



# COOLCHANGE

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## Hot water heat pumps fact sheet

ARC and the Department of Climate Change, Energy, the Environment and Water (DCCEEW) have published a new Fact Sheet covering the licence requirements for hot water heat pumps.

Hot water heat pumps for household hot water or pool heating are becoming more common, largely because they consume on average one-third the electricity of resistive electric storage hot water services. Many use refrigerants controlled under the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*. Fact Sheet 16 details the licensing requirements related to them.

There are 3 main types available in Australia. Two of them – the integrated hot water systems and integrated pool heater systems – combine the refrigeration system and heat exchanger into a single unit, so they require only electrical and water connections.

The third type is a split system comprising an outdoor unit that contains the refrigeration compressor, evaporator and fan; and a separate water tank containing the condenser (heat exchanger). These systems have refrigeration pipes between the two components, so they require a technician with the appropriate skills and training to handle refrigerant for installation, servicing and decommissioning.

If a split system uses a controlled refrigerant, it requires a technician with an appropriate ARCTick refrigerant handling licence.

Fact Sheet 16 can be downloaded here.

Information supplied by the Australian Refrigeration Council Ltd

### 16 FACTSHEET

#### Hot water heat pumps: licence requirements

These pumps are an energy efficient technology for providing heating and cooling services for a range of uses.

Hot water heat pumps that take heat from the outside air to heat water for household hot water or pool heating are becoming more common. They are vapour compression devices, similar to refrigerators but operating in reverse. Heat pumps consume on average one-third the electricity of resistive electric storage hot water services.

Many hot water heat pumps run on refrigerants controlled by the Australian Government, which are potent greenhouse gases that contribute to global warming. Some workers may use refrigerants that present safety risks, including hydrocarbons (highly flammable) or CO<sub>2</sub> (high pressure).

There are 3 main configurations available in Australia, all of which require a licensed plumber to install the water heating unit.

1. Integrated systems, which include a self-contained refrigeration system typically an tank and a combined water tank and heat exchanger all in one, only requiring electrical and water connections.
2. Integrated pool heater systems, which integrate the refrigeration system and heat exchanger into a single unit but do not have a water tank as they supply heated water directly into a pool. They also require only electrical and water connections.
3. Split systems, which comprise 2 components: an outdoor unit that contains the refrigeration compressor, evaporator and fan; and a separate water tank containing the condenser (heat exchanger). These systems have refrigeration pipes between the two components. They typically utilize flared connections to complete the refrigeration circuit, which can be a leak source.

If a split system is designed to hold a controlled refrigerant, it requires a technician with an appropriate refrigerant handling licence from ARC (based on the environmental risk of the refrigerant and how to prevent them).

If a split system contains a refrigerant with a hazardous safety rating, the installer should also have appropriate training to handle such refrigerants.

Two-part hot pump hot water systems (ARCTick licence required)

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# Australia shines at Montreal Protocol meeting

Australia's management of environmentally damaging refrigerants was hailed as a best practice example to the world at the recent 36th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP36) in Bangkok, Thailand.

MOP36 delegates adopted many key decisions to advance the implementation of the Protocol and its Kigali Amendment.

Life-cycle refrigerant management (LRM) was a focus of MOP36 with a workshop held the day before the meeting to allow sharing of different LRM approaches from around the world.

The Australian Refrigeration Council (ARC) participated in the workshop, with ARC Chief Executive Officer Glenn Evans highlighting Australia's co-regulatory model for refrigerant management. It was apparent that the ARCTick licensing model, operating under the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*, is the global standard in the eyes of many countries.

'Delegates from around the world recognised the merit of our scheme, with government and industry working together to ensure that people handling refrigerants are well trained, competent, and supported through effective compliance,' Mr Evans said.

'The strength of our co-regulatory model stood out strongly in the LRM workshop, where our model of consultation and collaboration between industry and government maximised participation and therefore scheme effectiveness.

'A seamless series of presentations from Australian government and industry representatives at the workshop and side events reflected how closely we work together.'

