

PLUMBING CONNECTION

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AUTUMN 2016

RIMLESS TOILETS

A NEW ERA IN FLUSH TECHNOLOGY

INSIDE:

INFLUENTIAL WOMEN OF
PLUMBING

SMART NEW WATER
SAVING PRODUCTS

THE ART OF ESTIMATING

FUNDAMENTAL FLUID
MECHANICS

CONTINUOUS FLOW JUST GOT A LOT BETTER!

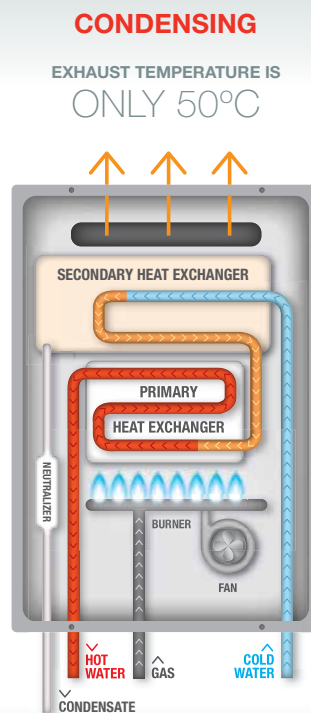
Dux Condensing Continuous Flow

The next generation in continuous flow

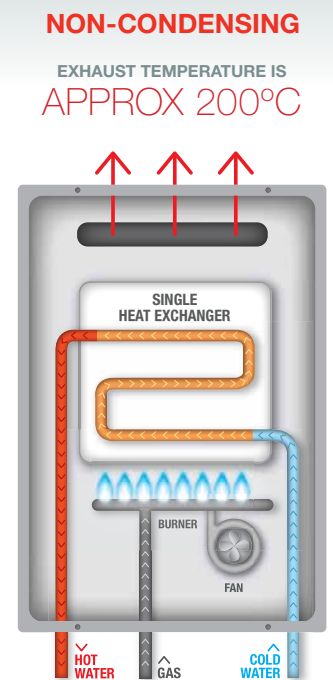
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* 12 year warranty on heat exchangers including 3 years full parts and labour.



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(Conventional technology)
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NEW



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STARS



12
YEAR

WARRANTY*



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COVER STORY

18 SMARTFLUSH EVOLVES TO CLEANFLUSH

Rimless toilet technology has been making waves in Europe in recent years and with Caroma on the cusp of launching its first models in Australia, we take a look at what it's all about.



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Are you struggling to compete with other plumbers in your area? Need a cash flow boost? Renewable energy certificates mean you can get thousands of dollars for a few pieces of paper.

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Aerial images taken by Australian company nearmap are proving to be a valuable resource for businesses in a wide range of industries such as building and plumbing.

34 BRIDGING THE GENDER GAP

Plumbing Connection caught up with three influential women of the plumbing industry who are proving that plumbing, as a career choice, really is for everyone.

50 TO A TEE

A tool that can help plumbers to form tees faster and easier, while producing consistently strong joins, is always going to be worth a look. Jacob Harris checks out the T-Drill.

52 SIMPLE, YET EFFECTIVE

An Australian invention is proving to be an effective chemical free water solution that is straight forward for plumbers to install and won't cost an arm and a leg to run.

54 FLOOD STOPPER

Con-serv has developed a clever little isolating valve product that protects homes and businesses from flood damage caused by defective hoses. Find out how it works and why you should use it.

56 GET THE SUB-METER RUNNING

Installing a sub-meter can be a real hassle when concealed pipe work needs to be accessed but one product makes the process easier. We take a look at the Quick Fit Water Meter adapter.

72 THE TRUTH ABOUT SEO

SEO can seem like the perfect solution to your online marketing problems, but nothing is as simple as it seems. Kate Jordan explains what you should know about this mythical creature.



Meet our NEW Managers!

Hayden Evans - Samios Bendigo - Victoria

Hayden has extensive history in the plumbing industry having worked in wholesaling and as a supplier representative. He has held a variety of roles and was most recently a Regional Manager for a plumbing company. He is a passionate St Kilda supporter and is involved in his local footy club - the Kyneton Tigers.



Tammy Foster - Samios Airport West - Victoria

Tammy has worked in the plumbing industry for around 30 years. She is a qualified plumber and also has extensive experience in plumbing wholesale and retail. Prior to joining us she was working as a Branch Manager for a local plumbing company. Tammy's new branch opened in October - if you haven't already, drop in and say hi!



Stewart Cole - Samios Rockingham - WA

Stewart joined us in November and brings extensive experience in both plumbing and electrical. He has worked in a variety of plumbing roles in New Zealand, from Sales Representative to Regional Manager. Prior to joining Samios, Stewart spent several years as the General Manager for an electrical company in Western Australia.



Willie Hanson - Samios Horsham - Victoria

Willie has worked in the plumbing industry for over 17 years in a range of roles. This varied experience has been invaluable in his role of Branch Manager for the past eight years and now our Samios customers get the benefit of his knowledge and great hospitality. He is a Horsham local and huge sports fan.



Matthew Dent - Samios Melrose Park - SA

Matt has many years of experience in the plumbing industry having worked for several plumbing organisations in a range of roles, most recently as National Sales Manager. He is a former AFL footballer with the Western Bulldogs and Hawthorn and now coaches in the amateur league in Adelaide.



COLUMNS

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Dr Terry Lucke simplifies the concept of fluid pressure and explains why you, as plumbers, need to be aware of how it works.

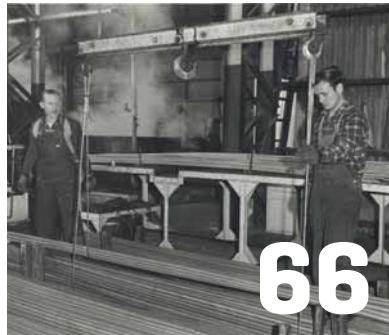
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66 COPPER CONNECTION
Not many companies have been around for a century, but MM Kembla says it's just getting started. John Fennell takes a look at the company's unique history and its importance in the production of copper products in Australia.

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Jon Palfrey provides 10 key points to consider when recommending a new water heater for your customers.



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THE FUTURE OF FLUSHING

The first edition of *Plumbing Connection* for 2016 highlights some key industry changes over the last few months as well as touching on some anticipated movements in the near future.

Our cover story takes a look at rimless toilet technology and the steady rise of the flushing method in Europe and its adoption here in Australia. Under the development leadership of Dr Steve Cummings, head of research and development at GWA Bathrooms & Kitchens' Caroma provided *Plumbing Connection* with an exclusive insight on its exciting market response.

We take a look at Caroma's first foray into the field with its Cleanflush range of rimless pans set to hit the market in March.

Steve explains that when Caroma commenced development of the rimless pan, its overriding aim was to solve all of the performance issues evident in some of the European products.

"We knew we needed to develop a design that would cleanse as much of the bowl area as possible through the controlled flushing of water effectively around the rim and into the sump to achieve maximum cleansing. It was critical to create enough water flow at the front of the rim to clear waste out of the trap and achieve good drain line clearance."

Through much innovation and refinement, Caroma has developed a product that plumbers will soon be able to offer both commercial and residential clientele. So, stay tuned for what looks set to be a big year in rimless toilet technology.

Also included in this edition is a

one-on-one with three influential women in the plumbing industry. It's no secret that certain careers tend to attract more men than women, or vice-versa. In the case of plumbing, the former has generally been the case; however, times are changing and more women are looking to the industry to either kick start or progress their careers.

We find out how these three women got into the industry, what drives them to keep going and why they recommend the plumbing sector to other women who are considering a trade focussed career.

In addition to these feature stories and many others, we welcome two new contributors who, through their knowledge, experience and willingness to share what they have learnt, will help you to become a more rounded contractor and business owner.

Dr Terry Lucke, Professor in Hydraulic and Civil Engineering at the University of the Sunshine Coast, has offered to write a series of articles that aim to help explain some of the fundamental fluid mechanics principles in simple, easy to understand terms for readers who are not engineers. In his first column, he simplifies the concept of fluid pressure.

Andy Farrell, who we featured in our Estimating feature of issue 3, 2015, has started a regular column that provides tips and tricks to help you become a more proficient at quoting and estimating. Being proficient in the art of estimating will help you to not only look more professional but give you a jump on the next guy who delivers a dodgy hand written 'guesstimation'.



PLUMBING SUPPLY FORUM

Plumbing Connection magazine in association with the Plumbing Products Industry Group (PPIG) is pleased to advise that the industry's premier business event takes place in Sydney on Tuesday May 24.

The PSF provides industry members from all sectors of plumbing – suppliers, importers, merchants, major contractors, consultants, regulators and educators and other service providers – to learn and better understand the current and future issues facing the industry.

We're bringing together the senior legislators and program managers to provide you an up-to-date understanding and the opportunity to ask the pertinent questions.

The primary aim of the PSF is to assist businesses (including yours) to operate more effectively and profitably.

Seats are strictly limited, so complete your registration online at www.plumbingsupplyforum.com.au and secure your place.

Enjoy the read

Justin Felix

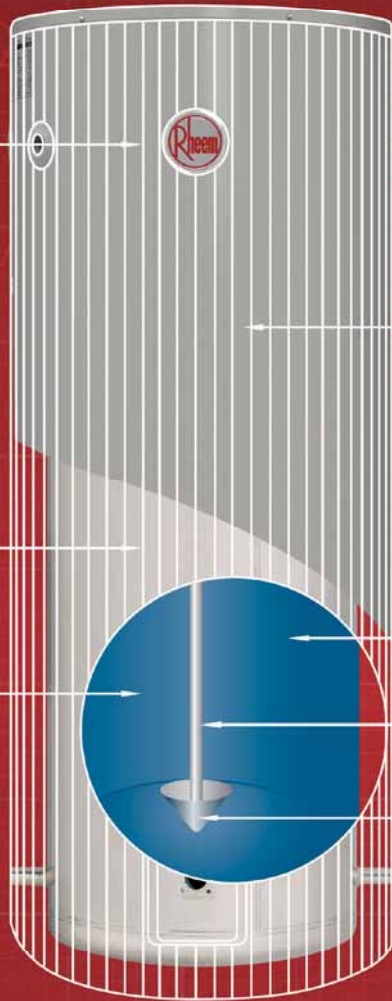
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CECELIA HADDAD

Cecelia is the director of Marketing Elements, which specialises in PR for the building and environmental sectors. She has over 20 years' experience with many well-known brands in Australia, New Zealand and Southeast Asia.

See **Business Promotion** on page 72.



MATHEW BRIGGS

Mathew Briggs has built up a passion for all things related to solar hot water parts over the years, including sourcing parts, installing new systems and repairing existing units. Mathew is a commercial plumber and director of www.solarhotwaterparts.com.au.

See **Solar Fix** on page 62.



ANDY FARRELL

Andy Farrell has put a lot of a lot of work into developing an estimating and management system to make running a plumbing business as simple as possible. He's also made himself available to answer any questions readers might have on estimating.

See **Estimating** on page 46.



DR TERRY LUCKE

Dr Terry Lucke is Associate Professor in Hydraulic and Civil Engineering at the University of the Sunshine Coast in Australia. His main teaching areas are Fluid Mechanics, Hydraulics and Road and Drainage Design.

See **Hydraulic Classroom** on page 40.



PETER MCLENNAN

Peter McLennan has been involved with Backflow Prevention in Australia since the late 1980s. He is the President of the Backflow Prevention Association of Australia Inc., and Secretary of the Backflow Prevention Association of Australia Inc. Queensland Chapter.

See **Backflow Prevention** on page 60.



JON PALFREY

Jon Palfrey is Rheem Australia's Training Manager and also a qualified plumber. He conducts training to plumbers and specifiers across the southern states, covering the latest water heater technology and key water heating issues facing plumbers.

See **Hot Water Clinic** on page 68.



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WELS MEETS EBAY

The Australian Government has started the largest ever online compliance operation of its kind, teaming up with eBay to clean up the murky world of water efficiency labelling of products sold online.

Assistant Minister for Agriculture and Water Resources, Senator Anne Ruston, said the joint endeavour with eBay would deliver significant benefits to Australian consumers.

“By 2021 it is estimated that using water efficient products will help to reduce domestic water use by more than 100,000 megalitres each year, and save Australians more than one billion dollars through reduced water and energy bills,” Minister Ruston said.

“Australia’s water efficiency labelling scheme, or WELS, delivers water efficiency information to consumers so they can make informed choices to reduce water usage and bills when purchasing domestic products that use water.

“Australia is the driest inhabited continent on earth, so it’s important for us all to strive to find ways to bring our consumption down.

“Less than one per cent of the more than 30,000 relevant listings on eBay comply with our water efficiency labelling requirements. This represents a massive amount of water and money needlessly going down the drain for consumers who may think they’re using efficient and environmentally friendly products.

“While we’ve managed to make sure the vast majority of conventional retailers do the right thing, online sellers, particularly those overseas selling into the Australian market, have a shockingly low level of compliance with our labelling requirements.

“People deserve to make purchasing decisions at face value based on information presented on the label—which is why the Department of Agriculture and Water Resources is working with eBay to raise compliance.

Minister Ruston said WELS and water efficient products had already delivered massive water savings in Australia, complementing the other work being done to secure Australia’s water future.

“The water savings delivered from more efficient products will by 2021 equate to over 800,000 megalitres (around 1.6 million Olympic swimming pools); and reduce total greenhouse gas output by 400,000 tonnes each year—equivalent to taking 90,000 cars off the road each year,” Minister Ruston said.

“It also frees up water resources for further agricultural and environmental benefits—which underpins our way of life through the food we eat, the clothes we wear and the natural environment we enjoy.

“That is why we are investing \$2.5 million dollars every day in the future of agriculture in the Murray-Darling Basin through infrastructure upgrades. It is the largest investment in water infrastructure in Australian history.

“Through these investments in water infrastructure and reduced domestic consumption we’re working to secure our water future, so that every Australian reaps the benefits of this precious resource.”

For more information on Australia’s water efficiency labelling scheme and the benefits it delivers to Australians, visit: www.waterrating.gov.au

STANDARDS AUSTRALIA REVIEWING PLUMBING STANDARDS DEVELOPMENT PROCESSES

Following the transfer of responsibility for plumbing regulatory code development to the Australian Building Codes Board in 2011, Standards Australia has undertaken a substantial amount of work and achieved solid results in a number of areas.

Through the same period, the Australian Building Codes Board has undertaken a review of the Watermark Certification and Management Scheme in relation to its regulatory function but also with respect to its operation.

In the most recent round of Standards Australia project prioritisation, demand was strong for work to be undertaken in the plumbing sector.

Concurrently, Standards Australia has been in a dialogue with industry stakeholders as to the effectiveness and efficiency of the current system as it relates to:

- Strategy and leadership within the sector;
- The prioritisation of industry and government objectives;
- The efficiency of the current technical committee arrangements;
- Coordination of activities across the range of organisations who play a role in plumbing technical standards writing and regulation;
- Development of new and innovative solutions for products and large scale industrial and commercial application.

In order to ensure that the development work undertaken efficiently and effectively leads to outcomes, Standards Australia will be undertaking a review of its plumbing standards development program prior to the commencement of any new development work.

Standards Australia has released a survey seeking input from stakeholders on:

- What’s working
- What’s not working
- How can we improve

The review is to be completed by February 2016. In the meantime, development work on existing projects will continue.

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Opal II Wall Faced Close Coupled Suite



Not the type of image you'd expect to see your old work truck appearing in.

PLUMBER SUES FORD DEALER

The pictured black Ford F-250 started life as a truck for a Texas-based plumbing company, carrying pipes, toilets and tools. It was then sold to a Ford dealership in Houston, and after that it was shipped off to parts unknown. Until, that is, it appeared as the focal point of a tweet from a supposed jihadist last December.

The photo indicated that the truck no longer carried plumbing accessories, but instead, emerging from its cargo bed were a black-cloaked figure and an anti-aircraft gun shooting fire into the distance. According to the tweet, the truck was being used by Jaish al-Muhajireen wal-Ansar [or, the "Muhajireen Brigade"], a jihadist group fighting against the Syrian government.

Yet, even with its function entirely transformed, the truck still bore the insignia of its past life, a decal that clearly read Mark-1 Plumbing with a clearly legible phone number.

Now the previous owner has filed a lawsuit against AutoNation Ford Gulf Freeway, the Houston dealership where he traded in the truck. According to the complaint filed, AutoNation misrepresented their intentions to remove the decal, causing Mark Oberholtzer, his business and his family "severe harm".

Oberholtzer's Ford isn't the only vehicle being repurposed for terrorist use. The Islamic State is known for featuring Toyota trucks and SUVs in their graphic propaganda videos, prompting the US government to ask the Japanese auto maker why so many of its products have landed in the militant group's clutches.

So, the next time you trade your work car in, you might want to make sure any decals or business insignia are removed...

You never know where it might end up.

EASY ACCESS

Yarra Valley Water, Melbourne's largest water retailer, is encouraging time-pressed developers, builders and plumbers to submit applications online through its new and improved online easyACCESS portal – a water industry world first that can issue standards, plans and connection conditions within minutes. The utility was also recently named winner of the international FICO 2015 Decision Management Award in the category of Decision Management Innovation.

"We understand that developers and tradespeople are busy, often managing multiple projects and dealing with a lot of organisations to secure requirements for each job," Mr Pat McCafferty, managing director Yarra Valley Water says.

"With easyACCESS, we've revolutionised the way we process applications for water and sewerage information, so it's one less thing you need to worry about. You can simply process your own application 24/7, whenever and wherever you want, just follow the prompts and the system instantly calculates your request. In the majority of cases, you will get a response within minutes."

For more information on easyACCESS, email easyaccess@yvw.com.au or phone 1300 651 511.

People can also view easyACCESS from Yarra Valley Water's website at www.yvw.com.au and click on 'easyACCESS' in the bottom right hand corner.

AUSTWORLD WA NOW OPEN

Austworld continues its expansion within Australia, announcing the new WA warehouse now fully operational. It prides itself on providing its customers with exceptional service and unrivalled quality. Servicing Australia and New Zealand, currently based in four states, Austworld are now proud to announce the addition of its WA warehouse.

"Our WA customers can now enjoy the benefits of having a local supplier at their convenience. This acquisition furthers our service and stature within Australia as one of the largest Australian owned and operated stockiest of superior plumbing products," Evan Zikos, executive manager Austworld says.

Austworld is a plumbing product manufacturer and wholesaler specialising in valves and screwed brassware along with a range of other products. Today they boast their inventory to exceed over 1200 products and growing fast.

For further enquiries please contact 1300 780 430 or visit www.austworld.com.au

ONE HOT APP

Tradelink has announced a key initiative in its customer service strategy with the launch of a new app aimed at plumbers, installers and homeowners.

The Tradelink Hot Water Selector, available online and on Apple/Android mobile phones, is a clever, simple-to-use tool that gives an instant overview on possible hot water system options, from leading manufacturers such as Rheem, Rinnai, Apricus and Bosch, for any given installation.

Users are asked just a few questions – such as number of showers taken a day, number of laundry loads, preferred source of energy – and the app will give a comparison of the systems available for that job. Alternatively, it can recommend a like-for-like hot water system for a fast swap out.

The app has full details and RRP's on more than 100 hot water systems from leading brands and all are fully backed by manufacturers' warranties. Tradies will need to call their local Tradelink branch for the trade price.

The user can also access full installation and warranty details plus specifications – all at a glance.

Visit www.tradelink.com.au/hotwater to access the Tradelink Hot Water Selector online or download the app from Google Play or the App store. The app is free.



OBAMA BANS MICROBEADS

President Obama signed into law the Microbead-Free Waters Act of 2015, banning the manufacture and sale of personal care products that contain microbeads, according to a press release.

Microbeads are small, plastic bits commonly used in personal care products such as face wash and toothpaste as exfoliants, noted the release. The materials often end up in waterways because they can slip through water treatment systems after being washed down household drains.

The law will go into effect, banning the manufacture of microbeads 1 July 2017, stated the release.

The Detroit News reported that bans on the sales of personal care products and over-the-counter drugs containing microbeads will begin July 2018.

Congressmen Frank Pallone Jr. [D-NJ] and Fred Upton [R-MI] introduced the bill, shared the release.

"The President's signature on this legislation is a major victory for U.S. waterways and the environment," Pallone said in the release. "Without the ban, an estimated eight trillion plastic microbeads pollute U.S. waterways each day, threatening the environment and ultimately our health."

Scientists have found evidence of microbeads in numerous bodies of water in the United States, including increasing numbers in the Great Lakes, the world's largest source of freshwater. In addition to contributing to the build up of plastic pollution in waterways, microbeads can be mistaken by fish and other organisms as food.

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PICAC AND STC SIGN LANDMARK AGREEMENT

Plumbing Industry Climate Action Centre (PICAC) is pleased to announce that following the signing of a historic agreement between the Services Trade College (STC) Australia and PICAC the on 15 December 2015, our industry has secured ongoing access to world class training in Queensland and expanded the scope and reach of our industry programs.

The STC in Brisbane plays a critical role in training apprentices and tradespeople to equip them with the skills necessary to meet the challenges of the dynamic plumbing industry in Queensland.

PICAC, together with our partners, have identified the importance of the service that STC delivers. In order to ensure STC's ability to continue and grow its pivotal role in supporting the industry, the newly appointed STC Board has welcomed the opportunity to integrate operations with PICAC. This enables both organisations to meet primary objectives to enhance and promote the plumbing industry on a State and National level.

This affiliation will greatly enhance training at both colleges, and more importantly ensure the plumbing industry in both states has access to the best career development available in Australia. It will also further enhance the ability to share knowledge, capitalise on the strengths of each entity and optimise training and skills outcomes.

In addition to supporting the plumbing industry in Queensland, the successful delivery of this project also supports the creation of an industry-driven training hub that delivers skills and other development opportunities for students throughout their career life cycle.

The combined college footprint will now extend to a total of 5 campuses, located in Brunswick and Geelong in Victoria, Salisbury and Brendale in Queensland, and the currently under construction campus in Narre Warren (VIC). To best service the needs of all stakeholders, further Victorian and Brisbane based locations are under consideration.

For more information, please visit picac.vic.edu.au.



NSW HOUSING AWARDS

The Master Builders Association of NSW Excellence in Housing Awards is one of the highest profile events on the building industry calendar, attracting nearly 800 building industry participants.

The Housing Awards showcase the very best in residential building, rewarding quality, workmanship and innovation and attract a broad cross-section of the residential building sector including project home builders, contract builders, multi-unit developers, medium density housing builders as well as builders specialising in alterations and additions.

These Housing Awards are not only highly sought after by builders and developers in the residential market but also attract exceptional exposure to the consumer market through the Sydney Morning Herald's special supplement. This is published in the Saturday edition immediately after the Awards evening.

The 2016 Excellence in Housing Awards are now open for entries.

For full details and to submit an entry, please visit www.mbansw.asn.au, download the entry form and return it by Wednesday 23 March.

SPRINKLER PROTECTION FOR BALCONIES

New regulations have been made to amend the National Construction Code in Victoria so that all new multi-storey residential buildings, hotels, healthcare buildings and aged care buildings that are required to install sprinklers designed to AS 2118.1, must extend that sprinkler protection to include all covered balconies, regardless of size.

These regulations will address the MFB finding in its Post Incident Analysis of the fire in the Lacrosse Building.

Currently, small covered balconies with an area less than six square metres, or that are less than two metres in depth are not required to be sprinkler protected. On 15 December 2015 the Building and Plumbing Amendment (Balcony Sprinkler Protection) Interim Regulations 2015 were made to address this issue. The regulations will also amend the National Construction Code that allows a building surveyor to determine that a material does not significantly increase the hazards of fire, without first subjecting that material to a performance based assessment.

This change will provide for increased confidence in the fire hazard properties of linings, materials and assemblies installed in Class 2 to 9 buildings as it will require the use of materials that have had their fire hazard properties assessed.



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Technik zum Wohlfühlen

*Refer to AS/NZS 3500.4, local requirements and installation instructions to determine if additional delivery temperature control is required.

SMARTFLUSH EVOLVES TO CLEANFLUSH

RIMLESS TOILET TECHNOLOGY HAS BEEN MAKING WAVES IN EUROPE IN RECENT YEARS AND WITH CAROMA ON THE CUSP OF LAUNCHING ITS FIRST MODELS IN AUSTRALIA, *PLUMBING CONNECTION* TAKES A CLOSER LOOK AND WHAT IT ALL MEANS FOR PLUMBERS AND END-USERS.

Readers of *Plumbing Connection* will have noticed over the past four years a number of stories about the progressive development of a new style of toilet pan referred to as rimless.

Not surprisingly, it looks much like the name suggests. And when the seat is down you can't see the usual overhang and shadow.

ISH 2011 in Germany saw the emergence of the technology in a commercial form. Though fairly limited, these early designs gained a lot of attention due to the obvious cleaning advantages.

Things happened fairly quickly and by ISH 2013 major European manufacturers had launched their own version of rimless models and from there things advanced at a rate of knots in Europe.

All the major players at the 2015 ISH had cottoned onto the rimless design. New technology is much sought after by the sanitary industry but there is more to it than meets the eye. While it may appear easy on the surface, it certainly isn't. It is a new way of flushing after all.

WHAT ARE RIMLESS PANS AND WHY DO WE NEED THEM?

As mentioned above, rimless creates a new way of moving water into the bowl to provide superior cleaning performance while removing waste and toilet paper from the bowl and into the drainage system.

Rimless pans are visually different. Unlike traditional pans, there are no undersides or concealed surfaces that can capture grime and germs. They are easy for users to clean and when you consider the health benefits, rimless is an impressive advancement.

It was thought that such a product would have a ready market in the healthcare sector, as well as high-use commercial facilities (airports, hotels, sporting facilities etc.) where a janitor traditionally cleans the toilets a number of times a day.

However, it was soon realised that the style would also be quite at home in residential premises. Don't mums (and a lesser number of dads) love cleaning under toilet rims! That's why the toilet duck toilet cleaner was invented.

While rimless is a great concept, it faces a number of technical challenges.



