



Saving Money on Installations

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A Creative Heating and Cooling Solution

With 45°C summers and minus 5°C winters Narellan, in SW Sydney, provides challenging ambient conditions for air conditioning design.

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And Then There Was One

Temperzone recently emerged as Australia's sole local manufacturer of big air conditioning units following Carrier's decision to stop producing equipment locally.

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Fast Food Solutions

The saying goes that virtually "every" suburb has a McDonalds and almost every second suburb boasts a KFC. Temperzone has been servicing the fast food giants for many years.

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- ✓ Hot gas bypass
- ✓ Energy efficiency
- ✓ High ambient
- ✓ Acoustic options
- ✓ Corrosion treatment
- ✓ Process Cooling
- ✓ Controls
- ✓ Insulation

Custom Options

There's no such thing as a standard building... Solutions can be tailored to individual applications, without having to be engineered from the ground up.

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Cooling Solution Show Hits Brisbane



Talking technical in Brisbane.

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Saving money on installation

AIR CONDITIONING contractors love nothing more than to save money, especially when installing equipment on big projects worth hundreds of thousands, if not millions of dollars. To accommodate contractors' needs, Temperzone has used product design innovation to both enhance quality and to create ways of offering significant fiscal benefits.

Temperzone is currently involved in the development of a 60,000m² homemaker centre designed to cater for project home builders, reportedly one of the largest bulky goods homemaker centres in the country. The project involves around 130 rooftop packaged units with capacity ranging between 40kW and 90kW; and 30 split ducted units ranging between 15kW and 30kW. Total cost of equipment? A ballpark figure of almost \$2 million.

Temperzone South Australia branch manager Ryan Wijayasekera tells Temperzone News that on such large projects installation savings to contractors are crucial. "By the end of this project, which is due for completion in mid-2009, we will have saved the contractors around sixty to seventy thousand dollars in installation costs," he says, quite a substantial amount of money. So how is this achieved?

As part of the BCA (Building Code Australia) manufacturers are required to install economy cycle on all air conditioning equipment over 50kW. Just about all of the units in this project have economy cycle, which was designed and specified into the job and fitted into the units manufactured by Temperzone.

"We looked at the duct arrangement and realised that we could fit economy cycle in our factory," Wijayasekera says. "Installing the filters inside the unit eliminates the need to build a filter plenum - you actually install the filters in duct work. This was one area where we could cut off a fair bit of sheet metal from the project."

Wijayasekera added that Temperzone was able



to build specific units capable of accommodating a 100mm filter (consultant's specification), whereas the standard product normally comes with a 50mm filter. "We also took away additional dampers in the ductwork and had them fitted into the equipment," he says. "On the unit we had an outside air damper which was a fully variable type set up with a cowel protecting it from the weather - at certain times these units would be running on 100% outside air. If it was suitable for them to use outside air for cooling that's all they were going to do; so we fitted a return air damper which closes off the return air to allow the outside air to flow in. We fitted all this into the machine to eliminate the need for the contractor to have it installed in the ductwork, thus becoming an integral part of the actual air conditioner. On top of that we

also fitted all the actuators to drive dampers – that took away any additional installation the contractor had to do on-site. So we’ve taken away the actuators, the dampers, and filters and fitted them all inside the air conditioner,” saving contractors some serious cash.

Temperzone has also saved contractors involved in this project considerable money on electrical wiring costs. “All the wiring for dampers runs through the terminal strip in our electrical panel in the machine,” Wijayasekera says. “This saves contractors from having to wire the actuators. All up, I’d say we’re saving installers and contractors between \$600-700 per machine in additional ductwork and labour.”

Wijayasekera adds that Temperzone has also saved contractors labour “and” money on other projects, including one at a multi-storey commercial office building in the Adelaide CBD.

“We supplied water cooled packaged air conditioners to this project and because of the tight ceiling space there wasn’t a lot of fall to run their drains,” he says. “But Temperzone has an option for water cooled units where we’re able to fit a condensate lift pump to our units. Normally the contractor would purchase the equipment and the lift pump. He’d then have to open the unit and install the lift pump into the unit; put it all together and then hang the unit. But our factory in New Zealand fitted the condensate lift pumps into the units, saving contractors considerable time in labour.”