The Montreal Protocol came into force in 1989 to protect the Earth's ozone layer by phasing out the chemicals that deplete it, and thanks to the collaborative effort of nations around the world, the ozone layer is on its way to recovery.



## Government funding for apprentices



To further support professional development in our field, be aware that governments around Australia provide incentives for apprentices, and the refrigeration and air conditioning industry is on the **apprenticeship priority list** which ensures it qualifies for many of the incentives for apprentices and employers.

Some of those available through the Australian Government include:

- Employers of Cert III or above may be eligible to receive 10% of your apprentice's wages through the **Priority Wage incentive**. It will be paid to you for the first 24 months (up to \$1500 per quarter), plus 5% for the third 12-month period (up to \$750 per quarter).
- Apprentices may be eligible for **Australian Apprenticeship Support Loans** totalling up to \$25,643 to buy tools and supplies. You will not have to repay your loan until you are earning an income above the threshold (\$54,435 for 2024-25). Once you complete your apprenticeship, you will receive a 20% discount on your loan.
- Apprentices having to move away from your parents' or guardians' home for your training may receive a **Living Away from Home** allowance up to \$77.17 per week.
- RAC Technicians and RAC Mechanical Services Plumbers appear on the **New Energy apprenticeships** list, so apprentices can be eligible for up to \$10,000 over the course of an apprenticeship.
- Women are eligible for additional incentives such as industry mentoring and entrepreneurship training. **Apprentice Australia**.
- **People with a disability** may have access to **Employee Assistance Fund (EAF)** funding for work-related modifications, equipment, Auslan services and workplace assistance and support services. **Disability Australian Apprentice Wage Support** which can provide a wage subsidy to your employer.
- First Nations apprentices may be eligible for **ABSTUDY** support through Services Australia.
- ARC proudly supports the TAFE Queensland Foundation in sponsoring a \$5,000 **scholarship** for a First Nations refrigeration and air conditioning apprentice.
- ARC offers subsidised Green Scheme Accreditation for graduates of the Dual Trade refrigeration and air conditioning (RAC) and electrical training delivered by TAFE SA, which includes low-GWP refrigerants.

# Consumers flock to look for the ARC tick

Thousands of consumers around Australia are responding to the latest 'Look for the Tick' digital marketing campaign run by the Australian Refrigeration Council (ARC) for the nation's refrigeration and air conditioning industry.



The campaign drives consumers to utilise the services of licensed practitioners, from installation and servicing to decommissioning, generating more than 200,000 contacts last year. This year's campaign launched on 1 October, and is already generating a strong response from people who are looking for air conditioning services to contact their local licensed technicians.

The campaign delivers its message through a combination of YouTube and Connected TV commercials plus online Google Search, Google Display, Facebook Lead Ads and Facebook Website Click Ads. Despite cool weather early in October, the campaign's Meta and Google ads are performing strongly in its first few weeks, and many of the people responding to the ads have downloaded the **free air conditioning guides** available from the Look for the Tick website.

Sydney has generated the strongest consumer engagement so far, closely followed by Melbourne and Brisbane, and an even stronger response is likely if summer proves to be as hot as forecasters expect. As in previous years, there is a slight male skew to the audience, at 57% of the audience. This year shows an increasing trend for younger people to be engaged with the campaign, the largest single age group being 25-34, followed by the 35-44 and 45-54 age brackets.

The 'Look for the Tick' campaign runs for six months to the end of March to capitalise on consumer demand for air conditioning services during that period, with the Google and Facebook images based on stills from the TV commercials. See the automotive air conditioning commercial [here](#).

## Annual indexation of RAC industry permit application fees

The Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 provide automatic indexation of application fees each year.

The fee increase is linked to the Wage Price Index published by the Australian Bureau of Statistics. Refrigeration and air conditioning (RAC) industry permit application fees will increase by around 3.5% per cent from 1 January 2025.



The permit application fees for 2024 and 2025 are outlined here.