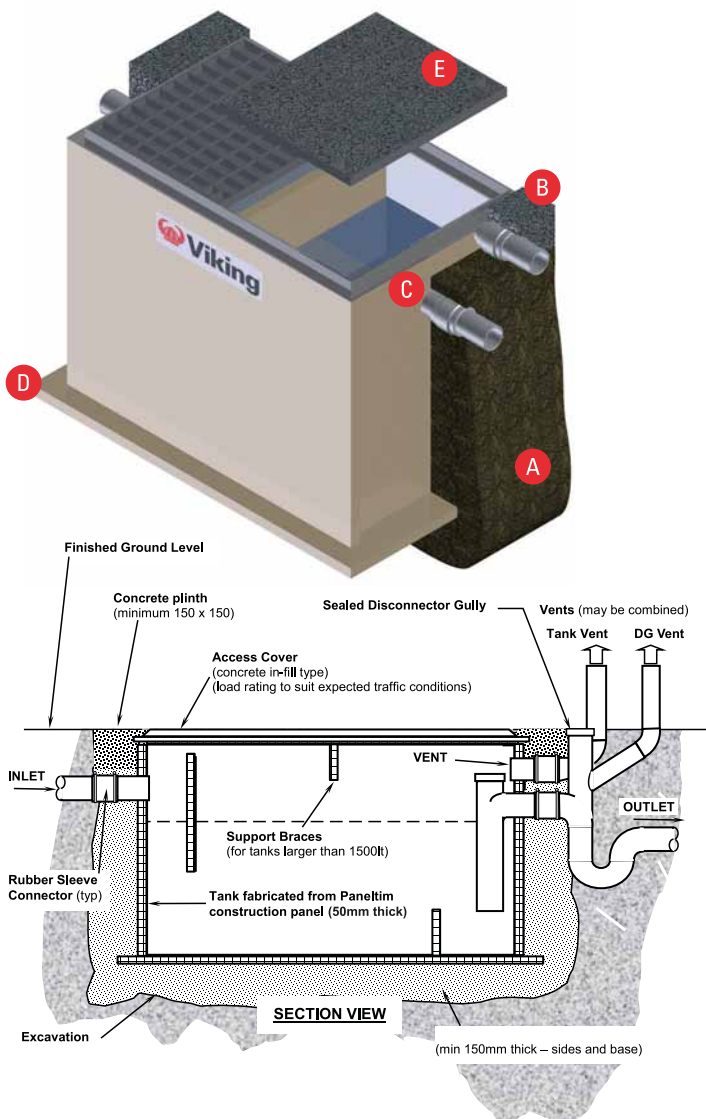
Modelling team manager Lenny Conrad and head of research and development Dr Steve Cummings of GWA Caroma.

The main critical issues are:

- Ensuring the required flow rate from the cistern or flush valve is balanced with the rim design
- Avoiding splashing and complying with Standard requirements
- Cleanse as much of the bowl area as possible
- Create an arrangement of water control that will flow into the sump and provide effective removal of waste into the drainage system. ▶

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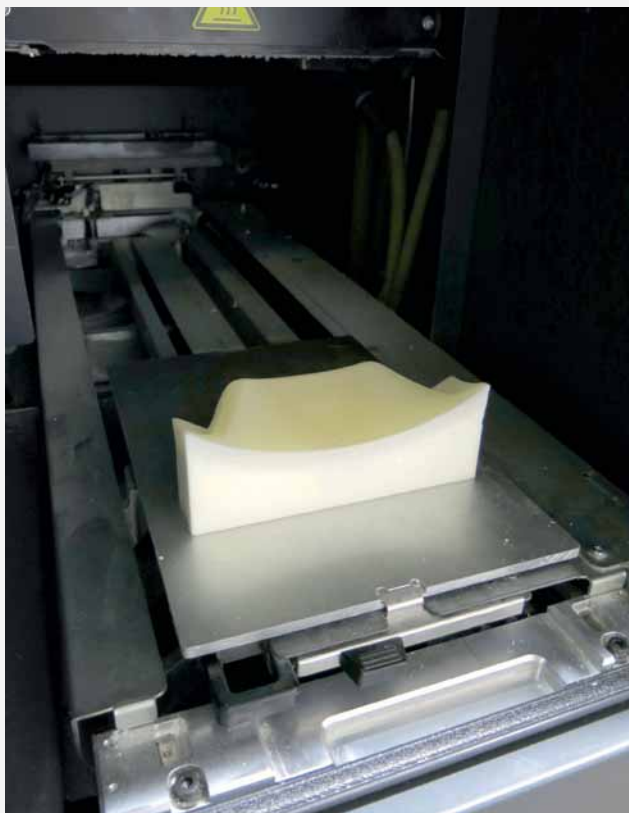


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Johann Karunaratne, Lenny Conrad, Dr Steve Cummings and Frank Quartiero of GWA Caroma.



Rapid prototyping of an important pan component during development.



Caroma found that to improve flushing performance it needed to stabilise the flow of water at the front of the rim while ensuring the bowl was washed effectively.

As our 2015 winter edition article detailed, it was obvious a number of European manufactures may have launched products without sufficient field testing. Like any market, there are good and not-so-good manufacturers and some of those products have made it to our shores, albeit primarily in 6/3 litre forms.

The message out of Europe is that any sanitary range must include rimless designs.

Meanwhile Caroma, Australia's largest selling sanitary brand with 75 years of industry leading experience, has been quietly working away on its own version of rimless technology.

Under the development leadership of Dr Steve Cummings, head of research and development at GWA Bathrooms & Kitchens' Caroma provided *Plumbing Connection* with an exclusive insight on its exciting market response.

Caroma's Cleanflush range of rimless pan models encompasses the basic fundamentals of flushing in a modern design.

While the global production market in recent years has required Caroma [GWA Bathrooms & Kitchens] to manufacture chiefly offshore, the core of its design and

development work remains firmly based in Sydney at its technical research and development centre.

That's similar to what has happened to Australia's car industry, where Toyota, Ford and Holden have all retained sizeable research and development facilities in Australia.

The reason being, Australians continually demonstrate superior skills when it comes to product design and technical development. Plus, they know, better than anyone, what the Australian consumer wants.

CAROMA'S DEVELOPMENT JOURNEY

Back in 2004 when Caroma launched its Smartflush solution which successfully reduced flush volumes from 6/3 litre down to 4.5/3 litre, the company identified the critical areas of the pan where the design needed to perform effectively with lower flush volumes.

As Steve Cummings says, "When we commenced development of the rimless pan, the overriding aim was to solve all of the performance issues evident in some of the European products. We knew we needed to develop a design that would cleanse as much of the bowl area as possible through the controlled flushing of water effectively ➤

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Rimless toilets have been making waves in Europe whereby extensive testing has taken place in recent years.

A MAN BEFORE HIS TIME

Every now and then, someone comes along with brilliant ideas that the world isn't ready for, just yet. Professor John Swaffield was one such innovator. In 1983, the UK Confederation of British Sanitaryware Manufacturers commissioned a project to design, develop and site appraise a low volume flush WC.

Some of the criteria included:

A reduced flush volume

- A washdown pedestal P-trap WC pan flushed by an independent cistern fitted with a drop valve
- The potential to offer a bucket/pour flush WC pan, upgradable to cistern flush with the omission of a flushing rim which could not be cleaned by pour flushing
- The necessity for simplicity of design and operation



With the omission of the flushing rim, Swaffield and his team at Heriot-Watt University in Edinburgh, Scotland developed a rimless bowl, a three point cleaning nozzle and a reduced sized exit/trap. The rimless bowl was easier to clean and it made it easier for it to be adapted for pour/flush usage [i.e. for use in developing countries where there might not be a mains supply]

Ninety five of the WC's were installed in a housing estate in Gaborone in Botswana where buckets would be used and water consumption was drastically reduced.

For one reason or another, the rimless technology was never properly commercialised. How times have changed some three decades on...

around the rim and into the sump to achieve maximum cleansing. It was critical to create enough water flow at the front of the rim to clear waste out of the trap and achieve good drain line clearance.

"We knew what we had to achieve and applied that to our rimless technology before moving into a lot of rapid prototyping work for performance testing evaluation. During these phases we found that to improve the flushing performance we needed to stabilise the flow of water at the front of the rim while ensuring the bowl was washed effectively. This is where we came up with the flow balancer concept.

"A predetermined volume of flushing water meets at the front of the bowl where its flow is redistributed via a patented balancer, where it is redirected into the sump to remove the waste," Steve says.

One of the tight performance requirements Caroma has refined is just how close to the top of the pan the water flow travels around the bowl. Caroma's models are set to flush at 60mm from the top of the pan, a height that ensures successful cleansing of the bowl area, which is what rimless is all about.

“WE KNEW WHAT WE HAD TO ACHIEVE AND APPLIED THAT TO OUR RIMLESS TECHNOLOGY BEFORE MOVING INTO A LOT OF RAPID PROTOTYPING WORK FOR PERFORMANCE TESTING EVALUATION.”

RANGE AND INSTALLATION

Caroma's roll-out program commences in March and it is offering this rimless Cleanflush technology in three ranges initially.

The Caroma Care 800 models will immediately be available to the market including concealed and wall faced solutions.

The popular Liano and Urbane collections are the first to offer the rimless option (while still offering traditional models).

All Caroma Cleanflush models will come with Caroma's Uni-Orbital® connector, and one important point for plumbers to note is that you must use matched pan and cistern sets to ensure flows are balanced and meet Standard requirements.

Caroma's strong focus on innovation and its commitment to fine-tune design in a practical sense should stand them well in a market that has grown from strength to strength in Europe. If Australia's high uptake of past European trends are anything to go by, they will take off here too. ■

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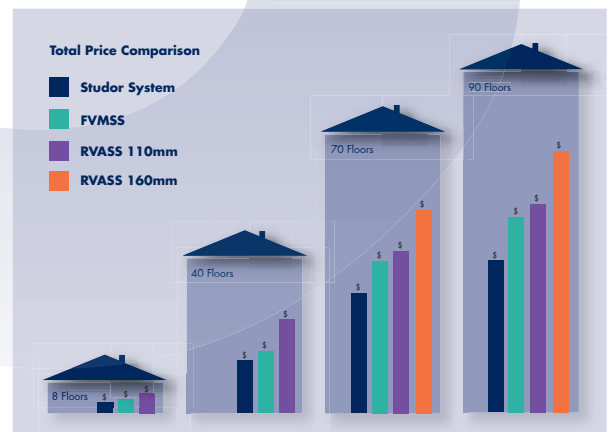
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RECs are the byproduct of the Howard Government's renewable energy target (RET) – a policy designed to ensure that at least 33,000GWh of Australia's electricity comes from renewable sources by 2020. (The RET was reviewed by the Federal Government and reduced in June 2015 from the previously legislated 41,000GWh to 33,000GWh.)

In addition to RECs, state-based energy efficiency schemes (that are completely separate to the RET) also offer environmental certificates that can add value to your business.

Under the various schemes, people can earn the following simply by making energy-efficient changes to their properties:

- RECs under the RET for installing solar systems or solar hot water heating;
- Victorian Energy Efficiency Certificates (VEECs) through the Victorian Energy Efficiency Target (VEET); or,
- Energy Savings Certificates (ESCs) through the NSW Energy Savings Scheme (ESS).

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The certificates can later be traded in for a cash rebate, potentially improving a contractor’s cash flow and competitiveness in the market.

“High energy users, carbon producers and energy retailers of the country have a liability under the RET, which came into effect in 2001 as part of the Howard Government’s Climate Change Action Plan,” Greenbank Environmental chief executive Fiona O’Hehir says.

“It started as a 2% target but has since increased to 20% by 2020.

“Now if you install say, a solar water-heating system, then you’re not contributing to greenhouse gas emissions, which means you’re entitled to create RECs. RECs are worth money on the environmental market, which works similar to a stock exchange.

“So if you want to know why you’re losing market share, chances are that your competitor is offsetting the cost of a system with RECs.”

WHAT IS VEET?

VEET is a Victorian based scheme and is one of the energy efficiency schemes operating across the country to reduce greenhouse gas emissions.

It is also designed to encourage investment, employment and technology development in industries supplying goods and services that reduce consumer use of electricity and gas.

The scheme operates by placing a liability on large energy retailers in Victoria to surrender a specified number of VEECs every year. Each certificate represents one tonne of greenhouse gas abated.

The VEET Act and regulations allow for accredited entities to create VEECs when they help consumers make selected energy efficiency improvements to their home or business.

“Plumbers can now register with the Essential Services Commission – which administers VEET – so that installation of energy efficiency product can attract VEECs,” a Victorian Department of Primary Industries spokesman says.

“When plumbers involve themselves in the scheme, either directly or through a third party like Greenbank, the revenue created through the sale of certificates means they can offer discounts to their customers, thereby making themselves more competitive.”

VEET is a market-based scheme, meaning the value of individual certificates is determined by supply and demand. Electricity retailers are required to purchase or generate VEECs to reach defined targets each year.

Greenbank’s settlements manager and head of energy efficiency Ben Redmond explains that the VEET was

established as a residential scheme. Home owners could change their incandescent globes to CFLs, or electric water heaters to instantaneous gas or solar, both of which would reduce their energy consumption.

“The number of tonnes of greenhouse gases you abated is how many certificates you earned,” Ben says.

“The VEET program was then expanded into the commercial market, and the advent of LED meant that the most common way of earning VEECs was the replacement of halogen lamps with LED lighting.”

WHAT IS THE ESS?

Just like its Victorian counterpart, the NSW ESS reduces electricity consumption in NSW by creating financial incentives for organisations to invest in energy savings projects.

“Energy savings are achieved by installing, improving or replacing energy savings equipment,” a spokesman says.

“The ESS is governed by NSW legislation. It places a mandatory obligation on ‘liable entities’ (eg: energy retailers) to obtain and surrender ESCs, which represent energy savings.

“The development of the policy framework is the responsibility of the Office of Environment and Heritage and the Department of Trade and Investment, Regional Infrastructure and Services.

“When businesses invest in reducing their energy use, ESCs are created by voluntary scheme participants that have helped to implement those energy

savings activities.

“Electricity retailers, which are mandatory scheme participants, then buy the ESCs to meet their own legislated targets, as required by law.

“The price of certificates varies due to supply and demand and can fluctuate considerably depending on market conditions. Historically, ESCs have traded between \$14 and \$32.

“There is no maximum price for an ESC. However, the penalty price acts as a practical maximum price: if a liable entity does not surrender the required number of certificates in a given year [excluding any shortfall it is allowed to carry forward to the next compliance year], it must pay a penalty.”

THE SOUTH AUSTRALIAN SOLUTION

Most recently, in December 2015, the South Australian Government passed its own legislation that would make similar savings possible.

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ARE ACHIEVED
BY INSTALLING,
IMPROVING
OR REPLACING
ENERGY SAVINGS
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The *Local Government (Building Upgrade Agreements) Amendment Bill 2015* is designed to overcome barriers to environmental upgrades of existing commercial buildings – upgrades that can reduce costs for tenants while improving the carbon footprint and environmental performance of existing buildings.

“This Bill has the potential to create hundreds – if not thousands – of important jobs and free up more than half a billion dollars in potential CBD capital investment,” Climate Change Minister Ian Hunter says.

“It clears the way for building owners to begin revitalising our ageing building stock, which will have the added benefit of advancing our plans for Adelaide to become the world’s first carbon neutral city.

“For commercial property owners, building upgrades can reduce operating costs, increase yields, help attract and retain tenants and improve asset values.

“Benefits to tenants include net reductions in operating costs, improved indoor amenity, staff productivity, and contributions towards corporate social responsibility goals – not to mention greenhouse gas savings of up to 32%.”

The Property Council of Australia’s SA executive director Daniel Gannon says the legislation will lead to a number of benefits, in particular to tradespeople.

“The Building Upgrade Finance mechanism makes economic sense, not only for building owners and occupiers as a means of managing their utility costs, but for the businesses that can provide the clean technologies and solutions [particularly hot water and lighting upgrades] that lift building performance,” he says.

“Financing such upgrades through Building Upgrade Finance may offer a number of benefits compared to other forms of traditional finance – the potential is limitless and could be applied to offices, shopping centres, hotels, healthcare facilities, university buildings, factories, and warehouses.”

HOW YOU CAN BENEFIT

“These state schemes are really set up to make energy efficiency more affordable,” Ben says.

“The idea is that contractors can design and install an energy efficient system for \$X, knowing that they’ll earn a number of certificates from the replacement of the existing system, which can then offset the cost.

“This means they can give a ‘discount’ to the property owner.

“Once the system is installed, the contractor can come to Greenbank, which will create the certificates, and we will

buy them from the contractor. Of course, the home owner could do this themselves, but that is rare, with the installer/contractor acting on the property owner’s behalf.”

Greenbank is Australia’s largest environmental certificate creator and trader. It essentially acts as an ‘aggregator’, purchasing RECs, VEECs and ESCs from contractors and property owners then selling them in large bundles to retailers to offset their liability

“Greenbank essentially provides installers with practically instant cash flow. Once we receive the signed forms and mandatory supporting documentation, we pay within 24 hours when our customers use our online REC portal and phone app.

“Once we have purchased the certificates, we adopt all compliance and pricing risk. That’s why a service like ours is very appealing to installers. They don’t have any compliance risk of the regulator saying something was filled out wrong and contractors have to go back to the site.”

Ben says about 95% of solar installers already claim RECs, but a large number of hot water and lighting installations haven’t been subject to a claim.

“A lot of credits are just going to waste.

“Installers need to understand that they can use these certificates as a sales tool. You can reduce the cost to customers without losing any income. Of course, because the certificates trade on the market, the price fluctuates, so that’s a risk you’ll need to manage.

“However, you have 12 months after a solar system has been commissioned

to create and sell the certificates, so you can study price fluctuations the same way you would the stock market and sell when the price is high.”

Ben notes that installers can generate their own certificates, but it’s a lot of work – to the point where the value of the certificates is negated.

“It’s so much easier to come to a company like ours.”

The process is simple, he says. Contractors can simply set up an account with Greenbank online. Claiming RECs after opening an account can also be done online or via an app.

Given the increasing pressures facing tradies, remaining competitive and maintaining a steady cash flow is imperative for survival. As you are already installing energy saving systems, why not use all the tools at your disposal?

As Fiona says: “Where else can you get thousands of dollars for six pieces of paper?” ■

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FRIENDS IN HIGH PLACES

AERIAL IMAGES TAKEN BY AUSTRALIAN COMPANY NEARMAP ARE PROVING TO BE A VALUABLE RESOURCE FOR BUSINESSES IN A WIDE RANGE OF INDUSTRIES. **JACOB HARRIS** EXPLAINS.

There can be no argument that the satellite images generated by Google and the like are invaluable when it comes to applications like meteorology and regional planning. But when a detailed inspection of individual premises is required, satellite images often won't be able to provide the requisite resolution.

nearmap is an online geospatial mapping and visual analytics tool that provides companies with high-resolution imagery captured using aeroplanes. This allows users access to regularly updated images that contain enough detail to enable precise measurements and calculations to be carried out remotely.

"We work with an aviation company that carries our aerial camera systems within their aircraft, regularly covering 85% of the Australian population. So in that way we differ from the likes of Google and Digital Globe that use satellite

technology," John Biviano Vice President and Managing Director of nearmap says.

"Our method of capture gives us an advantage because we're able to capture at a much higher resolution. We're capturing at 7cm per pixel which is 5 times clearer than satellite images."

This level of resolution allows users to zoom in and make detailed analyses without physically visiting the site; something that is particularly advantageous for industries like construction, plumbing, roofing and solar.

Central Queensland business Roth Plumbing specialises in plumbing and roofing for residential, commercial and industrial properties. The company needed a tool to enhance productivity and efficiency so it began using nearmap.

"We get requests daily for roof installations, repairs, redesign, and maintenance jobs. Before quoting for any job,



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we put together a detailed report of the work that needs to be done so customers know exactly what they're getting," Shane Yore Operations Manager at Roth Plumbing says.

"Compiling these reports used to require our estimation team to send at least two staff members to a property to measure and inspect roofs. It would take them anywhere from five minutes to two hours to drive from our office to the location, and then another two hours to measure, take photos and assess the job. This became extremely onerous for the business and its resources, limiting the number of jobs we could take at any given time and meant we were only able to complete a maximum of three inspections and quotes per day."

Using nearmap's high-resolution images and built-in tools enabled the company to inspect and survey locations remotely and prepare accurate reports within minutes from a desktop or mobile device. Because nearmap's imagery is updated regularly and captured at an extremely high resolution, the Roth Plumbing estimation team are able to zoom into the property they need to inspect and assess the work and resources required to complete the job.

"High-res images are great for helping us see what the damage is or what work needs to be done but being able to measure roofs is the critical element that helps us provide detailed and accurate quotes to our customers. nearmap's measurement tool lets us measure the distance between two points on an image, and measure paths and areas in order to get thorough data and complete detailed reports and job quotes," Shane says.

"The measurement tool makes our quoting process really quick and easy; so much so that a lot of our customers aren't even sourcing quotes from other businesses because they aren't able to get back to them in time. This gives us a massive advantage and a huge bank of new clients."

Safety was another reason Roth Plumbing started using nearmap. The on-site inspections they used to make to quote jobs would involve staff climbing up ladders to access rooftops that weren't always in the best condition. By using nearmap the company minimises risk by reducing the time spent on rooftops and checking for any potential dangers before arriving on site.

Because nearmap captures areas frequently (major cities are captured six times a year with other regions between one and three times annually) customers are also able to monitor change over time.

"Our images have proved very useful in observing projects right through the construction phases and identifying inefficiencies. Further analysis can be carried out by using our inbuilt features like shadowing data, volume estimation, measuring tools, and even things like flood prediction," John says.

According to Roth Plumbing, nearmap has had a huge impact on how their business operates. It has reduced



nearmap's ability to capture images at an extremely high resolution allows companies like Roth Plumbing to zoom in and inspect properties.

the need to do on-site inspections, effectively minimising staff travel time, petrol costs, improving staff safety, and therefore increasing business efficiency and accuracy across all job types.

"Being able to access up-to-date, high resolution aerial images on nearmap from anywhere, has reduced what used to take up to four hours to being a task that can be completed in a few minutes. This has drastically boosted our productivity and the number of jobs we can accept," Shane says. ■

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BRIDGING THE GENDER GAP

PLUMBING CONNECTION CAUGHT UP WITH THREE INFLUENTIAL WOMEN OF THE PLUMBING INDUSTRY WHO ARE PROVING, ALONG WITH MANY OTHER WOMEN, THAT PLUMBING AS A CAREER CHOICE, REALLY IS FOR EVERYONE.

Plumbing, like other trades, has traditionally been a male-dominated industry; however the tide has been shifting in more recent years with more and more women proving highly influential in the building and construction industry each year.

The shortage of skilled people in the building and construction industry is a continual problem and has been for a number of years in this country. More trained people via apprenticeships and group training schemes are needed so the future of building and construction remains strong for years to come.

If you asked somebody removed

from the industry, to tell you what they thought or pictured when they heard the word 'plumbing', they would likely respond with something along the lines of toilets, drains and water.

We can all agree that it would be fairly rare to hear someone talk about the innovation and design, marketing and brand strategy, water conservation and so forth. But such is the stigma surrounding the plumbing industry and all trades as a whole.

They're a lot more diverse than they appear on the surface and for that reason alone they should appeal to both men and women looking to enter the workforce or to those looking to

discover a new career.

We caught up with three influential women in the plumbing industry, who work in vastly different fields from one another, but all of whom greatly enjoy what they do and encourage other women to also consider plumbing as a career.

JENNIFER KRENICH (MARKETING)

Head of marketing for GWA Bathrooms & Kitchens, Jennifer Krenich is responsible for managing GWA's brand portfolio, digital marketing, social media, advertising and PR, customer insights and category management. ▶

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Jennifer Krenich, head of marketing at GWA Bathrooms & Kitchens.

“I have developed my career in the plumbing industry through GWA and over the past decade, I’ve worked in a number of roles across the business including: Communications Manager, Sustainability Marketing Manager, Brand Manager, Business Unit Manager, Category Marketing Manager etc.”

Working in the plumbing industry was not a clear pathway for Jennifer and with a background in both psychology and business, for a lack of better words; she basically fell into the industry.

“My first role in the plumbing industry was with GWA B&K. I’ve spent most of my career with GWA having been with the business for over 11 years now. I started off as Marketing Communications Manager with Dorf Clark [sinks & taps] and when I joined the business I was excited to have the opportunity to work with such well known brands - not only in the plumbing industry but brands that were also well known by Australian consumers more generally.”

Being that plumbing is such a dynamic industry and contains a vast array of layers that most would not suspect while looking at it on the surface, Jennifer believes that staying

in touch with consumer and design trends is key.

“The industry continues to evolve so keeping up with emerging trends and the changing landscape is really important. I’m personally driven by customer insights and using this information to develop marketing programs and initiatives that will hopefully make a difference to customers.”

“Over the last few years we’ve launched some exciting new initiatives based on feedback from customers and that’s really rewarding. As a marketer working with an amazing portfolio of well known brands including Caroma, Dorf, Fowler, Clark, Stylus and Hansa is such a great opportunity and something I’ve really enjoyed.”

With such a big proportion of advertising and marketing campaigns engaging social media to communicate key messages to consumers, it might come as a surprise to know that plumbing brands have well and truly jumped on board the trend, making it attractive to recent marketing graduates or those looking for a new role in a new field.

“As a business we’ve really embraced the digital space with the launch and ongoing enhancements to our Caroma Plumbers Handbook App and specifycaroma.com.au website. It’s also been great to have the chance to explore the use of social media in the plumbing world such as the Face of Caroma Plumbing social media campaign specifically aimed at plumbers in 2015.”

So, with such a successful career thus far in the plumbing industry, it won’t come as much surprise to hear her glowing endorsement and belief that more women should consider it when deciding on their next step.

“I’d most definitely recommend the plumbing industry to other women. It is incredibly dynamic and offers diversity, from commercial projects through to new homes and bathroom renovations.

I’ve had the opportunity to work on marketing programs across many segments of the industry and for both professionals and consumers. It’s an opportunity you don’t always have in other industries.”

CARLIE WRIGHT (PLUMBING INSPECTOR)

The position most often stereotyped in plumbing and all trades is being on the tools themselves. It’s always been that way, but it shouldn’t. We’re all built equally after all. And as a result of changing attitudes and more encouragement at school-level for women to consider a trade as a career, more women are getting their hands dirty and matching it with the boys. Carlie Wright is one of those women, and has been for some 16 years now.

“I actually carried out a school-based apprenticeship in my father’s family plumbing business and to tell you the truth, I don’t know why I chose plumbing. I was in year 11 and wasn’t sure about what I wanted to do. I didn’t know whether to stay in school or go straight into the work force. To tell you the truth though, I was really over studying by that stage.

“It was at this point I was informed about the school-based



Carlie Wright, Australia’s first female plumbing inspector has been in the plumbing industry for some 16 years.

apprenticeships, which meant I was at school three days per week (with the other two spent in my apprenticeship) and still eligible to qualify for my year 12 certificate. I decided to ask my father if I could do an apprenticeship with him. His response was, "I can think of way cleaner careers than plumbing," to which I replied, "I can only give it a go and if it's not for me I can find something else."

As it turns out, plumbing was for Carlie and her trajectory in the field was impressive. As far as she's aware, she was Australia's first female plumbing inspector with one other recently surfacing in Northern Queensland.

"When I was on the tools I worked on new houses, kitchen and bathroom renovations involving above and below ground drainage, installation of water

pipes and gas fitting to name a few. I also carried out work in shop fit outs and maintenance. Maintenance work involved anything from replacing tap washers to unblocking a toilet.