With the project boasting almost 250 units (eight different models of various quantities between 7kW and 30kW) Wijayasekera says it would have taken the contractor at least an hour to pull each unit apart, fit the lift pump and then put it all back together again.

“Labour doesn’t come cheaply on building sites so having the units factory-fitted in New Zealand as opposed to having them fitted on-site means considerable dollar savings,” Wijayasekera says. “This is another area where Temperzone is able to save contractors costs on install.”

Wijayasekera also says that on split system units of up to 27kW, Temperzone generally supplies a drain tray that can clip to the bottom of a fan coil unit.

“The contractor normally buys the fan coil unit then he’ll get a safety drain tray built separately,” he says. “Then when the contractor hangs the fan coil unit another set of hangers or straps need to hold the drain tray in place to have it sitting below the fan coil unit.”

Temperzone is able to offer a drain tray to clip to the bottom of the fan coil unit. If the contractor uses a Temperzone spring mounting kit they can then hang the unit and they don’t have to suspend the drain tray because it clips to the fan coil unit. “Again, apart from fact that you get the drain tray with our unit (you don’t have to go out and purchase one), when you install it there’s a little less labour involved because you only have to worry about hanging one thing, the fan coil because the drain tray is now attached (to the fan coil). This is another area where contractors are using our products to save money on installation.”

Temperzone has also got to the stage whereby they’re fast becoming a one-stop shop. “The less items contractors have to purchase from other suppliers, the better,” Wijayasekera says. “In the big project mentioned previously, the contractor would have to go to someone else to purchase the dampers, the actuators for the dampers, then the ductwork and filters. But we’ve put in place something that has cut out four or five other suppliers because we cater for most items the contractors need. This is proving to be quite useful, again providing welcome savings to contractors.”

A Creative Heating and Cooling Solution at Narellan Cinemas

LIKE MANY localities more than 20 km away from the coast, Narellan, on the south western fringe of Sydney, provides challenging ambient conditions for air conditioning design. With a recorded ambient range of -6 C to +45C and a specification requiring up to 100% outside air, the air conditioning design for the new Narellan cinema complex required creative design.

The recently-opened cinema complex at Narellan Town Centre is a crucial part of the centre's \$25 million, stage four, upgrade. Boasting eight screens, the cinema complex is designed to service the region's rapidly growing population. Temperzone and consultants ABACUS Engineering tackled the project side-by-side. Temperzone NSW sales

engineer Stuart Battle and ABACUS Engineering's Peter Brown provided Temperzone News with the low-down.

The biggest design issue was how to best deal with the extreme ambient range combined with the high people load which required up to 100% outside air.

The units were originally designed and selected at 39.4C ambient. In conjunction with ABACUS Engineering it was decided to rate the units for 45C ambient to ensure operation in extreme summer heat.

The very low winter ambient required a totally different approach. Due to the high rate of outside air ventilation, the de-icing cycle would produce



