



HOT AIR

NEWSLETTER

AUGUST 2009

The Automotive Air Conditioning, Electrical and Cooling Technicians of Australasia

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VASA REVIEWS ITS RELEVANCE AND SERVICE TO MEMBERS

The new VASA Board of Directors, under its new President Ian Stangroome, is on a mission to expand the organisation and improve the services it provides to members.



Above: Directors Jeff Smit (left) and Barry Rogers (NZ), with President Ian Stangroome.

Below: Vice-President Mark Padwick (left), and directors Tim Grimes, Mark Mitchell and Deyan Barrie.



The VASA Board will now meet every two months to monitor progress of a range of initiatives and to keep the pressure on issues such as the Carbon Pollution Reduction Scheme (CPRS), new refrigerants, and flammables.

Among other things, the Board will re-write the VASA Code of Ethics which will reflect the organisation's expansion to cover auto electrical and cooling or heat exchange sectors of the aftermarket.

New membership decals for placement on workshop doors or windows will be printed, and these will include space for the AU number for those workshops with this refrigerant authorisation.

New relationships will be forged with TAFE colleges, with a view to encouraging youthful participation in the VASA network, and so provide an ongoing means of membership growth.

The accident that was waiting to happen with hydrocarbon refrigerants has happened, in South Australia of all places. Now perhaps all State authorities will start enforcing their individual regulations to safeguard the repair industry service personnel and motorists of Australia.

(Full details inside)



The countdown begins

to the most important training convention and trade show in Australasia for vehicle air conditioning, electrical and cooling technicians.

- June long weekend 11-14 June 2010
- The best venue on the Gold Coast
- Registration target - 500 technicians and workshop owners
- Trade show target - 50 booths containing the latest and greatest in tools, components and technologies
- 36 trade booths are already pre-sold
- Training sessions - longer and better than ever with at least 10 of the nation's leading trainers
- Learn to Earn - a new emphasis on helping workshops to work smarter, solve problems quicker, keep up with new vehicle systems
- The best networking you will ever find in this industry
- . . . and have fun at the same time - bring your family





RACV Royal Pines
Resort

**Relevant
training is
Convention's
top priority**



PROGRAM

Greater attention than ever before is being paid by the Wire & Gas Committee to the training program.

While the program gets bigger at every convention, the committee is listening to the punters and as a result there will be a wider range of training and a more comfortable training set-up.

The spaciousness of the Royal Pines Resort will allow more room for the training sessions and, for the first time, chairs will be provided at each session and trainers with softer voices will be equipped with mini PA systems. Noise interference between the trainers will also be mostly eliminated.

Many of the popular trainers will re-appear, along with some new ones.

The subjects to be covered by the trainers will include most if not all of the following:

- Business management
- Agricultural and industrial plant aircon
- Commodore air conditioning
- Hybrid vehicles
- Common rail diesel
- European engine management
- Toyota air conditioning
- Safety restraint systems
- Radiators
- Entry level air conditioning
- Component rebuilding
- Scan tool training
- Dual battery/charging systems

As well, it's possible that the pride of the Australian defence fleet, the awesome Bushmaster, the Australian-built wheeled armoured vehicle, might be at the Convention.



If there are enough takers, the Grant Hand (Automotive Training Solutions) assessment program for the National Refrigerant Handling Licence will also be available, with the VASA air conditioning simulator pressed into service again.

The picture (left) shows trainer and assessor Rick Goodwin with candidates for assessment at Wire & Gas 2008.

