The International Organisation for Fluid Power and Motion Control Professionals

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FLUID TALK

The Official Newsletter of
The International Fluid Power Society of Australia Inc.

More than just filters

by Tim Bailey

HYDAC's Dr. John Duchowski addressing the meeting

Maybe it was the up-market venue, maybe it was the promise of good food and drinks but the most likely reason for a big attendance at the **HYDAC** technical evening in early June arranged by our hard-working Executive Officer, Stuart Coleman, was the promise of hearing about some very interesting developments in fluid power.

Stuart had arranged for **HYDAC**, a very well-known and world-wide hydraulics company, to sponsor the evening at the up-market Novotel Langley Hotel in Perth and to provide a brace of HYDAC technical experts and senior management for us to hear speak and later meet.

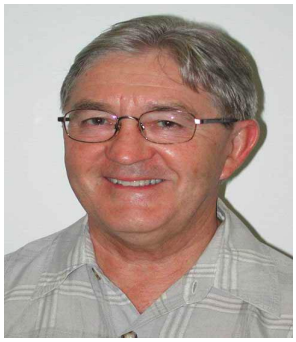
The principal speaker was **Dr. John Duchowski**, HYDAC World Director of Technology Development, assisted by **Mr. Christian Wengerek,** HYDAC Area Manager for North America, Asia and Australia, **Peter Agius**, HYDAC, National Sales & Marketing Manager and **Paul Hollis**; HYDAC Western Australia Branch Manager.

After introductions by Paul Hollis and Peter Agius who covered HYDAC's commercial activities and operations in Australia, Dr. Duchowski started his technical part of the evening by pointing out that HYDAC, whilst being very well-known for specialist expertise in filtration, does much more than just filters. Dr. John – as he seemed to prefer being called – then treated us to a very interesting expose of the progress that HYDAC is making in continuous, on-line hydraulic oil monitoring.

He carefully and expertly explained the many technical difficulties of monitoring the contamination and viscosity levels of a hydraulic oil system continuously. It was clear from his explanation of the instruments that HYDAC has developed so far that HYDAC is certainly at the very fore front of the technology wave in being able to provide a single instrument that can not only provide continuous oil condition reports but also warn of sudden changes that may indicate that an expensive hydraulic component is about to fail.

HYDAC's Mr. Christian Wengerek highlights the companies product range to the meeting.

Dr. John then had a bit of a break from speaking whilst Christian Wengerek talked to us about the range of other HYDAC products that we seem to forget about at times such as signal amplifiers, pressure transducers and other similar products.**(Continued on page 8)**



President's prologue

by Tim Bailey

Thank you to the IFPSA members who have paid their 2008 subscriptions. The response has been excellent with only a very small number not having been received due to people moving overseas or out of the fluid power industry. Additionally, new members have joined and the membership is increasing. I would like to ask you to make it your personal aim this year to have at least one person join the IFPSA - that would double our membership in one year!

Some new members have been attracted to the IFPSA by our training and skills-recognition registration programs and others have joined to give them access to the wealth of fluid power information available through the parent body – the International Fluid Power Society – based in the USA. We've also noticed a growing interest in The IFPSA that appears to be a result of the promulgation of the draft document ***MDG 41; Guideline for fluidpower system safety at mines*** by the NSW Department of Primary Industries and reported on in this column in the October, 2007 edition of *Fluid Talk*

A substantial Queensland-based fluid power company has met with your Vice President, Barry Catanach, to discuss the IFPSA's High Pressure Hose Assembler (HPHA) and Curriculum Matrix registration systems as the effects of MDG 41are now being felt in the Queensland mining industry. The company is wisely looking to get itself ahead of the game by having its personnel registered, as appropriate, by the IFPSA - being an independent organisation - before the requirements of MDG 41 become a mandatory, legal requirement.

