



Hot Air

NEWSLETTER

The Mobile AC, Electrical and Cooling Technicians of Australasia

JUNE 2008

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Australia honours its rising AC stars

The rising stars of Australia's automotive air conditioning industry was annointed at the inaugural CoolWorld Industry Awards in April.

Steven Tiniakos, proprietor of Sydney-based Celsius Air Conditioning and Refrigeration, was the first ever winner of the Mobile Air Conditioning Technician of the Year award at a Melbourne function.

VASA, which sponsored the Mobile award, had selected two finalists, both of them outstanding examples of the new breed of technician in the workforce. Both came from VASA workshops.

The runner-up was Steven Manassa, who works at Kar Air Pty Ltd at Ferntree Gully in Victoria.

The judges, led by Mark Padwick, VASA President, said the two finalists were "very able ambassadors for the mobile air conditioning industry".



VASA President Mark Padwick, with the first winner of the Mobile Air Conditioning Technician of the Year award, Steven Tiniakos of Sydney.

A generation which ignores history has no past and no future

VASA's vice-president Mark Mitchell, has taken on the task of collecting and writing the history of vehicle air conditioning in this part of the world.

He has talked several of Australia's pioneers into picking up the pen to contribute to the wealth of material which is,

fortunately, still available, but which has never been compiled into a history of an industry which can take its place alongside others in the National Archives.

Sure, VASA has acknowledged its pioneers through annual awards, but till now, the real history of how vehicle

air conditioning became a specialised trade in a unique part of the world where most vehicles came from foreign factories, has never been chronicled.

There's a role to play by every technician who has ever installed an AC in a vehicle.





Steven Tiniakos does VASA proud in his response to winning his award. At right was MC James O'Loughlin of the ABC's New Inventors and at left VASA President Mark Padwick.



Winner Steven Tiniakos had gone to great lengths to train and educate himself in all aspects of the trade as a licensed technician in both mobile and stationary air conditioning and refrigeration, a post-trade qualification and a teaching qualification - Certificate IV in Training & Assessment.

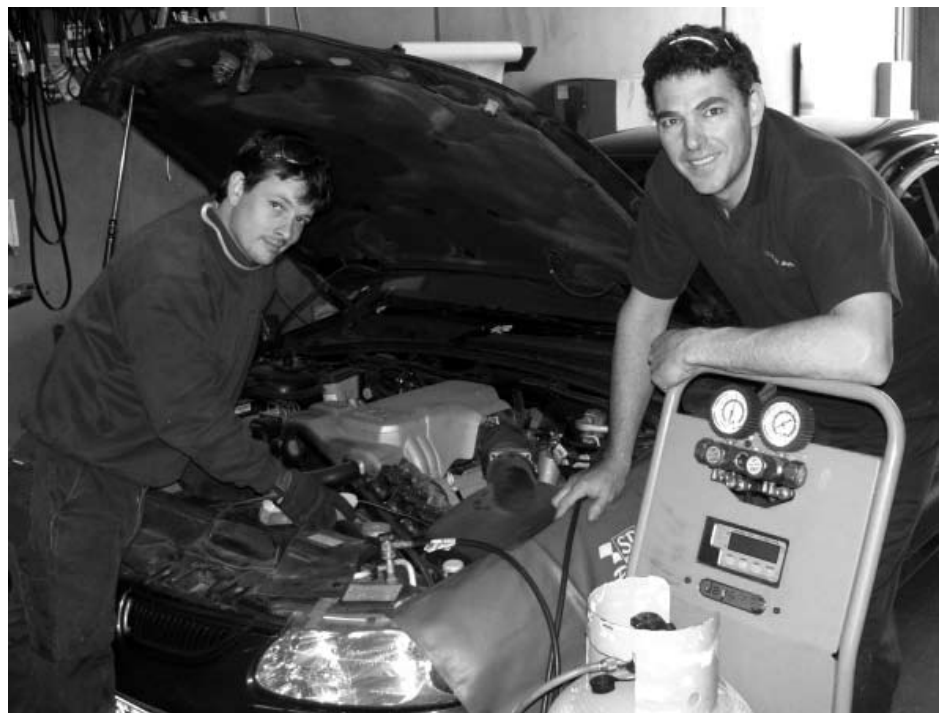
He did extensive overtime and voluntary weekend work to get there and, in the process, worked on AC systems on buses, coaches, trucks and cars in Australia and Europe.