FRIDAY 11 JUNE 2009

9am – 3pm	Wire & Gas golf tournament at Royal Pines course (including lunch)
12 noon – 3pm	Lunch and go-kart racing (to be determined) for non-golfers
6pm – 9pm	Official opening function at the Trade Show

SATURDAY 12 JUNE 2009

9am – 9.45am	Industry update by Grant Hand and Jack Stepanian
9.45am	Trainers provide three minute introduction to their training sessions
10.15am	Morning tea
10.45am	Open forum – including VASA Annual General Meeting
12 noon	Lunch in the Trade Show
12 noon – 4pm	Trade Show
2.30pm – 4pm	Training sessions
4pm – 5pm	Happy Hour in the Trade Show
Evening	Free

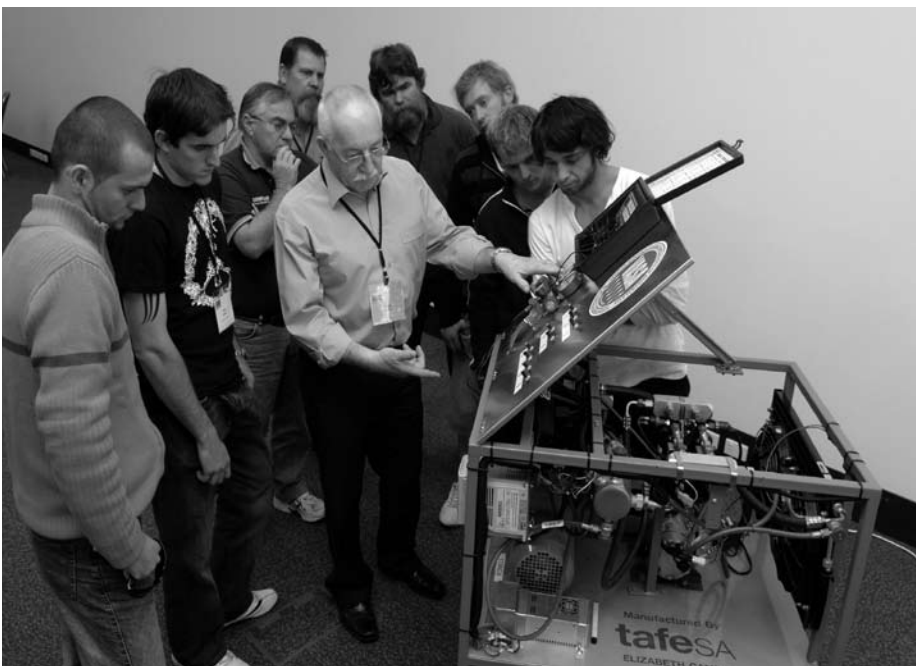


SUNDAY 13 JUNE 2009

10.30am – 12 noon	Training sessions
12 noon – 1.30pm	Lunch in the Trade Show
1.30pm – 3pm	Training sessions
3.30pm – 5pm	Training sessions
7pm – 11.30pm	Gala Dinner

MONDAY 14 JUNE 2009

10.30am – 12 noon Training sessions and farewell lunch



A convention room offer that will take some beating

The RACV Royal Pines Resort has agreed to peg the basic room rate for our conventioners to \$165 including GST. This is tremendous value considering the standard of the hotel amenities.

And the bonus for the convention is that the more delegates who take up the room offer, the bigger the rebate VASA receives on the hire of the major convention rooms and exhibition space. Those savings will be passed on to delegates in the form of better entertainment and other benefits.

The convention organisers have noted over the years that the best conventions are those where the delegates are contained within the precincts of the convention venue.

Royal Pines offers everything on site, and the convention committee is working with

the hotel to develop a partners' program and children's activities or child minding.

The delegate packages have been set for VASA members at \$495 + GST per delegate.

Incentives to encourage workshop owners to bring more staff and apprentices have been set at \$295 + GST for the second and subsequent technicians from the same workshop as a full-paying delegate and \$95 + GST for one apprentice per full paying delegate

Non-VASA members will pay an additional \$50 + GST premium on these fees.

The committee is expected to announce an early bird package later in the year.



THE GOVERNMENT CONTINUES TO CONFUSE - BUT VASA WON'T TAKE ITS EYE OFF THE BALL

The Federal Government's Carbon Pollution Reduction Scheme (CPRS) continues to confound the Australian public and its future impacts on industry remain in doubt.

However, the economic boffins in the government continue to push their barrow, especially in relation to the proposed inclusion of imported R134a in the permit scheme.