"While inspecting I carry out inspections on both commercial and domestic construction sites to make sure the work being installed complies with the AS/NZ3500 and is installed by a licensed plumber/drainer. I also carry out investigations which involve complaints logged with our call centre so I am dealing more with rate payers and the occasional licensed plumber. These investigations are mainly for seepages, blockages, illegal and unlicensed works."

Carlie's passion for plumbing stems a little further than most and as a result she has started a website: womanwithwrench.com.au on which

she provides simple and straight forward information that is relevant to both female and males with a section titled Life as a Lady Tradie in which she profiles various female tradies.

Being involved in a project from start to finish is one of the major appeals of the plumbing industry for Carlie.

"I love the feeling of looking back at the end of a project and being able to say, 'Yep, I did that'.

Another reason I loved being in a trade is the fact you can work both indoors and outdoors and everyday is different.

"I think it's important for people to realise is that there is way more to plumbing than just taps and toilets.

"For over 14 years now I have been involved and invited to attend several meetings, launches, careers expos, construction expos, school careers ➤



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days etc. to share my story and show everyone that it is normal for a female to be in a trade. Just remember, if you're considering the construction industry, there really is a lot on offer. You have nothing to lose and everything to gain, so go for it."

Carlie's aim for the future is to be a role model and ambassador for females who are ready or considering a step into the construction industry.

MEGAN LEHTONEN (BUSINESS DEVELOPMENT)

Primarily responsible for managing the India and Australia offices and operations for The IAPMO Group, Megan Lehtonen is the senior vice president of International Business Development. IAPMO provides product approval and certification services for suppliers as well as product testing and evaluation.

With a strong belief that the industry, as deliverers of water, will have a major impact on the global water crisis from the ground up, Megan is dedicated to expanding IAPMO's mission in countries across the globe.

Megan is also responsible for directing the Water For Indonesia Now initiative, focusing on the standardisation of plumbing systems within Indonesia. Her team, with support from the U.S. Department of Commerce, International Trade Administration, and USAID Standards Alliance Programs, works in partnership with the National Standard Agency of Indonesia (BSN) in the development of a uniform National Standard. This mission will impact generations of Indonesians by creating improved access to clean water and safe sanitation.

"I graduated from California Polytechnic State University San in 1997 with a major in Journalism and minor in Public Relations. Uncertain of my path and passion at such a young age, I studied Journalism thankfully from the invaluable advice at the time that any future career, in any field,

would require solid written word. It was some of the best advice I have ever received! I have been very fortunate in that every position I have held since college has opened up to initiative and development of the role to fit a larger need. They have all been ever changing and challenging roles."

Megan admits to falling into the industry as a result of wanting to bring Greenplumbers to the United States from Australia because of the focus on water conservation and need for new technologies to save water in front of the looming drought.

"I have been involved in this industry



Megan Lehtonen, senior vice president, international business development, IAPMO.

for nearly a decade and as a creative professional in mostly male dominated industries for 20 years."

And Megan strongly encourages other women to consider positions that challenge their traditional concepts.

"I can agree with you that at the apprentice level, and in the trades, plumbing has been mostly male dominated, but I believe that is changing as the industry evolves and more emphasis is placed on the proactive nature of the career and how plumbers can be champions of

conservation. They have such a strong ability to influence the purchasing decisions of consumers to save water.

"Within the executive realm, I am fortunate to know many women involved in, and shaping, this industry. The core of this industry is based on the one thing we all need to survive: water. Plumbers, water technicians, whatever you would like to call them, are the face-to-face connection with the homeowner and have a great influence on purchasing decisions of consumers. They can educate and steer the homeowner towards a sustainable, certified product that they can trust. Battle lines have been drawn for years based on water resources and the intensity will only grow stronger as we continue to deplete our groundwater resources. This industry can make major inroads in the technical research, and general knowledge necessary to assist in protecting and saving the world's most precious resource.

"All people, men and women, young and old, should look to be involved in this industry - there are so many facets to it. From clean water, to conservation, to standardisation - to protecting the health and safety of citizens of nations in developing countries by focusing on the standardisation and need for clean water through effective plumbing - who wouldn't want to be involved?"

Megan has never been one to look at something from a gender specific point of view. She believes if you're passionate about something, and focus on your purpose, you will eventually find your way.

"So, I am extremely grateful for the opportunities I have been given and I have certainly dedicated myself to the opportunities presented, but I don't believe gender has played a significant role in where I am today. It is, as far as I can see, about initiative, hard work, competence, passion, and your capacity to deal with issues as they arise." ■

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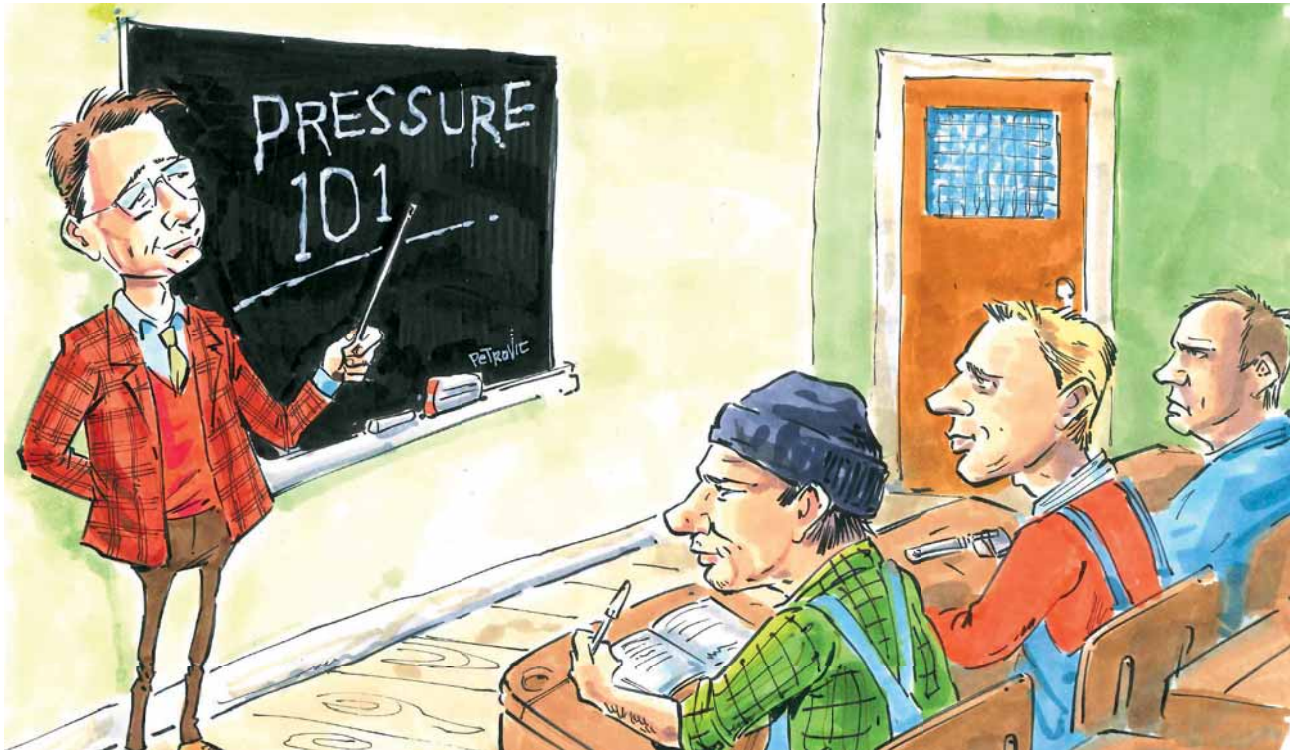
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FUNDAMENTAL FLUID MECHANICS – PRESSURE

DR TERRY LUCKE SIMPLIFIES THE CONCEPT OF FLUID PRESSURE AND EXPLAINS WHY YOU, AS PLUMBERS, NEED TO BE AWARE OF HOW IT WORKS.

After reading through a number of issues of *Plumbing Connection* magazine I felt that while most of the articles are very well written and interesting, some of the content and theory may be a bit challenging for readers without formal hydraulic or engineering qualifications to understand. To be honest, some of it is challenging for me, and I teach university-level hydraulics. So I thought it might be good to write a series of articles that help explain some of the fundamental fluid mechanics principles in simple, easy to understand terms, for readers who are not engineers. With that, I thank *Plumbing Connection* for the opportunity.

WHAT IS PRESSURE?

The classical definition of pressure is: “Force per unit Area,” but what does that really mean? Force is measured in Newtons [N], or multiples of N like kilonewtons [kN] which are thousands of Newtons, or Meganewtons [MN] which are millions of Newtons. The definition of a Newton is a

bit complicated to explain but basically has to do with an object’s Mass, and its Acceleration. The Mass of an object is wholly dependent on the number of atoms (or molecules) the object has and this is constant (unless you change the object in some way). The unit for Mass is the kilogram [kg]. Acceleration generally refers to the gravitational forces acting on the object.

On Earth, all objects are subjected to the Earth’s gravity force [this is about 9.8m/s^2], which is why they have a Weight. Please note: an object’s Mass is not the same as its Weight. For example, the Mass of an object is the same on the Earth, or on the Moon, or in deep space – it doesn’t change. However, the object’s Weight is very different if it is on Earth, or on the Moon [about 1/6th of the earth weight], or in space [zero Weight]. So for our purposes, a Force can be thought of as the Weight of a stationary object on Earth. Moving objects can also generate other forces but we will discuss that at another time. ▶

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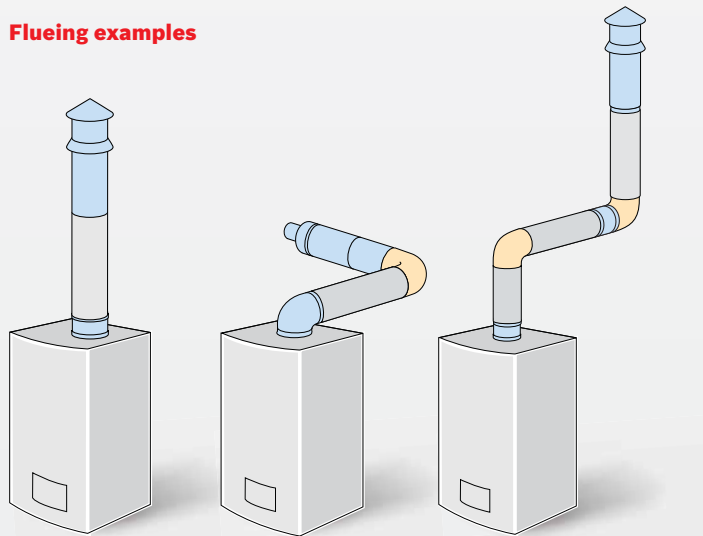
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Let's get back to pressure...

If you place an empty coffee cup on the table, there is a certain Pressure created between the bottom of the cup and the table (Fig. 1). The magnitude of the Pressure depends on the Weight of the cup and on the Area of the cup's base. The unit of Pressure is the Pascal [Pa]. This is defined as the number of Newton's [Weight force] divided by the number of square metres [Area]. If you filled the coffee cup up with coffee, the cup's Weight [N] would increase, which means the Pressure [Pa] between the cup's base and the table would also increase. Pressure is also measured in multiples of Pascals like kilopascals [kPa] and Megapascals [MPa]. For fluid systems we usually measure Pressure in kPa, while for construction materials [concrete and steel] we generally measure pressure in MPa. Great, so what's a coffee cup got to do with fluid or pipe pressures? Let's have a look...

Now that we have filled the cup with coffee, there are also [static] Pressure forces acting inside the cup on the walls and the base due to the Weight of the coffee (Fig. 1). This Pressure increases as the depth increases due to the Weight of the fluid [coffee] above. This is a fundamental concept of Fluid Mechanics [for liquids]: "The pressure at a particular point below the surface is directly proportional to the height of the liquid above the point." This means that the static Pressure in a liquid is caused by the Weight of the fluid atoms [or molecules] above it.

Different fluids contain different molecules so they can have different Weights and densities. Density is defined as the weight of a fluid per unit volume. The unit of Density is kilograms per cubic meter [kg/m³]. The symbol for Density is the Greek symbol, ρ , [pronounced rho]. Fresh water has a density of approximately 1000kg/m³. Oil generally has a density of around 900kg/m³ which is why oil floats on water. Concrete has a density of around 2400kg/m³ which is why it sinks in water. Salt water is slightly more dense than fresh water at around $\rho = 1030\text{kg/m}^3$. This is why it is a bit easier for us to swim in salt water than fresh water. You may have seen photos of people floating around on the Dead Sea. This is because it has a very high salt concentration with a density of 1240kg/m³. Humans have an average density of around 985kg/m³, so we can easily float on the Dead Sea.

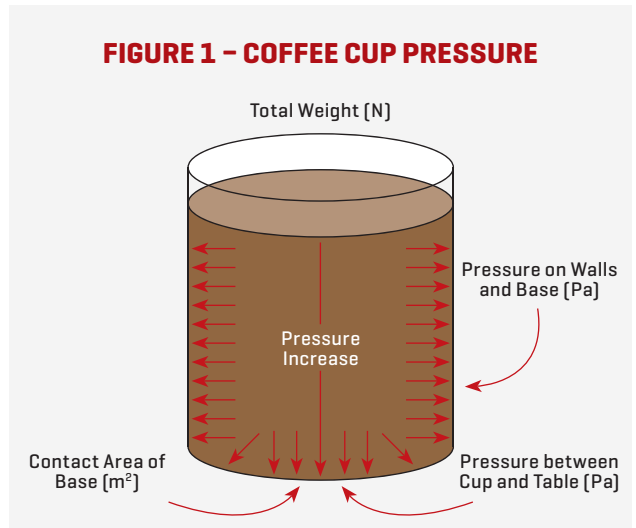
The formula for the pressure at a particular point in a liquid is shown in Equation 1:

$$P = \rho g H \quad \dots \text{Eqn. 1}$$

Where:

- P = Pressure [Pa],
- ρ = density [kg/m³],
- g = acceleration due to gravity [9.8m/s²], and
- H = height of fluid above point [m].

FIGURE 1 - COFFEE CUP PRESSURE



When dealing with fluids, we normally like the answer to Eqn. 1 to be expressed in kPa. To do this, we simply divide the answer by 1000. Here is an example to illustrate:

Example 1: What is the water pressure [kPa] acting on the internal base of the tank shown in Figure 2?

Solution using Eqn 1:

$$P = \rho g H = 1,000\text{kg/m}^3 \times 9.8\text{m/s}^2 \times 3.5\text{m} = 34,300\text{Pa}$$

However, the question asks for the Pressure in kPa, so we simply divide this answer by 1000, i.e. $34,300/1000 = 34.3$. So the pressure acting on the base of the tank is 34.3kPa [answer].

This process is always the same regardless of the liquid being used. The main thing to remember is to make sure you are using the correct Density for the liquid in question. For example, if the fluid in example one was Oil [$\rho = 900\text{kg/m}^3$], the base pressure would be approximately 30.9kPa [check this for yourself!].

One of the most important concepts to understand regarding static liquid pressures is that the pressure at a certain point below the surface is only influenced by the height [H] of the liquid above it. It makes absolutely no difference what shape the fluid above or beside the point is. For example, the water pressure acting on the inside wall of a massive dam 50m below the surface is exactly the same as the water pressure acting on the walls of a Ø5mm diameter vertical tube, 50m below the water surface. However, in this case the pressure would probably be too great for the tube which may cause it to explode.

Many pipes are pressure rated to indicate the strength of the pipe walls. A common classification system is the PN [Nominal Pressure] rating system. It is pretty simple really; a pipe with a PN4 classification can safely withstand an internal fluid pressure of 400kPa. A PN6 pipe can withstand 600kPa and a PN12 pipe can withstand 1200kPa, etc...

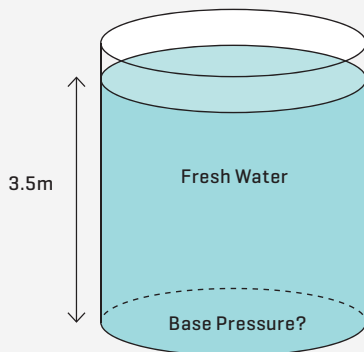
Vacuum Plumbing Solutions for...

For convenience, many fluid system pressures are referred to in metres Head [of the fluid in question]. This is really as simple as it sounds. For example, 25m Head of water is the pressure that would be acting on the base of the tank in Figure 2 if the water level was 25m, instead of 3.5m as shown.

Water pressure expressed in kPa can be approximately converted to metres head of fluid by simply dividing the kPa value by 10. For example, a standpipe rated at 250kPa is approximately equal to 25m head of water. However, please note that this conversion will not work for fluids with densities significantly different from water. For example, a pipeline carrying kerosene [$\rho = 810\text{kg/m}^3$] at a pressure of 270kPa, would be equal to 34m head of kerosene. Luckily, most of us are generally dealing with water, so this quick conversion method can be useful to remember. Pumps are also generally rated by the amount of Head they produce. For example, a pump rated at 15m Head means it can generate a maximum Pressure of about 150kPa [of water].

A good understanding of working pressures in water supply mains is important for plumbers as it significantly affects flowrates through pipes and fixtures. Mains water is often supplied by water towers and the water pressure at a dwelling is often governed by the height of the tower above the dwelling and the proximity of the dwelling to the tower, as well as a variety of other variables. For example, the maximum [theoretical] water Pressure available at the shower rose shown in Figure 3 is the difference in Head between the water level in the tower and the shower rose on the second floor of the house. I say maximum theoretical pressure because there are a number of other factors that will cause pressure losses such as pipe friction and form losses. However, we will discuss these in more detail in future issues. Where the available Pressure in a system ➤

FIGURE 2 - WATER PRESSURE EXAMPLE 1



“Stadiums”



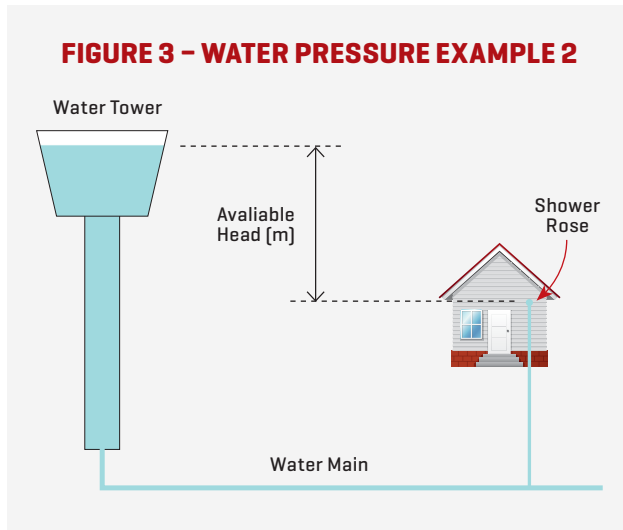
“Shopping Centres”



“Correctional”



FIGURE 3 – WATER PRESSURE EXAMPLE 2



is too low for the operational requirements, it is common to install some type of pump to increase the system pressure. If the system pressure is too high, Pressure reduction valves can be used.

You may have also heard the term “Bar” used to describe Pressure. One Bar is equal to 100kPa which is approximately equal to the atmospheric pressure on Earth at sea level [101.3kPa]. Atmospheric pressure [abbreviated ATM] is caused by the Weight of the air above the Earth. Although air is a gas which contains lots of molecules flying around, it also has a Density [$\rho = 1.23\text{kg/m}^3$], and therefore it also has Weight. The Density [and Weight] of air is greatest at the Earth’s surface. Air Density decreases as elevation increases. This is because the further away from the Earth the air molecules are, the less they are affected by gravity. Most of the Earth’s air is contained in the troposphere which is about 12km high. In addition, the Pressure at a depth of

10m under fresh water is also about 1 bar. So the Pressure at 90m below the water surface is about 9 Bar, etc...

This is probably a good time to explain the two terms “Absolute Pressure” and “Gauge Pressure.” Absolute Pressure is referenced against an absolute vacuum. For example, in the atmospheric air pressure explanation above, if you left the Earth’s atmosphere and went into space, there would be no more air molecules so there would be zero Pressure [absolute vacuum].

Gauge Pressure is referenced against atmospheric pressure [i.e. 1 ATM]. For example, when you check the pressure in your car tires, the pressure shown is the amount of extra pressure above 1 ATM. Therefore it is also possible to have negative Gauge Pressures [i.e. below atmospheric] under vacuum or siphonic conditions. However, it is not possible to have a negative absolute pressure as this is physically impossible [i.e. you can’t have negative numbers of molecules]. Generally when we are talking about Pressures, we are talking about Gauge Pressures.

I hope this article has helped clarified some of the fundamental principles of Pressure for you. In the next article, I will clarify some of the fundamental principals regarding friction and form losses and why they cause pressure drops in fluid systems. Please feel free to email me any comments, questions or suggestions at tlucke@usc.edu.au. ■

Contact: Dr Terry Lucke

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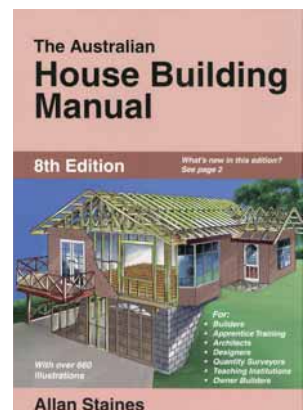
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THE ART OF PLUMBING ESTIMATING

MISQUOTING CLIENTS CAN MEAN YOU ARE ALREADY ON THE BACKFOOT BEFORE PICKING UP A SPANNER. HAVING A CONSISTENT ESTIMATION PROCEDURE IN PLACE IS JUST GOOD BUSINESS. **ANDY FARRELL** EXPLAINS.

“I would prefer to pass on a project and lay on a beach somewhere, than to under quote the job and work myself bankrupt,” Andy says.

Estimating or quoting, is fundamental for any plumbing business to be successful in a service based business as potential clients will almost certainly request a quote from you prior to awarding a project. If the job has been priced correctly, then it is fair to say you'll make a decent profit. Get it wrong, and you may lose money and unfortunately, in some cases, much more.

The competitive landscape of the plumbing industry has evolved over the past few decades. Clients and builders alike are highly motivated to reduce costs and seek value for money when building a project, sometimes accepting the lowest submitted price in order to achieve a set budget. This practice can be to the detriment of the plumbing contractor. As the margins get tighter and projects become more fiercely contested, it becomes much harder to successfully

bid for a project. In recent years, I have been invited to submit tenders for projects only to find out over 20 other plumbing companies are competing for the same contract. The chances of winning the contract are slim, and then to make a fair and reasonable profit becomes extremely concerning.

So, what's the solution to reducing the risk of falling into the trap of under-quoting projects? Simple: be consistent and know your bottom line.

Implementing a comprehensive estimating system that you have confidence in is vitally important, especially if you aim to achieve accurate quotes on a consistent basis. Consistency can only be achieved through experience, practice and prolific record taking. It's like anything else in life, 'practice makes perfect' and estimating is no exception.

It is very important that you give careful consideration when deciding which method of pricing is suitable for your business.

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Mr. Jobst Wagner
President of the REHAU Group



Here are six key features a good system should include:

- **Accuracy:** have confidence in the submitted price
- **Efficiency:** the system should be quick to use
- **User friendly:** anyone with minimal plumbing and/or computer skills can use it
- **Flexibility:** can modify a rate to suit each project
- **Good reporting:** complete specific project break down
- **Transparency:** see how each cost has been calculated

There are a few different ways plumbers price a project, each have their advantages and disadvantages. The most common is educated guessing. This is when you look at the project and from past experiences of a similar job; you throw a number at it and wait for the builder to tell you if you are "on the money". Personally, this is a very cavalier form of quoting, as it's impossible to know the projected profit margin. Another is per point pricing. This where the total number of fixtures [points] are tallied and multiplied by an amount resulting in the project price [eg. 150 points x \$2,500.00 = \$375,000.00]. These methods of pricing are quick and easy, but are thwart with danger as they don't take into consideration the different requirements of each project.

The most accurate form of estimating is the 'standard rate method' as it creates a consistent benchmark for each individual component of the project. The advantage is that each standard rate can be easily modified [if required] to suit the different site/project conditions. This type of pricing is quick, accurate, flexible and completely transparent.

HOW THE STANDARD RATE METHOD OF QUOTING WORKS

STEP 1: Measure a complete take-off for the project and enter the details/quantities into an estimating program. This will result in having the 'first cost' of the project, which is the cost to install all the required works [labour, materials, excavation and backfill].

STEP 2: Add the 'preliminary costs' of running the project [supervision, wet weather, floating equipment, etc]. This is usually entered as a percentage [from my experience around 8% should cover the prelims].

STEP 3: Add your businesses 'overhead cost' [cost of running your business verses the turnover] and add it as a percentage. An average sized plumbing business may have an overhead cost of around 14%, but your accountant can give you this information. The total of the above [first cost, preliminaries and overheads] is the absolute bottom line of the project.

STEP 4: The final and most important step of the entire process is to calculate and add the projected profit you wish to make on the project [for the sample below we are using a 10% profit margin]. This is entered as a percentage, which will calculate the dollar amount of the expected profit.

SAMPLE PROJECT MARKED UP

Total Labour, Materials and Plant cost	\$250,000.000
Preliminary Costs: 8%	\$20,000.00
Sub-total Cost (inc Prelim's)	\$270,000.00
Overhead Cost: 14%	\$37,800.00
Sub-total Cost (inc Overheads)	\$307,800.00
Profit: 10%	\$30,780.00
Total Project Price (Ex GST)	\$338,580.00
Total Percentage Mark-up (on first cost)	35.43%

HERE IS AN EXAMPLE OF A PROJECT MARK-UP BREAKDOWN:

From the above information, you now know what the project will cost you to complete [in the sample above, it is \$307,800]. Therefore, if the builder says that you can have the job for \$300,000 you instantly know that you would lose a projected amount of \$7800 if you take the project.

Alternatively, you may be happy to reduce the projected profit amount to secure the job and aim to negotiate better prices from your suppliers. This just gives you the confidence to know your bottom line and to walk away from an undervalued project.

It's important that you have confidence in your pricing system and remember that practice makes perfect. ■

Contact:

Andy Farrell has put a lot of a lot of work into developing an estimating and management system to make running a plumbing business as simple as possible. He's also made himself available to answer any questions readers might have on estimating. We welcome Andy as a regular contributing columnist to Plumbing Connection. www.plumbingpack.com.au

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TO A TEE

A TOOL THAT CAN HELP PLUMBERS TO FORM TEES FASTER AND EASIER, WHILE PRODUCING CONSISTENTLY STRONG JOINS, IS ALWAYS GOING TO BE WORTH A LOOK. **PLUMBING CONNECTION CHECKS OUT T-DRILL.**

Every now and again, a great tool will come onto the market and remain undiscovered by a large portion of the industry for some time. T-Drill has been around, in various incarnations, for about 30 years so it's surprising how many plumbers are yet to hear about it. At *Plumbing Connection* we thought we'd remedy the situation and give our readers a bit of a run down on what this capable machine can do.