He spends more time than most workshops would consider viable, educating his customers on the difference between a cheap, and now highly illegal, gas top-up in favour of a thorough diagnostic check of the system and repair of leaks.

He believes that if all workshops followed the same routine, the time they believe they may be wasting on customer service would be returned to them many-fold in the form of satisfied customers who will eventually see the long-term value of a properly repaired and efficient climate control system.

"Steven is also to be particularly commended for pursuing a part-time teaching role through TAFE, while staying 'on the tools'," said Mark Padwick.

In an opening address CCN (Climate Control News) managing editor Matt Porter said the significance of Australia's \$16 billion air conditioning and refrigeration industry to the nation's economy and ecology could not be overstated.



Runner-up Steven Manassa (left), who was nominated by his employer Andrew Robertson, who operates Kar Air Pty Ltd at Ferntree Gully.

The future through the eyes of young technicians

For years, VASA has sprouted the sage advice of its elder statesmen, and implored everyone in the trade to keep learning new skills and to diversify.

The two Stevens mentioned in this story represent the new upcoming generation of technician, and there's no doubt that they have a different slant on life.

VASA posed a series of questions to both, to see what they think about the future of the industry and those who wish to work in it.

Their assessments of the future are worth reading, whatever your age.



In line with decisions reached early this year, the VASA logo has been simplified to reflect its new status

as an entity representing The Mobile AC, Electrical and Cooling Technicians of Australasia.

The clutter of words surrounding the logo has been dropped.

VASA is now well enough known to be a word in its own right - it is no longer an acronym. The new logo will be phased in over time, and it will appear on new annual certificates to be issued to financial members in coming weeks.

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The Q and A of the future- through the eyes of two young prize-winning technicians

Q With vehicle design constantly changing, how will technicians in the aftermarket cope?

A There's a saying 'If you're not growing, you're dying.' There is no in-between. If technicians today don't apply themselves to continuing professional development it will be impossible to keep up.

They will fall behind. They will only be able to work on certain vehicles until eventually those vehicles aren't on the road any more.

Q Given that you have been selected for this award because you already have substantial credentials, do you intend to stop learning, or do you believe you have enough knowledge to carry you through for the next 20 years or so?

A Continuous improvement is the key to success. I learn at least ten new things a day, or I refresh on things I haven't done in a while.

Electrics is definitely something that needs continuous knowledge top up, but knowledge of new systems design would also be needed.

Q The vehicle aftermarket sector in electrics, electronics and climate control is generally regarded as an 'elite' or 'niche' area of vehicle maintenance and repair. How do you see it?

A True! The skills required are tremendous. So is the knowledge to back up the competent technician.



It's very technical and it does require a certain level of expertise.

Q Given the demands on modern technicians for advanced skills in electronics, do you believe that the training available through TAFE courses and other avenues is sufficient for the average technicians who just want to 'keep up'?

A TAFE provides the absolute fundamentals to build the foundations of a technician. The building blocks are added by working on the tools and by never-ending professional development. TAFE Plus short courses are also available and can be custom made to meet current industry demands, It's up to the industry as a whole to work together to develop these as cooperation is the secret.

Training through TAFE is not sufficient. The training provided by VASA for instance is much more industry specific than most TAFE programs and also more advanced to suit highly experienced technicians.

Q Do you have a wish-list for the benefits, training or other services you would like to see VASA provide its members?

A I would like to see VASA focusing more on education, by hosting seminars, conferences, training evenings, and hosting trade nights.



Certificate III in automotive air conditioning or even a Certificate IV just for auto air. Fully recognised apprenticeship in AC for new employees.

Q Do you have any views on how more young people (male or female) could be encouraged to consider a career in vehicle diagnostics?

A By removing TAFE fees for apprentices or trainees in areas where there are skill shortages such as the automotive industry.

Any encouragement programs would need to be angled at people with a passion for cars. Most people don't want to work on cars anymore.

Q Do you consider your chosen career a satisfying one? Do you think it could be promoted in a better way to give it a cleaner, hi-tech image, almost like a career in IT or computer programming?

A This is a satisfying career. Due to the rapid change of technology it's always challenging and rewarding, as there is always something to learn. The new look to Air Conditioning Specialist could be 'Climate Control Specialist'.