RAC Permit type	Permit duration	Application fee 2024	Application fee 2025
Refrigerant handling licence	1 year	\$83	\$86
	2 years	\$166	\$172
	3 years	\$249	\$258
Restricted refrigerant handling licence	1 year	\$83	\$86
	2 years	\$166	\$172
	3 years	\$249	\$258
Refrigeration and air conditioning trainee licence	1 year	\$35	\$36
Refrigerant trading authorisation	1 year	\$262	\$271
	2 years	\$524	\$542
	3 years	\$786	\$813
Restricted refrigerant trading authorisation	1 year	\$83	\$86
	2 years	\$166	\$172
	3 years	\$249	\$258

## mycar embraces licensing



Automotive service and repair business mycar Tyre & Auto recently invited ARC to conduct an education visit to its Brisbane training centre to tell its technicians about ARCTick licensing and how it applies to their work.

ARC field officer Robert Mandla ran two sessions at the invitation of mycar's Head of Technical Transformation, Tom Hatch. After presenting two videos on the background and importance of the scheme, Robert took participants through the Automotive Code of Practice and highlighted the importance of using nitrogen and tracer gas for leak detection. He described the field engagement visit process and the free record-keeping templates and risk management plan documents available from ARC, and the recently introduced Environmental Stewardship Award for RTAs that are compliant at first audit.

Tom Hatch said it was a privilege to have the support of ARC for mycar's compliance journey. 'Robert did a fantastic job presenting to the mycar technicians, imparting a solid understanding of their responsibilities as Refrigeration Handling Licence holders and their ongoing obligations to protect the ozone layer that we all depend on,' he said. 'We're grateful for ARC's partnership in promoting compliance and environmental responsibility within our industry.'

For a taste of the mycar presentation, the videos shown were:



David Attenborough video on the Montreal Protocol: <https://youtu.be/MgUobxtdm4A?si=k2XAp5jtdy1VRpX>



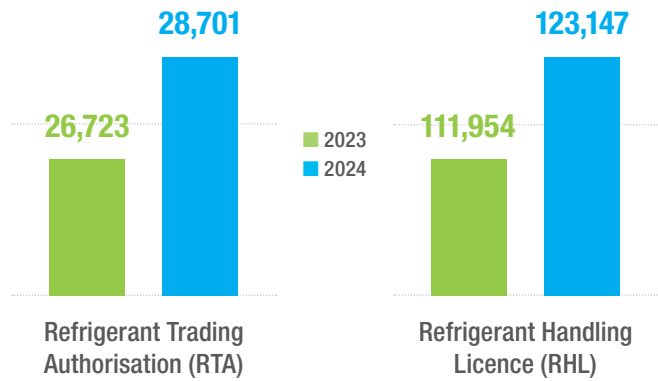
DCCEEW video on the importance of the work technicians do to minimise preventable emissions of synthetic greenhouse gases: [https://youtu.be/u7VqW0Q6n2w?si=yFMDuJ53W8l4E\\_kz](https://youtu.be/u7VqW0Q6n2w?si=yFMDuJ53W8l4E_kz)

