both courses take a maximum of eight people and will be held at Wearcheck's offices in Bedfordview and Pinetown. For bookings phone Melanie Hynd on (031) 700-5460 or Rina Vice (011) 455-3342.

Training is a vital part of oil analysis

FROM the large mining houses to small engineering firms, there is a steady increase in attendance at Wearcheck's technical training courses as companies see evidence that a well-managed oil analysis programme contributes positively to the bottom line.

"For best results, ongoing training should be seen as part of the oil analysis programme," says technical trainer, James Barton. "A workforce that understands and is committed to the oil analysis philosophy is far better equipped to make the most of an oil analysis programme than one that gets by with a limited knowledge of procedures."

During 1995, over 560 delegates attended Courses 2 and 3 which are run at Wearcheck's Pinetown and Johannesburg offices. The dates and venues for courses in May and June are shown below.

The introductory course which is run on the premises of customers by arrangement, is also becoming increasingly popular, taking

James to places as far afield as Kleinsee, Springbok, Tzaneen and Umtata. A trip to the Northern Cape in January, where James spent a week presenting courses to various customers including some of the larger mining houses, often involved classes of up to 100 people.

"These full day on-site courses not only contextualise training to the customer's own work-place, they also decrease labour downtime, save workers transport time and costs, and allow them to wear normal work clothes instead of dressing up to travel to a course elsewhere," says James.

"We also make use of videos to make the courses more user-friendly and to overcome language barriers which often confront non-English speakers, particularly when technical jargon is used."

The cost of the introductory course is R110 per person for Wearcheck customers and R150 for others.

1996 Technical Training Courses

Date	Course	Venue
8 May	2	Johannesburg
9/10 May	3	Johannesburg
12 June	2	Pinetown
13/14 June	3	Pinetown

Course 2: The applications of oil analysis and an introduction to troubleshooting. (8h30-16h30) Cost: R360 incl. VAT (Wearcheck customers); R500 (others).

Course 3: The technical management of oil analysis and lubrication. Cost: R690 incl. VAT (Wearcheck customers); R900 (others).

For bookings please telephone Melanie Hynd on (031) 700-5460 or Rina Vice on (011) 455-3342.

IF YOU would like to receive your own copy of Wearcheck Monitor please complete this coupon and post it to: Wearcheck, P O Box 15108, Westmead, 3608.

Name.....

Position.....

Company.....

Business Address

.....Phone (.....)..... Fax (.....)

Type of Business.....

I would like more information about: Wearcheck Infocheck

Where to find us

GAUTENG

3 Bedford Plaza, Skeen Boulevard, Bedfordview.
P.O.Box 1411, Bedfordview 2008.
Phone: (011) 455-3342 Fax: (011) 455-4909

KWAZULU-NATAL

9 Le Mans Place, Westmead.
P.O. Box 15108, Westmead 3608.
Phone: (031) 700-5460 Fax: (031) 700-5471