In parallel with the IFPSA's current and past efforts to provide formal skills-recognition registration to the fluid power industry, your Executive Officer, Stuart Coleman, has been providing company-specific fluid power training to a mining services company through the IFPSA. He has also developed a variation of the IFPSA's *Introduction to Hydraulics* course that has been presented to a group of Engineers by a qualified IFPSA member as part of that member's service to a client through the company that he manages. And just to occupy Stuart a bit more and keep him off the streets, your committee agreed to Stuart's proposal that the website be upgraded and modernised.
We anticipate that the renovated website will be operating fully in the next month or so and we are confident that it will be well received by the growing number of people who use it.

Further to my comments in this column about the annual general meeting function in previous newsletters, your committee has looked into the best value-for-money function and venue that would provide a pleasant evening out for members, their partners and guests. We are conscious of the rapidly escalating charges by function venues and the financial constraints on all families and after a considerable venue-searching effort by Stuart Coleman, the Royal Perth Yacht Club came out on top. The high-quality food that we've enjoyed at the RPYC in the past and the exclusive and quite fabulous location offered to us at a reasonable cost was unbeatable. Additionally, we have procured the services of a most interesting guest speaker for the AGM dinner. **Mr. Ted Graham, Chairman of the Finding Sydney Foundation**, has agreed to speak at the dinner and show films of the remarkable achievement of the Foundation, just a few months ago, in searching for and finding the wrecks of the World War II German raider HSK Kormoran and HMAS Sydney at water depths of over one kilometre off the Western Australian coast. As you may already know, both vessels sank in November 1941 after battle between them. I have recently had the pleasure of hearing Ted present a brief talk on the subject and I can assure you that he will make the AGM dinner a very memorable event as his subject is unique, historically and technically very interesting and not without emotion when you see live film images of the resting place of 645 men who died when 'Sydney' went down. I promise to keep the formal part of the meeting to minimum for your maximum pleasure! Be sure to book your place at the dinner as soon as you receive notification of the event as we have a restriction on the number of people who can attend. See http://www.findingsydney.com/ for all the details.

Another coming event is the IFPSA annual golf day that will take place at the Peninsular Golf Course in Perth on Sunday, 14th September. This increasingly popular day has gone from strength to strength due to the excellent organising prowess of committee-man Phil Bristow-Stagg variously assisted by committee-men Jim Muir, Stuart Coleman and Malcolm Tucker. However, this year will see a new hand on the helm as Phil has decided to take a back seat and he has handed the organising of the day over to committee-man Ken Fletcher jnr. of Mining and Hydraulic Supplies Pty. Ltd. On behalf of the IFPSA, I thank Phil most sincerely for a job very well done and I thank Ken for stepping into a big pair of shoes to carry on the tradition. I understand that past IFPSA golf day competitors are already organising their teams and booking places at the coming event and I strongly recommend that you register quickly when you receive the registration forms and information as there is a very definite cut-off on the maximum number of people who will be allowed to participate. Also, I ask our most generous sponsors of past golf days to give Ken a good response when he makes contact – keeping in mind the significant advertising benefits accruing from having your company name associated with the IFPSA's high-profile social event.

IFPSA members and guests have enjoyed two very interesting evenings recently with the first being a visit to Allstar Garage in Malaga, Western Australia, to observe Sean Keating and Nick Box, owners of the business, demonstrating a four-wheel, hydraulically braked dynamometer being used to test the power output of a Subaru WRX Sti turbo-charged car whilst electronically retuning the engine to extract more power just with the use of a laptop computer connected into the engine management system. We were impressed by the extensive technical knowledge displayed by Sean and Nick as they enlightened us on the quite basic performance of the average ex-factory car and what could be done, electronically, to increase power and reduce fuel consumption in car engines. The second was a technical evening in early June arranged by Stuart Coleman and sponsored by HYDAC. The event was well attended and very interesting – see 'More than just filters in this issue.
With best wishes…..Tim

What price fluid power?

by Stuart Coleman

Within UK fluid power circles there is a furore over the following article published in the June 2008 edition of the UK industry magazine *Industrial Technology*. Written by Mr. Nick Brooker Marketing Manager for SKF UK, the article sets out to discredit fluid power as a technology for the future. The article is published in full as follows.