If the permit scheme goes through, the price of R134a is expected to sky-rocket, causing a ripple effect which threatens to push motorists and some repairers towards cheaper alternatives.

This would run counter to VASA's consistent promotion of best practice and adherence to OEM standards in the choice of refrigerant.

The VASA Board discussed the issue at length recently, and agreed to maintain the pressure through Refrigerants Australia, which is spearheading the case for exemption to the government.

Here, in brief, are some of the main points being presented by VASA and argued at the

RA Board table by VASA's representative, Mark Mitchell.

The price

The price of refrigerant affects the entry level service prices provided by all workshops, and it is hard enough for this sector to sell itself and the services it provides without more increases in the cost of the refrigerant.

Death knell for old cars

Pushing old cars off the road is not a good move. VASA is against anything that makes it more difficult for the responsible motoring public to service their cars and maintain them properly. In many instances, the current cost of repairing an a/c system has the potential to end a good car's life. Even some of the environmentalists will confirm that it is better to preserve the fleet, rather than the crush-and-replace mentality of car disposal.

Our sector relies on servicing vehicles aged three years and older and any government intervention to reduce this minimum is not welcome.

Why encourage HCs

Higher HFC prices will drive the motorist to hydrocarbons

(HCs) in the states that don't enforce occupational safety rules. Motorists by nature will migrate to the apparent best value for money or even lowest cost.

Workshops may chase cheaper options

Higher HFC prices will motivate many workshop owners to opt out of R134a and peddle HCs. Motorists seeking a cheaper repair are likely easy pickings.

An increase in non-compliant workshops will be extremely detrimental to motoring and workshop safety in this country.

No environmental benefit

A positive environmental outcome for the automotive sector is not there under the CPRS, as expressed in earlier points.

Taxation will not solve it

The long term challenge of moving our cars out of HFCs and into something else, will not be solved through taxation and emission permits.

The carbon taxing models are best suited to smokestacks and tail pipes, not synthetic greenhouse substances.

The engineers, designers and scientists in partnership with industry and the true environmental side of government will shape the automotive landscape for the better, not the revenue grabbing economists shaping the CPRS.

Chairman of Refrigerants Australia, Andrew Ambrose, in accepting VASA's submissions, said the CPRS model is fundamentally flawed when associated with the HFC gases, specifically as it relates to the RAC sector.

"The CPRS is a one-size-fits-all exercise that applies to everything from coal to compressors. Unfortunately it simply does not work with refrigerants, which is why they are not included in any emissions trading scheme anywhere in the world.

"Unfortunately the Government seems wedded to this ideological approach, despite evidence that shows it will be extremely expensive and quite ineffective.

"We continue to meet with Government and the Opposition to push home our views," Andrew said.

The Code spells out the things you **MUST** do and the things you **SHOULD** do

Hot Air is publishing the entire Code of Practice, with comments, section by section, to help with interpretations.

VASA has received a number of requests for information, as well as some criticism of the Code for its lack of detail.

While VASA and the Motor Trades Association had a great deal of input into the Code, at the end of the day, the Code had to undergo a strict government process involving technical as well as legal scrutiny.

It is important for technicians to understand that this Code is delivered on the assumption that those who pick it up to read it, **already know what they are doing**.

In other words, too many technicians are expecting the Code to be a full-on workshop manual. The Code is only supposed to be read by technicians who are already well trained, and have at least the minimum Certificate II standard of understanding of vehicle a/c systems.

Members need to understand that this Code does not constitute a technical design document and must be used with other standards and Codes of Practice already in existence - in particular, AS 4211.1 - 1996 gas recovery or combined recovery and recycling equipment.

A.20 Advice to vehicle owner/operator

A.20.1 Owners/operators must be advised to operate the air conditioning system for a minimum of 5 minutes each week, regardless of the season. The reason for this is to keep the system functioning effectively and keep seals well lubricated so that they don't crack or leak.