Narellan Climatic Information

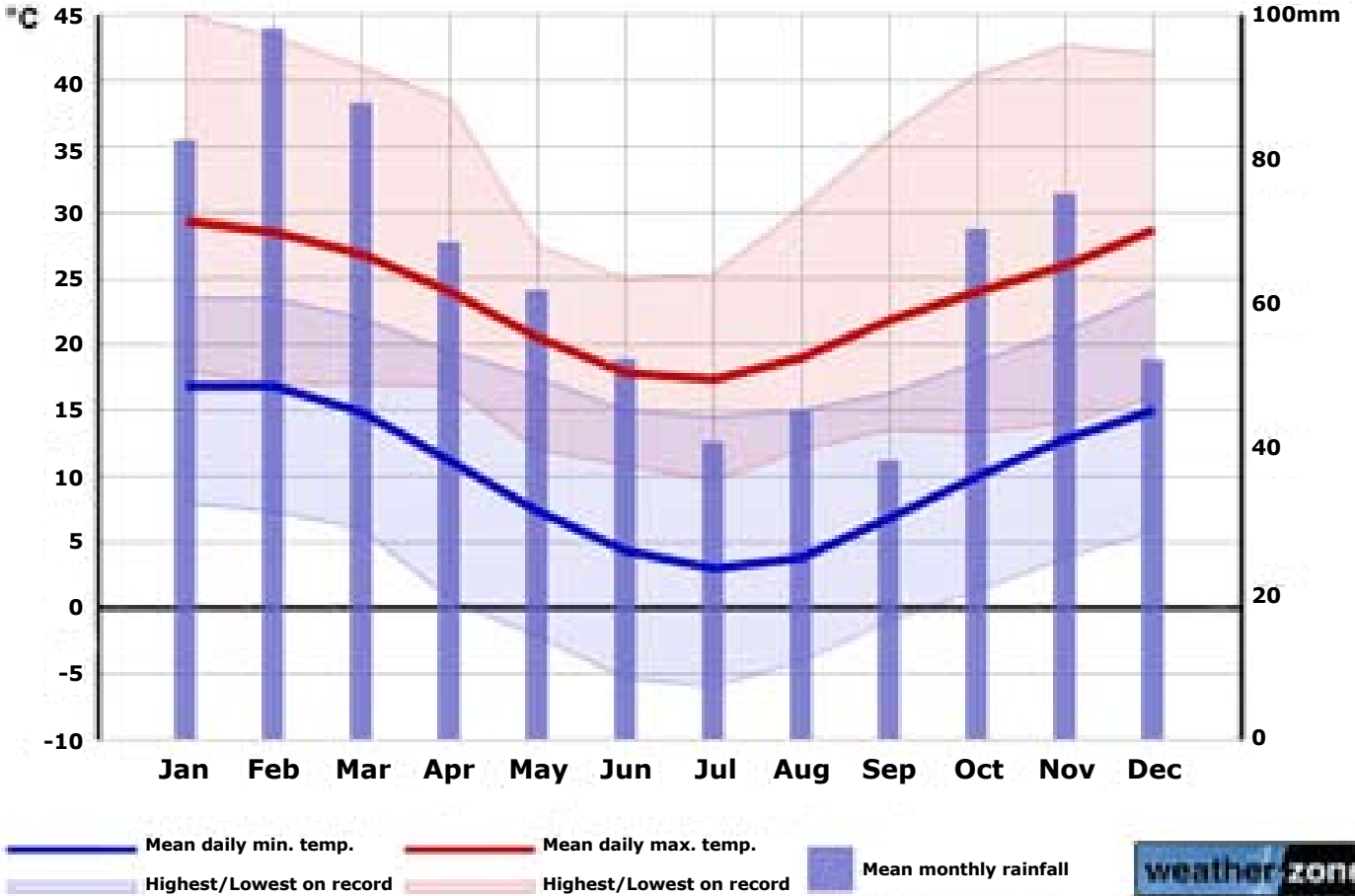


Image source www.weatherzone.com.au

sudden lowering of supply air temperature within the cinemas. To overcome this, heating is an entirely gas fired "hydronic" system with heating coils within each Temperzone fan coil unit.

With gas readily available a boiler was the best heating option. Temperzone has its own coil manufacturing plant, so we were able to design and build the hot water heating coils into the units, avoiding the difficulties of in duct installation.

The air conditioning units were located on a large roof platform with a louvre enclosure. A combination of standard and opposite hand supply and return air units were located within the enclosure. Units included hot gas by-pass,

smaller evaporator fan motors to suit lower air flows (because of full outside air), while all units included head pressure controllers.

We extended the existing "Trend BMSC" control system to cover Stage 4 (the cinema and food court), an economy cycle was added to further reduce costs. The system design also allows units to be run only for those cinemas actually in use.

This cleverly designed hybrid system gave the Narellan cinema complex the ideal mix of economy combined with the capability to cope with high people load in a wide range of ambient conditions.

And then there was one!

The advantages of local design & manufacture



TEMPERZONE RECENTLY emerged as Australia's sole local manufacturer of big air conditioning units following Carrier's decision to stop producing equipment locally. Temperzone NSW branch manager Gordon Stewart spoke to Temperzone News about the company's newfound position within the industry and the advantages of being No.1 on the local scene.

