



# FLUID TALK

The Official Newsletter of the  
Fluid Power Society of Western Australia Inc.

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## Tech Night at Pressure Dynamics

On Wednesday May 5<sup>th</sup>, Fluid Power Society members were treated to a very interesting display of technology at the headquarters of **Pressure Dynamics** in Welshpool. **Pressure Dynamics** – 'PDs' to most of us - are known for their ability to design and build custom fluid power systems.

The more than twenty FPS members that attended were treated to an excellent display of technology in the form of innovative design, precision manufacture and quality workmanship when the members were invited to PDs to inspect the recently completed Well Head Control System (WHCS), that is to be installed in Victoria, and a goods/man-hauling winch unit that is to service the radio communications towers at the Navy Base at Exmouth.

**Stuart Coleman**, Pressure Dynamics Engineering Manager, started the evening off with a descriptive overview of the WHCS before handing the presentation over to the designer, Senior Project Engineer **Greg Haig**, who then explained and demonstrated the operation of the system.



One very interesting aspect of the WHCS was the provision of a back up energy source in the form of a large bank of accumulators. Observation of the pressure gauges whilst the system was being demonstrated caused some people to take a few steps backwards as the quantity of stored energy became more obvious!

Similarly impressive was the very high standard of workmanship and the careful attention given to hydraulic fluid filtration and pressure and flow control as 'hammering' is a big problem in these systems due to the control of water glycol fluid at pressure up to 700 bar.

Greg then explained and demonstrated the electronic control unit that PDs had designed to control the functioning of the system. When Greg powered the system up, the crisp click of the solenoid valves could be heard followed by the sound of high pressure being unleashed - giving everyone a healthy reminder of the potential energy contained within the stainless steel conductors.

We were able to see which valves were operating, the various system pressures and the flow path of the fluid on the control unit video display screen. Greg operated the system through a few full cycles of operation whilst he explained some unique features of particular functions.



**Stuart Coleman** then showed the members the 240 kW, dual drum, goods/man-hauling winch unit that was under construction in PD's workshop. The unit attracted a number of interesting technical questions as it has to perform the dual function of goods handling and also man hauling for Exmouth Navy Communication Base 390 metre Tower Zero Transmission Antenna.

Stuart and Greg then invited the guests into the boardroom for light refreshments which were much appreciated and enjoyed by the visitors. This also gave the guests an opportunity of talking with **Leeza Wray** who is now General Manager and a PD board member. Leeza is well known to most Society members for her many years of secretarial and organising support for The Society.

A lot of interesting conversation on the visit took place over the refreshments only being interrupted by your president, Tim Bailey, thanking **Pressure Dynamics** through **Stuart Coleman, Greg Haig** and **Leeza Wray** for a very interesting and informative visit.

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## Presidents' Prologue

By Tim Bailey



We have received some pleasing, complimentary remarks about The Society's newsletter, 'Fluid Talk', from the fluid power and business community. The newsletter is distributed not only to the Society's membership but also to educational institutions and some parts of the business community and, as we hope you have noticed, your committee has consistently worked to improve the standard and quality of the newsletter to reflect the professional attitude of the members of the Society.

Naturally, this comes at a cost but it is felt that the direct expenditure on the newsletter is an investment that pays substantial dividends when we receive good comment. Whilst the direct expenditure is tangible, the voluntary effort put in by committee members and others is not and the newsletter simply couldn't be produced without this intangible input. Please help us by providing any information that you think is of general or specific interest to the industry - not forgetting that everybody enjoys a good joke (publishable!) and some factual gossip about industry happenings - humorous and otherwise!

It has been mentioned, in recent newsletters, that we have now established a procedure for the registration of people who qualify under the FPS of WA High Pressure Hose Assembler (HPHA) regime. I understand that a significant company in the specific industry area is probably going to proceed with the registration of all of their operators.

This is a very significant step in the industry because it will be the first time, in Western Australia, that a company working in the fluid power industry has chosen to align an aspect of its operations with specific knowledge and skill levels as set out by the FPS of WA.

I believe that any company or person taking up the FPS of WA HPHA registration procedure is showing considerable foresight as it is my opinion that it is only a matter of time before some form of government legislation will be enacted to require minimum levels of knowledge and skills in the assembly of high pressure hose assemblies - probably followed by fluid power work in general.

When the time comes, the FPS of WA will be able to present a 'ready-made' registration/certification structure for endorsement by the appropriate government department. The obvious advantage of this is that it will be a certification procedure that has been developed by the fluid power industry and not by a government structure that may have problems of self-interest and be insulated from the realities of life in the industry and the world of commerce.

You may recall reading an article in the last newsletter written by Stuart Coleman entitled: '*IS FLUID POWER MISSING THE BOAT?*'. The article has attracted considerable comment and has added more weight to a growing thought in the fluid power industry that some serious funding needs to be generated to provide the means necessary to establish a permanent industry representation on a professional basis.