T-Drill is an all-in-one tool that can significantly reduce job time for plumbers when forming tee branches in pipe work – without the use of tee pieces. The tool works by first drilling a pilot hole in the main tube, and then raising a collar from the material surrounding the hole as the head retracts. This action is made possible by two forming pins built into the T-Drill head, these can be extended after the pilot hole has been drilled by pulling back on the head and turning it counter clockwise.

The branch pipe is then inserted and sealed by brazing. Because the collar is formed so accurately, when it is brazed the solder flows around the joint by itself under capillary action. A branch made in this way is very strong and can easily withstand the forces the pipe network is subjected to.

Bevis and Bartels are specialised commercial plumbers who focus on large scale hydraulic and drainage works. They install plumbing and drainage systems to major construction facilities in Queensland and use T-Drill regularly.

"We used to use a hand set of branch pullers. To make a branch you'd have to put a drill bit onto a drill, adjust it to whatever size branch you were drilling, and drill the hole. Once that was done, you'd place the bobbin in the hole and wind that out by hand with a ratchet. Then you would get out the crimping tool and put a nipple on the pipe that you're feeding in so it doesn't protrude into the pipe, then you need to square it up and weld it. So you'd have three moving parts, but with the T-Drill it's all in one. You do still need the crimping tool but T-Drill is still a lot quicker and it's all in one box," foreman at Bevis and Bartels Leith Naismith says.

Because T-Drill creates consistent joins, any chance of leakage is greatly reduced. With support legs that keep the tool centred on the tubing, and the ability to pull a tee in a matter of seconds, the margin for error is minimalised while saving significant amounts of time.



The unique T-Drill action is made possible due to the T-Drill head: it both drills and forms a collar.

"We mark a route on the floor for the pipe work that's going to hang in the air. Then we place the pipe on the measurements from elbow to elbow (or on straight runs, mark where the tee's going to be), lift it off the floor into a vice. Then just grab the T-Drill and pull your branches. Once that's done your pipe and everything's ready to go up into the air in that location, with the tees in place. Each branch you drill is exactly the same, so once the tool is set to the thickness of the copper you can forget it, we haven't had any adjustment problems with it on the way through," Leith says.

The unique T-Drill action is made possible due to the T-Drill head: it both drills and forms a collar. The drill core is made of hardened steel, and the forming pins are shaped so that they do not cause any breaks or metallurgical changes in the collar, which would reduce the strength of the joint. The design of the T-Drill head is basically very simple. It is robust, withstands heavy use and is easy to service.

"Time, as we know, is money nowadays – so considering the time it saves and the ease in which it works it is a great tool." ■

Contact: Edro
www.edro.com.au

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SIMPLE, YET EFFECTIVE

JUSTIN FELIX REPORTS ON A PRODUCT PROVIDING CHEMICAL-FREE WATER SOLUTIONS THAT DOESN'T COST THE EARTH TO RUN. AND THE BEST PART IS, IT'S AUSSIE-MADE.

Australians are early adopters when it comes to products that treat or conserve water. Living in a hot, dry and remote place has made us global leaders in dealing with droughts and developing intuitive ways to solve bad bore and dam water quality issues.

One such product by Adelaide manufacturer Hydrosmart, provides a simple and sustainable hi-tech solution to conditioning water without the need for chemicals, filters or maintenance. Hydrosmart has helped clients battle droughts for over two decades and really comes into its own when freshwater dams run dry and salty bores become the only water supply available.

The technology is based on particle physics research which has established that scale layers and corrosion problems are related to how well minerals in water are dissolved. Subsequent application of the technology by crop growers has demonstrated that better dissolved minerals also confer a distinct growth advantage for living organisms.

"Hydrosmart emits an Electric Field (EF) modulated in the ultra low and very low frequency range. Water to be treated does not contact the apparatus. Hydrosmart frequencies selectively target minerals in the water. It does so as a result of research conducted into particle physics on using frequencies and pulses upon water," Paul Pearce of Hydrosmart explains.

A Hydrosmart microprocessor unit produces resonance frequencies that are focused on the water flow via antennae wound in tight coils around your client's water pipe. There are no reject streams, no pressure losses and no flow restrictions.

Frequency effects remain in treated water for up to 5 days and progressively break down bonds of any mineral deposits already formed. Calcium and iron scale in pipes and equipment that are connected to the treated flow becomes loosened within a period of months. The loosened minerals then break free and exit the pipe with the water, rather than continuing to clog the pipe or equipment.

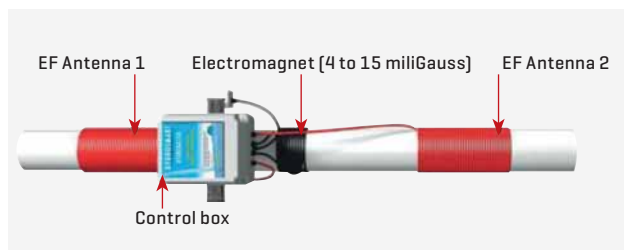


IMAGE 1: The unit is fitted at the point of entry or point of use to protect plumbing of entire communities or individual equipment. **IMAGE 2:** Hydrosmart provides a simple and sustainable solution to conditioning water.

“By dissolving minerals and preventing them from recombining while in suspension Hydrosmart softens hard water, scale and oxidised iron removal/prevention. It also fights corrosion and manages salinity without need of chemicals or membranes.”

“The unit gets fitted at the point of entry or at the point of use to protect plumbing of entire communities or specific individual equipment.

“If being fitted onto buildings then a plumber is required by law, making it another tool to have at your disposal for clients who like the set and forget aspect of no salt required or any need of services and maintenance in hard water areas of Australia. Hydrosmart has multiple selling points and can replace a water softener for homes, factories, cooling towers and hospital boilers as well as reverse osmosis in irrigation to remove salt,” Paul says.

Electronically run, the unit requires a power point or a battery and solar panel and requires less power than to run a light globe. ■

Contact: Hydrosmart
www.hydrosmart.com.au

SOME OF THE KEY APPLICATIONS AND BENEFITS INCLUDE:

Gardens: Hydrosmart encourages improved plant growth by reducing the size of salt particles on plant roots (and grass roots). Lawns become greener too.

Home: Scale or iron oxide on pipes, valves and fittings. Chemical free water softening also means better bathing, washing of dishes and clothes.

Pool: Hydrosmart lowers chlorine usage with less chemicals being needed, resulting in more stable pH, water chemistry and softer water.

Viticulture: Unblocking of drippers and irrigation systems, improve fruit quality due to easier uptake of nutrients and decrease salt stress from borewater.

Mining: Improve irrigation in heap-leach mining, prevent and remove mineral build-up without chemicals and remove odours and deposits from wastewater tanks.



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FLOOD STOPPER

CON-SERV HAS DEVELOPED A CLEVER LITTLE PRODUCT THAT PROTECTS HOMES AND BUSINESSES FROM FLOOD DAMAGE CAUSED BY DEFECTIVE HOSES.

Flexible stainless steel hoses are one of the most common materials used to connect plumbing fixtures such as tapware and toilet cisterns to the mains water supply. Despite their robust construction and ease of installation, they do have a finite lifespan which, a lot of the time, is found out the hard and expensive way.

This lifespan can be greatly reduced during the installation process by stretching or kinking of the hose while exposure to cleaning solutions and other contaminants can also impact the longevity of the product once installed.

The nature and general positioning of flexible connectors (under sinks and basins) is typically an install and forget. Unfortunately when an unattended product failure occurs, the consequential damage can be thousands of

The Flood Stop Isolating Valve offers a low cost safeguard to ensure that should a flexible connector burst, the damage is minimal.

litres of water lost and catastrophic damage to floors, walls and other fixtures. Then there's the inconvenience of dealing with insurance companies, potentially moving out for a few weeks and replacing all of the damaged goods.

Thankfully a product exists that ensures this nightmare does not become reality.

The Con-Serv 1/2" F&M, DR brass Watermark approved Whisper Flood Stop Isolating Valve offers a practical, low cost safeguard to ensure that should a flexible connector burst, the damage is minimal.

"The valve limits water leakage to less than half a cup of water, which, when you consider that water through an unregulated half inch pipe flows between 20-25L per minute, is incredibly minimal," Technical Product Advisor Con-Serv Ian Carmody says.

"If your client goes away on a Friday afternoon and comes back on a Sunday and a hose burst occurred just after they left, that's 48 hours of water flowing at 20L per minute. If you do the maths, that's 56,000 of water."

Tested by the Queensland Testing Laboratories to the Australia Technical Standards 5200.476 [Report No. 15078



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3922]. The BV 120 Whisper Flood Stop Isolating Valve offers an integrated ball valve to conveniently isolate the damaged hose should a failure occur. The ball valve also assists with tapware maintenance. An inline gauze filter is also supplied to ensure that contaminants in the water supply cannot impede performance of the Flood Stop function.

If a hose failure occurs and the Flood Stop Valve is activated, a simple flat bladed screw driver is all that is required to reset the valve.

"Our target market is predominantly multi-storey buildings because that's where the greatest amount of flood damage can occur, particularly in unit and office developments. That's not to say stand alone residential properties don't benefit from the Whisper Flood Stop Isolating Valve though. A hose burst in the toilet would flood the whole house. Home owners would then be left to replace carpets, floorboards and electrical goods. That could take weeks or even months to fix everything. And it's not so much the issue of whether you have insurance or not, it's the inconvenience of the time taken to rectify everything."

“ IF A HOSE FAILURE OCCURS AND THE FLOOD STOP VALVE IS ACTIVATED, A SIMPLE FLAT BLADED SCREW DRIVER IS ALL THAT IS REQUIRED TO RESET THE VALVE. ”

With water saving nowadays being a priority the BV 120 has an extra feature that guards against any outlet using an excessive amount of water. Should the flow rate of any fixture that the BV 120 is attached to exceed 11 litres per minute, the Flood Stop Isolating Valve will activate, requiring the inline flow regulator or tap aerator flow control to be replaced and the valve reset before the water flow will start again.

Con-serv has a ten million dollar product assurance warranty, meaning that if a Whisper Flood Stop Isolating Valve has been installed, and a flood occurs at the point of installation, it will cover your client up to ten million dollars to cover the damage.

With that in mind, it's pretty easy to see how strongly Con-Serv stand by their product. ■

Contact:

When it comes to burst hoses, almost everyone has a horror story of it happening to them or someone they know. If you have a horror story [and pictures] that you are willing to share with the rest of the plumbing community, please send them to mail@con-serv.com.au Con-Serv is offering a \$500 gift voucher to the one it thinks is best. Entries close 31/03/16.



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INSTALLING A SUB-METER CAN BE A REAL HASSLE WHEN CONCEALED PIPE WORK NEEDS TO BE ACCESSED BUT ONE PRODUCT MAKES THE PROCESS A WHOLE LOT EASIER. *PLUMBING CONNECTION* TAKES A LOOK AT THE QUICK FIT WATER METER ADAPTER.

Sub-metering can be a difficult proposition and often requires painting, repairing tiles and pulling out cupboards. But with the Quick Fit Water Meter Adapter (QFWMA) by Bayzone, access to concealed piping in walls or cupboards is no longer required. If you have access to a full-way stop tap the QFWMA can be installed directly in place of the stop tap assembly.

"If you can see the tee head of the stop tap assembly the QFWMA can be installed. The water service does need to be interrupted briefly but a quick freeze or shut down is a minor inconvenience to install the QFWMA with a new stop tap and meter assembly," Peter McCallum Managing Director at Bayzone says.

This fitting allows plumbers to work quickly and efficiently, even in the tightest of situations. Both the inlet and outlet are 360 degrees rotational so the placement of pipe work for either direct connecting a meter or simply connecting flow and return to a desired location is highly flexible.

The unit is designed for retrofitting in hard or unworkable access areas, for example where a shut off valve is under concrete or within a wall cavity or cupboard. The QFWMA 101 & 202 is designed to make it simple, quick and affordable to install a water meter which can be used in houses, flats, blocks of units and commercial areas. It also features 360 degree flexibility for shut off valves located in tight and difficult areas. The QFWMA101 & 202 is internationally patented.

The team at Bayzone has ensured installation of the QFWMA is as simple as possible and their website features a set-by-step installation process that you can follow with ease.

Using a QFWMA means a team can go through a block of units rapidly, by connecting a stop tap and loop you can quickly return supply to all dwellings, then water meters and AMR (automated meter reading) technologies can be installed when suited. ■

The QFWMA is easy to install and Bayzone provide detailed descriptions and step-by-step images for plumbers to follow while on the job. A finished installation using the QFWMA is shown at the bottom. The stop tap is located behind the waste pipe on the right hand side.

Contact:

www.bayzone.com.au

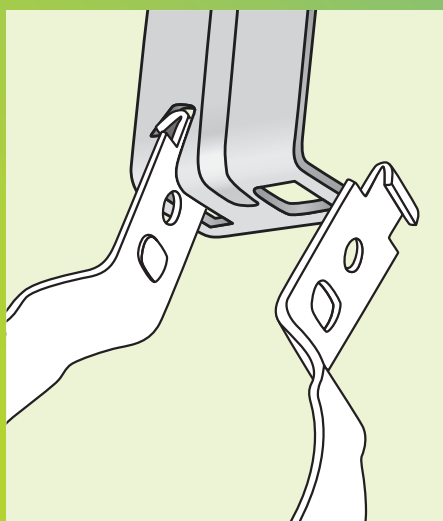


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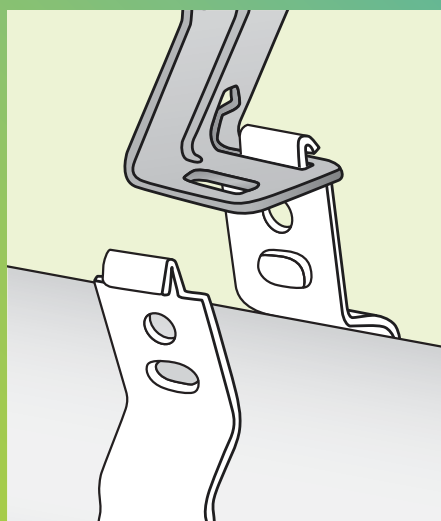
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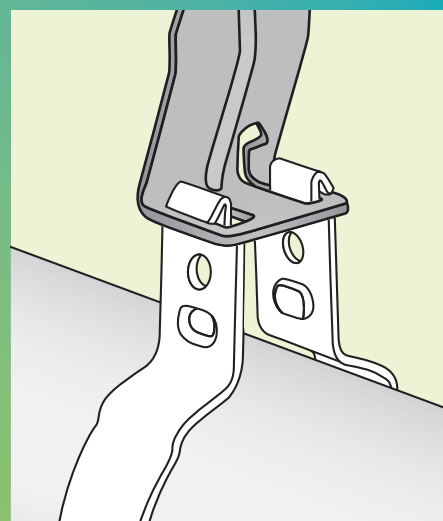
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STEP 3 Simply lock clip to bracket

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Always the innovators, Abey have further improved their revolutionary patented clipping system with a new stand off clip that makes installation a snap.

Like their hanging bracket range, pipes can be safely pre-hung, making installation simpler than ever. Time saving for these clips have been clocked at five (5) times faster than conventional nutted systems. Abey Speed Clips helps plumbers get the job done faster and easier than ever before.

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"ON THE JOB"

COMPLIANCE

THE BUCK STOPS WITH YOU

When faced with the issue of suitable fire protection within a home or building, there is no room for shortcuts. There are a significant number of important issues highlighting the risk to installers and builders in relation to passive fire protection:

- The recent high rise fires in Melbourne and Sydney were a catalyst to the Senate Enquiry in relation to the installation of defective building products;
- A recent defect survey by the Victoria Building Authority highlighted serious problems in relation to passive fire protection;
- Building owners and body corporates are commissioning audits prior to the expiration of the mandatory warranty periods and are uncovering widespread defective work with claims then being made against plumbers, installers and builders; and
- The adoption of the building maintenance standard AS 1851 is increasing the focus on all fire systems, again uncovering expensive defects.

While the majority of defects are unintentional, all of this has resulted in millions of dollars' worth of damage that plumbers, installers and builders are being called on to pay for. All of this combined clearly highlights the need for industry education and awareness.

REDUCING YOUR RISK – TRANSPARENCY IS THE KEY

Compliance needs to become a key business priority and is the most effective way to avoid risk.

The NCC sets out multiple pathways to provide 'Evidence of Suitability' to demonstrate whether building elements or components are fit for purpose. The most effective of these is the Deemed-to-Satisfy pathway. In the case of fire collars, they are tested in simulated installation systems to prove they achieve the stated fire rating level (FRL). Provided fire collars are installed in a manner identical to their tested configuration, they can be certified accordingly.

While sometimes unavoidable, using an Alternative Solution, assessments, or a formal opinion as a pathway to compliance can significantly increase the risk of non-compliance as this pathway is just that – an opinion. Unfortunately, the structure of the NCC allows for the use of Alternative Solutions, assessments and formal opinions in circumstances where products have failed the Deemed-to-Satisfy pathway – why risk using any product where a Deemed-to-Satisfy solution exists?

Snap Fire Systems (Snap) recognise the risk plumbers, installers and builders take and as a result only release products that exceed all Australian standards and building codes. The company produces a risk free product that has



All Test Reports for SNAP Fire Systems' patented spring system Fire Collars are available in their entirety online.

been designed specifically to meet the requirements of industry and the NCC. Snap Collars are independently tested to the highest standards and all test reports are made available to the public. This transparency is essential in avoiding risk, however, not all manufacturers are as quick to share their results.

In addition to questionable opinions, some laboratories and manufacturers are issuing misleading documentation in the guise of "Assessments", "Test Certificates" and "Regulatory Information Reports" that are clearly in conflict with the parameters of the relevant Australian standards. The only way to ensure that the products you are installing are fully compliant is to receive and record full unabridged fire test reports.

Some manufacturers cite confidentiality over test reports – what is there to hide? In practice, installers should consider the policy of No full fire test report – No purchase. Installing a non-complying collar exposes all stakeholders to unnecessary risk.

Transparency is the key and stakeholders should be provided with unquestionable original documentation to prove compliance and as a guarantee that they have not been short changed as a result of the installation of sub-standard products.

Snap fire collars are guaranteed to meet the Deemed-to-Satisfy compliance provisions of the NCC and provide full unabridged test results on their website. ■

Snap Fire Collars

www.snapcollars.com.au

WHEN THE HEAT IS ON RELY ON **SNAP** FIRE COLLARS

Re-engineered single piece casing reinforced **Snap** collars **NOW AVAILABLE**



DO IT ONCE. DO IT RIGHT.

With a rise in retrospective building audits across Australia you cannot take risks with inferior products. It is re-assuring to know you can rely on Snap collars.

To guarantee compliance always insist on a full test report. A test certificate is not evidence of compliance and some assessments pose risks. Do not be put off by claims of "commercial in confidence" – transparency is the name of the game.

- ✓ Easy, simple and quick installation
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- ✓ Cast in or retro fit to concrete slab
- ✓ Exceed all Australian standards and National Construction Codes
- ✓ All NATA accredited Laboratory test reports available on snapcollars.com.au website 24/7

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Snap Collars website provides a quick Online Collar Selection System allowing easy identification of specific fire collars based on individual needs.

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WATERMARK... FACT OR FALLACY?

PETER MCLENNAN DISCUSSES THE WATERMARK CERTIFICATION SCHEME AND THE CONFUSION THAT SETS IN WHEN VARIOUS STANDARDS REGULATE DIFFERENT ASPECTS OF ONE PRODUCT.



The Australian Building Codes Board (ABCB) is the Australian body responsible for administering the WaterMark Scheme. Their website is a wealth of information so I quote the following from <http://www.abcb.gov.au/product-certification/watermark>.

WHAT IS WATERMARK?

Material and product failures in plumbing systems can cause contamination of the water system and be a public health concern. The WaterMark Certification Scheme is a mandatory certification scheme for plumbing and drainage products to ensure that plumbing and drainage materials and products are fit for purpose and appropriately authorised for use in plumbing installations.

The Plumbing Code of Australia requires certain plumbing and drainage materials and products to be certified and authorised for use in a plumbing or drainage installation. These materials and products are to be certified through the WaterMark Certification Scheme and listed on the WaterMark Product Database.”

So, what do I mean above by fact or fallacy?

Surely if the product is WaterMarked it must be suitable for use in plumbing or drainage installations.

Wikipedia defines fallacy as: a reasoning in an argument or debate which contains a factual, punctual or logical error. A fallacious argument appears correct in one way but it proves to be wrong in the examination. Logical fallacies masquerade as reasonable statements, yet they are in fact statements designed to manipulate the reader by appealing to emotions rather than intellect.

Let me explain where I am going with this.

Innovation and technological advances often make it difficult to assess a product that has multiple functions and operations against only one standard. A simplistic example could be that you have invented a new pencil and want to have it approved against an existing standard for pencils. However, this pencil has various design features like an eraser attached to the end, a built in sharpening device and food grade material instead of charcoal, for when people lick the end of the pencil.

The problem arises because while it is only a pencil, there may be standards for the eraser function, the sharpener and the food grade material used as the marker. So which standard applies to this product so that an approval can be granted? Or do they all apply? Is it the responsibility of the WaterMark Conformity Assessment Body to identify all the applicable standards and request the necessary testing?

The manufacturer may ask that it only be assessed as a pencil as the other features are not integral to the function of the pencil.

Now to relate this back to plumbing products and backflow prevention. This exact issue is being seen every day where products designed to be connected to the water supply, perform multiple functions and operations through technical advancement and innovation.

These products include cooking equipment, beauty equipment, dental equipment, bathroom fixtures, hygiene equipment, agricultural equipment... the list goes on.

The Australian Backflow Prevention Association is regularly made aware of WaterMarked products being sold where the risk of a cross connection may be possible should a backflow event arise. Upon clarification or investigation,

often the protection offered is inadequate and does not meet the requirements of the applicable Standard AS/NZS2845.1-2010. Therefore installation of this product to the water supply would require additional backflow protection in line with the applicable hazard rating. This adds additional cost to the installation and confuses the end user when they believed the WaterMarked product would suffice.

Manufacturers need to be aware that even though they have invented a new pencil and it receives approval as a pencil, it may also need to meet additional standards before it is suitable for use in Australia.

A WaterMark approval does not necessarily make the product suitable for use without additional backflow protection. ■

Contact:

Peter McLennan has been involved with Backflow Prevention in Australia since the late 1980s. He is the President of the Backflow Prevention Association of Australia Inc., and Secretary of the Backflow Prevention Association of Australia Inc. Queensland Chapter. Visit www.bpaa.org.au to find out more about how the Backflow Prevention Association of Australia Inc. can help you understand Cross Connection Control and Backflow Prevention.

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A GLIMPSE BEHIND THE CURTAIN

SINCE 1977, RESOL GERMANY HAS BEEN A SUCCESSFUL BRAND MANUFACTURER IN THE FIELD OF SOLAR THERMAL AND HEATING CONTROL TECHNOLOGY. **MAT BRIGGS** TOOK A TRIP TO THEIR HEADQUARTERS TO SEE WHAT GOES ON BEHIND THE SCENES. THIS IS PART TWO OF HIS REPORT.

The trip to the RESOL headquarters in Hattingen Germany was definitely a treat and provided great insight into the advanced technology and use of Kaizen organisation principles to produce high-end quality thermal heating controllers.

Once we had completed our tour through the state of the art facilities it was time to hit the training rooms and take in some extra product knowledge. This included some well-informed training on the Vbus.net and how the data logger accessories produced by RESOL work with their thermal-heating controllers. RESOL have spent a lot of time perfecting the very best and most advanced thermal controllers, but they have spent many hours perfecting their product training apps and support.

The new RESOL app VBus®Touch Trainer is ideal for those who wish to train – themselves or others – in operating RESOL controllers. The app simulates a controller in real-life operation. All sensor inputs can be fed with freely adjustable values and all relay outputs are displayed with their status and pump speed. Therefore, users can follow and comprehend functions or try out controller reactions. VBus Touch Trainer is available free of charge and the DeltaTherm® HC mini controller is included in the basic version. Further controllers can be purchased from within the app.

With VBus Touch HC this easy-to-use app enables you to make adjustments on your RESOL heating controller from a mobile device. Through this app you can start using the brand-new Apple Watch for controlling your heating. There is not much they have not thought of with these back-end support programs.

I found the training on www.vbus.net the most interesting and probably most useful product information I have seen. Vbus.net is an internet portal that provides you and your customers with live access to their thermal system and its data. It communicates via a data logger connected to the thermal heating controller. From this you can see a basic outlay of the system and how it is performing throughout daily peak demand periods. Through this program you can make the necessary changes to fine tune the system. You can also view all live sensor temperatures and when the pump is in operation.

Once you start getting into the RESOL DeltaSQL BXL and MX controllers you really appreciate how the application comes to life. Multiple sensors can be programmed



1



2

IMAGE 1: RESOL have spent a lot of time perfecting some of the most advanced thermal controllers. **IMAGE 2:** The author sits in on a VBus training seminar.

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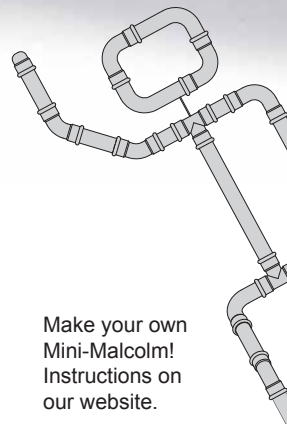
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to perform multiple tasks and the sky is the limit when it comes to monitoring as external and internal temperatures can both be viewed. Controlling thermal home heating, to operating automatic pool covers using the solar cell and global irradiation sensors can also be achieved. Combine one of these controllers with a data logging device and Vbus.net really shines.

RESOL solar controllers provide all the functions required for the control of large solar systems, such as those used in hotel buildings. For example, a twin pump function ensures equal runtime distribution between two parallel pumps and a special thermal disinfection function is designed for legionella control. Additionally, to protect the system from overheating on extremely sunny days, the heat dissipation function can be used. It is also possible to include space heating backup or complete heating circuits, DHW heating and a circulation for a more comfortable hot water supply. Precise energy metering is not only important for the comprehensive control of the system; it can also be monitored through a vbus application.

Vbus.net_Pro is an advance version of the program and allows a plumber to monitor multiple systems through data loggers. It can be used to manage commercial thermal heating systems. Customer parameters can be customised and set to indicate warnings if roof sensors have faults, pumps are running too long or maximum temperatures are reached.

An email is sent informing the plumber of the problem. This is great for servicing and monitoring your customers' thermal systems. Using the pro version means you can customise your own system functions for set controllers you use in your solar hot water system and thermal heating. These settings can be saved and loaded into a new controller for each new project.

