

International co-operation grows

THE 7th annual Wearcheck International (WCI) meeting in Llandudno, Wales during June sparked some interesting new developments, according to joint managing director Gary Brown who attended the event.

The eight associate companies from Europe, North America, the UK, Africa and Australia were represented, including the newest WCI member - the Lubricant Business Unit of the Hungarian Oil and Gas Company Limited based in Komárom, Hungary.

Joint projects

Two immediate joint projects arose from the meeting. The first is to extend the WCI round robin sample programme to include diagnosis as well as analytical testing, and to increase its frequency to every three months.

'This will help us standardise laboratory results and diagnosis internationally and ensure consistency,' says Gary.

The other is to assimilate training material from all member companies into one document, utilising the best elements of each to create a standard course structure with a consistent global approach.

Esso

One of the highlights of the trip was a visit to the Esso Research Centre in Oxford

where new additives for lubricants are formulated. The group toured the analytical and engine laboratories, but of most interest was the dynamometer test laboratory which houses a 'rolling road' where lubricants are tested under different climatic conditions. On this particular day, the group experienced the hot dry conditions of the Sahara Desert.

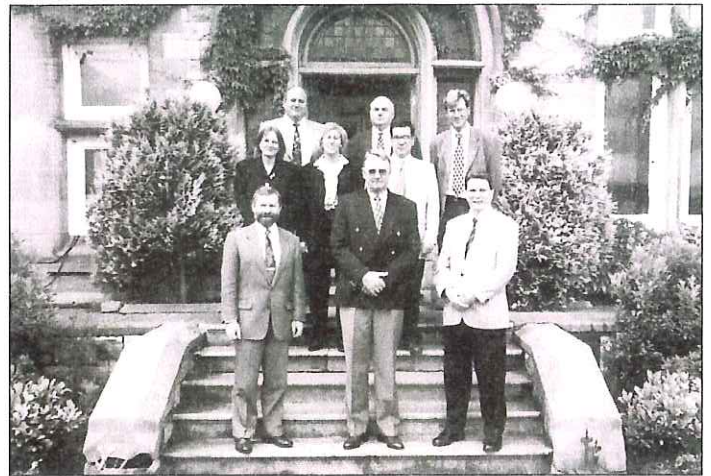
Oil drain intervals

Gary was impressed to find that oil drain intervals in the UK and Europe are sometimes more than double those achieved in South Africa, when using synthetic or part synthetic lubricants and improved filtration.

'Whereas we might achieve 250 hours and 15 000km in this country, oil drain intervals for the same equipment in Europe are as much as 500 hours and 80 000km apart. This is partly a result of strict environmental legislation, limiting exhaust emissions and making the disposal of used oil costly and difficult.'

Atlas on CD Rom

During the WCI meeting Gary learned of the existence of a particle atlas on CD Rom featuring almost 1 000 images of wear debris in oil and filter pads compiled by Noria Corporation, one of the largest US oil analysis companies. Wearcheck has ordered the



Members of Wearcheck International met in Llandudno, Wales during June. Seen outside the stately offices of Wearcheck UK are front: Peter Jordan of Australia, Gary Brown of South Africa, Bob Cutler of the UK, middle: Judit Bereczki of Hungary, Barbara Weismann of Germany, Jesus Terradillos Azqueta of Spain and back: Peter Weismann of Germany, Bill Quesnel Senior of Canada and Andre Verlinden of Belgium.

CD to supplement its existing library of several hundred images for use in RPD ferrograms and filter analysis.

'As always, the WCI meeting was a valuable opportunity to cement relations between the different companies, share experiences and discuss inter-

national trends in oil analysis,' says Gary. 'A number of different equipment suppliers also demonstrated new analytical techniques used on industrial equipment.'

The 1999 WCI meeting will be held in Spain. ✓

Wearcheck quality is spot on

WEARCHECK could not be faulted during the company's bi-annual SABS 9002 quality audit in June.

Dawn Salisbury, senior quality systems auditor for SABS KwaZulu-Natal's chemical division, said that for an audit to produce no findings was most unusual.

'In the numerous audits I have conducted for the chemical division over the past three years, this has only occurred about five times. Even then, we usually have some suggestions to make to improve

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Wearcheck quality is spot on

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weaknesses in the system, but I could find none in Wearcheck's case. You have to be in the top range for this to happen.'