" UK manufacturing is experiencing a sustained period of growth, without output and orders at a ten year high. Success has been hard won, and has demanded a focus on productivity, operational flexibility and cost control. However, if this resurgence in UK manufacturing is to continue, then the use of traditional production methods needs to be questioned. In particular, fluid power technologies may no longer be capable of delivering the levels of performance and cost-effectiveness that will be required in ever more competitive global markets. Pneumatics and hydraulics systems can generally be complex, wasteful and expensive. For example, compressed air systems consume more than 15% of all factory energy, while the capital, operating and maintenance costs of hydraulic systems are often extremely high. In addition, the long term development potential of these technologies is limited, especially in their ability to offer ever higher levels of performance, accuracy and energy efficiency, with a high return on investment. By comparison, an emerging generation of sophisticated electro-mechanical drive technology now looks set to offer manufacturers a number of exciting opportunities to reduce costs and increase productivity still further. Perhaps, as importantly, this technology offers clear advantages for precision control and positioning, giving instant power on demand and greater flexibility in a wide range of production applications. The bottom line is that the through-life cost of electro-mechanical technology can be considerably lower than for traditional fluid power systems. Combined with greater functionality, precision control, less noise and contamination and the potential to build production systems that can easily be adapted as manufacturing needs change, this truly gives engineers a technology that will support the continuing success of UK manufacturing into the future."

Nick Brooker
Marketing Manager
SKF UK

Ian Morris
Director BFPA

In reply Ian Morris, Director of the British Fluid Power Association (BFPA), lampooned Nick Brooker with the following response.

"Mr. Brooker attempts to completely discredit our industry in a manner both crude and ill informed. The Fluid Power Industry has never pretended that it is the sole solution for all applications and has thus shared with other technologies the motion and control stage. As a true engineering technology, we embrace all engineering skills, be they electronic, electrical, computing and mechanical. I would ask all BFPA members who deal with SKF to contact the most senior SKF Manager that they are able and ask him to explain this apparent lack of intellect so ably demonstrated by Mr. Nick Brooker."

The IFPSA embraces the BFPA position on this article which has been written by a person who obviously has a vested interest in denigrating the fluid power industry in favour of technologies peddled by SFK. If we look closely at this article and consider applications that were the sole domain of fluid power in the past such as apron feeder drives and ore car positioners to name a few. These applications are now predominately the domain of electro mechanical drives relegating hydraulic technology to a distant second place, why is this so? Generally, electro mechanical technologies have benefited more that fluid power from the rapid development of electronic and computer technologies and over the years fluid power has gained an unjust reputation as a technology based on the misguided preconceptions trumpeted by the opponents of fluid power such as Nick Brooker.

The only way to counter this 'misconception' is for organisations, companies and people involved in our industry to promote fluid power as a technology for the future and to build systems and components that offer customers a cost effective innovative alternative to the technologies peddled by the likes of Nick Brooker.

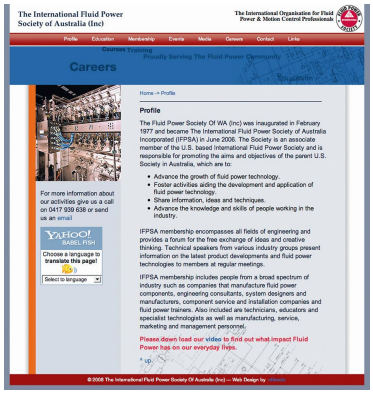
Remember, every time a customer takes delivery of a hydraulic or pneumatic system that leaks oil/air, overheats or is costly to maintain and operate, Nick Brooker and his cronies get a free kick in the technology credibility stakes.

New look website

Take the time to visit our new look website at www.fluidpowersociety.com.au developed by the IT sub-committee in conjunction with Ottimoto website design. Our new look website is compliant with international standards for website design and comprises twenty three pages of interest to members and fluid power web surfers alike.