However, the situation in Australia is that the only apparently active Fluid Power Societies are Victoria and WA yet the industry is Australia-wide. In line with Stuart's article, I think that we need to be giving serious consideration to establishing a national 'Society' with sufficient funding so that it can, at least initially, employ an executive officer who can act on behalf of the entire industry.

You may recognise that Stuart's and my comments could be backdated about 10 years to when The Fluid Power Association of Australia was formed and attracted substantial financial support from the fluid power industry by levying fees based on a percentage of the turnover of each member company. Regrettably, various factors conspired to bring about the demise of the FPA after just a few years leaving the present industry representation vacuum to which Stuart and I refer.

The Fluid Power Society of Victoria supports a part-time executive officer with funding emanating, as I understand, from the profits of running the fluid power expo on the east coast. The FPS of WA has considered running a similar expo on a number of occasions over the last decade but, on each occasion, the economics simply did not stand-up.

However, registration fees resulting from the HPHA and curriculum matrix systems are distinct possibilities as funding sources for an executive officer to run the day-to-day affairs of the FPS of WA. In fact, I believe that such a person will become necessary as individuals and companies take up the two systems.

The still leaves us with the growing recognition of the need for a national fluid power organisation and the questions of funding, state representation and the relationship of the existing and active Fluid Power Societies in WA and Victoria with a future national industry organisation.

Your comments on how some or all of these questions can be dealt with would be most welcome and I urge you to forward your comments to Stuart Coleman, Barry Catanach or myself by e-mail. Our e-mail addresses are on the back of this newsletter.

With best wishes..... Tim Bailey

## 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.



**Sunday 12th September 2004  
Annual Golf Day**  
Peninsula Golf Course, Maylands

All members are invited to attend the Golf Day.



**Saturday 13th November 2004  
Christmas Function**  
Hillarys Yacht Club

Details will be posted to all members .



**For more details on upcoming  
events refer to our website**  
[www.fluidpowersociety.com.au](http://www.fluidpowersociety.com.au)

## Bosch Rexroth, Trains and Big Boy's Toys

On the evening of June 9, about thirty Fluid Power Society of WA members attended a technical evening put on by **Bosch Rexroth** at their Malaga premises.

The evening started with **Bosch Rexroth** WA manager **Phil Byatt** inviting the members on a tour of the facility after ensuring that everyone was offered suitable refreshments to slake their thirst and quell the hunger pangs resulting from the day's exertions.

An interesting aspect of the workshop area was the large expanse of floor covered with grid mesh type flooring that allowed any spilt oil to immediately drain into a large, recessed floor, oil collection system without creating a safety hazard.

Equally impressive was the expansiveness of the working area, the neatly laid out workbenches and the overall cleanliness and excellent lighting. Obviously the Phil and his team place a high priority on safety and providing their workforce with good working conditions.

The visitors were then invited into the general office area that was also very open and created a pleasant working environment before **Roger Randall** ushered everyone into the conference room area for a technical expose of the SPENO Rail Maintenance Australia RR24 M20 Rail Grinder.

Roger had prepared an excellent PowerPoint presentation and combined with his extensive knowledge of the project through his close involvement with all aspects of the design from inception to completion, Roger held everyone's attention as he carefully explained many of the problems that were encountered in designing the hydraulic systems for this unique equipment.

The following is a very brief summary of the principal technical aspects of the equipment:

The purpose of this very highly specialised equipment is to re-profile those parts of railway rails that come into contact with rail wheels as the rails wear due to abrasion and the head of the rail deforms due to the effects of plastic deformation.

The rail grinding equipment consists principally of a small train with the 'locomotive' being the main hydraulic power unit and the 'rail cars' being the grinding units. The particular equipment that Roger described consists of two 'trains' mechanically and electronically coupled together so that one set of controls operates both units.

Each locomotive is powered by a Caterpillar diesel engine developing a maximum of 1400 kW at 1800 RPM. The engine drives an electrical alternator fitted with a through-drive shaft that provides the primary drive to a large splitter gearbox to which the hydraulic pumps are mounted.

The 1000 kVA alternator provides the power source for the actual grinding stone drives and the hydraulic pumps provide power for all of the other functions including traction for high speed travel between work locations and also low speed travel during grinding operations.

Both the main hydraulic pumps and the traction motors are variable displacement units so that the same equipment can provide the necessary power and control for the two required modes of travel.

The maximum power drawn by the hydraulic pumps in high speed travel mode is 782 kW at a maximum differential hydraulic pressure of 300 b. for initial acceleration and 254 b. for continuous travel. This power will accelerate the 160 tonne machine from 0 100 km/h in 140 seconds on a level grade.