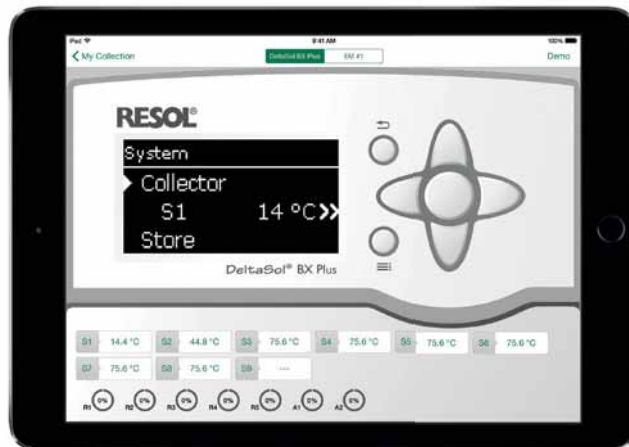
Remote parameterisation is another application that can be achieved with the RPT configuration software, which is available for download, free of charge.

These are just some of the many items we were shown during my short stay with RESOL Germany. I recommend you take the time to explore the options, register at vbus.net, go into the controllers' settings and understand the full use of them.

I would like to once again thank Isabel, Marcel, Julia and Rudolf Pfeil for inviting us to tour the RESOL headquarters as it was a very interesting and informative trip. ■

Contact:

Mat Brigs is the owner of Solar Hot Water Parts and an agent for RESOL.
www.solarhotwaterparts.com.au



Vbus.net_Pro is an advance version of the program and allows a plumber to monitor multiple systems through data loggers on multiple devices while at home or on another job. It can be used to manage commercial thermal heating systems and customer parameters can be customised and set to indicate warnings if roof sensors experience faults.



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MM Kembla delivers an extensive range of tubing, fittings, and accessories for plumbing, gas fitting, drainage, HVAC, refrigeration and industrial applications.

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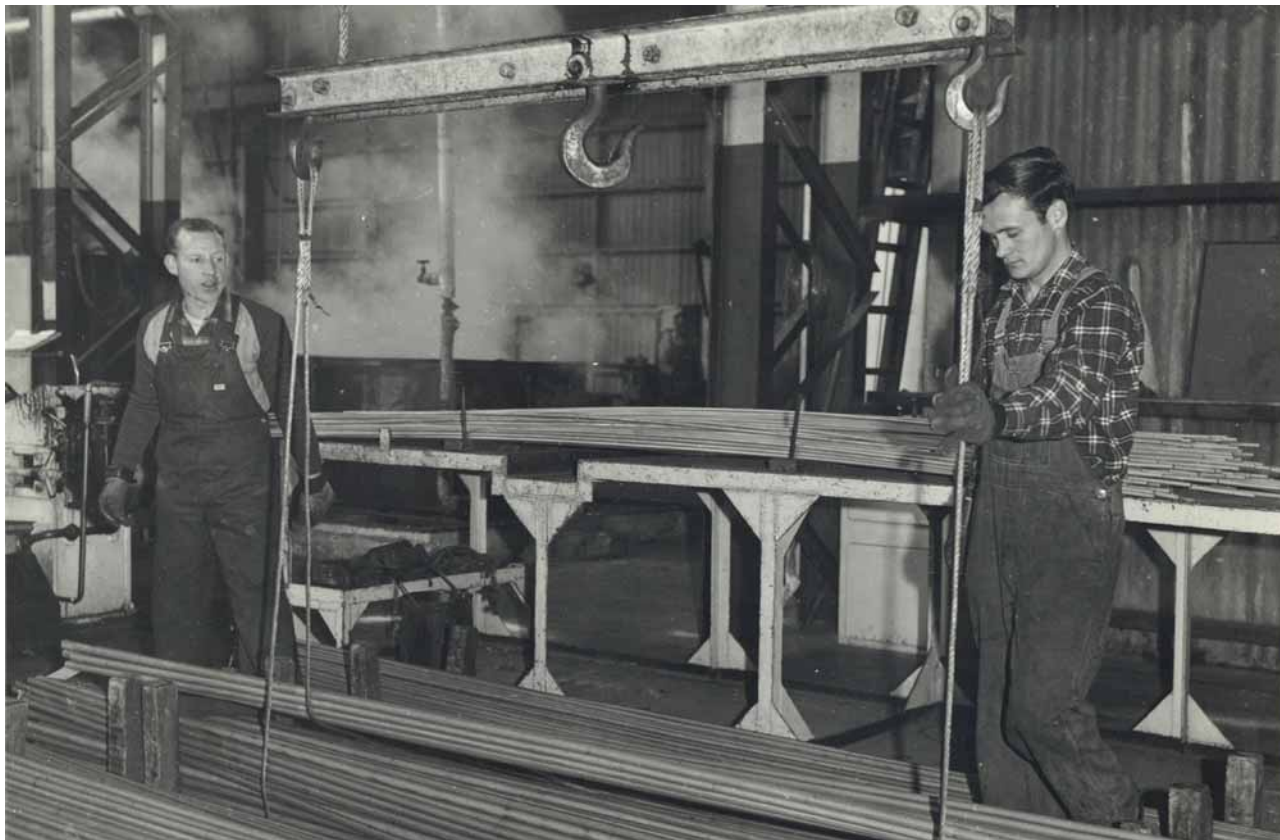
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100 YEARS OF AUSTRALIAN COPPER QUALITY



NOT MANY COMPANIES HAVE BEEN AROUND FOR A CENTURY, BUT MM KEMBLA SAYS IT'S JUST GETTING STARTED. JOHN FENNEL TAKES A LOOK AT A UNIQUE COMPANY.



You may have noticed MM Kembla recently developed a "Quality Reliability Service" company stamp to celebrate its 100 year anniversary based on its founding principles of quality product, reliability and unrivalled customer service. It's a logo that is well and truly earned after 100 years working with the plumbing industry here and overseas.

“ NO OTHER AUSTRALIAN COMPANY'S HISTORY QUITE SUMS UP HOW IMPORTANT COPPER HAS BEEN TO THE COUNTRY'S DEVELOPMENT ”

In fact no other Australian company's history quite sums up how important copper has been to the country's development or the changing shape of plumbing and construction as our cities keep growing.

100 YEARS YOUNG

Copper has always been a hard working, high demand metal, but back in 1916 when on March 16 the original 'Metal Manufacturers Limited' company was set up at Port Kembla near Wollongong in NSW it was probably the world's most important.

War, industrialisation, electrification, new forms of transport like trains and cars, and the start of urbanisation all made copper a crucial asset, but while Australia already had a growing copper mining sector, it lacked a local manufacturing base to produce finished products like tubes and pipes.

Metal Manufactures Limited-now known in the tube and fittings market simply as its division MM Kembla-was a joint effort of government and the private sector to not only solve that problem, but start to build the skills and technical expertise Australia was going to need if it was to become a world economy.

The rest, as they say, is history. The company boomed right from the start and kept expanding in the 20s and 30s to produce copper and brass locomotive tubes, copper superheater flue tubes, copper and brass tubes for steam heating or hot and cold water plumbing, as well as oil and gas reticulation.

The company has also closely mirrored the changes going on in Australia over the whole of the Twentieth Century. From the 2nd World War where it faced the risk of Japanese bombing and had one of its mills run entirely by women at the time due to the wars impact on man power, to a rapidly diversifying workforce as migration re-shaped the country.

TAPPING KNOWLEDGE & QUALITY

As Australia's population grew post war, and industry and infrastructure became far more sophisticated, MM Kembla

increasingly focused on expert knowledge by recruiting metallurgists and other technical staff, and boosting research and development with its own laboratory and analytical facilities on site for investigation, testing and analysis of copper tube.

Through its experience and close relations with a number of overseas companies over time in the production of copper products, MM Kembla has gathered together a substantial bank of technical knowledge at its Port Kembla plant. Today, MM Kembla continues to have a dedicated department to quality and process improvement and its technical support services available to all customers and installers alike.

In the 1970s it also started its own onsite Apprentice Training Centre where all new apprentices would spend their first year under the supervision of an apprentice master and foreman. After learning the basics they were positioned in various departments on a six-month rotation to gain wide experience across all aspects of the Port Kembla works.

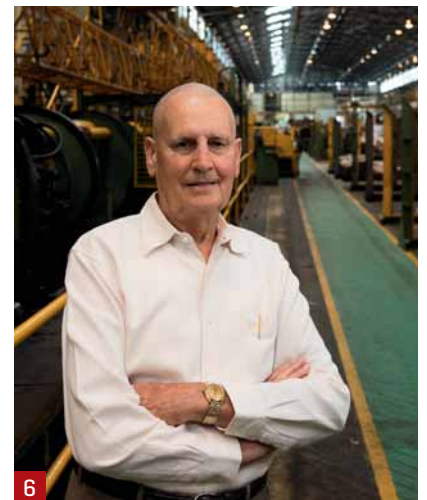
A key to the company's success has also been its ability to remain relevant to the plumbing and building sectors in the face of massive changes like rapidly rising copper prices, ➤



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1: 40 years of experience, MM Kembla's Jarvis Fletcher. **2:** A Metal Manufactures delivery truck in the 1960s. **3:** Taking shape, – MM Kembla Port Kembla factory in 1921. **4:** As it stands today – MM Kembla Port Kembla. **5:** The production of Kembla copper tube. **6:** Brian King, 42 years of service. The King family had a combined 248 years of service with MM Kembla.

far cheaper imports from Asia, and the spread of lower cost plastics like PEX or cross-linked polyethylene tubing.

Recognizing the need for plumbers to have access to a complete “behind the wall” system, it has been steadily growing a whole suite of copper plumbing products. Key to the push for simpler, smarter and faster installation has been Kembla’s launch of the flame-free copper PressFit system KemPress that’s found ready acceptance from plumbers. The uniform common size for all copper tube and fittings suppliers is another major advantage.

Kembla has also never lost sight of the need for quality and performance. For a start copper tubes and fittings are suitable for all potable water applications unlike plastics or other systems which may be compromised by shorter working lives especially when exposed to hot water temperatures greater than 70°C, fire, direct sunlight or ultraviolet light.

STAYING POWER

It’s a strategy that’s paying off. Over the past year the Australian building market has seen a growth in the use of copper plumbing in the booming multi-residential building,

infrastructure and development sectors due to performance issues with alternate products.

MM Kembla’s Tube & Fittings division continues to ensure the future of copper tube in Australia. Rationalisation and further investment in its copper tube manufacturing has led to record production efficiency levels in its Port Kembla plant in 2015.

You’ve obviously got to be doing something right to not only last for a century, but to now be Australia’s sole producer and supplier of copper tube to the Australian, New Zealand, Asian and Middle East markets. And I know the company’s commitment to product innovation, stringent quality controls, and unrivalled customer support and technical expertise will keep it there for another 100 years.

It’s always nice to know you have a tried and trusted company with such history available to service your needs locally; it’s like having the assurance of an old friend. Take a look at their website www.kembla.com.au. ■

John Fennell

CEO, International Copper Association Australia.



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MAKING RECOMMENDATIONS

JON PALFREY PROVIDES 10 KEY POINTS TO CONSIDER WHEN RECOMMENDING A NEW WATER HEATER FOR YOUR CUSTOMERS.

01 DO YOUR RESEARCH

It is important to find out what system you are replacing and to investigate whether the operational and delivery characteristics are the same as the model the customer wants you to install. Ask the customer what their expectations consist of.

By asking various questions you will be able to suggest and install a system that meets the needs and satisfies the end users. This in turn can lead to more work through recommendations.

02 KNOW YOUR PRODUCT

For example: mains pressure storage that relies on either a volume of usable water such as a gas storage system which will recover or re-heat during a period of its operation (usually measured in the first hour). Alternatively, in the case of an electric storage system, when operating on a night or off peak tariff, will store/hold the normal daily useable volume to meet the end users demand.

Be mindful of gas storage water heating systems available that have minimal recovery performance. Remember, recovery is 'horse power' when it comes to the provision of hot water for the second or third shower in the peak demand period and that should be explained to the end user.

03 ASK QUESTIONS

The following questions should all be asked prior to choosing and installing a system: How many people? How many bathrooms? What appliances are connected to the heated water plumbing?

The answers will help determine sizing which needs to be considered for the customers' expectations regarding delivery performance, efficiency and suitability.

04 RUNNING COSTS

What does a star actually represent in gas reduction? Each star on the energy label sticker on a domestic gas water heater represents approximately 7% reduction in gas consumption per star and with gas prices rising; this can mean significant savings for the end user.

05 KNOW YOUR FLOW RATES

What does 27 litres per minute actually deliver and at what temperature?



27 litres per minute is at a 25 degree rise from the incoming cold mains supply water to the property. For at least six months of the year in southern Australian cities, the incoming cold water supply temperature will be around 15 degrees and by raising the incoming temperature by 25 degrees, the provision of approximate showering temperature is delivered to the fixture.

06 DYNAMIC GAS PRESSURE

When commissioning a gas water heater, always assess the gas pressure when all other gas appliances are operating. This is a key commissioning step to ensure that when peak gas loads are required – typically during winter months when all appliances are operating – have adequate gas supply to function correctly.

07 WATER PRESSURE

Rheem, Vulcan and Aquamax mains pressure water heaters are intended for connection to high or low water pressure supplies subject to the following conditions:

- The maximum supply pressure does not exceed 80% of the temperature and pressure relief setting. If the incoming supply pressure does exceed this limit then a pressure limiting valve is to be fitted on the cold water supply.
- Mains pressure performance cannot be expected if the incoming water supply pressure is not above 350kpa.

08 LOCATION, LOCATION, LOCATION...

Where a water heater is positioned can often go a long way towards meeting the customers' expectations relating to delivery of heated water quickly.

If there is a considerable distance of pipework between the outlet of the water heater and the kitchen sink it can often take approximately a second per metre of piping to transfer heated water from the outlet of the water heater

to the point of use. A satisfactory delivery performance occurs when the distance equates to the heated water being delivered quickly.

09 AIR PRESSURE

Balanced air pressure around the balanced flue terminal will provide reliable, efficient and consistent operation of a mains pressure gas outdoor water heater.

10 DEFINE INSTANTANEOUS VS. INSTANT

Define the difference between instantaneous and instant, especially in the case of a mains pressure storage water heater being able to supply the same water pressure that has been connected to the system compared to a continuous flow system that will continually heat the water flowing through the unit but will deliver downstream to the fixtures at a reduced rate of motion.

Be mindful not to leave the customer with the expectation of 'instant' hot water to all fixtures... ■

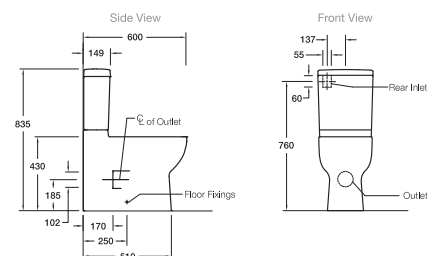
John Palfrey is Rheem Australia's Training Manager.

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See our range and showroom details at au.kohler.com

THE TRUTH ABOUT SEO

SEO CAN SEEM LIKE THE PERFECT SOLUTION TO YOUR ONLINE MARKETING PROBLEMS – BUT NOTHING IS AS SIMPLE AS IT SEEMS. **KATE JORDAN** EXPLAINS.

If you have a website, I can guarantee someone has tried to sell you SEO. The approach is generally the same: the salesperson says they've been looking at your website and think it can be improved. They promise the world; with their expert help, your website will be the best, you'll have requests for work pouring in. All that's needed is a small investment of money...

So, what is this magical SEO? It's Search Engine Optimisation, the process of improving your website's ranking on search engines like Google (and sometimes smaller sites like Yahoo and Bing). Google has an incredibly large algorithm [a mathematical formula] that decides which website best matches the word or phrase the user searched for. A crawler bot assesses your website against this algorithm to see if it is relevant. To rank on Google, therefore, your website needs to impress the algorithm – but that's not as simple as it sounds.

Google closely guards the algorithm. Anyone who tells you they know the algorithm is lying. Nobody knows the entire algorithm or even which aspects of a website the algorithm assesses or how much importance is placed on each aspect.

If the algorithm is so mysterious, how do SEO companies know what tactics to use? The good ones – of which there are very few – monitor changes in their clients' rankings and feedback from the SEO community to see what works and what doesn't. They then make an educated guess about what might cause a website to rank.

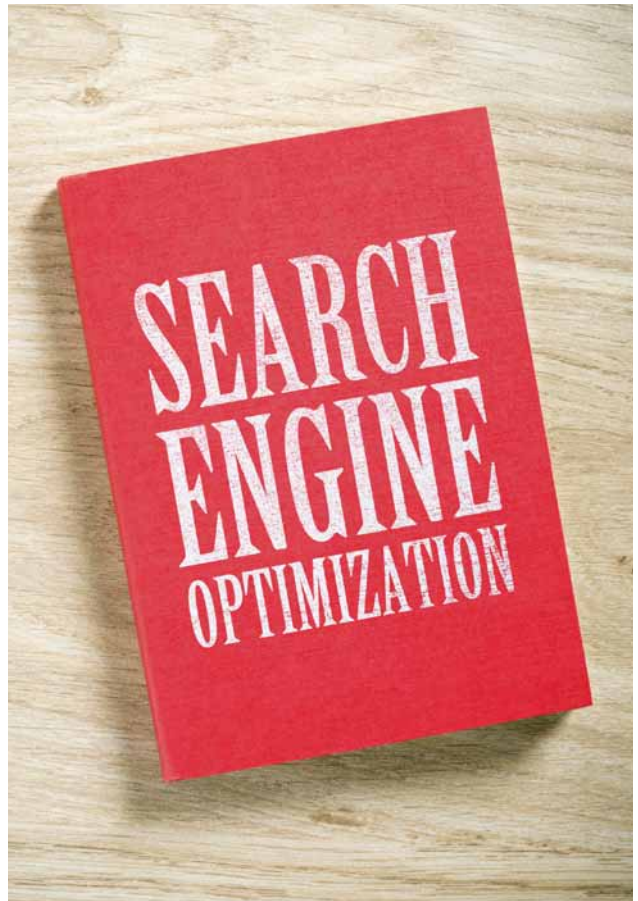
In short – SEO is a little like predicting the weather. Through research and past experience, you can predict what the most likely outcome is – but at the end of the day, there are too many variables to be certain.

To make SEO even more complicated, the Google algorithm is constantly changing. Small updates are released every day, as well as occasional large updates. SEO tactics that worked a week ago may not be as effective next week.

“

IN SHORT – SEO IS A LITTLE LIKE PREDICTING THE WEATHER.

”



Search Engine Optimisation is far from straight forward and may not be worthy of your investment.

The factors that affect a website's ranking can be broken down into two parts: onsite and offsite. Onsite factors are relatively simple and include the content of the website, how the content is structured and how the pages of the website are connected. There are also non-visible onsite factors, like how easy it is for the crawler bot to access the site and the speed of the website.

Offsite factors are a bit more complicated and harder to fix. They include backlinks (when another website has a link back to the original website) and social media cues (the impact of which is heavily debated). In the 'good old days' it was only the number of backlinks that mattered and SEO companies could simply build thousands of links. Now, it's

the quality of the link that matters [where the link is from, what the link says, etc.] that is important and this is a lot harder to manufacture.

Sounds complicated right? That's because it is. There are no guaranteed results – in fact, Google advises never to trust any SEO company that offers guarantees.

There's more bad news.

There are at least 3000 plumbers in Melbourne alone. When someone searches for the term 'plumber Melbourne' there are more than 3000 companies trying to be in the top five results [two thirds of people only click on the first five results¹]. In addition to all those plumbers, there is a myriad of directory websites, all pushing plumbing websites down the rankings. And while you [or an SEO company] might be optimising your website, so is everybody else.

Don't despair though – there are small [free!] things you can do to improve your online presence – namely optimise it for Local SEO. You can't compete in the Melbourne-wide market [or the particular state you live in] – but you do stand a chance in your local suburb and the surrounding area. Ensure you've claimed your business on Google Maps and optimised the listing [see pull box].

And remember – online marketing is a small part of your overall marketing strategy. ■

¹ <https://moz.com/blog/google-organic-click-through-rates-in-2014>

HOW TO GET YOUR BUSINESS ON GOOGLE MAPS (AND THEREFORE ON G+).

This is surprisingly easy to do – Google knows most business owners aren't computer specialists and they give you plenty of helpful pointers along the way.

1. Search for your business address.
2. If your business is already there, click on 'Claim this business'. If your business isn't there, click 'Add missing place' and add in your business details.
3. You'll be asked to verify this listing – follow the instructions to have it verified by mail [a postcard will be sent out] or phone [a Google representative will call you].
4. Creating or claiming this listing will automatically create a G+ page. The information from here will show up on your map listing in search results. Fill out your G+ page with as much detail as you can. Essential items include:
 - a. Company name – sounds simple, but ensure this is the exact name you use on all your other advertising, online and off.
 - b. Address – even though this will be correct, you still need to edit it to ensure that you've clicked the box that says 'I deliver goods and services to my customers at their location'. This will help you rank in local searches for plumber.
 - c. Phone number
 - d. Web address
 - e. Opening hours

These are the bare essentials – add as much good information as you can.

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THE ART OF WRITING GREAT NEWSLETTERS

CECELIA HADDAD PROVIDES SOME VALUABLE TIPS ON HOW TO WRITE A NEWSLETTER THAT CUTS THROUGH THE INBOX CLUTTER AND EARNS NEW CUSTOMERS

Let's start with a question. How many newsletters have you unsubscribed to in the past 12 months and why? How many have you subscribed to and continue to diligently read?

Newsletters are one of the most difficult pieces of communication to write. You just need to miss the mark once and an un-subscription becomes a lost contact.

Newsletters, whether produced in print or online are everywhere. Despite complaints they proliferate needlessly, every organisation seems to have one. The fact they are so common, means careful consideration must be given to every aspect of content and production to ensure the end result is worth the effort and the cost.

As with any marketing activity we need to look at the objectives first. What are the benefits of producing a newsletter?

- It is an efficient and effective way of staying in touch with new, former and potential clients.
- It can be used to establish you/your company as an expert in your field.
- It is a very good way of communicating your company's service offering especially if you operate in more than one area, for example, new home building and major alterations and additions.
- It provides an opportunity for clients to get to know you and your team through personal profiling.

The bottom line is that newsletters are simply special purpose newspapers. They can be used to present arguments, give information, entertain and provoke action.

Like all good marketing activities – fail to plan, plan to fail. So make a plan that is workable for you and it will deliver the result you need.

WHO IS THE NEWSLETTER FOR?

In most cases your newsletter will be distributed to existing, potential and new clients. They may know you or your company, having some interaction in the past, but they won't be contractors so will not have the knowledge you do.

Working out who the newsletter is for is your foundation work. Now we start to build it.

CONTENT

What do you want your recipients to know and what do you want them to do when they get that information. For example: you might want to tell them about the range of services you offer, showcase your latest bathroom renovation project or introduce them to a new trend to incite them to use your services in the future. The content must be informative and interesting, *not a sales pitch*. Start by preparing a content calendar and listing the possible themes then stories that spin off those themes which can be included in your content.

HOW MUCH CONTENT IS ENOUGH?

Most newsletters are sent via email as an electronic direct mail which means it is likely to be read on a screen. This could be as large as a big desktop monitor or as small as an iPhone. Content that really works is usually featured in one of two ways. The first option is to make your newsletter a five minute read.

Promise your reader that in five minutes or less they will be able to read your newsletter and get value from the content. This is much more likely to be read than long, scrolling content on a device. The second option is to make your point in a paragraph or two that is in the body of the email but one that clicks through to a slightly longer piece that sits on your website should they want to read more detail. Even if they don't read the entire newsletter you have still communicated your key message and if they do click through, then you have driven them to your website.

MAKE IT A COMPELLING READ

If you don't grab their attention in the first 30 seconds of opening your email it is likely to get deleted or go unread. Use the WIIFIM principle – What's In It For Me. Talk to the reader in your opener and tease them into reading and wanting more. For example, "Want to know how to add \$100,000 to the sale price of your home?" Or "The family will



love your new sparkling water tap.” An alternative is to use an impactful photo or visual that first captures their attention with some copy underneath. People are more likely to notice and click on a photo they like than text.

Frequency Newsletters are much more effective if they are issued regularly but I don't mean every week. Once a month is enough but it does depend on how much content you have. Every two months or even quarterly is fine but no less frequently. Make sure your schedule doesn't run into other major holidays like Christmas but early in the new year is the perfect time when people think of home improvements.

FEEDBACK

Always invite feedback and commentary. Ask readers if there is any particular topic they want to hear about. If your newsletter sits on your website you could offer a "Comments" or Q&A section for readers.

GROW YOUR DATABASE

Surprisingly most people won't send your newsletter on to someone else unless they are prompted. Include something along the lines of *Refer a Friend* or *Distribute to*

colleagues or others who might be interested in receiving this information.

CONTACT DETAILS

Don't forget your website address and company contact information. You will also need to include an Unsubscribe facility as recipients must have the option of opting out if they no longer want to receive information from you/your company.

Writing great copy for a newsletter is a distinct skill and many organisations hire the services of a professional copywriter to both help them in their editorial decision-making, and to produce copy which is the right length for the space available, which strikes the right note, and which retains a consistency of style throughout the publication. If you decide to do the copy yourself then at the very least have someone proofread and correct it before it is distributed. It will be worth the extra time and spend. ■

Contact:

Cecelia Haddad: www.marketingelements.com.au



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REDUCING THE “RE” FACTOR TO BENEFIT CODE USERS

THE ABCB EXPLAINS THE DECISION TO MOVE TO A THREE-YEAR AMENDMENT CYCLE FOLLOWING NCC 2016.

If you have been in the building and construction industry for a while, you might remember the days when the Building Code of Australia [BCA] was amended every SIX months.

Between 1990 and 1996, the BCA was amended irregularly but generally twice per year. With the introduction of the performance-based BCA96, amendments were made in January and July each year. From BCA 2004, the pace of code amendments slowed somewhat with a move to annual amendments that took effect from 1 May each year.

The Plumbing Code of Australia [PCA], first published by the National Plumbing Regulators Forum in 2004, remained unamended (but not nationally adopted) until it joined the National Construction Code [NCC] series in 2011. Since then, the PCA like the BCA has been amended every year.

Code changes can be a double-edged sword. On the one hand, they can be seen as keeping the code relevant and contemporary and adopting a continuous improvement approach. On the other hand, code changes can place significant burdens on code users; burdens that manifest themselves in the time and money spent on retraining, redesigning, rewriting, reviewing, redoing and a host of other “re”s.

It would be wrong to expect that a document like the NCC should never change. Over time, code changes are necessary to respond to emerging issues, changing practices and new technologies. The challenge is getting the balance right so that these changes occur in a way that allows code users to keep up (and comply as intended) and avoids industry constantly being in “re” mode.

Feedback received by the ABCB from individual code users, industry bodies and other sources clearly said that annual code changes did not achieve that balance. For example, a NSW parliamentary inquiry into building practice stated, “A key problem for building practitioners is that the Building Code is too frequently changed and amended.” Another source stated,

“Certifiers have to take on the role of educators because of rapid changes in the building code”. Under an annual code amendment cycle, the public comment draft of the next edition is released just one month after the current edition is enacted.