We get a lot of satisfaction out of fixing things.

Q What are your views about the way most aftermarket workshops present themselves; how they explain to a customer the sort of diagnostic services which need to be performed before

a repair can be effectively carried out?

A It is very difficult with a seasonal business to explain diagnostic services during the peak season to every customer. We don't do things as well as the big dealerships do with regard to presentation.

Q What about charge out rates? Do you believe the time has come for professional workshops with the skills you possess, to change their attitude to hourly charge out rates?

A I tell my clients "If it's price you are after, you are speaking to the wrong person. If you want to ask me what I do, go right ahead! If you can trust someone to do an honest job without overcharging that's the key. By the same token, you should not undercharge a client by taking shortcuts.

Some dealerships charge over \$110 an hour. If we charged that, many customers would go elsewhere. Customers have the perception that dealerships have more highly qualified technicians.

Q Is there anything else you would like to comment on with regard to your profession?

A Look out, technicians of tomorrow. The skills required to work on AC systems today are greater than they were yesterday and will be a lot more complex tomorrow than they are today, especially if CO2 trans-critical technology progresses. Technicians must stay ahead of change!

The wider community doesn't understand that air conditioning repairs require more specialised technicians than just a mechanic. We should have our own trade, such as Auto Refrigeration Mechanic or Auto Air Mechanic.

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To understand how air conditioning in cars developed in the South Pacific, there must be an historic connection with what was happening in other parts of the world, especially in the dynamic engine rooms of America.



To this end, Mark Mitchell has tapped into the best resources available. He has a personal friendship with former chief of IMACA, Frank Allison, who attended a VASA convention some years ago.

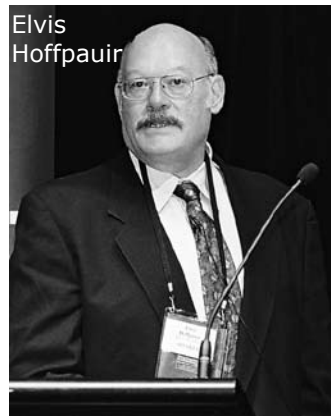


Frank now lives in retirement in Texas, and many years ago had written a detailed

history of AC in the USA, which VASA published as a series around 1999.

IMACA no longer exists, with its membership absorbed into MACS Worldwide, with whom VASA has a strong affiliation going back many years.

MACS President Elvis Hoffpauir has also visited a VASA convention, and has pledged the MACS resources to combine with VASA to ensure the



history project achieves prominence on both sides of the Pacific.

"Mobile AC has attracted an amazing, colourful and interesting bunch of individuals," says Mark Mitchell.

"The aftermarket and the individuals in the business, in particular during the late 1940s and early 1950s, set the scene for a succession of events and personal achievement. Their exploits are not only a matter for the history books, but it makes a magnificently powerful and interesting story.

"This story was first kept alive by IMACA, and afterwards carried on by MACS and VASA.

"VASA has kept excellent records of its pioneers, with a testimonial on each at its website," adds Mark.

"Apart from this list, there is no accurate list of achievements or contributions made by the pioneering businesses.

"There is no accurate timeline of technical development, no time line showing the growth and decline of the industry, no integration of OEM and aftermarket milestones.

"If you Google the history of mobile air-conditioning in Australia the result is next to zero," Mark laments.

"I personally think this is a sad state of affairs, and to make sure I was

not alone, I have asked several people for their thoughts, most from within our industry and some from outside, and so far I have received very strong support and encouragement for us to do something about it.

"The National Archives are not only interested in the historical timeline, but the human stories too."

VASA has decided to do the following:

- Bring the pioneer records up to date
- Build a historical timeline of people and events
- Seek information from industry leaders
- Recognise that some of the early pioneers are not members of VASA, nor have they received awards, and should be honoured.

"Our history in Australia and New Zealand is deeply intertwined with the USA pioneers, particularly those from the Dallas, Fort Worth area," said Mark.

As a second phase to the historical timeline, current industry leaders should be asked to submit or write their stories for the record.

In fact, Mark believes that every technician in every workshop who has installed air conditioning systems in cars, should be recognised.

Elvis Hoffpauir at MACS is just as enthusiastic as Mark Mitchell, vowing to pull it all together before the end of this year.