VASA NOTE:

The a/c in most modern vehicles is used now on a daily basis, but the owners of those vehicles which are not used regularly should be advised to run the system at least once a week, as recommended.

A.20.2 Owners should be advised to periodically inspect or have the air conditioning system inspected for evidence of leakage.

VASA NOTE:

Most customers don't even consider regular a/c maintenance until the system stops blowing cold air. Many also think that the a/c is serviced as part of a standard engine service, which is not the case.

It is good marketing practice to offer a free inspection of the system once a year, giving workshops a good excuse to invite the customer back for something free. The workshop should take the time to educate customers on the value of this service to avoid very expensive replacements and repair in the longer term.

A.20.3 Where a refrigerant used to charge a system is a different refrigerant than was originally designed for that system, the vehicle owner should be advised.

VASA NOTE:

This is particularly relevant if a non-professional workshop charges the system with something like a hydrocarbon refrigerant. Under most state laws, the customer must be told that it is a flammable refrigerant, and must also be shown a copy of a letter from the manufacturer of the vehicle that it is safe to use a flammable refrigerant in the vehicle. Since no car maker in the world will provide such a letter, it means that hydrocarbons can't be used - but some backyard workshops will still try it on, just to save a few dollars.

A.21 Storage

A.21.1 Refrigerant containers must be stored in a secure, cool place, away from fire risk and sources of direct heating and must be within test date.

A.21.2 Refrigerant containers must be stored at or below 48°C unless otherwise specified by the manufacturer.

VASA NOTE:

Adhering to all of these clauses in the Code is really a matter of common sense. Refrigerant is reasonably expensive, so why would a workshop willingly throw money away just for the sake of paying a bit of attention to storing bottles in a specific and safe place in the workshop, checking the valves for leaks at least once a week in the busy season, and checking for worn valves or valves not sealing properly because of build-up of workshop grime.

A.21.3 Containers should not be dropped. Mechanical damage to the container and its valve should be avoided by careful handling. Refrigerant containers must be secured at all times to avoid accidental damage.

A.21.4 When not in use, container valves must be closed, the valve outlet cover nut fitted and the valve protection cover replaced.

A.21.5 Containers must be dedicated to one type of refrigerant.

The President's View



VASA President Ian Stangroome has high ideals for his organisation's future.

He firmly believes that VASA workshops are among those that fulfil the criteria of the modern shopper who has become more knowledgeable and more demanding as a result of the information revolution.

"It is the responsibility of all business owners to ensure their team members are given every opportunity and encouraged to upgrade their skills and gain new ones," he says.

"Our businesses must evolve, just as the technology in the vehicles we repair is constantly evolving.

"Car owners are now looking for a business that will not just be able to solve their automotive problems efficiently, but provide outstanding service and offer excellent value.

"Customers will shop around until they find that business.

"It follows that technicians must be provided with the most up-to-date training and equipment that the workshop can afford.

"You can't worry about technicians leaving your business after you've spent time and money training them. The alternative is that you don't train them and they stay forever.

"What an unbearable thought," Ian added.

Over the phone quotes - DON'T DO IT!

VASA has more than once tried to educate members on the correct way of quoting on jobs. In fact, in many of the original RTPs, trainer Grant Hand frequently mentions the importance of communication with your customer as the only way of making jobs pay.

VASA's affiliate organisation in America, MACS Worldwide is on the same track, and we thought members might take more notice if it heard the story from an industry leader from elsewhere.

MACS Chairman, Andy Fiffick sums it up like this:



"With the economic downturn, our industry is experiencing a vast increase in calls for quotes on repairs and services.

I would argue that our industry shoots itself in the foot most of the time when we quickly respond to these calls.

In my opinion, a workshop should never give out a price for a repair of a vehicle over the phone.

If we provide a quote without taking the time to inspect and diagnose the vehicle, we have to rely on what the caller tells us is wrong.

This is a very risky practice because most callers have no idea what is wrong with their car. By not inspecting it we rob ourselves of full knowledge of what is wrong and fully understanding what actual repairs are needed. And we also do a disservice to the client by not giving them our full professional evaluation of their vehicle and its needs.