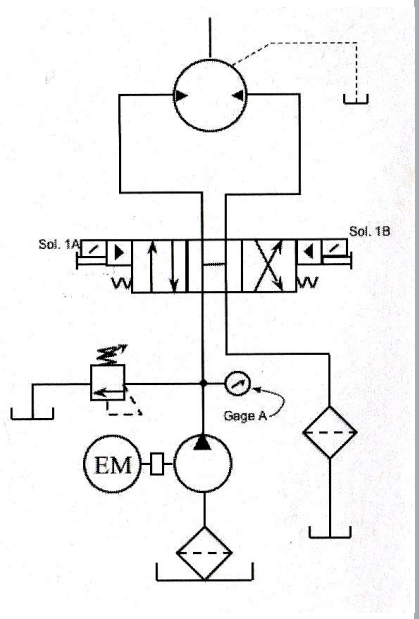
The profile page has rotating fluid power application photographs and a link to a short video which gives the uninitiated visitor a brief overview of what fluid power is all about.

We also have a 'Careers' page which is designed to attract overseas people who are looking to further their further their fluid power careers in Australia. Considering we are experiencing on average over three hundred hits a day on our new website and some days over a thousand, this feature should prove attractive to our members who are looking for qualified fluid power staff.



Testing time

A large conveyor system was hydraulically driven using the schematic as shown running on ISO 68 hydraulic fluid. During a modernisation of the plant the conveyor was moved to the foundry and run on water-in-oil invert emulsion fluid operating at higher ambient temperatures. This was due to a fire hazard issue presented by having red hot castings on the conveyor. The system has run successfully for several years on ISO 68 hydraulic fluid, however when the hydraulic system was recommissioned the motor would not rotate. Maintenance was called to troubleshoot the problem and they initially suspected that the pilot operated two stage valve was not shifting. They installed a new valve, but it did not fix the problem. Maintenance then removed the valve to confirm that the pilot pressure and pilot drain connections were connected properly. They followed the guidelines and found the new valve to be configured correctly and matched the old valve arrangement.



Conveyor drive hydraulic system

Maintenance next suspected that the pump was not producing enough flow and replaced it with a new one. The problem still persisted, Someone suggested that the relief valve could be sticking open, so they replaced it all to no avail.

Now with a new pump, relief and directional valve, it only left the motor. They removed both motor lines from the valve and plugged the valve 'A' and 'B' ports and energised one solenoid but there was still very little pressure on the pressure gauge. The circuit plumbing was not changed or modified from the original installation.

Do you know what the problem is and how to fix it? If you do, email your solution to the *Fluid Talk* editor Stuart Coleman at secoleman@iinet.net.au The first correct answer will receive a bottle of Margaret River wine.

All our yesterdays

Hagglunds Drives apprentice Leon Griffiths (left) and technician Tony Adams repairing a Hagglunds Viking motor. This photo was taken in Hagglunds Drives WA workshop circa 1990, although the exact date is unknown.

Events Calendar

First Wednesday of each month
General Committee Meeting
AMTC Wembley

The Fluid Power Society general committee meets on the first Wednesday of each month except January. Members are always welcome! Contact the President, Tim Bailey, for details of the meeting location and time. Contact details are on the last page of this newsletter or on our website: www.fluidpowersociety.com.au

Notification of forth coming events and site visits. Members will be advised specific dates by email or by post

August 2008
Annual General Meeting at the Royal Perth Yacht Club

September 2008
Annual Golf Day at the Peninsula Golf Club, Maylands

October 2008
To Be Advised

November 2008
To Be Advised

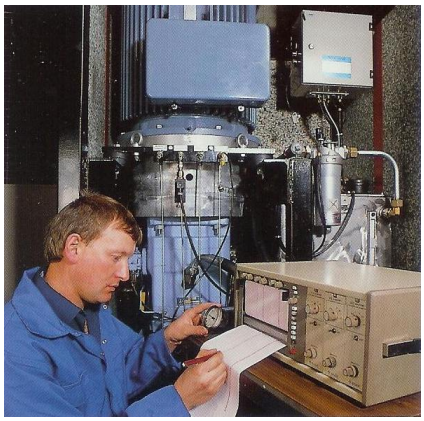
Dec 2008
To Be Advised

Member profile

Chris Hardaker

Chris at the controls of his favorite toy. Chocks away chaps.