"Temperzone specialises in air conditioning. It's not one of the things we do, it's all we do," Stewart says.

Since 1956, Temperzone has been designing, developing and manufacturing quality air conditioning units that have earned a formidable reputation in commercial applications.

Everything about the company is local. Temperzone's Sydney plant is one of the largest dedicated air conditioning manufacturing facilities in Australia. And at a time when some companies have moved their manufacturing operations off-shore, Temperzone has invested in expanding its factory and creating more jobs.

Temperzone engineering is local. Coils, sheet metal and powder coating is local. Assembly is completed in-house (local), with staff trained to meet Temperzone's stringent standards and requirements, regardless of previous experience.

"Every unit, whether fully manufactured, or modified is tested before leaving the factory," says Stewart. "All results are documented which gives us the final inspection in our comprehensive QA checks throughout the entire manufacturing process."

Temperzone manufactures its own coils, therefore controlling the quality, the design and availability of its units. Powder coating is carried out in-house, with customers given the option of using standard colours or colours from the Dulux colour chart.

Temperzone also boasts warehousing large enough to accommodate adequate stock to allow the manufacturer to respond to the demands of modern contracting with standard equipment.

"We're second-to-none in customer support within the industry," Stewart says. "Our service department has in excess of 50 years experience of working with, working on and assembling

Temperzone product. Our sales offices employ industry-trained staff, varying from sheetmetal workers, refrigeration technicians and mechanical engineers, all with a vast background in contracting and design and application work. We also provide assistance to customers when applying product by guaranteeing that the requirements of a project are met and by ensuring the selections made are the correct selections." Temperzone also boasts enough stock of standard equipment to enable quick delivery to customers Australiawide.

"Having adequate stock (of standard equipment) is essential," Stewart says. "Having a continual stock manufacturing program in place to replenish stock as it's used; being quick to adapt to changing needs in the marketplace; and controlling our deliveries, whether they're conducted by selected transport companies or our own in-house delivery service, are crucial aspects of our operation. If a customer orders stock, they rightly expect a prompt delivery, which is a service we can provide."

Temperzone also offers flexible design in its units and, unlike some manufacturers, doesn't operate on a "one shape fits all" creed. "We have a requirement for custom handings," Stewart says. "Due to building constraints, service access, etc, mass-produced equipment cannot meet the demands of configuration change."

Stewart says Temperzone equipment is designed and built for Australian conditions, not, "designed and built for Chinese conditions and applied poorly in Australia".

"We design and manufacture for local conditions and understand the variations in climate and variations of location. They're not just spots on a map. We test to meet and exceed local standards. We have input into local requirements with specifying bodies. We don't have to modify equipment to meet local standards and we don't have to purchase partially-built equipment, then bring in various trades to finish off the job before going to site."

Indeed, Temperzone will continue to thrive as the industry's sole local manufacturer.



Fast solutions for fast food giants

THE SAYING goes that virtually “every” suburb has a McDonalds and almost every second suburb boasts a KFC. Temperzone has been servicing the fast food giants for many years, ensuring that their air conditioning needs are accommodated all-year-round.

Temperzone Queensland branch manager Shane McBride spoke to Temperzone News about the unique challenges involved in servicing Kentucky Fried Chicken (KFC), while his NSW counterpart, Gordon Stewart, gave us his take on Temperzone’s relationship with McDonald’s.

Diverse Environment

McBride: Temperzone provides climate control equipment and solutions to KFC stores nationwide. The stores are located in a diverse range of environments: from dusty rural main roads to squeaky clean suburban shopping centres. It’s our brief to ensure that air conditioning units are designed and built to deal with the challenges provided by those environments. The units are expected to keep staff and customers comfortable all-year-round but many variables determine how we go about doing so in the most efficient and economical manner.

KFC stores are often located in built-up areas where Temperzone must negotiate noise and space issues to satisfy customer and regulatory bodies alike. For units located in enclosures, we protect the coils from damage by using condenser coil guards.