Regular readers of the ABCB’s Australian Building Regulation Bulletin [ABRB] will be familiar with the ABCB’s Next Instalment of Building Regulatory Reform which includes making the NCC free of charge for online users, and a suite

of reforms to reduce red tape, improve housing affordability and lower construction costs. A key part of these reforms is the move from an annual NCC amendment cycle to a three-year amendment cycle.

A decision to move to a three-year amendment cycle following NCC 2016 was taken by the Building Ministers’ Forum at its meeting on 30 May 2014. In taking this decision, the BMF recognised that there still needed to be a mechanism for making code changes in exceptional circumstances, for example, to respond to urgent safety and health risks. These “out-of-session” code changes will

be subject to strict criteria and can only be made following support of the majority of members of the Board of the ABCB.

The 2016 edition of the NCC is being finalised for enactment from 1 May 2016. This will be the last edition of the NCC under the annual amendment cycle. This means that under a three-year amendment cycle, the next scheduled edition will be NCC 2019. ■

For further information on the NCC amendment cycle, please contact the ABCB office at <http://www.abcb.gov.au/en/about-the-australian-building-codes-board/contact-us.aspx>

Australian Building Codes Board
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BUILT-IN QUALITY AND SAFETY CHECKS

WITH A NUMBER OF IMPORTED BUILDING PRODUCTS QUITE LITERALLY COMING UNDER FIRE THIS YEAR FOR BEING UNSAFE AND NON-COMPLIANT WITH LOCAL SAFETY REGULATIONS, THERE IS A STRONG ARGUMENT FOR TURNING BACK TO LOCALLY MANUFACTURED ALTERNATIVES.



Australian manufacturers have to meet some of the highest quality and safety standards in the world. While this can be onerous and sometimes translate to slightly higher prices, locally manufactured products are made to last, ethically, so buyers can purchase with confidence knowing they will be fit for their purpose and safe for use. In potentially hazardous industries such as building and construction any opportunity to reduce risk should be capitalised upon, so it makes good sense to buy Australian-made goods, to help ensure the wellbeing of contractors and end-users, and avoid costly disasters. Access to backup services and repairs is often far easier when dealing with local manufacturers too.

LOOK FOR THE LOGO AND AUTHENTICATE ONLINE

To be sure a product has genuinely been made in Australia, buyers can look for Australia's registered country-of-origin certification trade mark. The green-and-gold Australian

Made kangaroo logo has become synonymous with Australia's high quality and safety standards. As a third-party accreditation tool it offers influence and credibility, and can help differentiate and justify charging a premium. It has been used to promote genuine Aussie products for almost 30 years, and can be found on more than 15,000 products, many of which fall under the categories of building and construction. All certified products can also be found on the online product directory at www.australianmade.com.au.

THE CAMPAIGN BEHIND THE LOGO

The not-for-profit Australian Made Campaign ensures compliance of the logo, and also promotes it in a multi-million dollar marketing and communications campaign each year. Part of its role involves developing partnerships with organisations around the world to help certified businesses market their products, and facilitate conversations between buyers and suppliers. The campaign has supported the National Excellence in Building and Construction Awards for more than a decade. The Australian Cablemakers Association is also a Campaign Associate.

CONNECT WITH OTHER BUSINESSES VIA THE AUSTRALIAN MADE B2B PORTAL

Australian Made recently launched an interactive resource hub for Australian businesses. The 'Australian Made Business-to-Business (B2B) Portal' can be used to search for certified Australian Made products with a B2B application and access exclusive business opportunities. The centrepiece of the portal is an online connection point for buyers and suppliers of Australian products. Powered by Industry Capability Network (ICN) Gateway, it enables suppliers to search for project opportunities and register their company's interest in just a few easy steps. It also offers a sophisticated supplier search functionality for procurement professionals and project managers. ■

The Australian Made B2B Portal can be found at www.australianmade.com.au/for-business.

Contact:

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PALEO OR PEASANT FOOD?

DOCTOR **BERNIE CRIMMINS** DELVES INTO THE CRAZY WORLD OF FOOD FADS AND DIETS, AND OFFERS PRACTICAL ADVICE ON HOW TO EAT HEALTHILY ON THE JOB AND AT HOME.

Food, glorious food, we are surrounded by it. We are certainly the lucky country with respect to food, largely due to our multicultural society, which gives us access to a wide, varied and healthy array of cuisines. And I stress the healthy component. Just the other week I partook in Italian food on Monday, Spanish food on Tuesday, Greek food on Wednesday, Vietnamese food on Thursday and Thai food on Friday. My taste buds needed a rest on the weekend!

Yet there are all sorts of food wars going on with protagonists extolling the virtues of restrictive diets and labelling certain foods and food groups as being bad for you. This is totally wrong. It is extremely confusing for the public who are getting mixed messages about very healthy foods. I think that it is important not to moralise about food. Rather than the food being good or bad, it is more the eating behaviour or use of that food that is the problem.

Food information comes from varied sources, a lot of which I find questionable. Unfortunately, some of this misinformation influences the public to head along a particular eating and nutritional pathway that may be detrimental to their health in the long term. And I stress the long term.

Often the science behind the diet is pretty flimsy, but there is potential for a good book or a supplement sale. The public is also very vulnerable and our diet, with all the associated processes to get the food from the source to the plate safely, becomes a scapegoat as to the cause of all sorts of diseases. Throw in the suspicions and conspiracy theories raised about ulterior motives of the big food

conglomerates and people end up making unnecessary and drastic dietary changes.

A lot centres on the difficult area of weight loss where there is a huge money-making industry set up and an even bigger and extremely vulnerable client/patient base. In Australia, obesity is literally a huge issue with the serious associated health issues of diabetes, heart disease, osteoarthritis and even some cancers adding a huge burden to Australia's healthcare costs. Diets fly left, right and

centre. Eat only this, don't eat that, eat only at this time, don't eat at that time and skip eating on these days.

Crazy!

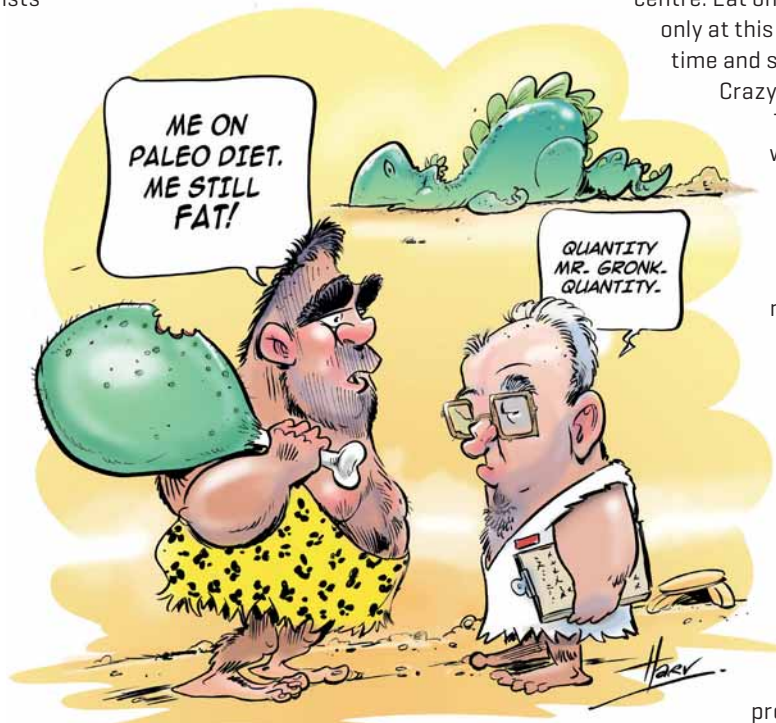
The reality is that, from a weight loss perspective, all diets work – for most – over only a fairly short period of time. That success doesn't necessarily mean it is healthy if kept going life long, particularly if there are restrictions of major and healthy food groups. When you peel away all the ritual associated with the weight control method, you will find that less energy comes in than goes out. Any

proper weight loss regime should be healthy, balanced and sustainable. It should also

encompass exercise into the equation.

The simple answer to the problem of obesity is to eat less and move more, but this has no ritual attached to it. It is not very sexy. It won't sell many books. Most people want some sort of a ritual to hang their hat on. Eat only this, eat it at this time, avoid that and do it this many times per week. A diet of do's and don'ts generally satisfies this necessity for a ritual.

A diet also implies a beginning and an end. It is the end bit that most people secretly and subconsciously find attractive. The perception is that I will fix up whatever



ILLUSTRATIONS: PAUL HARVEY WWW.HARV.COM.AU

nutritional problem I have in a fairly short period of time and then I can lapse back into what I was doing before. A small number of fanatical followers will continue, but the vast majority will slip off after a while or jump onto the next new food craze.

It is interesting that when extolling the virtues of a particular diet, celebrities are the most revered people to champion the cause rather than say Emeritus Professor Cafoops, head of nutrition at the World University. And when referring to the evidence backing the said diet, the standard statements begin with 'They say...' and 'Studies show...' It is important to ask who 'They' actually are. What are their qualifications? Where are they from? In what journals do they publish their findings and how many of them are there? With respect to the 'studies', how many back that way of thinking and how many are against it? Who, what and where were the studies done? How were the studies done, what was their quality and power? With respect to quoting studies, you can probably find a few somewhere to back virtually any way of thinking.

I will give you my general thoughts about proper nutrition as a late 50-something male who is also a doctor with a big

interest in preventative medicine and a considerable amount of extra training in nutrition. On a day-to-day basis I see people with all sorts of problems, and nutrition and exercise are high on my list of assessments. Am I perfect with my own diet? No way. I'm a typical bloke when it comes to food and eating. There are things I love to eat that probably aren't particularly 'healthy', but I'm not overly concerned as the majority of my eating is healthy and I always have the other all-important positive health promoter in exercise, churning away in the background.

WHY DO WE EAT?

We eat to obtain energy for all our bodily systems along with micronutrients like vitamins, minerals and anti-oxidants, and other compounds such as fibre. Food also gives us some fluid and increases our metabolism as it is broken down.

That is the scientific side of things, but food also has a huge social element to it. We eat to enjoy. It gives great joy to the creators and enjoyment to the consumers. It is often the cornerstone of the family unit and has been for a long time. ▶



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Certain meals such as breakfast and lunch to me have a stark, scientific 'fill me up with something reasonably healthy in a short time frame' message, but dinner has connotations of enjoyment and family communication. I couldn't imagine sitting down at dinner and worrying about what was 'bad' in it or even feeling guilty that I was eating it at all. Food would become a fiend rather than a friend.

The other big thing I want in my diet is balance. And that is the big thing that most fad diets dip out on. The current Australian Dietary Guidelines cover this. Guideline 2 says that we should enjoy a wide variety of nutritious foods from these food groups every day:

- Plenty of vegetables of different types and colours, and legumes/beans
 - Fruit
 - Grain [cereal] foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
 - Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
 - Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat
- PS: And drink plenty of water.



I have no qualms whatsoever eating something from all the food groups despite some recent diets telling people to avoid major food groups such as grain foods and dairy products. In the words of ELO – confusion. For the vast majority of people, grain foods and dairy products are fine.

THE SHEER VOLUME

Liking a wide range of foods as I do, I must control the main problem affecting blokes when we eat: the volume. We eat too much boys! Importantly, it is the volume of food relative to the amount of energy we burn each day, in a society with energy-saving devices everywhere and a work situation that is largely sedentary. It is important to note that Dietary Guidelines are not thought up on a whim. There is a huge amount of research and ratified scientific data that goes into preparing them.

I certainly believe blokes eat differently to females. We eat more, drink more and do both more quickly. We are also less likely to be able to prepare a healthy meal for ourselves as we tend to cook less than our female partners. I think blokes

perceive cooking as being time consuming, so fast food options are more attractive and hence we tend to eat more 'fast' or 'junk' food, getting lots and lots of calories in a very short period of time. Or we just skip that meal, particularly breakfast and just have a fag and a cup of coffee instead! We don't plan our day very well either with cooking and diet being low priorities.

I know that there are a lot of SNABs [Sensitive New Age Blokes] out there who do the cooking, but I'm not one of them. I could survive if I had to and I can read a recipe, but I have no spontaneity or flair. I hope to improve this in my third book, *Blokes' Food*, where I will cover in-depth my thinking on diet and also look at some basic healthy cooking techniques and recipes – it seems every author must do a cookbook, but believe me, mine will be different.

I hate the necessity to label oneself as a particular type of food follower, but if I had to, I'd say I'm a Mediterranean-style of eating fan. The roots of this probably stem from the wonderful peasant foods from countries like Italy, Greece, and Spain, and the subsequent delicious and healthy staple foods that emanated from the necessity to survive on very little. The ingenuity of people to make beautiful basic and healthy food from raw plant-based ingredients has been amazing.

The Mediterranean type diet should be modified a bit because of Australia's wonderful and close association with Asia and the Subcontinent, and the delightful and healthy foods that come out of those regions. Is there such a way of eating as MeditterAsian?

THE NEW FOOD PYRAMID

Nutrition Australia has just recently updated their Healthy Eating Food Pyramid, which I am happy about as it is basically a Mediterranean-type pyramid with the bottom two rungs switched around. This is at great odds with the current dietary flavour of the month, the Paleo Diet, which restricts wonderful grains including bread, cereals, legumes, and potatoes, as well as dairy products. I couldn't cope with that and I think that their time machine overshot the mark and should have dropped them off when peasant foods were being created.

Without pasta, noodles, rice and potatoes, many societies would have not survived. These wonderful, nutritious foods have survived for centuries with delicious and extremely ➤



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We run your call centre, ensuring that every customer gets to speak to someone straight away so you don't have to keep putting tools down to answer the phone and take details - or worse still, letting a customer's call go unanswered! Our philosophy works, and we have proven systems that make it work. As well as ongoing training and mentoring, a proactive franchisee can work towards a goal of laying down the tools and moving into a full-time managerial role in their business. Marketing and advertising is also taken care of for you, leaving you to do what you do best — Plumbing! You will have every opportunity to operate a successful business and reap the rewards in your journey towards building PlumbCall into a national household name. Get in touch to find out more!

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MEN'S HEALTH DR BERNIE GRIMMINS

healthy recipes being passed down from generation to generation. And the societies that eat those basic staple meals are not unhealthy, generally not overweight (unless they eat too much) and importantly, are very happy eating them. My wife is of Italian and Irish extraction. Her Nonna taught her how to make risotto perfectly. And she does. She also makes the most delectable mashed potato you would ever want to taste as well as pasta and sugo to die for. Those foods were basically peasant foods that have become staple foods. Over the years the recipes have been modified from region to region with their own little quirks. Fresh vegetables and herbs have been added in, along with various meats and seafood.

There are people who struggle with wheat and dairy products, but most of the intolerances are relative rather than absolute. Some with conditions like coeliac disease need to be properly assessed by a doctor/gastroenterologist and then advised by an accredited dietician. Don't assume that you have some intolerance and go on a restrictive diet until you have spoken to a professional such as a GP or dietician.

“ DON'T ASSUME THAT YOU HAVE SOME INTOLERANCE AND GO ON A RESTRICTIVE DIET UNTIL YOU HAVE SPOKEN TO A PROFESSIONAL SUCH AS A GP OR DIETICIAN. ”

There are also so many myths out in the general public about food. I was having a go at Bob, one of my patients, the other day about his weight. He quipped in, "I've already started, Bernie, and cut bread right out." I then had to explain to Bob that bread wasn't the problem, that in fact as a wholemeal variety it gave him good fibre for his bowels and B group vitamins and minerals such as selenium. It was also a good base to add lots of healthy ingredients. Bread was good for balance. The extra couple of beers per day and sitting on his bottom too much were more of the cause of Bob's body blowout.

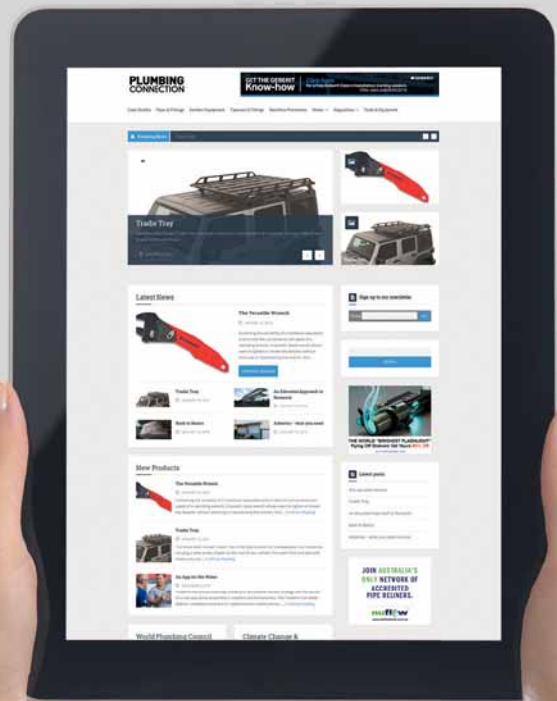
I am happy to continue the way I have always eaten and I feel sorry for those who will deny themselves some particularly healthy and enjoyable foods, but that is their choice. For me, paleo or peasant? Peasant please. It would make a good Monty Python sketch. I will throw in another P word which is extremely important – portion. ■

As always, stay happy and healthy. And Go Hawks!
Bernie

Chaos.



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WHAT'S HOT IN HOT WATER

PLUMBING CONNECTION TAKES A LOOK AT WHAT IS CURRENTLY MAKING NEWS IN THE EVER CHANGING HOT WATER SECTOR.



DUX IS BACK

In 2016, Dux Hot Water releases its new range of continuous flow water heaters. The new range is made in Japan by Noritz, the new owner of Dux.

The entire range has a minimum 6 star energy rating coupled with a 12 year heat exchanger warranty. Australian plumbers will be familiar with the traditional, non-condensing range, which will be available in natural gas and LPG across the 17L, 21L and 26L products with a full range of accessories.

In addition, the range includes the higher performing, next generation condensing models in both 21L and 26L.

The condensing range uses a secondary heat exchanger to capture around 150 degrees in heat energy normally wasted through exhaust. It's far more efficient and technological advances from Noritz means that the condensing product is now the same size as traditional continuous flow units and any condensate is neutralised.

www.dux.com.au

SOLAHART TEAMS UP WITH TESLA

Solahart has joined forces with US energy storage pioneer Tesla Energy to offer Australian households a one-stop shop for all their renewable energy needs. The Tesla Powerwall will be added to Solahart's already extensive renewable energy range, with installations expected to commence in February 2016.

The Solahart offer will allow Tesla Powerwall batteries to be retrofitted to existing photovoltaic systems, or sold as part of an integrated solution when paired with a new PV system.

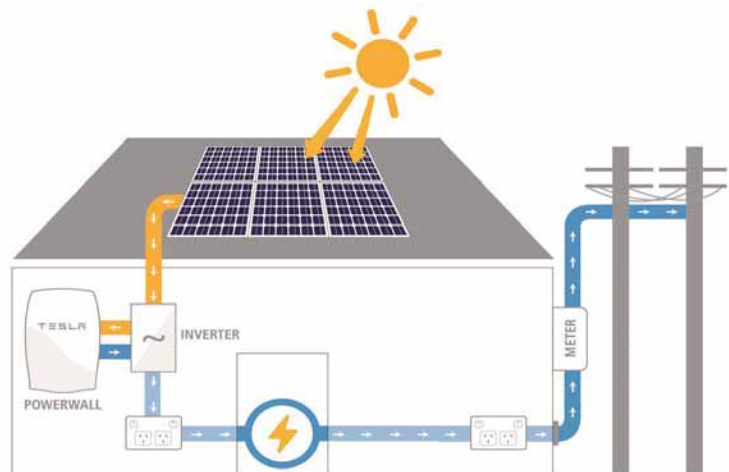
"This is a natural fit and makes perfect sense, for Solahart," says Stephen Cranch, Solahart's GM Sales and Marketing Renewables.

"We're not new to renewable energy. Indeed, Solahart has an unsurpassed reputation for solar excellence spanning more than 60 years, and we are committed to providing the best products and advice to local homeowners. Not only that, but we have an extensive installation capability throughout Australia, which was obviously a key consideration for Tesla in identifying preferred resellers."

Solahart has been operating in the solar sector since 1953. It has manufactured over one-million solar hot water systems, which have been installed in 80 countries on every continent. In 2010 it made the move into PV, with Solahart systems now installed on thousands of Australian roofs.

"We have witnessed myriad changes in the solar industry in Australia and anticipate significant changes in the country's energy market and how consumers perceive and take up renewable energy," says Cranch.

"Product quality has always been a major point of difference for Solahart, and we are very selective about whose products we sell. Our Research and Development (R&D) team thoroughly tests everything – and the Powerwall is no exception. We currently have the Tesla Powerwall in our test lab and have been conducting general battery storage testing for some time."



www.solahart.com.au



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COMPLIANT & FUNCTIONAL

Enware's Handwash Station Kits provide a simple yet compliant solution to the requirements of the Australasian Health Facility Guidelines and meet hospital hand wash guide lines. They also aid in infection control whilst still being user friendly with easy maintenance. Ideal for hospitals, health care and research facilities, all the kits use the Enware IFO Cera basin complete with a shroud with either an eSQX touch free electronic mixer, a Leva wall mounted surgeon set or an Enmatic 5000 series sensor tap.

www.enware.com.au

HAND FLATTERY

In collaboration with long-standing partners Phoenix Design, bathroom specialist Hansgrohe has developed mixers whose distinctive shapes combine precision with smoothness. The Logis mixers come in different heights and handle variants, ensuring that ceramics and mixer match both visually and functionally in day-to-day, customised usage. Perfect for modern homes, the range is both varied and extremely



www.hansgrohe.com.au

PLASTIC PIPE LOCATOR

The AML PRO from Subsurface Instruments is a scientific instrument that uses ultra-high radio frequencies to find differences in densities. This offers the best method for locating PVC and PE pipes, as well as nearly any other object that has an edge. Weighing just 1.1kg, the AML PRO features new microprocessor intelligence and radio wave technology in a durable ABS housing. It also comes with a rechargeable lithium battery and noise isolating headphones.



www.civilsafetyproducts.com.au

MINI CONVENIENCE

Offering a smart, space saving solution, the Utility Mini Laundry Tub and Cabinet is only 500mm in length and 300mm wide, making it the most compact laundry tub and cabinet currently available in the Australian market. The Utility Mini is ideal for small, multifunctional laundries including laundry and bathroom cupboards where space is at a premium. All Clark sinks and tubs are covered by a Clark Lifetime Warranty™, laundry cabinets with a 10 year warranty and accessories with a 1 year warranty.



www.clark.com.au



KEEP IT CLEAN

It's common knowledge that building sites can get pretty messy and the old work car cops it a fair bit, especially when working in a muddy environment. Bosch's extensive high pressure washer range offer all-in-one, compact units that come with a range of accessories such as a patio cleaning attachment, fan jet nozzle, and a high pressure detergent nozzle. Sturdy 18cm wheels make the unit easy to tow around while a telescopic handle makes it easier to clean among those hard to reach places.

www.bosch.com.au

... INCLUDING, THE KITCHEN SINK

Washing up, washing hands, preparing meals – the humble kitchen sink is an often neglected, but frequently used part of the kitchen. The new Burazzo sink from Highgrove, however, will catch the eye of home owners and their guests and help inspiration flow at meal times.



www.highgrovebathrooms.com

ATT

ACROSS THE TRADES

AUTUMN 2016

INSIDE:
TOOLS, TIPS & TRANSPORT



Top hats for tradies





THE MAD HATTERS OF CONSTRUCTION



As the wearable technology sector takes off, a handful of innovators are turning their attention to designing the hardhat of tomorrow. **Paul Skelton** reports.

eHat can communicate through the wearer's smart phone to an expert who is sitting at their PC at a remote location.

By now, you've probably heard about the new 'wearables' craze. In fact, many of you probably wear a FitBit or know someone with an Apple Watch – some of you may have even seen Google's stupid and pointless Google Glass. But, what you may not know is that wearable technology could play a vital role in the future of health and safety on a construction site.

In the US alone, the wearable market is anticipated to be worth some \$30 billion by 2018. This has stoked competition in all sectors of the market, but perhaps the most interesting is industrial.

Industrial wearables (IWs) can be broken into several categories – safety devices (e.g. wristbands with inbuilt GPS trackers), health trackers (e.g. heart rate and blood pressure monitors), communications devices and security solutions.

For construction site workers, especially those in remote areas, the current interest in IW technology appears to be surrounding 'smart hats'.

According to eHatsystems, which is getting ready to release its very own 'smart hardhat', the global smart hat market is estimated to be worth \$3 billion by 2020.

The eHat System comprises a smart hat with several unique features. It's a safety hat with a light, a high definition camera, microphone and headset and some intelligent software that allows it to communicate wirelessly to an approved smart phone, back to your subject matter specialist (who could be at home or in the office thousands of kilometres away), who can see almost simultaneously what the wearer sees through their PC or tablet.

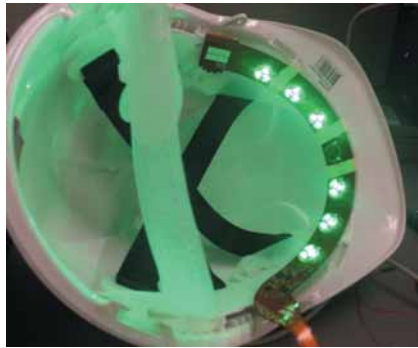
"We believe that with the help of

IWs, skilled workers will be kept better informed and safer," eHatsystems founder Terry Lancaster explains.

"eHat may be the first working example of a communication IW. It is aimed at workers who are located at worksites with limited access to supervisors and experts.

"This means eHat can communicate through the wearer's smart phone to an expert who is sitting at their PC at a remote location. From the eHat camera, the expert can see live streaming of video and hear the eHat's audio. The expert is also able to send audio back to the eHat's headphones."

Ultimately this means that when a person in the field requires assistance or has a task to be assessed, they put on the eHat and make a call to the appropriate expert who is registered with the eHat system. This way the expert can see the problem immediately as well as communicate with the wearer of the eHat so that the issue can be resolved quickly or in the case of training, a trainer can assess if the task



Laing O'Rourke's smart hardhat includes an array of sensors in the sweatband as well as a GPS tracker.

answers to those who can provide them."

When a company signs up for the eHat service they will nominate the expert contacts that are most relevant to their workers; however, down the track the company will launch its 'assist hub', which enables the worker to contact the eHat Support Centre. Through this service an expert will be found that is the best match to handle the equipment fault or task required by the person wearing the eHat.

The global smart hat market is estimated to be worth \$3 billion by 2020.

is being performed correctly.

The eHat itself is specifically made to meet hardhat standards. It can also be rated to withstand water exposure and be able to stand high temperatures. The great beauty of eHat is the wearer has their hands free to work on the task and therefore have full mobility. This is a significant step forward in the efficiency of communications when compared with standard smart phone applications.