Chris was born in Bradford UK and attended Beckfoot Grammar School. He accepted an apprenticeship with J Parkinson & Son as a craft apprentice (Chris comes from three generations of mechanical engineers, so his future vocation was planned before he was born). Chris was one of the final apprentices to be indentured. This meant that Chris his parents and the company all had to sign an agreement for things like committing him to make sure he went to work on time with shiny boots and clean, tidy, ironed coveralls. He was not allowed to go onto licensed premises before reaching 18. He also could not get married and worst of all was not allowed to own or ride a motorcycle with a capacity over 250 cc. At that moment in history it meant riding one of these motorcycles was only a little better than walking. Chris completed his apprenticeship as a fitter / maintenance fitter just as the Russians were flooding the market with shoddy but cheap machine tools. He was transferred to the company's hydraulic division (Renold Carter Hydraulics) where he spent time in their R&D department working on what he believes was the first pintle type hydraulic motor. This work entailed building by hand motors that were then fitted in the field, monitored for performance, removed after a set number of hours, stripped and inspected. During one of the field trips he met and got talking to a person who worked for Alison Hydraulics, a local hydraulic company. (This is where both past Stuart's and Chris's past came very close as all three Alison Hydraulic bosses came from Towler Hydraulics.) One of the Alison Hydraulics owners made him an offer he could not refuse, a fifty per cent wage rise but more importantly for a young lad a 'Transit' panel van. Absolute heaven! Mothers, lock up your daughters! Chris immediately accepted the position and was for the next few years trained in the black art of 'General Hydraulics'. During this time he learned many things, including that a one ton van will actually take over one and a half tons before the suspension breaks, blocking the main entrance to British Steel's Scunthorpe plant. Phosphate ester fluid is NOT nice to drink and does not taste like Yorkshire Bitter. Also copper washers can be annealed by heating to cherry red with a Zippo lighter then cooled by peeing on them and why 'Jesus' springs are so named after one let go on the last few threads of the last cover bolt and proceeded to embed itself into a railway sleeper lined wall.
Chris got a call one night from another hydraulic company (Monsun Tison) who offered him a lot of money to wear its badge on his coveralls. This was his first initiation into the 'Swedish' ways of working. Sometime later he got another evening call (why are calls like this made at night?) from Hagglunds Dives, this call leading to him commencing with Hagglunds Drives UK in 1987. During his tenure with Hagglunds Drives UK Chris visited many countries, some excellent and a couple he was lucky to get out of alive.
Siberia was memorable as the temperature got down to minus forty nine centigrade without wind chill factor an experience that taught him Tellus 46 oil at this temperature equals toffee. Then to Mongolia where the route to the mine took him past a wreck where the body of the driver remained getting blacker, more swollen and smellier each day until it was removed by his family.



A young Chris on site data logging a Hagglunds Drives power unit

After that a trip to Malaysia to sort out why the Hagglunds Drives power unit electric motors would not start when running on a generator. This meant first class travel to site to find out that they had reduced the generator speed from 1800 rpm to 1350 rpm to save fuel, at 1350 rpm the generator would not recover speed when the electric motors were started. This dropped the control voltage for just enough time to drop out the microprocessor and shut the unit down, a quick tweak on the throttle and all was well. Then back to the UK first class. It's tough sometimes but someone had to do it.
In 2001 Chris and his wife Anne decided to give their two children a 'better' chance in life as things were looking generally bleaker in the UK even though there was plenty of work. After discussions with Hagglunds Drives Chris was offered positions in North America, South America, Sweden and Australia. In 2002 they chose to come to Australia and are glad they did. From their very first day the true Aussie spirit and mateship came shining through. Chris's family were in rented accommodation when they first arrived with all of their belongings in a container somewhere on the ocean. The guys at Hagglunds Bunbury and some new friends were just great, pulling out all the stops, loaning beds, sleeping bags, cutlery and even a television until their belongings arrived.
Chris's daughter is married and lives within walking distance, his son finishes his mechanic's apprenticeship this year and is setting up a car repair business with his brother-in-law.
Chris took up flying 2 years ago and can now be found most weekends scaring the seagulls around Bunbury, occasionally flying to Jandakot where he causes chaos in the circuit (only joking).
Chris's first love is for his wife and family because without their support throughout the years he would never have experienced or achieved many of his goals.
Hagglunds has been good to him over the past twenty one years and they continue to be so. His MD keeps trying to slow him down but that is not in his work ethic so they both agree to compromise on things.
Chris reckons flying is an addiction and should carry a government health warning and he will bore the pants off of anyone who will stand still long enough to talk about flying. He is a self confessed 'type junkie' with an aim to be endorsed on as many types of aircraft as possible as soon as possible.
Chris and his family are glad they chose to live in beautiful Australia and WA in particular. The settling in process was made easier over the past six years due to the help and understanding of their many genuine friends.
In closing, Chris said he would just like to say a big thank you to all of his friends and colleagues who are part of the 'worldwide family of hydraulic engineers' your friendship means a lot to him.