'Wearcheck's approach to quality has been highly professional since they were first audited in 1996 and they have continuously improved since then. I recall that they were recommended on the day of their assessment which is rare - normally there is a three month clearance period which gives companies the chance to correct any minor problems.'

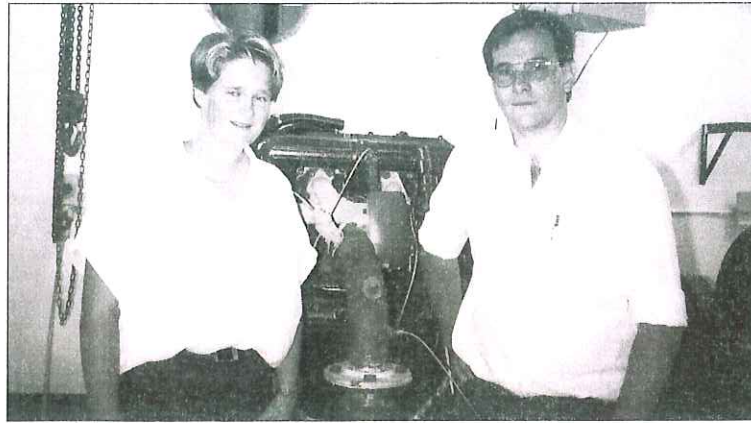
Business system

'This is an example of a quality system that is driven by top management. Lesley Crawford as the management representative is 100% behind it and the staff believe in it, which makes all the difference. It is not so much a quality management system as a business system - it is an integral part of the operation and it receives dedication and respect.'

Paperless

Ms Salisbury was also impressed by the fact that Wearcheck introduced one of the first paperless systems in the province, using an Intranet web browser.

'This is a model system which they developed in-house. If other companies are thinking of going paperless, we refer them to Wearcheck for advice.' ✓



Elzanne Retief and Dr Andrew Taylor inspect equipment used in a lubricant research study which involved extensive use of oil analysis at the University of Stellenbosch's Centre for Automotive Engineering.

Oil analysis aids lubricant research study

OIL DRAIN intervals on mobile equipment should be based on total fuel consumption and not distance travelled.

This was one of the conclusions of a lubricant research study undertaken at Stellenbosch University's Centre for Automotive Engineering (CAE) during 1996 and 1997.

The project, conducted by Elzanne Retief, Dr Andrew Taylor and Dr Peter Strachan of the university's Department of Mechanical Engineering in conjunction with Mercedes Benz SA and Caltex Oil SA, aimed to identify appropriate lubricants for extending the oil drain interval on a 2.5 litre Mitsubishi Colt 4D56 engine.

Degradation

Road tests were carried out on a one ton 2.5 litre diesel Mitsubishi Colt pickup. This test data was then used as the basis for the development of an engine bench dynamometer test cycle at the CAE which accelerated the degradation of the oil. A Mitsubishi Colt 4D56 engine was then mounted on an engine test bench and run for more than 1000 hours on the test cycle. This enabled the researchers to identify the mechanisms causing oil degradation and to measure the rate of degradation.

Oil analysis was a critical part of the study with over 120 oil samples being sent to Wearcheck during the testing period.

In parallel with the engine bench test, fleet tests were completed over a 16 month period on a controlled vehicle fleet operating with different workloads and in different conditions over more than 250 000 km. This was done to confirm the laboratory observations and to correlate test hours in the lab with mileage on the road.

'The cause of degradation was identical in both the lab and field tests and oil degradation

was closely linked to vehicle fuel consumption,' says Ms Retief who initiated the research as part of her final year project for her mechanical engineering degree.

'We found that the chief reason for limited oil drain interval was a rapid increase in viscosity as a result of soot and sludging caused mainly by excessive fuelling and poor combustion. If it were not for the viscosity increase and combustion-related contaminants, the lubricants would be fit for further use. Fuel composition has also been found to play a major role in the excessive oil thickening that occurs in South Africa.

Additive

It was evident that the additive package in a lubricant has a significant effect on its ability to carry large quantities of combustion products without suffering from excessive viscosity increase. We also found that advanced mono-grade oils consistently outperformed the multi-grade oils with similar additive packages.

'We were therefore able to conclude that, as long as a proven oil was used and the vehicle was equipped with an altitude compensation device if operated at high altitudes, extended oil drain intervals could be achieved. Manufacturers have thus been advised to identify appropriate oils and implement these findings.