Technicians who have been in the game for 20 years or more are invited to contribute their history to this project. Send your contribution to: secretary@vasa.org.au

Two industry figures call it a day

Just as VASA was celebrating the energy of youth through the CoolWorld Awards, news comes in of the departure from the industry of two Queensland stalwarts.

Les Bennell, who founded his workshop at Cleveland more than 20 years ago, has closed the doors. He was VASA member number 13, which means he was involved right at the beginning.

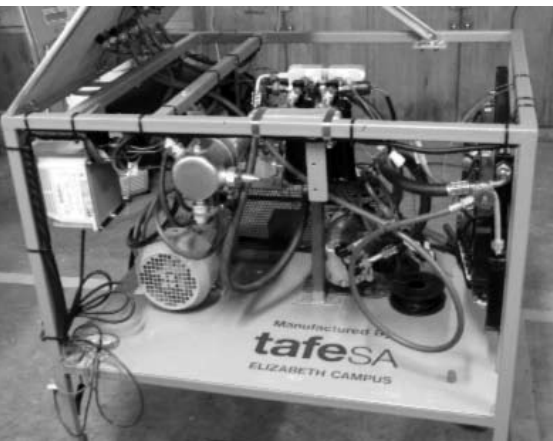
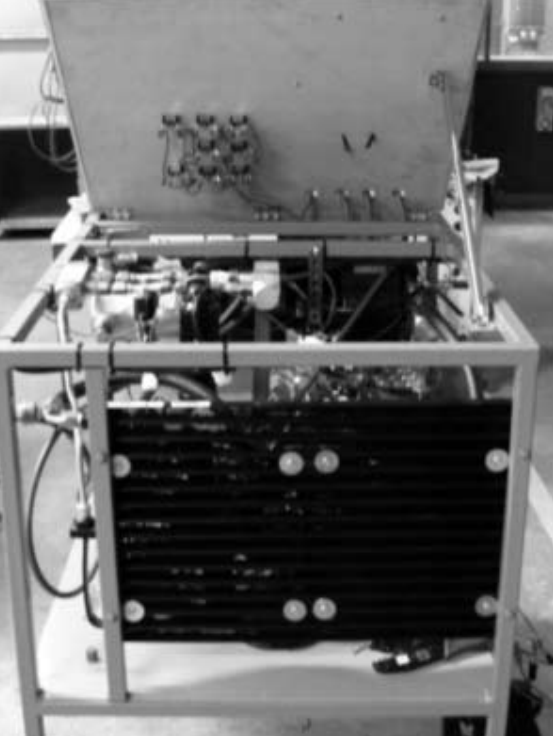


Les was awarded a VASA pioneer award in 2002, and is regarded as one of the most knowledgeable people in the game.

Another well known face at all VASA conventions and workshops was Colin Beards who ran Mobile Car Air from Narangba. Colin was member number 36.



After running his business for more than 16 years, he's hanging up the tools, but is keeping his options open for occasional weekend or night work for long-time customers.



Simulators to help in VASA assessment and training

The first of three AC simulators, designed and built by the Elizabeth Institute of TAFE in South Australia, will have its debut at the Wire & Gas Convention in late June.

The simulator will be used by trainer Rick Goodwin, of CoolDrive, for the free assessment of technicians who need to have their skills benchmarked against Cert II auto air conditioning, so that they can acquire their national Refrigerant Handling Licence. The service is available as a bonus to convention delegates only and was made possible through the generosity of Grant Hand of Automotive Training Solutions and CoolDrive Distribution.

The simulators, made possible through a funding program by Refrigerants Australia, and with the help of the staff and students at Elizabeth TAFE, CoolDrive and Sanden will later join the AIRAH assessment program which travels around Australila assessing competency levels for industry licences.

Welcome to new members

VASA extends a hearty welcome to the following new members.

If existing VASA members know any of these workshops in your locality, do the right thing and drop around with a six-pack and shake them by the hand - then promise to work together to keep all customers in the VASA network. This neighbourly gesture will do you both good.