# BY THE NUMBERS

## ARC Licence Scheme 2024: A year in review

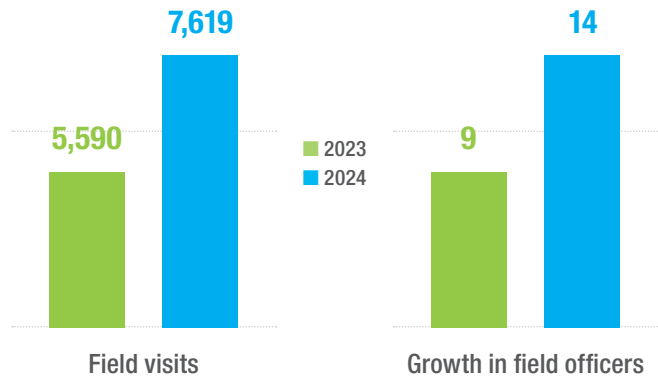
### Permit Numbers

▲ 1,978 RTA  
▲ 11,193 RHL  
increases in 2024



### Field engagement

ARC visited an additional  
▲ 2,029  
RTA holders in 2024



**99%** of non-compliant licence holders achieved compliance by the **fourth** visit from our field officers

**930,887 tonnes**

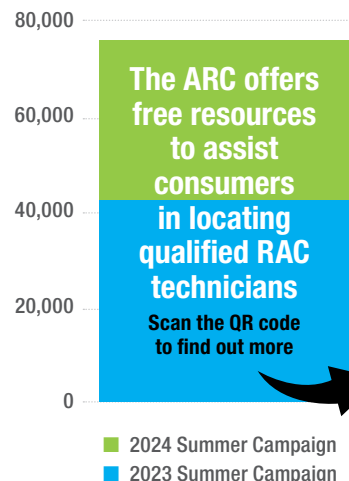
Total CO<sub>2</sub> tonnes of emissions prevented by licenced technicians through refrigerant recovery and return to RRA in 2024



### Summer Campaign



'Look for the tick' website visits



'Look for the tick' website visits are up **43%** from last year



The ARC offers free resources to assist consumers in locating qualified RAC technicians  
Scan the QR code to find out more



FIELD OFFICER PROFILE

## Bobby Hynes

Bobby Hynes may be the youngest of ARC's field officers, but his trade knowledge and 'here to help' attitude ensure that RTAs are pleased to see him for a field engagement visit.

Based in Queensland, Bobby finds the new RTAs are particularly pleased to see him, having already received a welcome call. 'They are very receptive of what I can tell them about the licensing scheme and what they have to do,' he said. 'It's very much an educational visit, and I will always help them if I can. If I can't help them with something myself, I'll find out who can and I'll pass that information on to them.'

Unlike many in the trade, Bobby never saw his future on the tools, and he considered roles in health and safety or wholesaling before deciding ARC was where he wanted to be. He prides himself on having solid industry knowledge from his studies and his experience in the domestic and light commercial air conditioning sector, and he expands that knowledge with after-hours reading so he can better help his RTAs.

He appreciates that business owners have more to contend than just compliance. 'I try to take the pressure off people,' he said. 'They've got a lot going on, including the financial side of their businesses, so I do whatever I can to make their lives easier. Not that we don't pick up non-compliant activities, but we take an educational approach to dealing with them.'

Bobby also understands the importance of protecting the planet, partly because his indigenous background gives him a strong connection to country, and partly because the greenhouse effect has always been part of his life. 'We've always known about it, and were taught about it at school,' he said. 'It's good to have a job where I can help to stop it.'



FROM THE FIELD

## Look after your vacuum pump

With summer imposing a heavy workload on you and your equipment, it is important to keep up your equipment maintenance – and a good place to start is your vacuum pump.

The single best thing you can do to increase the performance and life of your vacuum pump is to change the oil on a regular basis. Oil both lubricates the pump and collects moisture and contaminants from evacuated systems. Key reasons to change it frequently include:

- Oil that is saturated with moisture can't absorb any more moisture, which affects the vacuum you can achieve.
- Contaminated oil eventually becomes sludge, which reduces your pump's efficiency.
- Oil that's saturated and contaminated doesn't lubricate well, which will lead to your pump wearing out prematurely, and may cause internal corrosion.

Depending on your pump's manufacturer, the recommended time between oil changes may vary from 10 to 50 hours of use. Regardless, you should always change the oil when it becomes contaminated or discoloured, when condensation is present, and before and after the pump is stored for a long period of time.

An oil change is also needed when the vacuum pump is not pulling the required vacuum. A compound gauge alone is not an accurate indication, but this can be tested by evacuating an empty cylinder or pressure vessel with a vacuum gauge or Vacrometer attached, or with a Vacrometer placed directly on the pump. Check the reading against manufacturer's specifications – ideally, the vac pump should be able to achieve a reading of under 100 microns. Before testing or evacuating a system, always run the pump to get it to operating temperature.