'In the course of our research we realised that limited oil drain intervals are responsible for unnecessary downtime and that severe engine damage as a result of oil sludging is a major problem in the field. These findings will be of great interest to maintenance managers with large fleets of similar light commercial diesel vehicles.'

The CAE has been using the Wearcheck programme for various projects over a number of years. ✓

New Netcheck aids maintenance management

WEARCHECK has taken advantage of Internet technology to introduce a new product which enables customers to receive their sample results via e-mail and to manage their oil analysis programme from their own computer.

Netcheck is a user-friendly Windows application database browser designed in-house by Wearcheck's IT specialists which, at the click of a button, gives maintenance staff access to sample reports. They can select results by site, equipment, component or problem severity, and view the history of each unit.

They are also able to create customised tables and charts and compare test results from different components on graphs.

'The system is very easy to set up,' says Wearcheck joint managing director, Lesley Crawford.

'We generate a database of the customer's equipment and sample history and e-mail it,

together with Netcheck software, to the customer. Thereafter, results are e-mailed on a daily basis. The customer saves the e-mail to hard disk and uses Netcheck to access the data.'

Standard formats include sample reports, sample history, feedback reports and submission forms, as well as listings of abnormal samples, components due for sampling and outstanding feedback.

'All of these can be printed, faxed or exported to other applications, as can graphs or tables created by the customer,' says Lesley. 'The system is designed to make maintenance management that much easier.'

Netcheck is provided free of charge to Wearcheck customers on request. Companies using Netcheck will no longer receive printed sample reports or faxes.

For further information contact Simon Robertson on (031) 700 5460. ✓

Easy ordering

WEARCHECK has produced two new catalogues detailing all the company's products and services, complete with prices, to make the ordering process as effortless as possible for customers. One is for industrial and automotive customers and the other is for the aircraft industry.

'We have created a product code for every item which most maintenance staff can relate to, as they are used to working with part numbers,' said financial manager Robyn Schroeder.

Products and services are categorised for easy reference and range from standard oil kits and sampling equipment to specialised tests, software packages and training courses.

The catalogues are available on request from Melanie Hynd, telephone (031) 700-5460. ✓

Automated RPD developed in-house

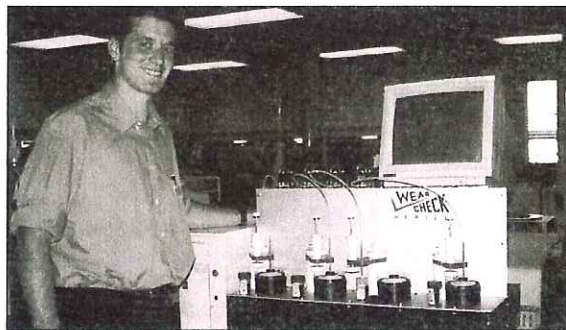
WEARCHECK's three-year old rotary particle depositor (RPD) which is used for the preparation of ferrograms for in-depth wear debris analysis, is to be replaced by a semi-automatic, multi-station unit designed and manufactured in-house.

The original single-station manual instrument manufactured at Swansea University in Wales, will serve as back-up to the new multi-station RPD which is capable of preparing four ferrograms simultaneously under tightly controlled experimental conditions.

Laboratory manager Alistair Geach is expecting the new instrument to offer several benefits.

'Greater capacity through improved productivity is the first advantage. Whereas manual preparation of ferrograms requires between 10 and 15 minutes per sample, four ferrograms are prepared simultaneously on the automated instrument, reducing average process time by about 70 per cent.

'With the manual RPD, sample



Wearcheck systems analyst Stephen Clur developed most of the software for the new multi-station rotary particle depositor (RPD).

and solvent are added drop wise to the rotating slide by means of a hand held pipette. With the automated instrument, an operator only assists with loading the sample, after which a computer-controlled motorised syringe delivers the sample and solvent to the slide at a continuous pre-programmed rate.

'This eliminates the human element and results in an even particle deposition rate that will ensure ferrograms of a consistently high quality.'

The multi-station RPD cost close on R200 000 to develop, with the patent-protected components imported from Wales and the remainder of the parts sourced or manufactured in South Africa. It is currently in the testing and evaluation stage.