Box Hil Institute of TAFE, BOX HILL, VIC

CoolCar North Shore, GLENFIELD, NEW ZEALAND

Total Air Supply Co Ltd, NEWMARKET, AUCKLAND, NEW ZEALAND

Bendigo Auto Electrical, EPSOM VIC

VASA is working hard to deliver bonuses for members

As covered broadly in the last issue of Hot Air, VASA is working up a schedule of benefits which will prove its relevance and value to members.

As a volunteer, not-for-profit organisation, VASA knows that when every dollar counts, members must feel confident that their membership is not only rewarding for its networking opportunities and contacts, but for improving their skills and adding value to their careers.

As a result of a number of new initiatives in recent months, it is now possible to tote up the value of membership in real dollar terms. A simple exercise shows that for those who want to keep up to date in the industry, a VASA membership can be real value for money.

Here's an example:

A VASA member has embarked on six month plan to upgrade his skills as well as those of two employees, a technician, and an apprentice.

He begins by registering early for the Wire & Gas Convention in June, with its comprehensive training program, and then he follows up with just one auto electrical workshop for himself and his two employees at his home city of Townsville, sponsored by VASA. He's also taking advantage of the free assessment day at Convention so that his technician can achieve his Refrigerant Handling Licence.

Convention registration for himself, a technician employee and apprentice:

Total registration cost (3) \$640

If he had been a non-member, his outlay would have been \$1,380
Assessment for technician (Ave) \$600

Workshop registration for Townsville (3) \$285

If he had been a non-member his outlay would have been \$525

And as a member, he already receives one free copy of the new problem solving magazine, TaT, but wants to enrol his two employees as well to enable them to gain full benefit and web access to a host of solutions (2) \$198

If he had been a non-member, his outlay would have been \$297

Do the sums...a VASA member engaged in this continuous education exercise, has outlaid just \$1,123, while a non-member workshop, with the same goals has paid \$2,802.

The VASA member is \$1,679 ahead.

His membership, for the whole year, cost him \$302.50 and this has given him discounts for himself and two staff, not available to non-members.

He's way ahead in dollars and knowledge.

Refrigerant charge rate charts can only ever be a guide. In fact, you don't need them at all.

A spate of requests for charge rate charts means that the air conditioning technician needs to be reminded once again that these charts are really not the answer and that if used, they can only ever be a rough guide. First preference is to use the recommended rates as specified by the car manufacturer.

From Volume 1, Bulletin 1 (Retrofitting) of VASA's Registered Technician Program, here is another in the series of refresher courses on charging rates.

Determining charge rates by pressures

Things are not as simple here as what they might seem - and those technicians who have been in the trade a while will know this.

The relationship between charge rates and condensing pressures/condensing temperature is not linear.

That is we do not have 75% of ideal pressures at 75% charge rates and correct pressures at 100% charge rates.

This is not to say we can't use pressures for system evaluation but rather that we need to identify the system dynamics when charging.

Let's Go Back To Basics

The condenser has to dissipate the heat that the evaporator absorbs. While charging at approximately 1/2 charge on a 25°C day there is a considerable amount of vapour being fed to the TX valve (the receiver drier stand pipe is not covered in liquid). With excess vapour feed to the TX excess superheating will occur across the evaporator (ie. reduced volume of

refrigerant entering the evaporator = excess superheat).

In this case the TX valve will open up to compensate for the vapour feed. At 25°C (nominal) the TX will fully open to fill the evaporator coil. In this scenario the evaporator can therefore absorb cabin heat relatively effectively. If we are absorbing cabin heat, then the head pressures will already be at recommended levels 'ambient' + 25°C = 50°C.