The Temperzone OUC (outdoor unit controller) enables the unit’s fans to operate at slower speeds and reduced noise levels. The controller incorporates modulating head pressure control that ensures fans operate at slower speeds and reduced noise levels during low-load and off-peak periods or in cooler weather (typically at night).

Stewart: Many McDonald’s outlets are located in some “weird and wonderful” places, therefore reliability and serviceability is a must. Temperzone design and build their units so that customers aren’t forced to wait for the arrival of a specific



electronic component. Instead, major componentry is available at the local refrigeration parts shop, making life as simple as possible for all concerned, including McDonald’s.

Often in builtup areas, noise and space are serious issues that need to be addressed. Units tucked away in enclosures in built-up areas facing noise and space issues are the bane of our existence. But Temperzone can work with contractors to install facades that are functional and allow the unit to work correctly.

Many of the issues we face at McDonald’s stores are climatic, whether they be extremes in operating temperatures, or locational, such as red bull dust, etc clogging up units. Temperzone offers custom-



made condenser coils to alleviate the threat of dust.

Maintenance

McBride: Maintenance is critical at outlets located on busy, dusty and dirty roads, therefore regular maintenance is a must.

Stewart: Because many McDonald's outlets are located on busy and dusty roads, regular maintenance is essential, not only for the installing or maintaining contractor, but for the end user. If equipment is poorly maintained the reputation of both the installer and contractor is at stake. McDonald's stores are generally used 24/7 and customers and staff alike have an expectation of being comfortable when inside. We need to ensure that happens.

Warranty

McBride: Our warranty gives the end user (KFC) the comfort that Temperzone, which carries parts for units in excess of 25-years-old, has the capabilities to provide after sales support for the product.

Stewart: Basically, if the customer (McDonald's) doesn't keep up maintenance on their equipment, there's no warranty. No maintenance, no warranty. It can be embarrassing and very costly for an end-user to find they have not had their equipment routinely maintained as per the manufacturer's requirements.

Desuperheater

McBride: Desuperheater is factory-installed in the unit's refrigeration system (discharge line of the stage one compressor at the rear of house units) and is used in fast food chains for preheating of hot water for kitchens. The kitchen's unit runs continuously and when needed, enables 40kW of heat to be transferred into the kitchen's water.

Stewart: The desuperheaters can be fitted inside the condensing section. McDonald's has found massive savings in the amount of energy being used for hot water usage.

Repair or replace?

Stewart: This is a hard one and comes down to whether the existing unit is cost efficient to operate. Obviously anything manufactured over the last couple of years is going to be more energy efficient than previous ranges.

e.g.

Previous Model

OPA 920

EER of 2.64

Nominal Capacity of 92.0 kW

New Model

OPA 960

EER of 2.80

Nominal Capacity of 96.0 kW

Advantages 4.3% increase in capacity and approx 6% less energy used to achieve more cooling.

Many end users, builders and developers don't look hard enough at running costs and energy efficiency when selecting plant, and approving equipment.

On being green

Stewart: Large corporations such as McDonald's have a mandate to be green. With increased capacities, and better EER figures, Temperzone can assist with energy saving and is presently researching methods of better energy efficiency

Custom Options

A flexible approach that's cost effective

THERE'S NO such thing as a standard building... and the implications for air conditioning engineers are clear. Whether it is a domestic, commercial or industrial project, flexibility is the key to meeting customer expectations. That's why Temperzone has developed a range of custom options. Solutions can be tailored to individual applications, without having to be engineered from the ground up.

Air conditioning is rarely an "off-the-shelf" item. Each project presents its own set of problems that requires individualised solutions for the best result. In the past, that often meant extensive reengineering involving longer lead times and greater costs. However, Temperzone Engineering Manager, Mark Gilchrist, says the company's approach to custom options has made it possible to tailor product from the company's standard range to overcome both problems.

"We've introduced a huge range of custom options that embraces almost every aspect of air conditioning design and installation," says Gilchrist. "For example, there are an amazing 288 handing options for our air-cooled package units – that's 32 options per model in the current capacity range."