The flexibility of the drive system is evident when, in grinding operations mode, speeds between zero and 15 km/h can be maintained with an accuracy of about plus or minus 1%.

An electronic Micro Controller that is programmed for optimum and safe traction system drive, including hydrostatic braking, exercises control over all of these functions. The information required by the Micro Controller in order to provide a high level of control is supplied by a large number of sensors that monitor hydraulic pressures, engine speed, wheel speed, drawbar pull etc.

A very important aspect of the hydrostatic braking mode is that since the diesel engine is required to absorb the deceleration energy of the train and since any over-speeding of the engine would result in very expensive damage to the engine, the Micro Controller is required to control the maximum amount of energy being delivered from the hydraulic pumps to the engine at a value slightly less than the maximum decompression braking capacity of the engine at all times.

The hydraulic fluids are fire resistant and environmentally friendly with the main traction drives and the grinding trolley and ancillary systems using two different types of fluid. Extensive hydraulic fluid filtering has been installed to ensure optimum fluid cleanliness at all times.

Roger provided an insight into the extensive design work involved in developing the hydraulic systems by showing some time/velocity/distance and tractive force/velocity graphs that were produced by the highly specialised computer program that **Bosch Rexroth** use to predict the performance of these systems under load.

At the conclusion of Roger's very interesting talk, a number of questions were asked by the visitors and expertly answered to their satisfaction.

The Society's president, Tim Bailey, thanked **Bosch Rexroth**, through **Phil Byatt**, for inviting The Society's members to a most interesting and informative evening and he also thanked **Roger Randall** for providing an excellent technical talk saying that it was most pleasing to see specialised fluid power engineering of this type taking place in Western Australia and that it is a clear demonstration of our ability to match the world in practical fluid power engineering.



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# Fluid Power and Related Industry Forum Update

*Fostering alliances with other professional and industry organisations*

By Barry Catanach

The last newsletter made reference to members' concerns regarding current fluid power training. It appears word is getting around as another industry group has contacted us with similar issues to our own.

Their concerns are focused on class sizes and the combining of apprentice stages one to three into a one-day release program. This may make sense if you are an administrator or accountant but is inefficient when applied to the learning environment. For example, consider the variety of topics that need to be covered - taking into account the depth and content differences for each of the stages as well as the various apprentice stages practicals.

The demands on the lecture/trainer to organise lesson and assessment plans are a logistical challenge - not to mention the nightmare of record keeping!

In an effort to overcome these problems, the FPS general committee has agreed to expand alliances with other professional industry and organisations with similar interests in the training system and you are encouraged to become part of this forum and provide your comments on how the present training system affects your business.

Over the past months, I have made a number of trips to the eastern states to liaise with fluid power companies regarding their skills shortages and training. The news is no better over there as they face the same issues as us. There appears to be no single, big issue but rather a multitude of issues all interrelated. For instance, some companies pointed to the difficulty of recruitment, for others it was either staff retention or both issues.

Comments from senior HR managers have not been flattering either. All too often the comment is that a lot of the applicants were totally unsuitable. This may seem like an exaggeration but it is my experience from meeting with at least six different companies a week. My conversations with other training consultants in the private sector indicate that my experience is also their experience.

Based on the fact that fluid power is such an extensive field of technology, I encourage everyone involved in the industry at every level and in every role – including training consultants/lecturers – to maintain their professional development momentum so that their skills are kept up to date. This is one purpose and function of the FPS technology evenings as these evenings afford people the opportunity to see what is happening, gain exposure to the latest technology and meet the people who are designing and building fluid power systems. Two very good examples of such visits are mentioned in this newsletter.

I have recently been appointed to the WA council of the Australian Institute of Training and Development (AITD). The AITD is a national body that is also keen to develop ties with organisations such as the FPS. They have the same concerns as us regarding the problems that industry as a whole is facing. One of my reasons in accepting the appointment is to provide a more direct means of contact for the FPS of WA with other organisations.

Recently the FPS contacted the Manufacturing, Engineering and Related Services Industry, Training Advisory Body Ltd - better known as MERS ITAB - with regard to the competency standards units review currently underway as we are keen to have an opportunity to view changes and comment on competencies specific to fluid power. We are looking forward to their reply so that we can pass this information back to FPS members through this newsletter.

## Fluid Power Award

In 1999/2000 your Society provided an annual award to the student under each training provider who, in the opinion of the lecturers, has applied himself diligently in the field of fluid power. This was offered to all training providers as more than one award can be presented in any one year. Since the interception of the award, there have been two recipients with the inaugural award being received by **James Yates** followed by **Rene Priest** the following year.

We ask all training providers in fluid power to keep this annual award in mind when assessing their students as The Society is currently looking for applicants for the awards this year. Training providers should contact The Society's secretary, Stuart Coleman, for more information about the award and the requirements for nomination.