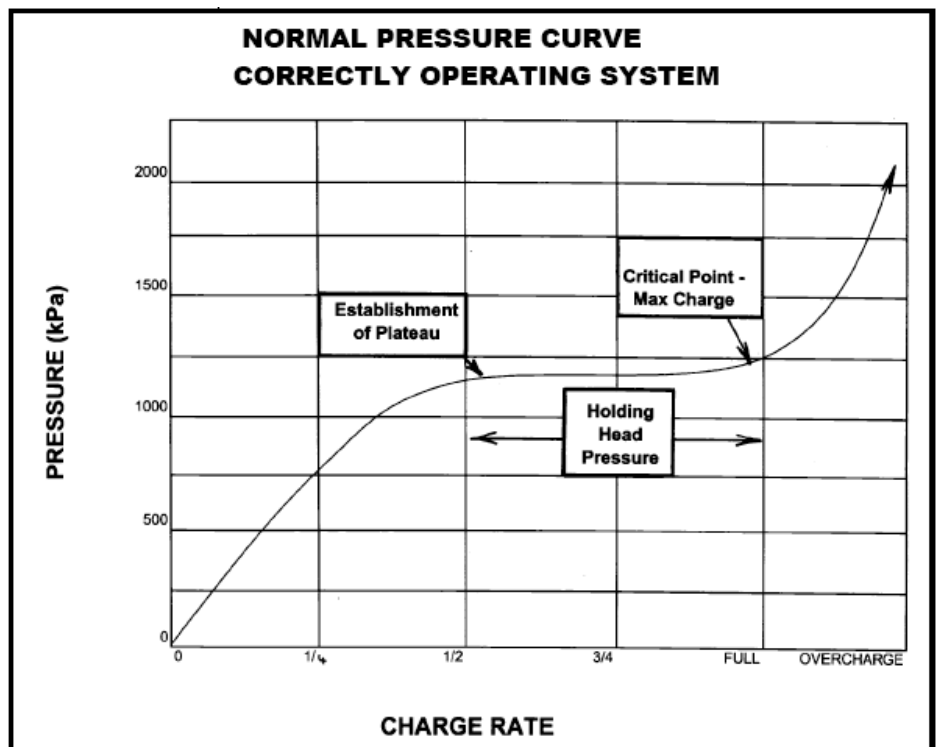
Past this point we are increasing liquid feed rates to the TX which will effectively cause the TX valve to 'shut down'. The amount of heat absorbed by the evaporator will, however, remain relatively stable.

At moderate heat loads (eg 25°C) the evaporator can be filled at relatively low charge rates - due to the TX opening up. Once the evaporator is filled and absorbing heat the head pressures will be at or near recommended levels.

Therefore the head pressures will not rise significantly.

This is the formation of the high side 'Plateau'. The high side stabilises off at 50°C (1220 kPa - 180 PSI) as charging continues up to a point of overcharge.

When entering the overcharge band, the head pressures 'kick' or begin to wander off the prestabilised plateau.



The correct procedure when charging is to watch the high side gauge carefully for the establishment of the plateau.

Past this point the high side should stabilise off or only increase marginally (due to a marginal efficiency rise in the evaporator as a result of liquid feed).

With continued charging the pressures should remain stable until the system has either:

- been charged with the correct weight/volume of refrigerant (90% of R12 weight) OR
- the sight glass clears



Refrigerant charging

The system should 'hold the plateau' up to 90% charge rates (for retrofitted systems).

If the high side kicks or wanders before a 90% charge rate is achieved or before the sight glass clears it clearly indicates a condensing deficiency.

The high side kick indicates the condenser is no longer handling the evaporator heat loads at full charge rates when the evaporator is working at peak efficiency and absorbing maximum heat.

CAUTION:

Below 30°C (dry air) or 25°C (humid air) the evaporator is not operating at maximum heat load and therefore a pressure kick may not be indicated.

Overcharging is common on cooler days because of the reduced 'load' on the condenser. At these reduced heat loads the system can hold the plateau past the maximum recommended charge point. The problem is on hot days the head pressure 'runs away'. This is where the additional subcooling check is recommended.

A 'kick' off the plateau clearly indicates the condenser is no longer dissipating the heat that the evaporator is absorbing.