Another example of Temperzone's approach is the option to choose from different refrigeration and electrical mechanisms on its air conditioning products. But that is only the beginning. Specific components, controls and materials can be incorporated into the company's standard products, so that many installations which would have been considered a custom order in the past can now be manufactured to order with a 4-week lead time.

Environmental Options

Temperzone maintains its long-held environmental commitment – both to the environment in



which each system operates and to the wider environment. Mark Gilchrist says that it starts with energy efficiency, pointing out that while the introduction of the MEPS (minimum energy performance standards) legislation and revised building codes have stimulated much greater interest in the marketplace, Temperzone was at the forefront of the move to the 'greener' refrigerant, R410A across its redeveloped product range.

In fact, energy efficient operation has always been important to Temperzone when designing new products. "This has led to the development of singular and combined supportive systems," says Gilchrist, "such as electronic expansion valves, plug fans and economy cycle options which mean that Temperzone's standard products can be utilised in even more applications."

The environment in which each machine

operates can present special challenges. Councils and government authorities have responded to pressures for quieter air conditioning equipment and this has created special challenges for acoustic engineers. "As a result of our extensive research and development, we offer a range of sound suppression options," says Gilchrist. These include compressor hoods designed to maximise sound deadening; externally fitted axial condenser fan sound attenuation PODS to minimise sound pressure levels; internally integrated silencers; plant room package systems with remote air cooled condensers; and high static condenser fans which overcome the difficulties of removing condensed air from equipment located in plant rooms.

Mark Gilchrist added, "Our engineers have also developed both remote and internalised heat reclaim options for our larger commercial products, and integrated de-superheating options designed to achieve base hot water storage temperatures for high end users. At all times, the objective is to enhance our green credentials with products designed to minimise energy wastage."

Corrosion treatment

With such a large proportion of their populations living on or near the coast, Australia and New Zealand offer some of the world's most corrosive environments for air conditioning installations. While Temperzone uses the highest quality 'long life' materials in its standard range, some applications require special treatment. Custom options available include the "Rotaurua treatment", which incorporates technology pioneered by Temperzone for high sulphur areas.

While quality stainless steel fixings are used across the board, stainless steel construction is also available for quantity orders of OPA style package systems. "For ultimate corrosion protection, it's the way to go," says Mark Gilchrist.

Options for industry specific needs

Many industries pose unique problems which can be solved cost-effectively with Temperzone's custom options approach.

Mark Gilchrist cited the mining industry as a

classic example. Specific challenges like 'no neutral' power supply, high static evaporator fan operation, corrosive environments and high airborne particle contents require higher protection strategies for construction materials and components. "There can be site specific identification and OH&S issues, too," says Gilchrist, "so we have developed custom solutions such as colour coded electrical access panels for quick identification".

Many other industries present demands that Temperzone's range of custom options can help overcome. Telecommunications and data management demand 100% fresh air and high latent load capabilities; the pharmaceutical industry often calls for low return air and low ambient temperatures; other industries need high temperature long-term storage. Temperzone has extensive experience in these and other specialised operating environments.

There are control options too. Some customers have special control strategies in place, so Temperzone offers multiple control options and can also integrate individualised controls into standard products.

Does it come in any other colour?

In an early series of the ABC television program 'The Inventors' one panellist was famous for asking this seemingly trivial question. When integrating air conditioning installations into modern buildings, however, the question can be anything but trivial! So Temperzone uses the latest powder coating technology, which not only offers a superior finish to wet sprayed coatings, but also means that the 134 colours on the Dulux colour chart are additional options for Temperzone customers.

System protection

Air conditioning systems represent a considerable investment, so their protection is simply good business. One of Temperzone's solutions is to fit a pre-programmed outdoor unit controller (OUC) which provides on board fan control designed to optimise head pressures. The inclusion of this technology makes standard Temperzone

products suitable for a far wider spread of applications. OUC technology offers additional system protection functions such as compressor cycling; HP and LP protection; lockout protection after repeated faults; indoor icing protection; refrigerant loss monitoring; and full fault history reporting. Together, they effectively enhance the economic operational life of Temperzone products.