## Upcoming Conferences

The 8th International Symposium on Fluid Control, Measurement and Visualization (FLUCOME) 2005 will be held on August 22nd-25th, in Chengdu, Sichuan Province, CHINA Call for Papers on 8th FLUCOME 2005. For detailed information about the technical scope, important dates, venue, organizers, Abstract& Paper Submission, Contacts and links to the web-site [Http://www.8flucome.org](http://www.8flucome.org),

Chengdu is the provincial capital of Sichuan and is one of the big cities of China. It has an area of 12,400 square KM and a population of ten million. The 2,000-year old Chengdu got its name in the fourth century. Today the city is the centre of science, technology, commerce, trade, and finance as well as a transportations hub in south-western China. There is Shuangliu International Airport which can be reached by transfer from Tokyo, Osaka, Singapore, Seoul, Pusan, Los Angeles, New York, Rome, Paris, London, Berlin, Sydney, Malaysia, Thailand, Hong Kong, Shanghai and Beijing. If you have any questions or comments, please feel free to contact us, your participation is and will be highly welcomed.

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**For further information regarding upcoming conferences contact The Fluid Power Society of WA.**

## Your Fluid Power Society Website is Better Than Before!

The Society's web site has been undergoing renovations! We hope that you will like the changes that are aimed at providing more information that is easier to find.

Our aim is also to provide all aspects of the fluid power industry with a professional avenue to promote fluid power, to disseminate industry news and to bring new innovations to your attention.

What could be more important than news of job vacancies in the fluid power industry? Certain, you will find a new web page for careers and opportunities within the industry and also allied occupations.

The new page will advertise specific job vacancies as well as information on industry personnel seeking employment. We see this as an excellent venue for people currently living overseas to advertise their intention of moving to, or returning to Western Australia and seeking work in the fluid power industry.

We are also now ready to promote your business on the Web Site. For a small annual fee The Society will place a *hot spot* link to your business. For those of us not so computer literate, this means a picture of your company logo which, when clicked on, will send the user straight to your site.

For any information regarding the web please log on to

<http://www.fluidpowersociety.com.au>

OR CONTACT:

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# Is A Word From The Sponsors of This Newsletter - *Mining and Hydraulic Supplies*

**Mining & Hydraulic Supplies** have the knowledge, expertise and products that you need to maintain all oil and fuel systems to the most exacting standards of cleanliness required by the manufacturers of engines, transmissions, hydraulic systems - in fact, almost anything that requires clean oil or fuel.

(**Ken Fletcher snr.**, the founder and managing director of **Mining & Hydraulic Supplies**, says that he is working on ways to clean up arthritic joints using their super filters but he admits that it may be sometime yet before they can market the equipment however, he is looking for live test volunteers – or is that ‘victims’?!)

The **Mining and Hydraulic Supplies** product line is now greater than ever before with the inclusion of the **C.C Jensen** range. All models of this range of filtration products have a very high dirt holding capacity as well as having the ability to remove water from both oil and diesel fuel in a variety of offline or online units that can be added to existing equipment installations.

**Mining and Hydraulic Supplies** invites members to contact their office on- phone: (08) 9249 2511; fax: (08) 9249 2232 or e-mail: [enquiries@miningandhydraulics.com.au](mailto:enquiries@miningandhydraulics.com.au) for more information.

**Mining & Hydraulic Supplies** have sales engineers that can meet you at your place of business to discuss your particular requirements.

## Advertising with the FPS

Your company can sponsor **Fluid Talk!** For a very reasonable cost of \$150, you can publicise your company with a flyer or brochure inserted into the newsletter. Your publicity information will be distributed to a specifically interested and targeted audience giving you maximum return for your money!

Contact Margaret at Lime Communications on phone number 9459 4402 to take advantage of this unique opportunity.

## New Members

The Fluid Power Society of WA extends a warm welcome to all new members.

Andrew Stewart - Hydraulic Manifolds Australia

Peter Cranfield - Apollo Hydraulics

Ken Cranfield - Apollo Hydraulics

Gerry Gould - Steelform

## Movers & Shakers

- Terry Pulford has resigned from Parker Hannifin to take up a position at Hydair Drives.
- Aaron Masterman has resigned from Tyco Motion & Control to take up a position with Pressure Dynamics.
- Parker Hannifin has restructured into three business units to facilitate divisional growth.
- Tyco Motion & Control have appointed a new division manager to head up the Henderson Operation.



## FPS Contact Names and Numbers

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### Disclaimer

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The Fluid Power Society newsletter is compiled by Margaret from Lime Communications. Suggestions, ideas and information for the newsletter are most welcome - contact us on 9459 4402 or email [limecommunications@yahoo.com.au](mailto:limecommunications@yahoo.com.au).