Hydraulic Resource-major sponsor of this issue.

About Hydraulic Resource

Hydraulic Resource is a Western Australian owned and operated manufacturing company specialising in the distribution of the **GPM (Gear Pump Manufacturing)** range of hydraulic pump/motor gear products. GPM's main facility and in-house foundry is located in Cape Town on the southern tip of South Africa. Ian Lavington Hydraulic Resource's Managing Director has worked in the Hydraulic Industry for the past thirty years, twenty seven years which were with the Australian division of the multi-national hydraulic gear pump manufacturer **Commercial Intertech Corp.** The gear pump design, manufacture and application experience gained during that period is now available to the fluid power industry, through Ian and the other members of the Hydraulic Resource's team.

The Hydraulic Resources team outside the manufacturing & sales facility.

All of the castings are imported from GPM South Africa with all of the fine-tolerance machining already completed. Port machining and de-burring is done in-house using an Archdale pillar post drill, contour form cutters, taps for all threaded port configuration, and drilling jigs for split flange ports.


Prior to dispatch each pump and motor is tested on Hydraulic Resource's test bench to ensure performance integrity.

These capabilities, combined with an extensive range of components held in stock, allows **Hydraulic Resource** to offer a fast and efficient turn-around of new and remanufactured units at short notice, allowing customers to keep their downtime to an absolute minimum.
Hydraulic Resource also offer customers an engineered product replacement service for gear pumps and motors manufactured by the following companies: **Parker Hannifin**, **Bosch Rexroth**, **Commercial**, **Permco, Metaris**, **Hydreco**, **Cessna**, **Webster**, **Cassapa**, **Salami**, **Ultra**, and **David Brown**.
If you have difficulty repairing or replacing a Gear Pump or Motor give Ian a ring 08 9274 2835 he is more than happy to help.

Hydraulic Resource's company philosophy is simple. Give the customers:

- **What they want.**
- **When they want it.**
- **At prices they can afford.**

About Gear Pump Manufacturing (GPM)

Local expansion of the company started during 1999 when **Dosco** bought out the then **Debex Cape** Manufacturing plant in Cape Town, changing its name to Gear Pump Manufacturing (GPM). GPM produces gear pumps similar to the **Parker Commercial** range and has become the largest commercial replacement manufacturer outside of the USA..GPM currently exports more than 75% of its production and the company's product range includes hydraulic bushing pumps, bearing gear pumps, power take offs and some valves. Since taking over this facility, Dosco GPM has invested significantly in it. In order to ensure the quality of the castings used for the pumps a new foundry was established which operates under the name of **Engineering Technology Services (ETS)**. The equipment for the foundry was imported from the UK and has been upgraded to become one of the best sand foundries in South Africa using high quality sand from the Cape region. With its environmental policy based on ISO 14001 ETS recycles most of this sand, to ensure the manufacture quality of the castings used by GPM is to world best practice in accordance with ISO9001 certification gained in 1992. GPM has the productive capacity to manufacture up to 10,000 castings per month and is looking to increase this capacity as global demand increases. Before the castings can be used they must undergo precision machining and, as a result, GPM has heavily invested in equipping its manufacturing facility with numerous state-of-the-art CNC machines to increase productivity and reduce product costs.