"It's important to note that eHat is more than just a hardhat with some electronic gear on it. It also opens up the opportunity for a new service," Terry says.

"eHat will also enable the efficient crossing of the knowledge line. It will enable, via its support network of experts, the most efficient transfer of knowledge from the people who need

"Through the assist hub, even small companies with limited staff can use the resources of eHat to assist them with situations that they are unfamiliar with. This will have a profound effect on how tasks are completed in the future. Workers will need to feel they are not left to their own devices with eHat. Real live help will always be one call away."

IF THE HAT FITS

eHat isn't the only company currently exploring smart hat technology and, where eHat is yet to launch, international engineering enterprise Laing O'Rourke has been conducting field trials of its own hardhat solution.

Developed by the company's Engineering Excellence Group, the smart hardhat includes an array of sensors in the sweatband, a GPS tracker, an

accelerometer and a data collection unit. It has been designed to monitor the temperature and heart rate of the wearer working in harsh environments, plus the external temperature and humidity.

"While the most reliable way to measure a worker's vital signs would be to use a chest strap or undergarment that is in proximity to your heart, guys on site simply won't wear them. A weekend warrior out riding or running may be happy to do that for a couple of hours of exercise, but making it a requirement for a full day's construction work isn't feasible," Laing O'Rourke device engineering leader Rod Shepherd says.

"For that reason, our system has been designed to retrofit any hardhat, ensuring the technology can be used by anyone on site wearing their current protective gear."

In addition to the sensors there is also a vibrating and sound alert system to provide warning to the wearer, based on all the data that is collected and transmitted via a lower-power Zigbee radio to a central gateway for storage. The central gateway is equipped with a 3G M2M industrial router allowing for remote access to all data collected and can also be used to generate alerts by SMS and email.

"We're still in the pilot stage, but we're gaining a lot of insight into how to turn this into a very robust solution that can be used in more applications," Rod says.

"Initially the system will be used on projects that include high-risk activities or extreme conditions with a view to rolling out more broadly across the business in the future.

"Laing O'Rourke is committed to the continual pursuit of safety innovation to ensure our people go home safely everyday. This smart hardhat is just one way we're working to achieve that."

With projects like these in the works, there is hardly any doubt that IWs will soon be a staple of any construction worker's toolkit. If not, I'll gladly eat my hat. ▲

eHat Systems
www.ehatsystems.com
Laing O'Rourke
www.laingourke.com



IR SCANNER

Bosch Power Tools

www.bosch-pt.com.au

Capturing, documenting and sending detailed temperature measurements have never been easier thanks to the **Bosch GIS 1000 C** professional infrared scanner. Never again risk losing your measurement data through manual transfers, as the GIS 1000 C allows users to store all data and photos taken internally and conveniently document results.

Quickly identify problem areas with the highest precision thanks to the Infrared Scanner's high accuracy of $\pm 1.0^{\circ}\text{C}$ with a wide temperature range of -40°C to $+1,000^{\circ}\text{C}$. In addition, accurate ambient temperature and relative humidity levels of $\pm 2\%$ can be recorded due to the precise exposed sensor.



TRUCK ACCESSORIES



ARB

www.arb.com.au

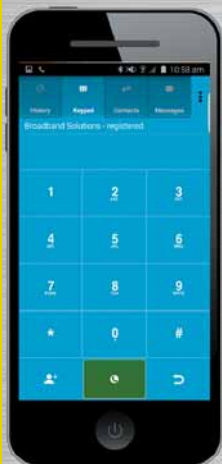
Since the release of the MY16 MQ Triton, ARB has been building an extensive accessory range to complement the vehicle. Designed with practicality in mind, ARB's range of gear includes front, rear, side and under body protection as well as the classic canopy, air lockers and more.

Using 60.3mm outer frame and cross bar tubing, as well as an extensive use of press forming in the construction, the **Summit bull bar** for the Triton uses a split pan design for maximum strength and airflow as well as under wing protection panels to protect the vulnerable lower parts of the Triton. The bar is able to accommodate a range of low mount electric winches, up to 4,500kg, and includes twin hi-lift jack points to assist with difficult recovery situations. Provision for ARB Intensity LED and IPF driving lights are integrated into the top pan of the bar, while a redesigned fog light surround and ARB LED indicator/clearance light assembly is included as standard.

PORTABLE PABX

Broadband Solutions

www.broadbandsolutions.com.au



Broadband Solutions has announced the launch of **Smartphone BBS**, an easy-to-use mobile interface for its cloud-based telecommunications platform, SmartPABX.

The app simplifies the process of eliminating traditional phone handsets from the office environment and ultimately reduces overheads for established businesses and start-ups. Staff simply download the application on their own mobile device and enter their username and password to access their personal extension.

The app is powered by the flexible SmartPABX cloud platform which gives businesses access to all the capabilities of a full-featured enterprise quality phone system for a fraction of the price including, call-waiting, music-on-hold, call queues and CRM integration. Thousands of dollars can be saved on hardware costs with no onsite PABX or handsets required.

STORAGE SOLUTION

Festool

www.festool.com.au

Through the SYS-Combi 2 and SYS-Combi 3 (pictured) Systainers, Festool has combined its traditional Systainer with a drawer for consumables and small parts. These products are the perfect combination of Systainer and Sortainer, providing even better organisation – even on the move. The drawer can be divided flexibly for accessories, consumables, small parts and other objects. This ensures excellent organisation, saves time and cuts down on unnecessary movements, trips and effort.





SUMMER WORKWEAR

KingGee

www.kinggee.com.au

KingGee Workwear is set to keep you cooler with the launch of its new **WorkCool 2** range.

Complete with the latest HyperFreeze and Outlast technologies, the KingGee WorkCool 2 range is designed to support personal safety and wellbeing by easing heat-related impacts during scorching days on the tools.

Injected with Outlast technology, the WorkCool Boot keeps hard working tradies cool on their feet throughout the day, without forgoing cutting edge design.

The lightweight construction comprises a wide profile composite toe cap, cosmo lining treated with Agion Anti-Microbial fibres and a ripstop nylon mesh upper – to provide strong, and breathable support.

CORDLESS TOOLS

Panasonic Australia

www.panasonic.com.au

Panasonic has announced three new cordless power tools using the company's latest brushless motor to deliver optimum performance and durability – the **EY74A2 13mm drill** and driver, the **EY79A2 hammer drill** and driver and the **EY75A7 impact driver**.

The enhanced internal engineering and technology is complemented with a fresh new body design. The cordless tools have a 'carbon fibre look' textured finish, and a comfort grip for improved ergonomics. All models are part of Panasonic's 'Tough Tool IP' range of IP56 rated dust and water resistant power tools, designed to perform at their best whatever the conditions.



CASUAL WORKWEAR

Hard Yakka

www.hardyakka.com.au

Inspired by early 20th century workwear and its Brunswick roots, the new **3056** summer range from Hard Yakka combines the toughness of yesteryear with the form and functionality required from today's hard-working tradies, through a range of jeans, shorts, shirts, Ts and footwear.



EXCAVATOR-DOZER

Kobelco

www.kobelco.com

Kobelco has laid new ground in the Australian market with the launch of a 16-tonne digger/dozer hybrid; the **ED160 Blade Runner**.

The ED160 Blade Runner combines the digging power of the popular Kobelco SK135SR-3 excavator and a six-way power and tilt dozer blade. The blade is similar in size and volume to the blade on a 90 HP dozer.

The ED160 Blade Runner can be used anywhere an excavator or bulldozer would be deployed, for example cutting forest roads and associated drainage work, or stripping vegetation prior to digging trenches and laying pipes. The ED160 Blade Runner offers powerful digging together with fine grading capabilities to provide a one-machine solution on job sites.





SPREADING THE GLOVE



With WHS playing such an important role on jobsites around the country, it is important to get your head around understanding chemical resistant properties.

Protecting workers' hands from chemical hazards can be a complex challenge due to the variety of chemicals and gloves with different protective properties.

ProChoice Safety Gear product development manager Brad Rodgers says that hand protection from chemicals requires a detailed risk assessment of the chemical concentration and exposure time along with knowing the age of the gloves, their history, testing them before use and ensuring they are tested to Australian/European Standards (see below), as well as being a good fit.

"Chemical concentration will have a huge influence on the breakthrough time [how long it takes for the chemical to breach the glove] while exposure time must also be carefully managed," Brad says, adding that other factors influencing glove choice include the temperature of the chemical or material being worked on, along with the frequency of the glove's use.

He suggests that specific advice should not be relied upon unless it comes from the manufacturer of the chemical in question.

"Knowing exactly what is in the chemical and the concentration levels plays a big part in the protection required," he said.

"Material safety data sheets are available from the outlet that sold the chemical or you can usually download them from the manufacturer's website."

MATERIAL AND FIT

Brad states that matching the material of gloves – whether nitrile, PVC, latex or neoprene (see overleaf) – with the above factors is an essential part of the PPE identification process, with thicker gloves not necessarily offering better protection.

"Different glove materials react in different ways to chemicals, so thickness won't play a big part; however, if it's a combination of risks – for example chemical and abrasion, then glove thickness could play an important role."

That said, he cautions, if materials handling is also involved a thicker glove can reduce the feeling and grip, potentially increasing risk.

Brad emphasises the need for a detailed risk assessment and states that fit and comfort of a safety glove is critical.

"It not only increases the likelihood of the glove being worn, but also provides better dexterity and feel. In the case of chemicals, it can reduce the likelihood of the glove slipping or the hand pulling out of the glove and exposing the user to hazards," he says.

**Includes 92kW TSI with DSG
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New Caddy. A lot goes into a Volkswagen van.

People who start their own small businesses put a lot into their van. Not just their supplies, but also their hard work, time and the career they left behind to follow their passion. At Volkswagen, we've loaded our new Caddy with innovative features like a 92kW turbo charged petrol engine, DSG transmission, BlueMotion Technology, touch screen audio, with City Emergency Braking* and Adaptive Cruise Control* as optional extras. We put in so much, because you put in so much.

*Safety technologies are not a substitute for the driver's responsibility of the vehicle.



**Commercial
Vehicles**

Brad adds that matching the length of the gloves to the application is also essential.

"Some chemical resistant gloves can be wrist length but most are above the wrist and some extend right up to the shoulder," he says, adding that submerging the hand into a chemical requires a longer glove to afford the appropriate protection.

GLOVE STORAGE AND TESTING

Depending on how they are stored, the chemical resistance of gloves may degrade over time, according to Brad who adds that latex, being a natural material, is most susceptible to breakdown.

He says gloves should always be stored in a cool dry location and out of direct sunlight to maximise the lifespan and suggested that before use, gloves – whether new or used – should be tested before working with or on

COMMON HAZARDOUS SUBSTANCES IN THE WORKPLACE INCLUDE:

- Acids
- Caustic substances
- Disinfectants
- Glues
- Heavy metals, including mercury, lead, cadmium and aluminium
- Paint
- Pesticides
- Petroleum products
- Solvents



auto assembly, petrochemicals, food processing.

Suitable For: Oils, greases, petroleum products and some acids and caustics.

Applications: Janitorial, food processing, general maintenance.

Suitable For: Ketones and mild acids.

• PVC

Polyvinyl Chloride (PVC) is an ideal alternative for those with latex allergies, PVC chemical-resistant gloves offer good abrasion resistance, but may be susceptible to punctures, cuts, and snags.

PVC is effective against water and most aqueous solutions, detergents, and diluted bases and acids, but has limited chemical resistance to organic solvents. PVC is one of the more common coatings for coated work gloves.

Applications: General maintenance, fisheries, construction, janitorial and gardening.

Suitable For: Most acids, fats and petroleum hydrocarbons.

NEOPRENE

Neoprene is exceptionally flexible and has good abrasion and cut resistance, while resisting the effects of aging, sunlight, ozone, oxidation and weather.

Applications: Automotive, degreasing, mechanical and janitorial

Suitable For: Some acids and caustics. ▲

ProChoice Safety Gear
www.prochoice.com.au

Hand protection from chemicals requires a detailed risk assessment.

the hazard in question to determine if there has been any degradation and to understand the gloves limits and breakthrough time.

"Ensure the gloves are watertight first and foremost. Don't expect every pair will be," he says.

"While manufacturing process are very good, once the glove has been shipped and handled by multiple people you can't be sure that it wasn't damaged. Even if there is no visible damage, it may contain a pin hole."

CHEMICAL RESISTANT GLOVE MATERIALS:

• NITRILE

Nitrile rubber offers excellent physical-hazard resistance to punctures, cuts, snags and abrasion. Nitrile rubber has considerable resistance to oils, fuels and certain organic solvents.

Applications: Chemical handling,

• LATEX

Natural rubber (latex) has a very high elasticity compared to other glove materials, good cut, puncture and tear resistance, and outstanding grip and temperature resistance.

It withstands water, alcohols and some ketones, but has poor chemical resistance against most hydrocarbon and organic solvents. It can cause allergic reactions in some people.

STANDARDS FOR CHEMICAL GLOVES:

The standard that relates to chemical gloves is EN374-3- 2003- *Chemical Risk Standard*. The Australian equivalent (which is identical) is AS/NZS2161.10.3:2005 Part 10.3: *Protective gloves against chemicals and micro-organisms— Determination of resistance to permeation by chemicals*

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Please note: This is a Type B Gas Appliance. Installation of this appliance requires a submission to Energy Safe Victorian by an appropriately licenced Type B Gas Fitter. The installation must be accepted by Energy Safe Victoria prior to operation. For installations outside Victoria please refer to the relevant state Gas Technical Regulator. Transfer Switch sold separately. Additional fittings may be required upon installation. Images for illustrative purposes only.



For more information phone **1800 333 428** or visit www.allpower.com.au



A BOLT FROM THE BLUE

Dewalt has introduced a new battery that features the latest in communications technologies.

Smart phone technology is being used increasingly by professional tradies to drive productivity and a more efficient way of working. To address this opportunity, Dewalt has expanded the XR lithium-ion system with Tool CONNECT, a power tool battery with Bluetooth connectivity that provides the modern construction professional with an easier and faster way to manage their power tool arsenal.

Any power tool fitted with a Dewalt XR 18V Tool CONNECT battery pack (either 2.0 or 5.0Ah), may be paired to a mobile device up to 30m away via the Tool CONNECT app. The customisable interface is designed to provide the user with one-touch access to a wealth of information, such as proximity of location, state of charge and temperature, as well as access to practical reference material.

Once paired via the Tool CONNECT app, batteries (and the associated power tool) can be easily located and identified. Rapid inventory checks can therefore be carried out at the start and end of a job to ensure that all batteries are fully

notify the owner following expiry of the agreed period of time. This can be a useful means of tracking for tools used by a team on large commercial construction sites, and also an effective way of managing vibration exposure time.

Any power tool fitted with a Dewalt XR 18V Tool CONNECT battery pack may be paired to a mobile device up to 30m away.

charged, and are within the immediate vicinity. Forgotten or misplaced items can also be quickly identified without time consuming searches.

The 'Lend' function of the Tool CONNECT app allows owners to keep track of tools loaned to an individual or a team. The app will automatically deactivate the power tool battery and

In the event of theft, or if the tool leaves a defined working perimeter, construction professionals can automatically disable the Tool CONNECT battery to prevent further use.

Tool CONNECT app users are able to tailor alerts to monitor the status and health of batteries. These include notification of a low state of charge and a remaining run time indicator. The user can also choose to disable a battery when out of range, and be warned of a high operating temperature to prevent damage.

"Time is precious at the end of a working day and high quality power tools can be expensive to replace," a spokesperson for Dewalt says.

"The XR Tool CONNECT system allows construction professionals to quickly check if they have all of their tools accounted for and also verify which, if any, of their batteries need to be charged overnight, ready for the next challenge."

The Dewalt Tool CONNECT app is available to download free of charge from the App Store for smart phones (iPhone 4, 5, 6 models and above) and tablets (iPad Mini and Air models, and above) featuring an iOS operating system, and from the Android App Store (on approved android devices). ▲



Tool CONNECT app users are able to tailor alerts to monitor the status and health of batteries, including notification of a low state of charge.

Dewalt
www.dewalt.com.au

According to figures from Labourforce, franchises are on the rise, with many tradies looking for the support of a larger brand while still working autonomously.



TRADESMAN AND HANDYMAN FRANCHISES GREW 3.2% ANNUALLY FROM 2009-2014.

Handyman franchises had a total estimated revenue of \$882 million in 2014.




IN 2014-2015, TRADIE JOB ADVERTISEMENT RATES WERE UP 20.7%.

Demand for temporary and contract staff is up 6.9%

Demand for permanent staff is up 3.4%



25.6% OF ALL JOB ADVERTISEMENTS IN OCTOBER CAME FROM THE MINING, UTILITIES AND CONSTRUCTION SECTOR.



VICTORIA HAS SHOWN THE BIGGEST GROWTH IN EMPLOYMENT, WITH 6.2% INCREASE.

Conversely, NSW was the weakest performer.

**Sources Labourforce Impex Transport, Logistics & Supply Chain Job Index, and Tradesman and Handyman Franchises in Australia: Market Research Report.*



INCENTIVISE AND THRIVE

Through the introduction of a simple incentive scheme, your business can see a growth in productivity of up to 200%, writes **Tony Gattari**.

Once, a client of ours was so upset in the 200% productivity gain that he turned red in the face and shouted obscenities around the office

He wasn't upset with us or the gain, he was upset because he felt that his employees had been taking unfair advantage of him for many years and this was the proof.

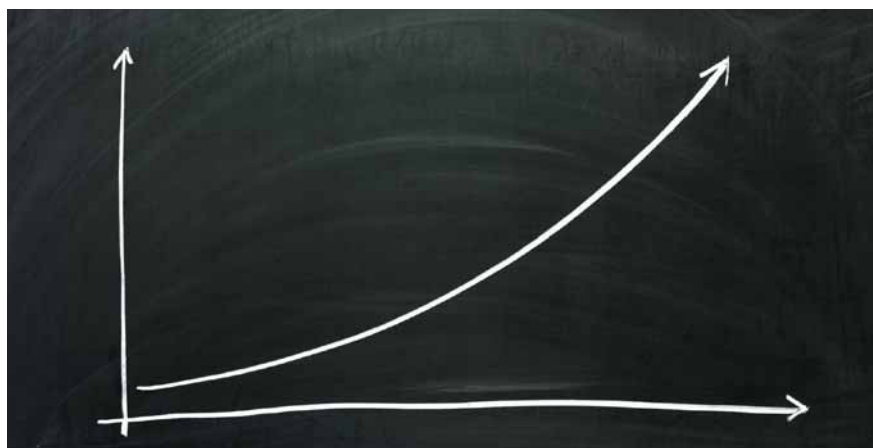
In reality, it wasn't the employees that were the problem; it was the business model that they had to work to that was the problem. Our client had simply done what every other business in their industry had done – pay award wage or just above, similar working conditions and similar reporting standards.

Well, if you treat employees like every other business they have been employed in then they will treat you the same way as they have treated their last boss... or worse!

The challenge is that most business owners do not find a more productive way of rewarding their employees, other than paying industry standard. They also treat their employees in the same manner as all the other employers. Your ability to act the same way as all the others gives you dramatically the same result as all the other businesses, and let's face it, that's not being competitive.

THE 200% INCREASE

Originally, the employees of this company were paid a standard wage for the week and the result was standard – employees took sick leave as it became available, wouldn't work back when needed, loyalty was non-existent and the work being done was just satisfactory. The business was a manufacturing business, but the lessons can be used in any business if you put some thought into it (a little more on that subject later).



The stages of change were:

- The owner calculated how many items a person produced each week over a period of one month.
- Every person in the factory was put onto a base wage (they already had this) plus they were paid a piece rate over a certain level of production. Each person was told that this was a test and some adjustments to the rate were possible. Bonus points were taken away for items below quality.
- The items produced and wages paid were calculated each week and the owner discovered that some people (different items being produced) in the factory received substantially more so the rate was adjusted to be more even across the board.
- Monitoring went on for another two months and small adjustments were made to the rates for the different sub items being made.
- The business adopted the new system - crazy not to, given the results.

THE RESULTS

The results truly spoke for themselves:

- 200% increase in productivity.
- Comparative decrease in wages against items being produced.
- Decrease in absenteeism across the board.
- Willingness to work after hours and on Saturdays.
- Higher quality of goods produced.

- Increase in loyalty.
- The highest paid production workers in the industry.
- The most profitable business in the industry.
- A gain of clients due to improved delivery times and quality of goods.

ABILITY TO INCREASE INCOME

Employees need to be able to increase their income if they put in more effort. If you do not allow this to happen in your business then you have a communist regime where every person gets paid the same no matter how hard they work – so let's all work the same – as little as possible to get paid.

If you are fortunate you have employed people that are self inspired and feel rewarded by the effort they put in. Reward for effort is a powerful tool not to be ignored.

LIKELY STEPS

The process below is not an exhaustive list of steps to follow just a simple process to give you points of reference:

1. Define each departments desired productive output. For example, marketing has number of qualified leads; sales is fairly easy with number, value and profitability of sale; production is what the client/customer receives and/or the subcomponents that need to come together to make the end product; finance and

administration could be against percentage of invoices sent out within a set period, bonus for collections under 14 days, etc.

2. Pick the department that is going to give you the highest result for your effort; for example, if you manufacture pick production, if you are a re-seller then sales is your area and if cash flow is a challenge then it could be a combination of the sales and finance departments for collecting the money on time.
3. Develop a bonus system on paper first ensuring you have factored in your costs. Most bonus systems fall down because the employees over perform and the business can't afford to pay the bonus.
4. Model the bonus system on a spread sheet using the wages, bonus and costs as the key figures to check. If you are working on units and the

current situation is 100 units produced each week then you need to test the bonus on what happens if they produce 300 units or 500 units. How does this affect your costs – do you have to employ more people to keep up with the work? Do you have to move premises, etc?

5. Build in quality if you are working on an increase of units.
6. Once you are happy with the bonus structure and have tested it on paper and on your computer then you will need to meet with your employees, discuss the bonus system, discuss how it will work and that it will be tested and some adjustments may be necessary.
7. Test it, cost it so you know you are making a profit.

DANGER POINT

Do not put in a bonus system and then take it out as employees will

become unmotivated and your business will suffer. A bonus system needs to be well structured prior to it being implemented.

Make sure you cost the bonus system in terms of extra wages compared to profit and productivity and you have the cash flow to pay it. If you are paid on 30-45 day accounts by your clients/ customers and you pay wages every week then a good bonus system could send you profit rich and cash poor. Pay a bonus only after you receive the cash, e.g. if you are paid by your clients every 45 days then the bonus would be paid quarterly. ▲

Tony Gattari is founder and chief energy officer of Achievers Group. He also acts as general manager of sales and marketing for Laser Plumbing and Electrical membership group.



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LADDER SAFETY

SAFETY DEVICE

Ladderlimb

www.ladderlimb.net

Ladderlimb was recently launched on the market to enable all ladder users to perform more safely and efficiently when carrying out all ladder tasks.

Ladderlimb makes working up ladders safer by securely holding tool bags, buckets of water or paint cans securely in place leaving your hands free to work. It fits into the hollow rung of most modern aluminium ladders and the handle of your bucket, tool bag or paint tin is then clipped onto the sprung clasp at the end of the hand grip.

The tapered, rubberised 'limb' of the LadderLimb fits snugly into the ladder, holding whatever is attached to it securely in place. And, when you wish to work at another height, the LadderLimb can be easily and effortlessly withdrawn and placed into another rung.

Ladderlimb is available in Bunnings.



LADDER LEVELLER

Branach

www.branach.com.au

The patented **LevelLok LL-STB-1** leveller/stabiliser has only two controls and operating it is so easy, it can be done with the touch of a toe.

To set into position, hold the ladder with both hands and simply push the foot pedal down. The leg will extend in increments of 5mm up to 245mm. You'll hear the stainless steel ratchet's reassuring 'click' with each increment. When the leg has been extended to the point where it has firm footing, you're done. Additionally, the automatic backup safety lock is instantly activated, thereby preventing accidental slipping or tripping of the locking mechanism. This is another patented feature found only on Levelok Ladder Levelling Systems.

Tough as nails, the LevelLok LL-STB-1 leveller/stabiliser enables most fibreglass, aluminium or wood ladders to adapt to nearly any indoor or outdoor situation – from stairwells to uneven terrain.



SHOULDER PADS

Branach

www.branach.com.au

If you're tired of the shoulder pain you experience when carrying an industrial-strength, fibreglass ladder, the solution could be the Permanent-Mount shoulder pad, which makes hauling a ladder more like carrying a kitten on your shoulder (assuming you can find a 45kg kitten).

Made entirely of polyethylene foam, the **PASR-3** is not only extremely strong and durable, it also provides excellent vibration and shock absorbency. And being able to tote your ladder without the accompanying pain means you can more readily carry the ladder in the proper way.

The PASR-3 even helps prevent shoulder and back injuries. It accommodates any shoulder size and shape. Its bevelled edges minimise interference with clothing and objects, and help reduce wear and tear to a minimum. It's also waterproof.

LOCKING JAW

Lock Jaw Ladder Grip

www.lockjawladdergrip.com.au

Lock Jaw Ladder Grip is a new Australian product that assists in securing ladders to gutters. It is designed to increase the safety of persons who use ladders and assist in meeting increasingly strict legal requirements associated with ladder use.



Lock Jaw Ladder Grip contains an adjustable locking jaw allowing it to be secured to a range of different gutter types. In addition there are adjustment mechanisms that allow the device to be used on a wide variety of single and extension ladders.

Once a ladder has been climbed the Lock Jaw Ladder Grip can be clamped onto or removed from guttering in approximately five seconds.





**RENAULT
PRO+**

Renault TRAFIC

The van you need. Guaranteed.



If you're in the plumbing, building or electrical trade, the Renault Trafic is the van you need, guaranteed. It combines great value for money with plenty of grunt and up to 6.0m³ load space, 1.2T payload and load-through length of 4.1m. It's got the safety features you want including bulkhead, Stability Control and Reverse Sensors and Camera*. It also has the generous 12 month/30,000km service intervals you need to keep you on the road. Get the van you want and need, visit your Renault dealer today.

*Standard on Trafic Twin Turbo models only. †Three (3) year/200,000 km warranty offer and 3 years/200,000 km Roadside Assistance both apply to all new or demonstrator TRAFIC models. Warranty & Roadside Assistance valid for 3 years or 200,000km (whichever comes first) from new. Demonstrator vehicles receive balance of new vehicle warranty and Roadside Assistance. Roadside Assistance terms and conditions apply. Call our Customer Service Team on 1800 009 008 or view the Terms and Conditions statement at www.renault.com.au/drivingpeaceofmind for details. ^First 3 scheduled maintenance services capped at \$349 per service on new and demonstrator TRAFIC models, based on standard scheduled servicing from new and on normal operating conditions. Scheduled maintenance services required every twelve (12) months or up to 30,000km (whichever occurs first). However, TRAFIC is subject to adaptive servicing requirements, as determined by the Oil Condition Sensor, and may require servicing prior to the standard twelve (12) months or 30,000km service interval. If vehicle is not presented within three (3) months of when the scheduled service is required, right to that capped-price service under the program is forfeited.