LIQUID LINE SUBCOOLING

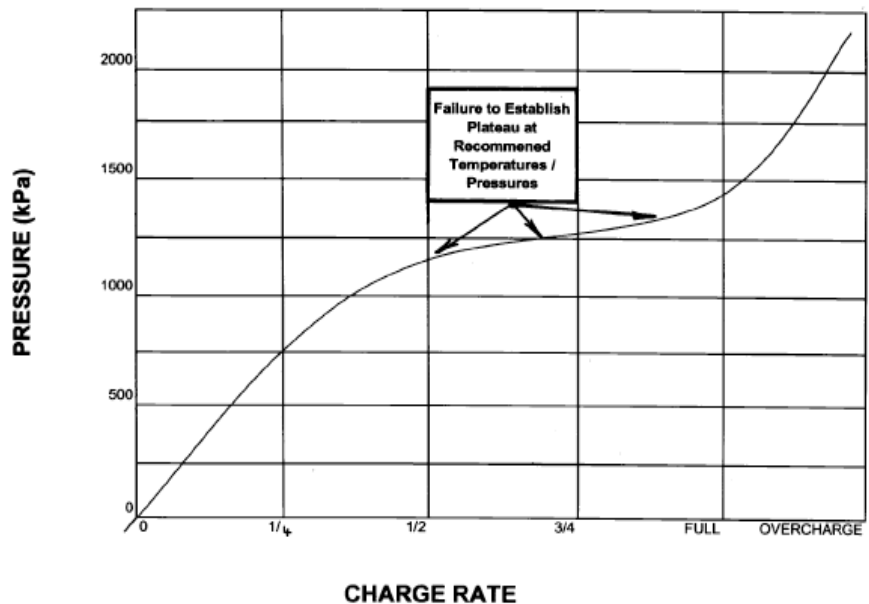
Liquid line subcooling is a check of condensing efficiency and charge rates. It is a vital check to systems that:

- Do not hold the plateau (or exhibit rising head pressures) at lower than recommended charge rates
- Are lacking performance on hot days
- Fail to clear a sight glass.

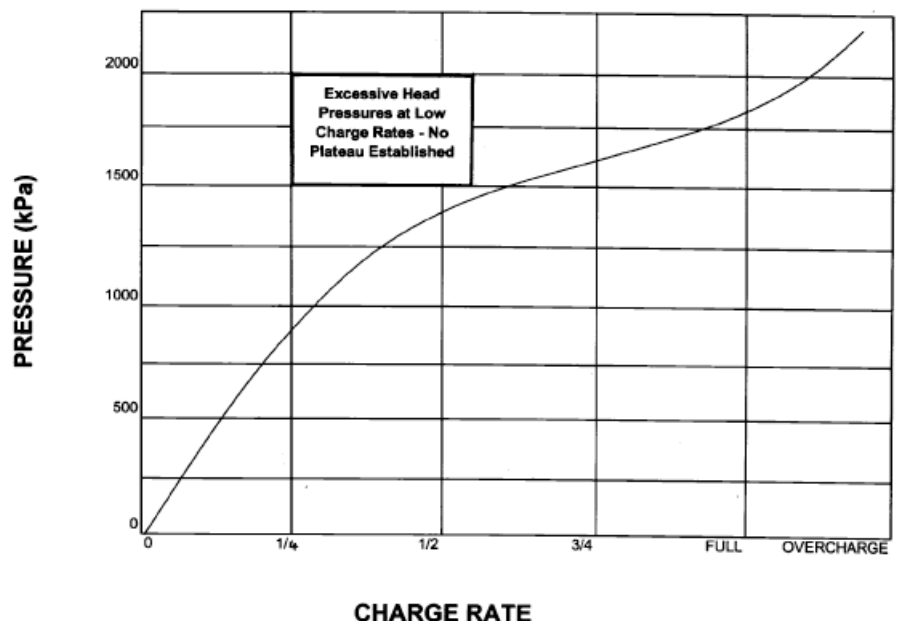
The concept of liquid line subcooling is simple. NO LIQUID LINE SUBCOOLING CAN OCCUR UNLESS THE CHANGE OF STATE IS COMPLETED 'BACK IN' THE CONDENSER.

Liquid Line subcooling is an additional check that can be used to verify condensing efficiencies or limitations.

NORMAL PRESSURE CURVE MARGINAL CONDENSING LIMITATION



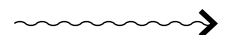
NORMAL PRESSURE CURVE POOR CONDENSING

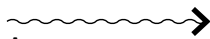


Once the vapour has condensed it will cool in the last portion of the condenser. It is this 'subcooling' that is the key indicator of adequate condensing.

There are, however, various reasons for lack of condensing. Most of them are obvious and have been our basis for evaluation for years:

- blocked condenser (external)
- blocked radiator (external)
- restricted airflow (coolers, insect screens)
- undersized condensers
- inoperative electric fans
- loose drive belts (mechanical fans)
- faulty viscous drive hubs





Any one or more of the above factors may lead to lack of condensing.

There are two additions to this list which are largely a product of the retrofit era:

- contaminated refrigerants (mixtures)
- higher latent heat capacity of R134a

Many technicians fail to realise that R134a, from a purely technical standpoint, is approximately 20% harder on condensing.