The GP 130 is smallest pump in the Hydraulic Resource range.


Variety of truck PTO pumps just introduced into the Hydraulic Resource market range.

The effects of fluid injection accidents

The employees own story

This story is a reminder to all people who work in our industry that we must be vigilant at all times when working on fluid power systems. It is far too easy for both management and employees to become complacent in our everyday working lives to the safety hazards that surround our workplace. Failure to remain informed and vigilant at all times may result in you having a similar story to the one below. Lets hope that this scenario can be avoided.

"I work for a company that carries out aircraft maintenance. In 1985 I got transferred to the maintenance part of the company and was retrained in aircraft structural maintenance. After a few years I was trained to be the hydraulic bay operators deputy. One of the jobs included pressure testing hydraulic pipes. The training consisted of being shown how the equipment worked and the procedures involved. Health and safety instruction consisted of making sure the Perspex cage was closed when raising pressure, also I was assured that if a pipe split when pressure testing with oil the pressure would drop to zero and there would be no harmful effects. The test rig was a steel framed Perspex box on a stand with a hinged lid and front cover. Pressure was supplied by a low volume high pressure pump powered by a compressed air. Controls for the pump were at the outside end of the cage and the pressure release valve was at the same end but on the inside. Apart from the pump, the test rig was constructed from scrapped components salvaged from aircraft and old hydraulic test benches. Maintenance of the test rig consisted of cleaning and testing the oil for contamination and the test medium was OM15 hydraulic oil as used on various aircraft.
On retirement of the previous operator I got the job on a full time basis.
At the time the company was starting to take health and safety a bit more seriously and had employed a health and safety manager who asked me to do a risk assessment of my work processes. After training in the method of carrying out risk assessments I carried out the assessment as requested. What I had not had was any training in the dangers of high pressure hydraulics.

hand five days after the oil injection accident.

At 9-00 am on the day of my accident I was testing a pipe at 415 Bar. As I reached into the cage to operate the pressure release valve my hand brushed against a pipe leading to a gauge. I felt a thump against the side of my hand, and looking at my hand there was a 6 mm long slot with a 12 mm ring around it where the top skin layer had been lifted. As I squeezed my hand oil came out, however there was no pain at this time. The company nurse sent me to the local hospital in the company security truck. At hospital, I was seen by a consultant who told me I would be operated on as soon as possible. As time went by the pain was increasing. Pain control started with a pill and within two hours they were going in intravenously, all with little effect. At 2-00 pm I went for the operation to try and get the oil out. The next day in the ward the pain was so intense that even with morphine I was sitting on the floor in a corner of my single room rocking backwards or forwards, or just walking around the hospital trying to distract myself from the pain. The only relief from the pain was when the surgeons came in injected local aesthetic into my hand, undid the stitches and tried to flush out more of the oil. On day three I had another operation after which I was told it was likely I would lose my finger or at the very least need extensive skin grafts on the hand as the skin was black on most of the little finger, rest of my hand was not looking too good either. They had opened up the carpal tunnel to try and relieve the pressure, as the swelling was massive and the nerves and tendons in the tunnel were being crushed, and cut away parts of the side of my hand where the oil was burning the flesh away. On day five I had another operation, the result of which is the above photograph. The surgeons cut away more damaged flesh but started putting split skin grafts on the large wound on the side of my hand. Day six was the first time since the accident that I was relatively pain free or at least the drugs were having some effect. I was released from hospital after a total of fourteen days but had to come back every week for medical checks and physiotherapy. Three months later I had another operation to try and release the little finger that had curled up almost to the palm, stopping me from using the hand properly. I was off work for six months and had to become an office worker, something that I was not prepared for and have always had trouble with.

