Train the cold chain

Australia's food cold chain is embracing the latest refrigeration technologies for the benefit of the environment and to control operating costs, investing heavily in equipment and staff. The industry's next big investment will need to be in training. Australian Refrigeration Council CEO **Glenn Evans** explains.

ABOVE: Woolworths installed its first 100 per cent natural refrigerant system in 2017.

RIGHT: Coles has installed 4200 solar panels on its Edinburgh Parks DC, reducing reliance on grid electricity by 30 per cent.

BELOW: Coles is trialling a fleet of delivery vans with solar-powered and battery operated fridges.

AUSTRALIA'S big grocery retailers are heavily invested in the marketable aspects of retailing, such as prices, freshness and service, but they have also invested massively in the food cold chain behind the scenes.

They are investing in equipment and people to achieve world's best standards in both cost efficiency and energy efficiency, and smaller players are not far behind. With technology advancing at a rapid pace, there's a pressing need for high quality training to make the most of what technology has to offer.

The retail grocery cold chain is by no means the only food cold chain in operation, as we are reminded when we eat on board an aircraft or a cruise ship, or at a large restaurant chain, but grocery retailing is where it most impacts our everyday life.

In Australia, our big grocery retailing duopoly has given us a clear focus on how important the cold chain is to commercial competition. Both Coles and Woolworths have sustainability plans which cover all aspects of their businesses, and cold chain management is a major part of those plans.

Woolworths, for example, aims to reduce its emissions by 63 per cent in the 15 years from 2015 to 2030 – and refrigeration accounts for almost 50 per cent of its energy consumption and almost all of its on-site emissions.

The retail giant moved quickly to transition its refrigeration away from high Global Warming Potential (GWP) synthetic refrigerants towards cascade R134a-CO2 solutions, thereby improving energy efficiency and reducing on-site emissions. To date, the company has around 360 stores employing cascade R134a-CO2 refrigeration systems.

In 2017, it took the next step, installing its first 100 per cent natural refrigerant transcritical CO2 refrigeration system at Greenway Village in Sydney. This system performed on par with existing cascade R134a-CO2 systems while completely eliminating on-site emissions. The company now has almost 70 transcritical CO2 systems in service.

How important are these advanced cold food chain systems in the wider picture of global energy and food management? Are they a first world luxury or a global environmental benefit?

The International Institute of Refrigeration (IIR) addressed these questions at COP26, the 26th Conference of the United Nations Framework Convention on Climate Change in 2021. IIR estimated food losses due to a lack of refrigeration and then compared their global carbon impact with that of refrigeration equipment emissions.

If the whole world had a cold chain operating at the level of developed countries, it would generate only half the CO2 equivalent emissions due to food perishing, so overall the cold chain is an environmental gain.

In this brave new world of global cold chain development, one of the major challenges is training the specialised workforce for the job. Companies installing these systems need skilled, qualified and accredited technicians trained in the new technology. Today's refrigeration technicians with their specialised trade skills will need to be more specialised than ever.

The climate control industry – which designs, installs and services all this high-tech equipment – is developing new training courses to meet the challenges. The best of these courses comply with the Australian Qualifications Framework (AQF) and thus can lead to accreditation such as ARC's Green Scheme Accreditation, which in turn is recognised by several

states as an occupational safety qualification.

Meanwhile, the relentless march of green technology continues, not least in renewable energy. Coles aims for the entire Coles Group to be powered by 100 per cent renewable electricity by the end of FY25. It has signed numerous renewable electricity agreements needed to meet that target from wind and solar farms across Victoria, New South Wales, South Australia and Queensland.

Perhaps more visibly, it has completed the installation of solar panels on its distribution centre at Edinburgh Parks, South Australia. With more than 4200 solar panels, it is expected to reduce grid electricity requirements at the site by 30 per cent.

On a smaller scale, Coles is addressing the last-mile end of its cold chain with a trial fleet of delivery vans with solar-powered and battery operated fridges to deliver Coles Online orders in parts of Victoria and Queensland. The vans are calculated to reduce fuel usage by an average of three houses each day per vehicle, providing yet another improvement in cold chain energy consumption.

As with its arch-rival, Coles' refrigeration management program includes the use of natural refrigerants, which have close to no GWP compared with older synthetic refrigerant gases with high GWP and/or high ozone depleting potential. When building new Coles supermarkets, more than 90 per cent now use natural refrigerants, for a total of 28 supermarkets and 15 Coles Liquor stores using them by the end of 2022.

To reduce loss of refrigerant gases, regardless of type, Coles has invested in leak detection technology and a refrigeration pipe replacement program. Simpler but more visible improvements include doors on refrigeration display cabinets across most categories in new and refurbished stores. Doors have also been added to fridges in more than 500 Coles Express sites.

Many of these improvements will go largely unremarked by casual observers, but they are all contributing to the energy efficiency and low emissions of the food cold chain that Australian consumers use every day. Their cost-efficiency benefits everyone from food producers to end users, and their energy efficiency benefits the whole planet.

Needless to say, other grocery retailing groups are heading down a similar path. The major gains made by the cold food chain in recent years show no signs of abating.

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ABOUT THE AUTHOR

Glenn Evans is the CEO of the Australian Refrigeration Council (ARC), the national regulator for the climate control sector. ARC licenses more than 125,000 refrigeration and air conditioning technicians and businesses under its ARCtick licensing scheme.