If the R12 condenser fitted to the vehicle was easily handling R12 then it will probably have adequate capacity to handle R134a.

NOTE: Documentation from USA gives guidelines of retrofitting for all their vehicles 1980 to 1992. Reviewing the list, over 80% of their vehicles had a condenser change or modification stipulated.

Most vehicles retrofitted in Australia do not have a condenser change because it is a price-driven not a performance-driven market.

Answers to member's questions

A number of administration changes have been made within VASA in recent times.

The changes have been decided by the VASA Board of Directors, who are constantly looking for ways to improve service to members and to help the organisation keep up with the usual pressures which face most volunteer organisations.

It is becoming harder and harder to keep ordinary members interested in the day to day affairs of the associations to which they belong, so new ways have to be found to make the association relevant and of value.

For the moment, let's examine some of the most frequent questions about membership.

When is the membership year?

For most existing members, the year runs from 1 April to 30 March. Member fees are due on 1 April, and members are given 2 months to pay, with a discount applying if payment is made in that time. After that, there is no discount, and under the rules of the association, membership can lapse. However, VASA usually sends out one last reminder notice before cancelling membership. From

The common practice is to tailor charge rates to compensate for the lack of condensing. There are problems with this procedure in high heat load environments.

Subcooling is the method used to identify condensing is in fact adequate.

The liquid line should be 5°C to 16°C cooler than the condensing temperature.

How do you do a subcooling test?

- Check the condensing temperature on the gauge (ie 1220 kPa = 50°C condensing)
- Measure the liquid line with a good quality thermocouple/thermistor probe. It should read 34°C to 45°C
- This verifies the liquid has subcooled in the bottom of the condenser

NEXT ISSUE OF HOT AIR:

Lack of subcooling, and using subcooling to determine charge rates.

now on, the membership year will be tied to the date of joining. So a member who joins in September, will be sent his renewal notice on the anniversary of that payment.

Do I get a Certificate of Membership to hang on my wall?

Yes, every year. For those who paid recently, new certificates will be sent out in coming weeks.

If I need to talk to someone at VASA, where do I call?

There is a central VASA phone number now, manned during office hours. It is: 03 8623 3019 and fax is: 03 9614 8949. If it's a general inquiry about your membership, it will be handled on the spot. If it's a more complex issue, you will receive a call back from the CEO, or from the Technical Advice Centre operated by TaT.

I want to keep up with decisions made by the Directors. How can I do that? All minutes of all VASA meetings, including member meetings in other states, are on the website, in the members' pages, for which you will need password access. Go to www.vasa.org.au, log in and follow the prompts to the meeting decisions.

I might want to stand for office one day. Can I do that.?

Sure you can. Any financial member can be nominated for any position on the Board of Directors each year. Forms for

The last word...

Official VASA website is:
www.vasa.org.au

Official TaT website is: www.tat.net.au

For all inquiries about your membership status, please now call
03 8623 3019 or fax 03 9614 8949.

Email address: secretary@vasa.org.au

Hot Air is the only official journal of VASA and is published every two months and mailed to members.

All inquiries about Hot Air should be directed to the CEO, Ken Newton at secretary@vasa.org.au, or ph 07 5591 6274 or fax 07 5591 8172.



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this purpose are on the website also. In addition, if you wish to contribute any effort towards growing the association, the Board has the power to invite you to its meetings and appoint you to specific tasks. VASA welcomes input from members but, like many organisations, those who put their hands up to help are usually very few.

If I really needed to, can I talk to a Board member?

Absolutely. Again, on the website are full details and phone numbers of the VASA Board. Given that they are volunteers and they have businesses to run as well, they are usually available to take calls from members, and if further action is required, they may refer you to the CEO or to the administration office in Melbourne.

I'm getting a new TaT magazine now. Is that free to members?

Yes, it's a benefit of membership and so is access to the solutions and other technical info on the TaT website. You can also call on them to solve specific technical problems. However, it is personal service for the member whose name is listed with VASA. If you want employees to have the same benefits, it is recommended you pay the extra and sign them up for subscriptions to TaT. You will find it a worthwhile exercise in the long run, and your staff will learn a lot more as well because they will have their own instant access to the website.