So up to now, I have had five operations, three skin grafts with corresponding scars on my inner thigh and forearm. Two years of physiotherapy and I still have a hand that does not function properly and can hardly hold a pen. Simple things like polishing the car become difficult as the little finger sticks out and leaves scratches in the finish which is most frustrating. I can tell when the weather is cold and wet, as my hand goes blue and hurts. I can no longer grip with any strength and knives are a particular problem. I have to make a special effort to grip knives and keep a grip as the fist does not clench as much and things slip through my fingers. Imagine holding a carving knife, raising it up vertical and it slipping through your fist! It's happened to me and amazingly did not cut me. Another embarrassment is when people hand you change at the shop it slips through your fingers and you end up scrambling on the floor picking up coins.
My accident brought a huge stress to my family. According to my wife I became "difficult" and eventually the situation proved too much for her and my marriage broke up.

Following my accident the company immediately stopped pressure testing and after investigating the whole system decided that it would be best to contract out pressure testing to firms properly set up to execute the task. My company has also used the accident as an example in training of what happens when health and safety systems go wrong or are non existent. I think my accident shocked the company quite a lot and since then it has worked very hard to prevent accidents within the workplace."

Movers and shakers

- **David Manoni** has left **Hagglunds Drives** to pursue other interests.
- **Chris Hardaker** has been appointed by **Hagglunds Drives** as WA Service Manager.
- **Bruce Allen** has left **Parker Hannifin** to join **Hydair Drives.**
- **Brian Hill**, after forty four years in the engineering and hydraulics industry, retired on 30 June from **Perth Hydraulic Centre**.
- **Tim Sinclair** has joined **Pressure Dynamics** as Engineering Manager.
- **Neil Shepherd** has joined **Pacific Hydraulics** as a Senior Technician.
- **Ken Hess** has joined **Pressure Dynamics** as Logistics Coordinator.

- **Roger Randall** has retired from **Bosch Rexroth** to pursue other interests. Roger has had a stellar career in the fluid power industry spanning more than thirty years during this period he worked for **Moore Hydraulics**, **BTR** and **Bosch Rexroth.**
- **Barry Palmer Owen** has left **Pressure Dynamics** and joined **Custom Fluid Power** as Business Development Manager.
- **Moog Inc** has announce announced that **Ferrari** has placed an order for the engineering, design, development and deployment of a next-generation driving simulator to be located at Ferrari's headquarters in Maranello, Italy. The system includes a driving simulator featuring a customized motion control solution with combined motion mechanism, control loading system, complete software package, top platform and a dedicated operator workstation. **Marco Fainello**, Head of the Car Performance and R&D Department for **Scuderia Ferrari**, stated, "The dynamic driving simulator is a new step for us in developing virtual tests that give drivers the true feel of a real environment and direct feedback on their actions. We have been impressed with Moog's motion control expertise and their ability to make every detail of the mechanical design a key to improving overall system performance, as well as the comfort and security of our drivers. This dynamic driving simulator will support the new breed of tests we are planning to launch to support our future success."
- **Ron Babich**, after forty plus years in the Australian fluid power industry, has finally retired. During his stellar four decade career Ron worked for **Vickers Systems**, **WA Fluid Power Services**, **John Honey Hydraulics** and lately **Tyco Motion & Control**.

Paul Hollis, HYDAC's WA branch manager addressing the meeting.

More than just filters (continued from page 1)

Dr. John took over from Christian and went on to discuss the technicalities of hydraulic oil filter elements, filtration media and related problems including the causes and effects of electrostatic discharge in filter elements. He showed some video clips of lightning-type electrical discharges in operating hydraulic oil filter elements that reduced the element to a charred mess!

Dr. Duchowski's very extensive knowledge on the subjects that he presented was obvious and it's not in the least surprising that he is considered a world expert in the field.

At the end of his most interesting talk, Dr. John invited us to ask questions and the effectiveness of his ability to communicate with his audience was demonstrated by the high quality of the questions asked.

To end the official part of the evening and to allow us to enjoy even more good food and drinks as HYDAC's guests, it was my pleasure to thank HYDAC for sponsoring the evening, for the considerable knowledge that we had gained and for HYDAC's generous hospitality.

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