3
YEARS
200,000 KM¹
WARRANTY

3
YEARS
ROADSIDE[†]
ASSIST

3
SERVICES
CAPPED[^]
PRICE

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You don't need 1001 tools to cut penetrations in heavy-gauge profiled metal roof sheet, duct, furring channel etc. when you can have the tool with 1001 deconstruction uses. You need a tool that won't shy away from the folds, seams and awkward situations that other tools pass up!



**This
will**

What you need is a Metal Pecker; the revolutionary new tool that cuts penetrations in-situ. It eats-up multi-folds, chases profiles and makes cutting so much safer thanks to no sharp blades and extended handles that provide cutting leverage to keep your hands clear of jagged metal edges.

See the Metal Pecker in action at www.metalpecker.com





ISUZU UTE D-MAX 4X2 VARIANTS, HOLDEN COLORADO LS-X

Isuzu Ute Australia has added two new 4x2 models to its D-Max that are designed to help attract more trade customers to the one-tonne ute range, which has now expanded to 25 variants.

Priced from \$34,300 plus on-road costs, the Space Cab Ute is now available in SX trim with a 4x2 driveline, while a two-wheel-drive SX Crew Cab Chassis is also now available, priced from \$36,100 plus on-roads.

Previously, the Space Cab and Crew Cab Chassis body styles were offered only with a 4x4 drivetrain.

Both are available only with a five-speed automatic transmission and combine with the familiar 3.0-litre four-cylinder '4JJ1-TC Hi-Power' turbo-diesel engine in service across the range, producing 130kW of power at 3,600rpm and 380Nm of torque from 1,800-2,800rpm.

Holden's related Colorado has also come in for some attention with a limited edition LS-X model based on the LS 4x4 Crew Cab Pick Up reaching showrooms late in 2015.

Priced from \$46,490 plus on-road costs for the manual (or \$48,690 for the auto) – \$1,000 upstream from the donor LS 4x4 – the X-rated edition adds a host of accessories including 16" alloy wheels, front fog lamps, an alloy sports bar, Colorado-branded smoked bonnet protector, carpet flooring and LS-X decals.



Holden says customers save more than \$1,000 by opting for the special edition rather than purchasing the extras individually.

The LS uses a 2.8-litre 'Duramax 2' diesel engine that develops 147kW at 3,600rpm and either 440Nm (six-speed manual) or 500Nm (six-speed auto), both at 2,000rpm ▲

Isuzu Ute Australia
www.isuzuute.com.au
Holden Australia
www.holden.com.au





HOLDEN VFII UTE

Giving us every reason to celebrate and also start the grieving process, Holden has turned out the quickest and most powerful Commodore-based ute ever with the VFII series upgrade that marks its final Australian-built model range before closing the shutters on local manufacturing in 2017.

Talk about a final fling, and saying the best 'til last, the headline act of the VFII series is a new, more powerful all-alloy 6.2L LS3 V8 that delivers 304kW of power at 6,000rpm (up 34kW over the previous 6.0L Gen 4), 570Nm of torque at 4,400rpm (up 40Nm) and a stirring soundtrack courtesy of a bi-modal exhaust and locally designed mechanical sound enhancer that pumps up the exhaust volume in the cabin and outside the vehicle by up to 10%.

Previously the domain of HSV's Maloo, the LS3 V8 in Holden's SS, SSV and the SSV Redline utes can reach 100km/h from standstill in less than five seconds with the standard six-speed manual, and the optional six-speed automatic is just a tenth of a second behind.

Fuel economy takes a hit, with the 6.2 V8 consuming about a litre more per 100km than the 6.0L V8 in the VF range, at 12.8L/100km for the SS manual and 12.9L/100km for the auto.

The pick of the bunch is clearly the SSV Redline, priced from \$50,490 in manual guise – \$6,000 upstream from the SSV and 10-grand up from the SS (auto adds \$2,200) – which as well as a host of extra equipment and features brings revised

suspension tuning to improve both ride comfort and handling, and a Brembo braking package with four-piston callipers that now extends to the rear wheels.

A new optional Performance Brake package, developed for heavy-duty police application and comprising a larger master cylinder, uprated brake pads and larger front rotors, is available for an extra \$350, while Redline customers can also order 20" forged alloy wheels for \$1,500.

All sports utes (including SV6) have a new front fascia with larger grille and fascia ducts that are designed to improve aerodynamic performance, while the V8s have bonnet vents that release hot air out of the engine bay and, perhaps just as importantly, add to the general tone of aggression at the front end.

There are no modifications to the 210kW/350Nm 3.6L V6 and the auto-only Evoke (priced from \$33,490) continues largely unchanged. The SV6, which starts at \$33,990 as a manual and \$36,190 with auto, scores keyless entry, push-button start, new 18" alloy wheels and the new front fascia detailed above.

As well as the big donk and design tweak, the SS likewise adds keyless entry/start and new 18" rims, while SSV now has new 19" alloys and a colour head-up display. ▲

Holden
www.holden.com.au

LDV G10

Chinese brand LDV has launched its all-new G10 van in Australia, pitching the Toyota HiAce rival directly at tradies with a value-oriented package that starts at \$25,990 drive-away for ABN holders.

A product of China's biggest motor company, SAIC Motor Corporation, the rear-wheel-drive G10 one-box van is a smaller sibling to the V80 and part of the specialist LDV light-commercial brand distributed by Ateco Automotive through a growing national dealer network – 37 outlets at last count, with more on the way.

Ateco describes the G10 as a game-changing vehicle for the brand that is the best-value one-tonne van on the Australian market.

Whereas the V80 was a carryover from the now-defunct Leyland DAF Vans, which was bought by SAIC in 2009, the G10 was designed and engineered in China from the ground up using some up-to-date technology including a perky turbocharged petrol engine and a ZF-supplied six-speed automatic transmission.

The engine and transmission in question – fitted to the higher-series model priced from \$29,990 drive-away for ABN holders – is a 2.0L twin-cam turbo-petrol four-cylinder with direct injection and variable valve timing, offering maximum power of 165kW and peak torque of 330Nm. Official fuel consumption on the combined cycle is 11.7L per 100km.

At the entry level, a less advanced 105kW/201Nm 2.4L naturally aspirated four-cylinder petrol engine paired with a five-speed manual gearbox – a combination that returns 11.5L/100km – was recently added. It also has a leaf spring rear suspension compared with the five-link coil-spring

set-up on the turbo-petrol auto.

Both use a MacPherson strut arrangement up front, have power-assisted hydraulic steering and disc brakes at each corner, the latter supported by an anti-lock system, electronic brake-force distribution and emergency brake assist.

Electronic stability control is also fitted standard, along with a 'roll movement intervention' system, rear camera with park assist feature, parking sensors with alarm, a tyre pressure monitoring system and an airbag for the driver and front passenger.

External features run to 16" alloy wheels (running on 215/70 tyres) including a full-size spare, power side mirrors with integrated turn signal, rear fog lamps, dual sliding doors and a lift tailgate – entry points that provide access to the cargo area which offers a maximum volume of 5.2m³ and can accommodate two standard pallets.

The cargo area measures 2,365mm long, 1,590mm wide (wheel arch width: 1,278mm) and 1,270mm high. Maximum payload is 1,093kg, and gross vehicle mass 3,000kg, with braked towing capacity 1,500kg. Tare weight is 1,907kg.

Convenience items include remote central locking, cruise control, air-conditioning, power front windows and two-speaker radio/MP3/DVD with a 7" in-dash LCD touch screen and Bluetooth phone and audio.

The vehicle is backed by a 3-year/100,000km warranty and emergency roadside assistance. ▲

LDV Vans Australia

www.ldvautomotive.com.au





RAM 2500, 3500

The third biggest-selling pick-up in America, where around 40,000 examples are sold every month, the full-size Ram truck is now available in Australia through a new right-hand-drive (RHD) conversion operation set up by Ateco Automotive and the Walkinshaw Automotive Group.

Joining other local conversion and retail outfits such as Performax International, the newly formed American Special Vehicles has launched the Ram 2500 and 3500 series trucks through a 20-strong national dealer network and with the blessings of Fiat Chrysler Automobiles (FCA) in Detroit, which is providing support in areas such as vehicle supply, homologation and parts and service.

Backed by a 3-year/100,000km warranty and full volume import approval (meaning no restriction on numbers), the Ram pick-ups do not come cheap given the costs involved in importation from Mexico and substantial re-engineering at Walkinshaw's factory in Clayton, Melbourne, to convert them to RHD and measure up to RAM's own standards of safety, comfort and build quality.

Prices start at \$139,500 for the Ram 2500 and \$146,500 for the 3500, plus on-road costs. Both are offered in five-seat crew cab configuration in high-end Laramie specification, with the same powertrain: a Cummins-sourced 6.7L six-cylinder turbo-diesel engine that pumps out 276kW of power at 2,800rpm and a stonking 1,084Nm of torque at just 1,600rpm.

The engine is paired with a six-speed automatic transmission and BorgWarner part-time 4x4 driveline, with high and low range. The fuel tank holds 117L.

For tradies carrying big loads, the Ram offers up to 6,989kg braked towing capacity using a pintle or 4,500kg with a 70mm tow ball; a 50mm ball enables 3,500kg. Gross Combination Mass with the pintle is 11,479kg, 8,990kg with the 70mm ball or 7,990kg with

a 50mm ball. Payload is 913kg for the 2500 and 1,713kg for the 3500.

The pick-up is built on a steel ladder frame chassis using eight separate cross members, while the front suspension is a three-link coil spring arrangement and the rear a solid axle set-up – a five-link coil-sprung configuration on the 2500, while the 3500 uses a heavier-duty Hotchkiss leaf spring format.

The large cargo box has a 1,939mm floor length, 1,687mm width (1,295mm between the wheel arches housing 18" alloys) and 511mm depth.

The overall body stretches 6,027mm from end to end, and is 2,009mm wide and 1,974mm high in Ram 2500 form or 2,027mm for the 3500, which also has extra ground clearance (218mm versus 188mm). Kerb weight is 3,577kg for the 2500 or 3,596kg for the 3500, with a GVM of 4,490/5,309kg respectively. The turning circle is 13.38m.

Safety equipment includes multi-stage front airbags, front and rear curtain airbags, electronic stability control, four-wheel disc brakes (360mm rotors up front and 350mm at the rear), ABS, a rear view camera, eye-level brake light with cargo camera and a tyre pressuring monitoring system. A security alarm is also fitted.

Comfort and convenience items run to leather upholstery, heated and ventilated front seats (with 10-way power adjustment for the driver, six-way for the front passenger), heated/leather multi-function steering wheel, dual-zone climate control, 8.4" touch screen display, 7.0" multi-view cluster, nine-speaker sound system (with subwoofer), satellite navigation, a media hub (SD, USB, aux), a 240V auxiliary power outlet, and plenty more. ▲

Ram Trucks
www.ramtrucks.com

HOLDEN SPECIAL VEHICLES GEN-F2 MALOO

Not to be outdone by Holden and the 304kW LS3 V8 it has transplanted into the swansong VFII ute, the Aussie lion brand's high-performance division HSV has produced a fitting farewell for the Maloo R8, dropping the incredible supercharged 6.2L LSA V8 into the Commodore-based two-door.

The new range is dubbed Gen-F2 and, like VFII, marks the final fling for the Australian-built ute as Holden prepares to close its manufacturing facilities towards the end of 2017.

Gone is the 340kW/570Nm LS3 of the regular Maloo and in its place is the force-fed Chevrolet-sourced LSA that in this case churns out 400kW of power at 6,150rpm and 671Nm of torque at 4,200rpm.

This is slightly down on the previous limited-edition GTS Maloo that offered the LSA engine in full-blown 430kW/740Nm

form and was priced from \$87,990, but the Gen-F GTS is no longer available, leaving this detuned but still hard-punching and more affordable LSA as the next best thing.

Priced from \$76,990, the Gen-F2 Maloo R8 combines with a TR6060 (MG9-spec) six-speed manual transmission as standard, while a 6L90E six-speed heavy-duty automatic with 'Active Select' and paddle shifters adds \$2,500.

The new series is also more than a mere engine upgrade, with exterior design revisions and modifications to the suspension set-up.

HSV says spring and damper rates have been stiffened to reduce bodyroll and improve corner-entry response, while the unique rear suspension module with 9.9" differential and upgraded drive and prop shafts delivers improved rear stiffness and rear braking efficiency.

New five-spoke 20" alloy wheels are a striking addition, while the front fascia has been tweaked and now incorporates a subtle air splitter. The bonnet vents seen on the Holden VFII V8 utes are found on the new Maloo (finished in satin black paint rather than gloss), with the mirror caps and fender vents using the same colour.

A new vibrant blue dubbed Slipstream has also joined the exterior bodywork palette.

The LS3 is expected to become available in Gen-F2 guise in the first half of 2016, although pricing and specifications were still to be confirmed prior to publication. ▲



Holden
www.holden.com.au





CITROËN BERLINGO

Citroën Australia has introduced its upgraded Berlingo, bringing a segment-first standard reversing camera to the light-sized commercial vehicle class and other advanced features.

Standard safety features on the MY 2016 series now run to hill-start assist and electronic stability and traction control, while high-level infotainment technology arrives in the form of a locally developed 7.0" touch screen with Apple CarPlay and MirrorLink for Android connectivity systems, as well as Siri Eyes Free, Bluetooth and USB and auxiliary jacks.

Dual side sliding doors are also now standard across the series that continues to offer three variants spanning short and long bodies and turbocharged four-cylinder petrol and diesel powertrains.

The short body manual is priced from \$21,990 plus on-road costs and is powered by a 1.6L turbo-petrol engine that offers 80kW of power at 5,800rpm and 147Nm of torque at 4,000rpm, driving through a five-speed manual gearbox and offering fuel economy of 8.2L per 100km on the official combined cycle.

The short body has a cargo volume of 3.3m³ to the back of the front seats, or 3.7m³ with the passenger seat folded. Total load length is 1,800mm to the seatbacks, or 3,000mm to the passenger's footwell.

Priced from \$26,990, the long body is offered only with a 1.6L turbo-diesel good for 66kW at 4,000rpm at 215Nm at 1,500rpm, combining with a five-speed manual – capable of 5.7L/100km – or optional (\$4,000) six-speed semi-automatic transmission

with a fuel-saving automatic engine idle-stop system that lowers consumption further to 4.7L/100km.

Load capacity increases to 3.7m³ to the rear seats (4.1m³ with the passenger seat down), while load length is 2,050mm/3,250mm.

Both body styles rest on a 2,728mm wheelbase, have cargo width of 1,230mm between the wheel arches and an 1,100mm interior height. Rear barn doors opening to 180° are also fitted.

Payload is 850kg on the short body and 750kg on the long body variants, while braked towing capacity ranges from 800kg to 1,000kg, depending on the variant.

A third seat can be added for \$500, or \$1,000 with a front passenger airbag and storage box included. Otherwise, only the driver's seat has an airbag. Four-wheel disc brakes with ABS are included, as are front seatbelt pre-tensioners with force limiters for the outboard positions.

The upgrade brings an optional (\$500) 'look pack' for long body variants, which includes LED daytime running lamps, fog lights with cornering function and cosmetic enhancements such as colour-coded bumpers, exterior mirrors, doorhandles and side strips, and new 15" 'Airflow' wheel covers.

Regular models gain a revised bumper while cargo areas benefit from a standard moulded floor protector. A metallic grey exterior colour is also added to the Berlingo palette.

Citroën Australia
www.citroen.com.au

TOYOTA LANDCRUISER 70 SERIES

Toyota Australia is preparing to introduce a significant upgrade to its LandCruiser 70 Series range, with a high level of safety equipment added to bring all variants – including the single and double cab utes – up to a top-rating five-star standard.

While the current model manages only three stars under the Australasian New Car Assessment Program's (ANCAP's) ratings system, the series upgrade due in the second half of 2016 will improve on this with the introduction of electronic stability control, brake assist and five airbags – two curtain-shield airbags and a driver's knee airbag adding to the current frontal airbags for the driver and front passenger.

Cruise control will also become standard across the 70 Series, which has long been valued by tradesfolk for its tough character and hard-working nature, particularly its mechanical reliability and serious towing, load carrying and off-road performance.

Toyota Australia says the company has worked closely with employers in the construction industry and other sectors, including mining and agriculture, in order to develop the improvements for the "unapologetically rugged vehicle that is renowned for its heavy-duty capabilities" – and to secure its future after 30 years on the market.

Further details are still to be released for the upgraded

model, but expect it to continue to have a strong diesel engine as the backbone of the series.

The current 70 Series uses a 4.5L 32-valve '1VD-FTV' V8 turbo-diesel – with common-rail direct injection and an intercooler – that delivers 151kW of power at 3,400rpm and 430Nm of torque from 1,200-3,200rpm, the latter said to be the flattest torque curve among all of Toyota's engines. It drives through a five-speed manual gearbox and part-time four-wheel-drive system.

Braked towing capacity is 3,500kg and gross vehicle mass 3,300kg on the single and double cab utes, with kerb weight ranging from 2,065kg on the entry level single cab chassis Workmate to 2,215kg for the top-end double cab chassis GXL.

The current model has four-wheel disc brakes, electronic traction control and a few cabin mod-cons such as MP3-compatible stereo and Bluetooth mobile phone connectivity.

That said, air conditioning is still optional and the 70 Series remains a hard-edged vehicle at its core, with rigid axle suspension at both the front and rear, recirculating ball and nut steering system, manual 4WD hub engagement, front and rear diff locks, and so on. ▲

Toyota Australia
www.toyota.com.au





TRADESTUFF

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Water: not down the drain

A guide to using rainwater and greywater at home

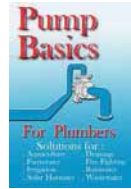
Water Not Down the Drain is a comprehensive guide to sustainable water use around the home. With Australia experiencing one of its driest phases in history, everyone has to think about how they use the water available to them and find ways to reduce their day to day water use.



\$35.95.....CODE 761

A quick reference and solution handbook

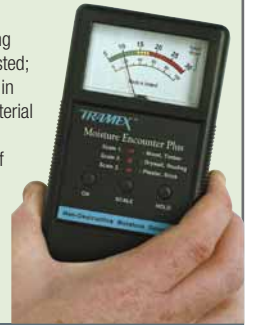
This handbook covers broad topics such as pump types and suitability. Emphasis is directed mainly on centrifugal pumps and their characteristics including capacity, head speed, power and efficiency, supported by charts, tables, formulas and graphs. There is a useful trouble-shooting chart and has installation hints.



\$25.95.....CODE 362

TRAMEX Moisture Encounter Plus Non-Destructive Moisture Meter For Building Inspection.

This is an upgraded version of the world's most popular and successful non-destructive moisture meter, the Moisture Encounter. It incorporates all the features and benefits found in the original Moisture Encounter such as: non-destructive moisture measurement of wood, plastic, drywall, block, brick, roofing and most materials found in the building envelope. It uses three ranges of sensitivity; deep signal penetration to detect elevated moisture through most covering materials such as ceramic tile, drywall, carpet, vinyl flooring, VCT, floor laminates, wall coverings, roof membranes and coatings without damaging or puncturing the materials being tested; rubber electrode pads in direct contact with material being tested for better sensitivity and depth of signal penetration.



\$795.00.....CODE 696

HB 233-2008 Fire Protection Systems Testing Water Conservation Handbook

A Handbook to assist in minimizing wastage of water during fire tests and a companion guide to AS 1851-2005 Maintenance of fire protection systems and equipment. This Handbook considers the systems listed which require flowing water as part of the testing and maintenance, and makes recommendations as to how that water usage can be minimized, reduced and/or recycled.



\$95.55.....CODE 763

Solar Hot Water

This is a very small book with a lot of big information and will help you with many applications. Plan your own solar hot water system. It gives you an understanding of solar water heaters and the most common models and their features. It also covers retrofits, size and site locations, including mains pressure versus low pressure, collectors, tanks, boosting and freeze protection, warranties, rebates and Standards. A very helpful booklet.



\$16.95.....CODE 589

Plumbing & Drainage Guide

This guide explains in simple terms the general principles of the building codes and Standards for sanitary plumbing and drainage in Australia and New Zealand. It is intended as an aid for designers, builders, students and owner/builders. It also serves as a useful reference guide for plumbers, drainers and building officials. This book covers most common plumbing and drainage solutions.



\$71.90.....CODE 424

Domestic Plumbing & Drainage Standard

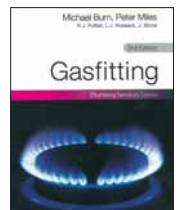
AS/NZS 3500.5:2012 Prepared to provide a suitable Standard for domestic plumbing work associated with buildings not exceeding three floors in height. The objective is to describe in a simplified way the installation requirements for hot and cold water services, sanitary plumbing and drainage and stormwater drainage. This standard is a MUST HAVE if you are involved with any domestic plumbing.



\$325.00.....CODE 521

Gasfitting: Plumbing Services Series

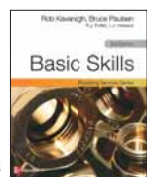
This text assists the licenced gasfitter to understand and correctly interpret the Standards laid down in the current code for the installation of gas burning appliances. This new second edition incorporates thorough and wide ranging revisions to bring it up to date with the requirements of the Plumbing and Services Training Package.



\$69.95.....CODE 165

Basic Skills

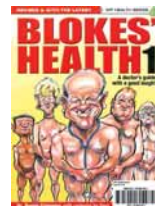
The third edition of Basic Skills has been completely updated to incorporate the wide ranging revisions that meet the requirements of CPC08. New features include a trade maths chapter for applied plumbing, chapters on sustainability, communication and OHS in the workplace, a competency grid to the Training Package, worksheets and interviews with plumbers.



\$59.00.....CODE 604

Blokes Health

This is an absolute gem of a publication and a valuable resource for men of all ages. Written by Dr Bernie Crimmins, Blokes Health provides extremely useful health advice in a simple manner. There aren't many books you can buy that could actually SAVE YOUR LIFE!



\$19.95.....CODE 394

The New Tramex CMEXpert II

The Best Concrete Moisture Measuring Instrument just got Better! The CMEXpert II allows for instant non-destructive moisture tests of concrete. Accessories available are Wood Probes for testing wood flooring prior to installation. Relative Humidity Probes & Sleeves for in-situ and Hoods for surface RH testing of slabs.



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Good Tiling Practice

This guide to successful ceramic tiling contains 120 pages of practical, fully illustrated advice on how to avoid tiling failures. Aimed at designers, tilers, inspectors and builders, its 15 chapters cover everything from selecting the right tiles for specific purposes, choosing substrates, adhesives and grouts, wet-area requirements, maintenance, swimming pool tiling and 'troubleshooting'.



\$52.50CODE 320

HB 230-2008 Rainwater Tank Design and Installation Handbook

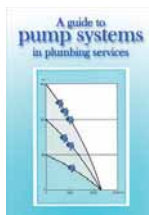
This handbook has been developed to provide practical information for the collection, storage and use of rainwater within an urban environment on private residential property. It outlines the minimum standards and performance requirements criteria for all development works associated with rainwater tank installations. It applies to new installations as well as alterations, additions, maintenance and repairs to existing installations.



\$69.95CODE 720

A Guide to Pump Systems

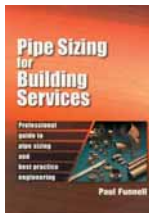
A guide to Pump Systems in Plumbing Services is an Australian first publication specifically written for plumbing designers, practitioners, consultants and specifiers of plumbing installations and equipment involving the use of pumps for all classes of buildings and construction. The content of the handbook includes information on pump systems associated with water supply, rainwater, harvesting, bush fire protection, sewage, disposal by pumping, special purpose installations and dewatering systems.



\$29.95CODE 669

Pipe Sizing for Building Services

This is the key that unlocks the secrets to pipe sizing! Tables provided in Australian Standards are based on minimum requirements for sizing, but this book has tables and charts that will provide an optimal design solution for specifier, installer and customer. The result will be more efficient and cost-effective use of materials, faster installation and commissioning, and problem-free solutions for the customer.



\$52.50CODE 701

New Gas Installation Standard

Part 1: General installations (A)
Part 2: LP Gas installations (B)

After six years, the building industry can breathe a little easier with the release of the updated AS/NZS 5601. It highlights minimum requirements for the design, installation and commissioning of gas installations and provides 'deemed to comply' solutions to promote uniform Standards. If you work with gas, this revised Standard is vital.

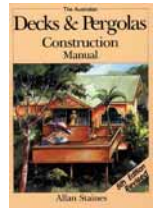


\$305.00CODE 489A

\$205.00CODE 489B

Decks and Pergolas Construction Manual

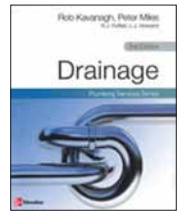
One of our most sought-after construction manuals, this is an invaluable reference covering every aspect of decks and pergola construction. Includes designing, estimating, building, timber selection charts, fastening & anchoring recommendations, terminology, painting & finishing, and preparation of plans for councils.



\$28.95CODE 49

Drainage Plumbing Services Series

Drainage Plumbing Services Series 3rd edition is an important entry into the world of drainage and sanitation history and maintenance. The text provides an overview of how to deal with the collection, treatment and disposal of waste. Common treatment methods and alternative disposal methods are explored in depth and with astute attention to principles, practices and regulations.



\$74.50CODE 392

Little Red Roofing Book

Roof cuts and rafter lengths – Hancock's 10th edition is a very popular, best selling book. With calculations, diagrams and tables it will help you with plumb and side cuts for hip and rafter, down and side purlin cuts and more. Calculations for roof frames, roof cuts and rafter lengths. This 88-page pocket size edition is in metric, updating all the old calculations, and it is a very easy-to-use roofing guide which you can use with complete confidence. This book will earn its keep.



\$25.95CODE 129

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PSF



Plumbing Supply Forum 2016

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If you want to know what's really going on behind the plumbing industry, the Plumbing Supply Forum is the must-attend event.

Rub shoulders with owners and senior executives from across the supply side of the business as they are briefed on the latest updates with WaterMark, Australian Standards, Codes, WELS, as well as a host of other great business presentations you can apply to your business.

The PSF is of interest to everyone across the sector, including manufacturers, importers, merchants/resellers, contractors, certifiers, regulators, educators and consultants.

The event is jointly presented by: The *Plumbing Products Industry Group* (PPI) and *Plumbing Connection Magazine*.



Full details and registration at: www.plumbingsupplyforum.com.au

Date: Tuesday May 24th 2016

Location: Rydges - Sydney International Airport Hotel

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For further information visit: www.plumbingsupplyforum.com.au

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