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Show off

How PICAC put its kit on display, and won the day.

100 AIRAH

Have synthetics hit peak?

The latest update to the Cold Hard Facts series is just about the, er, facts.

A new version of the *Cold Hard Facts* report reveals that Australia's HVAC&R sector may have hit "peak bank" for synthetic greenhouse gases (SGGs) in 2019–20.

The total global warming potential (GWP) of the bank of synthetic greenhouse gases employed in refrigerating and air conditioning systems in Australia is predicted to have peaked in 2019–20 at about 102 million tonnes CO_2e.

TOTAL GWP DECLINING

Although the total volume of refrigerants in the bank is expected to continue to rise in the years ahead – reaching more than 60,000 metric tonnes by 2030 – the total GWP of the bank is predicted to decline by more than a quarter to about 74 million tonnes CO_2e as new generations of lower-GWP refrigerants are introduced.

The report's authors were Peter Brodribb, M.AIRAH, and Michael McCann of the Expert Group.

"The rapid adoption of lower-GWP HFCs, particularly in small AC systems, the migration of both domestic and some commercial refrigerating systems to natural refrigerants, and the arrival of the new-generation HFO/HFC blends and very low-GWP HFOs is expected to drive down total GWP of the bank," says Brodribb.

McCann notes that new equipment is also becoming more energy-efficient, and operating on smaller refrigerant charges in systems that are inherently better sealed.

"This means that the overall refrigerating and air conditioning task is become less greenhouse-intensive," he says. "However, there is a large stock of legacy equipment in the economy, employing a still considerable bank of older generations of high-GWP refrigerants, and consuming more energy than new designs."

Michael McCann

THE LATEST IN A SERIES

The latest *Cold Hard Facts* report, CHF2020, is the fifth in a series quantifying HVAC&R in the Australian environment and economy.

CHF2020 estimates that refrigerating and air conditioning systems used nearly 65GWh of electricity in 2019 – more than 24 per cent of all electricity produced in Australia that year.

More than seven million tonnes of CO_2e emissions were created by direct losses of about 3,000 metric tonnes of refrigerant gas to air from operating equipment. Another 1,800 metric tonnes of all types of refrigerant is estimated to have been lost from end-of-life equipment. But these were far outweighed by the more than 54 million tonnes of CO_2e emissions resulting from the electricity used in the stock of equipment.

TOTAL EMISSIONS

Total greenhouse emissions produced by refrigerating and air conditioning equipment were estimated at more than 11.5 per cent of total Australian emissions in 2019.

"We need to get very good at this," McCann says. "Higher average temperatures and more long periods of extreme heat days means that cooling requirements are only going to increase. These services have to be delivered reliably without compounding the drivers of climate change."

Would you like to know more?

To check out report, go to www.environment.gov.au/protection/ozone/publications/cold-hard-facts-2020

Up close

Marta Talarska, Affil.AIRAH, is a mechanical engineer for Stantec, based in Sydney.

HVAC&R as a career

My grandfather is a retired HVAC engineer, and my aunt a building services lecturer at university. Growing up in an engineering family and admiring their professions and projects they worked on, I chose to continue the trend and pursued a career in building services.

Since settling in Australia, I've developed a keen interest in air conditioning systems rather than heating.

Dream project

A dream project for me would be to work on more sustainable projects across Australia. A shift in client and consultant dynamics is required to take the initiative to incorporate energy-efficient building design, passive solutions and renewable energy use. It is time to start looking into our design assumptions, building users' needs and the response to the environment surrounding us.

Challenges

The most challenging aspect of my position is finding that balance in the design between architecture, comfort and cost. To meet all three requirements, it takes many hours of research, design and coordination. The results, however, are always worth the effort.

AIRAH

The HVAC&R industry in Australia is male-dominated. AIRAH provides a platform to encourage and reach out to more female students and engineers alike to pursue engineering.

Continuing my career in Australia, AIRAH has been a great help in providing a perspective into Australian standards and local regulations through seminars, technical publications and encouraging networking.

AIRAH has been a key promoter of the HVAC industry, and assists in bringing our industry closer to its users. It is a vital requirement for other disciplines involved in building design, such as architects, structural consultants and other services disciplines, to understand each other's requirements. This holistically helps in having the buildings designed in collaboration from the very start.