We also do a huge disservice to our industry.

Rebate arrangement benefits VASA

A promotional rebate arrangement, forged between the former Australian Association of Automotive Electricians and the Australian company, Century Batteries, has been transferred to VASA since the amalgamation of the two associations.

When VASA members purchase a Century battery, a rebate is credited back to VASA.

Century expects no endorsement from VASA, but obviously appreciates that VASA is mostly made up of auto electricians who are big battery users.

Every time we quote a low or cheap price for some service or repair over the phone we lower the standard for all other workshops in the area and set our industry up for a black eye.

Let's say a person calls shop A about some kind of repair and get a quote for \$130. The caller then goes through the phone book, calls shops B, C and D in the area and asks them if they can beat the first price.

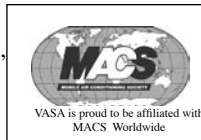
Shop rates vary for many reasons but that quoted price continues to drop until someone has a 'loss leader' job in their workshop. And once again our industry is beaten up and shell shocked about charging a fair and equitable price for our goods and services.

And when that customer comes in they don't want to hear about the actual needed repairs like the dry-rotted hoses, stuck or worn out components or desperately needed maintenance items. They buy reluctantly and will often walk away telling everyone that our industry is full of rip-off artists and cheats who will not honour that low quoted price for what they thought they needed. Furthermore, since the shop had discounted the service in an attempt to make the customer happy, no one wins in this scenario and the industry gets a huge black eye.

I believe that all repairs should have a comprehensive and detailed inspection before any price is given. It protects the consumer, our reputation and our profit margins.

Please take the time to educate your callers on the need to inspect the vehicle before you just blurt out a price. Everyone will sleep better, the vehicle will be repaired properly and our industry will appear a lot more professional to the consumers.

Don't be part of the problem by quoting 'loss leader' pricing over the phone without inspecting the vehicle."



As the VASA Board explained, it is a good relationship with no strings attached, and works purely for the welfare of the members as a whole.

VASA appreciates the support provided by Century and has agreed to let its members know that when they buy Century batteries, they also help VASA funds.



Board meeting highlights

Approved Repairer Status with car clubs

Following the successful operation of the Approved Repairer arrangement in South Australia with RAA, an approach will be made to all other Australian Clubs to see if a similar arrangement can be made in other states.

Because of the different operational and management arrangements in other clubs, the Directors were made aware that it may not be possible to repeat the arrangements in other states. The concept will be sold on the benefits of providing the best service to club members.

Media exposure

VASA will prepare more general media releases as part of the program to improve the awareness of the VASA brand.

Service Code of Ethics

A Service Code of Ethics will be drawn up in a four page document for distribution to all members and accessible on the website.

The Code of Ethics, which has not been updated for some years, will provide a new set of standards which all members should apply to provide the best outcome for customers of VASA workshops across all sections of the trade.

New window decals

A new VASA decal will be produced. It will have the descriptive words of VASA together with the member's AU number if they have one.

A CD will be produced for distribution to all members. It will contain a wealth of information to assist with member marketing, including external signage templates, copies of the VASA logo in various formats, templates for engine labels, vehicle job cards, appropriate documents and media release templates.

TAFE memberships

As a trial program, those TAFE Colleges which have shown an interest in a relationship with VASA will be provided with a negotiated number of the bi-monthly Hot Air newsletters. An offer will be made of free membership (except the TaT service) to all apprentices for the four years of their apprenticeship.

South Australian Government rules hydrocarbon refrigerants cannot be used in cars in their State

VASA had always claimed that it would take just one death or near-death to make the various state authorities get serious about enforcing existing safety regulations on the use of hydrocarbon refrigerants in systems for which they were not designed.

South Australia, one of the states which has so far turned a blind eye to the use of flammable refrigerants in cars, has had its big incident, an explosion and fire in a Toyota campervan which resulted in serious burns to the mechanic and auto electrician working on it.