'We tried to persuade the engineers at Swansea to develop and manufacture a semi-automatic instru-

ment without success as the market was considered to be too small to be viable,' says Alistair. 'We were, however, able to purchase four magnetic turntables which allowed us to build our own.'

Alistair was responsible for designing the mechanics of the instrument, with systems analyst Stephen Clur developing most of the software. IS manager Larry Baddock's electronics expertise was used to design improved speed control circuitry for the magnetic turntables - a feature that has also been incorporated in the latest manual instruments produced by Swansea.

'This is a powerful technique and we expect demand for it to increase as customers become more aware of the benefits of ferrography,' says Alistair. 'We planned the development of the automated instrument ahead of anticipated demand as cost-effective preparation of ferrograms is essential if higher volumes are to be processed at the price at which the service is currently being offered.' ✓

Making headway

TWO NEW managerial positions have been created at Wearcheck as part of the company's ongoing strategic plan to streamline operations and increase efficiencies.

Upwardly mobile

John Evans, an experienced chemist and diagnostician, has been appointed diagnostic manager of mobile equipment after nine years with Wearcheck. This follows the separation of the diagnostic department into the industrial and mobile equipment divisions.

'Creating the two divisions, each with its own specialised diagnosticians, will help us to offer improved customer support,' says John.

Working with John in the mobile division will be technical consultants Rowan Maartens, Michelle Allis and Eugene Schultz as well as diagnostic assistants Ravi Chetty and Trevor Pillay. The industrial division will be developed by joint managing director Gary Brown with support from diagnosticians Daan Burger and Ashley Mayer.



John Evans

'Eighty-five percent of the samples we receive come from mobile equipment - ranging from bulldozers to buses,' says John. 'If it has wheels and moves, we take care of it.'

John is well equipped for his new position. A B.Sc. (Chemistry) graduate from Southampton University in the UK, he began his career with a Caterpillar agency in Botswana, establishing oil analysis laboratories in Gaborone and Harare. He then moved

to De Beers in 1986 to set up laboratories on the Jwaneng and Orapa diamond mines in Botswana. He ran the Orapa laboratory for three years and was responsible for integrating oil analysis into the mine's maintenance planning system before joining Wearcheck in 1989.

John will continue to be involved in technical training in his current position. ✓

Managing information systems

FORMER senior systems analyst Larry Baddock is Wearcheck's new information systems manager, responsible for the information technology and data processing sections.

Researching and developing new systems as well as prioritising and scheduling IT projects and maintenance are all in a day's work for Larry and his team of 15 employees.

'This position requires a combination of creative and management skills,' says Larry. 'There is always something new to tackle and there is very little time to be daunted by the continuous demand for innovative solutions



Larry Baddock

to meet operational needs.'

Larry has been actively involved in information systems and related fields for the past 15 years. He holds an M.Sc. Eng. in chemical engineering from the University of Natal, Durban. He was part way through a Ph.D. in computational fluid dynamics

when he was approached by Wearcheck in 1995 to automate the Houillon viscometers, as he had considerable experience in process control, software and electronic hardware design. He joined Wearcheck a month after the completion of the viscometer project. ✓

Wearcheck Technical Training Courses SEPTEMBER - NOVEMBER 1998

Date	Course	Venue
14 September	2	Johannesburg
15 September	3	Johannesburg
17/18 September	4	Johannesburg
19 October	2	Johannesburg
20 October	3	Johannesburg
22/23 October	4	Johannesburg
23 November	2	Johannesburg
24 November	3	Johannesburg
26/27 November	4	Johannesburg

Course 1: *A practical introduction to oil analysis* (8h30 - 12h30). By arrangement. Cost: R132 (Wearcheck customers), R181.50 (others).

Course 2: *The application of analysis and an introduction to troubleshooting* (8h30 - 16h30). Cost: R434.50 (Wearcheck customers), R605 (others).

Course 3: *Troubleshooting series* (8h30 - 16h30). Cost: R434.50 (Wearcheck customers), R605 (others).

Course 4: *The technical management of oil analysis and lubrication* (Day 1: 8h30 - 16h30, Day 2: 8h30 - 12h30). Cost: R836 (Wearcheck customers), R1089 (others).

Infocheck Training Courses

Date	Venue
8-10 September	Johannesburg
10-12 November	Pinetown

All prices include VAT.

For bookings phone Melanie Hynd on (031) 700-5460.

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