In addition, hot gas bypass (HGBP) is available on stage 1 or 2 of all air-cooled package systems as a standard MTO option. Temperzone engineers believe it is a wise precaution that prevents low suction operation for applications that operate over extended periods.

The right system for the job

"At Temperzone, we are determined to deliver the air conditioning system that best suits each individual customer's needs," says Mark Gilchrist. "In designing and developing unique systems over the years, we have gained invaluable experience and developed new technology that has evolved into our range of cost effective custom options.

"Of course, some applications will still have to be engineered from scratch to ensure that the end product is fit for its purpose," adds Gilchrist, "but what we learn has a habit of filtering into our custom options range and sometimes even into our standard product line-up."

Cooling Solution Show Hits Brisbane

TEMPERZONE'S RECENT Cooling Solutions Show in Brisbane wowed the crowds and had visitors vowing to come back for more after the company put on an impressive technical display for the local HVAC industry.

Shows presented by manufacturing companies are often dismissed as being nothing more than 'sales bluster with no substance', a complaint expressed by several Temperzone customers in the leadup to the Cooling Solutions Show. Temperzone took the criticism on board and delivered a technical extravaganza worth talking about.

Dedicated to providing



valuable technical training information to a broad cross-section of the industry, the Cooling Solutions Show embraced service technicians, HVAC business owners, service managers, consulting engineers, service supervisors, contract managers, project managers, and design engineers.

“Temperzone is confident that every person who attended the show walked away wiser for the experience, whether it’s just simply understanding Temperzone’s vast product range or understanding who should check an air conditioner’s superheat.” says Temperzone Queensland branch manager, Shane McBride.”

At Temperzone we like to think that we know air conditioning because that’s all we do. But we don’t just sell boxes of air, we offer our customers cooling and heating solutions and our 50-plus years of manufacturing is testimony to that.”

Over two days (March 3-4) Temperzone delivered three high quality technical presentations, each of which drew appreciative crowds. National Service Manager Mark Howcroft, a veteran of 30 years’ experience with Temperzone products, presented a course on service training targeting technicians, installers, contractors and consultants. Mark also provided important industry information about Refrigerant R410a, Temperzone electronics, water cooled units, digital scrolls, inverters, controls, applications, installations, commissioning, fault finding and MEPS.

Shane McBride presented ideas on Temperzone’s rooftop package units and splits, unit flexibility, factory-fitted options such as economy cycle

dampers and actuators; factory fitted controls, handing options, split vs package units, selecting the right units, meeting the intent of the specification, and using Temperzone’s flexibility and options to save money on installations.

National Sales Manager David Staker joined Mark in delivering a presentation on watercooled units, delivering the range of Temperzone’s horizontal and vertical watercooled units; installation and application issues; controlling water flows; controls and overcoming difficult and tight installations.

David also spoke about custom built units: Temperzone’s capabilities in modifying and/or customising units for telecommunications, mining, tough environments and high ambient locations.

The show was informal but informative as



visitors enjoyed a range of food and beverages while meandering through the equipment displays and listening to Temperzone’s team of experts.

Units were spread out in a café-type environment which allowed the service guys, project managers, estimators, owners and consultants to move around freely and to study the units at first-hand. Visitors could also choose to sit down with staff members and over a coffee and a muffin enjoy a

chat in a relaxed atmosphere with the benefit of having the units nearby.

“Some people just can’t help themselves from getting in there, taking the covers off units and getting a real close look,” McBride says. “And plenty of guys did that.”

We had service training in the morning so the service guys could come along and be back on the road by morning tea time. We offered technical training topics throughout the morning and afternoon to cater for the contracts managers, projects managers, design engineers, consulting engineers and HVAC company owners, enabling them to go to the office before coming along for a bite to eat and to enjoy the show.”

Units on display included the full product range;

- Aircooled – splits / package units
- Inverters
- Digitals
- Fixed speeds
- Water Cooled
- Chilled water
- Unit accessories, louvers, spring kits and controls



“The show achieved the desired outcome to take Temperzone, our people, products, capabilities and services to the local HVAC&R industry,” McBride says. “You can tell someone 100 times that ‘yes we can do that’ – but it’s not until you show them how it can be done that they truly remember.”