SafeWork SA issued a Hazard Alert in September last year, presumably soon after the explosion occurred. Considering the seriousness of this event, VASA believes the government should have issued a major media statement to warn all motorists and repair shops.

The government warning makes it very clear: "A retrofit can only be undertaken on an automotive air conditioning system if

the vehicle manufacturer has approved the use of flammable refrigerants in the system.

"To date, no manufacturer has approved the use of these refrigerants."

A retrofit can only be undertaken on an automotive air conditioning system if the vehicle manufacturer has approved the use of flammable refrigerants in the system. To date, no manufacturer has approved the use of these refrigerants.

VASA can add to that.

From its worldwide research, it is now common knowledge that no vehicle manufacturer has any intention of even thinking about designing a system to handle flammable refrigerant in any vehicle air conditioning system because of safety fears.

The alert goes on to say that a

retrofit can only be undertaken on fixed installations if the equipment components are designed or modified to be safely used with flammable refrigerants.

There are other Australian

Standards and safety regulations, including proper use of permanent labelling, which come into play when use of hydrocarbon or flammable refrigerant is contemplated.

In South Australia, the *Dangerous Substances Act*, plus the Occupational Health, Safety and Welfare Hazardous Substance Regulations of 1995,

are those which set out the risk assessment criteria, and which spell out the general duty of care to avoid endangering the safety of others.

The risk control measures quoted by the government are believed to be based on this Act and the Occupational Health regulations.

The Alert said that SafeWork SA was investigating the incident.

The refrigeration mechanic and an auto electrician were repairing an air conditioning unit in an old model campervan that was using hydrocarbon refrigerant. It appears that while the refrigeration mechanic was working on the unit in an auto service centre, a quantity of flammable refrigerant escaped and came into contact with an ignition source.

An explosion and fire engulfed the internal engine compartment and front interior of the vehicle, resulting in serious burns to the mechanic and the auto electrician.

www.safework.sa.gov.au

Final of the Australian History of Vehicle Air Conditioning



This is the final chapter in Ralph Cadman's memoirs of the characters, movers and shakers of the vehicle air conditioning industry in Australia.

1980

AWA

Five Dock NSW

John McIlwaine

When Pioneer Japan commenced sourcing car air conditioning components, AWA accepted the challenge on the Australian market. In conjunction with Sanwa Seiki Japan, Pioneer/AWA released the ten piston swashplate compressor to contest the rotary compressor aftermarket against Sanden.

AWA achieved reasonable success with interstate branches being an obvious advantage for distribution, particularly in Queensland.

As the need for some local variations to models increased in the late 1980s, AWA's penetration suffered at the hands of Cooltemp, although there was considerable brand sharing occurring in that decade.

John Wallace, a radio technician, assisted AWA with some of the local changes needed. John also spent time with Repco, another national parts company with ambitious plans to be a major player.

Post-1980

In this period, a large number of small parts operators commenced business, most with limited resources.

Some of the notables started parts and system dealing following design of a system suited for a low volume car or truck.

The major importers sold these operators the major components and adaption was made as needed. The car industry saw this happening and in some cases, contracted the locally made assembly to restrict the sale as an aftermarket competitor.

The parts companies fought each other for sole distribution of components both large and small in order to preserve their place in the market.

Whatever anyone could do, they could never prevent the growing strength of the motor companies and the OEMs such as Nippondenso with their overwhelming research and engineering expertise.

It seems history is not high on the agenda of members. Despite the open invitations for members to throw their history into the mix, very few responded. The Board has decided that the project will be wound down, but not before the history chapter dealing with Mark IV is written by Mark Padwick, and John Blanchard Senior (Melbourne Auto Air) will be asked to finalise a history he began some years ago. It will all be assembled and placed on the VASA website for posterity.

New DVD on air conditioning servicing procedure is a must-have for all workshops

One of Australia's most experienced air conditioning trainers, Grant Hand of Automotive Training Solutions, has delivered the most comprehensive and clear air conditioning service message ever produced.