Frequency of oil changes can vary depending on your oil type, application and possible contaminants, and on the frequency of use and types of systems being evacuated. This could range from daily, weekly to quarterly or even six monthly, and it may need to be changed more frequently in high humidity regions.

Use the oil recommended by your vacuum pump manufacturer and remember, oil is cheaper than a new pump.

As a final point, record your pump maintenance at least once a quarter to ensure compliance with the conditions of your ARCTick permit.

# Australia supports Indonesian training initiative



An Australian delegation of government and industry experts recently visited Indonesia to support it to meet its obligations to phase out ozone depleting substances under the Montreal Protocol.

Senior representatives of the Department of Climate Change, Energy, the Environment and Water (DCCEEW), Refrigerants Australia and the Australian Refrigeration Council (ARC) undertook the visit in conjunction with the United Nations Development Programme (UNDP).

After meetings with the Government of Indonesia and UNDP, awareness raising workshops were delivered to local industry representatives in Jakarta, Samarinda and Bekasi on alternatives to using hydrochlorofluorocarbon (HCFC) technologies in the refrigeration and air conditioning sector.

Australian experts also provided some recommendations in relation to Indonesia's regulatory frameworks for standard setting and how to update training resources for refrigeration and air conditioning technicians.

Indonesia is committed to meet its Montreal Protocol compliance target of 100% reduction in consumption of ozone depleting substances by 2030 and to commence its phase-down of hydrofluorocarbons (HFCs). Drawing on the success of Australia's ARctick licensing scheme for refrigeration and air conditioning technicians and businesses, the delegation provided information and suggestions on updating certification mechanisms for RAC technicians, codes of practice, equipment needed for training institutions and how to ensure quality of refrigeration and air conditioning installations in Indonesia.

The delegation observed a deep interest by Indonesian industry institutions in training and a dedication to teaching and learning in this sector, with teachers and students believing that learning the trade offered them both a better life and capacity to deliver a high-quality service to their community.

# Jury still out on mobile refrigerants

Recent research by car manufacturers and automotive air conditioning companies reveals that the jury is still out as to the preferred refrigerants for future automotive use, especially in electric vehicles (EVs).

In Australia, R134a remains by far the most common refrigerant, even in high-tech EVs which promote their environmental credentials, while 1234yf is being seen in a gradually growing number of models from some European, Chinese, North American and Japanese manufacturers. Several EV models which use 1234yf in Europe are using R134a in Australia.

But two global car companies presented significant alternatives at the recent ATMO MAC summit in Berlin: Volkswagen with carbon dioxide (R744) and Ford with propane (R290).

Volkswagen's EV heat pump system can source heat from the vehicle's drivetrain components, the ambient air or both. It features a 5.5kW R744 compressor manufactured by South Korea-based Hanon Systems. Volkswagen first offered an R744 heat pump in its ID.3 and ID.4 EVs in 2020 and now offers it in the Audi Q4 e-tron and Cupra Born EV. It is also an option in the new electric Ford Explorer, which uses VW's electric platform.

Meanwhile, Ford has identified R290-based full-secondary loop heat pumps as a superior solution for battery electric vehicles (BEVs). Working in partnership with DENSO, Ford says R290 is the best global option 'if safety is addressed'. Their research has shown 20% efficiency gains over a direct expansion system using the same refrigerant in their new system. Compared to systems using the same technology with 1234yf, Ford and DENSO have reported efficiency gains of 5% in heating mode and 29% in cooling mode.



Access the ATMO MAC summit presentations here <https://atmo.org/presentations-atmosphere-mac-summit-2024-2/>

## Time to tell us what you think

As mentioned in the last issue of *CoolChange*, the Department of Climate Change, Energy, the Environment and Water (DCCEEW) is seeking feedback from RHL and RTA holders in order to strengthen the permit scheme.

The survey is now live and will remain open until the 28th of February 2025. It should take about 10 minutes to complete, and asks your views on:

- The department and ARC's approaches to permit condition checks and compliance
- Training and qualification requirements and gaps
- Licence conditions, the application process, our websites and more.

Take the survey [here](#).