It's a timely refresher course for the experienced and an essential tool for apprentices and newcomers to the industry.

to sell a professional service, as opposed to a quick 'top up' (now illegal) and an in-depth study of why components fail.

And, inside the DVD case is a 24 page workbook containing a summary of professional air conditioning service procedures.

This total package is retailing for \$50 but, for VASA members, a limited number of DVDs are available for only \$40.



To order your copy, email a request to secretary@vasa.org.au with your name, membership number and phone number and we will post it to you immediately along with your invoice.

Thanks to sponsorship funding from Refrigerants Australia, creative input from Grant Hand's company Automotive Training Solutions and production support from VASA, this long awaited program is now available at a special price to VASA members.

You receive a DVD case containing three programs, including a detailed air conditioning service on a vehicle, an insight into how

June 2009 workshop weekend in Adelaide a huge success

The Bosch/VASA training weekend in June 2009 was a great success with 60 participants in the training and 80 for the dinner function and awards ceremony.

Training was delivered by Bosch's Darren Todd and Daryl Cavanagh, Dylan Pinkard and Michael Hammer from Redarc and Dave Townley from Adair.

The trade show attracted plenty of attention.

While the members were at work, 17 of their partners explored the Barossa on an organised tour.

At the dinner, VASA Life Member and former director Glen Watkinson was MC and among the attendees were representatives from Bosch Head Office in Melbourne, The Capricorn Society, Adair, Redarc Electronics, Cooldrive Distribution, General Bearing

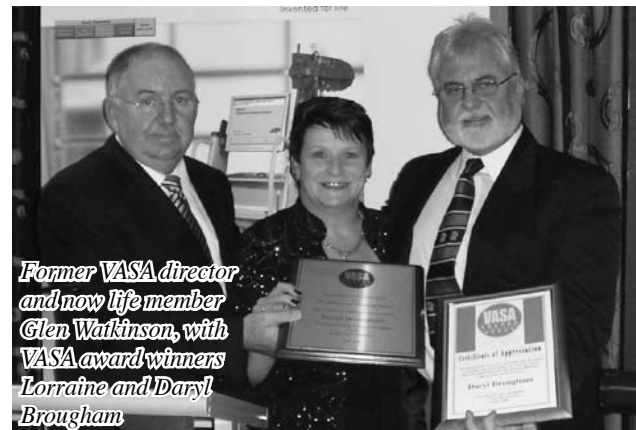
Company, Heatcraft, Ashdown/Ingram, Independent Batteries, TAFE SA, RAA and a great contingent of VASA members, Bosch Service Dealers and their partners.

VASA directors Mark Mitchell, Deyan Barrie and Jeff Smit made special trips for the event.

Jeff Smit's Sydney workshop was announced as being accepted as the latest Bosch Service Dealer.

Former VASA director David Jackson and his wife Julie received the Bosch Award and David and Carolyn Vidler (Seaside Automotive) received the RAA Award.

Daryl Brougham (former employee of Car Aire and Cooldrive) received an award from the SA VASA membership for his efforts and input over the years.



Former VASA director and now life member Glen Watkinson, with VASA award winners Lorraine and Daryl Brougham



David and Julie Jackson accept the Bosch Award from Regional Director for the Automotive Aftermarket, Phil Robinson



Scott Robertson of RAA presents David and Carolyn Vidler (Seaside Automotive) with the RAA Award



The trade show attracted a lot of interest

Another crucial step towards global adoption of HFO-1234yf as replacement for R134a

Japan's regulators have moved HFO-1234yf one giant step closer to global adoption as the refrigerant of choice of most of the world's car makers.

Manufacturer Honeywell has recently announced that its new low-global-warming-potential refrigerant for mobile air conditioning can be imported and used in Japan. This is seen as a significant step toward global adoption.

HFO-1234yf has been reviewed by the Japanese Ministry of Health, Labor and Welfare, the Ministry of Economy, Trade and Industry, and the Ministry of the Environment in accordance with the Chemical Substances Control Law.

Following these reviews, the Japan government decided that the refrigerant can be imported into Japan without volume or use restrictions and that no special controls or special monitoring are required.

"This approval from Japanese regulators moves forward the global adoption of HFO-1234yf, and is a significant step in the effort to limit greenhouse gas emissions from mobile air conditioning systems," said David Diggs, global business director for Honeywell Fluorine Products.

"HFO-1234yf is a near drop-in replacement for the current refrigerant and offers proven performance in climates around the world."

Honeywell developed HFO-1234yf in response to the European Union's Mobile Air Conditioning Directive, which requires that all new vehicles produced starting in 2011 use a refrigerant with a global warming potential (GWP) below 150.

Current mobile air conditioning systems use HFC-134a, a refrigerant with a GWP of 1,300. HFO-1234yf has a GWP of only 4.

This new refrigerant is part of a larger platform of low-GWP refrigerants and blowing agents that Honeywell is developing.

HFO-1234yf has undergone significant testing for safety and efficacy by independent testing groups, including the SAE International Cooperative Research Program, which comprises leading automakers.

The SAE testing found HFO-1234yf to offer 'superior environmental performance to CO₂' an alternative refrigerant, while having 'the lowest risk for use in mobile air conditioning systems in meeting environmental and consumer needs'.

For more information on HFO-1234yf, go to www.1234facts.com.

Until recently, the only car manufacturers which supported the CO₂ air conditioning technology were in Germany.

However, recent murmurings indicate a cooling of support, because of cost.

Their move towards natural refrigerants may have suffered a setback in the face of commercial realities.

In a statement at the end of May, Matthias Wissmann, president of the VDA (German auto manufacturers' association), said that the association had always expressed its desire for a global standard and realised that the continuing development of vehicle air conditioning systems requires considerable funding for research.

"In the opinion of the VDA," he said, "it is very unlikely that investigation of natural and chemical refrigerants can be done in parallel, and impossible for the Germans or Europeans to develop a solution of their own, in view of the state of the global market."

Honeywell lists the main benefits of HFO-1234yf:

- lower lifetime greenhouse gas emissions
- dramatically shorter atmospheric lifetime
- compatibility with current automotive a/c systems
- superior cooling efficiency
- best ease of adoption
- safety for mobile applications

Vehicle air conditioning system first with injector technology

DENSO Corporation has developed the world's first passenger vehicle air conditioning system that uses ejector technology.

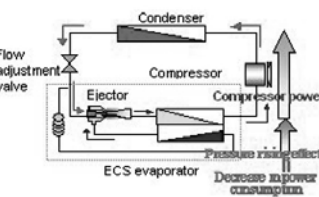
The ejector, which is a small refrigerant injector, contributes to an overall reduction in power consumption. The system was to be installed on the new Prius, introduced by Toyota recently.

The new air conditioning system reduces the compressor's power consumption by up to about 25 per cent, compared to conventional car air conditioning

systems, and thus contributes to fuel savings.

Much of the energy consumed by a vehicle's air conditioning system is used by the compressor to compress the refrigerant. In conventional air conditioning systems, an expansion valve is used to reduce the pressure of the refrigerant before passing it through the evaporator to cool the air.

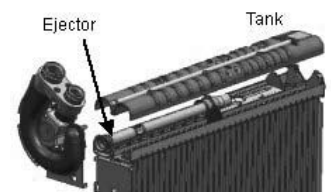
DENSO's new system uses an ejector instead of an expansion valve. The ejector recovers expansion energy, which was



previously lost in the expansion valve, and converts it into pressure energy.

This reduces the compressor's workload and helps reduce the air conditioner's overall power consumption.

The ejector is integrated into the evaporator tank, where refrigerant flows. This new design eliminates the need for the ejector to have a thicker structure to withstand external pressure and also eliminates pipe connection parts needed to connect the ejector with the



evaporator, which helps reduce the size of the ejector.

The ejector cycle system (ECS) evaporator which is equivalent to the size of a conventional evaporator, can also be applied to conventional air conditioning systems.

