



ROUNDTABLE

Industry Conversation

Barriers to Net Zero



Setting the 2023 Agenda





Driving performance improvements



CCN PARTNERED WITH INDUSTRY LATE LAST YEAR HOSTING A ROUNDTABLE TO ADDRESS A WIDE RANGE OF IMPORTANT ISSUES INCLUDING THE BARRIERS TO NET ZERO.

THE ROUNDTABLE WAS divided into four key topics including: equipment; installed efficiency; refrigerants; and end of life issues.

Each session examined emission reduction, energy efficiency, challenges facing the refrigeration and air conditioning trade, barriers to industry action, HFO technology, training, safety and driving performance improvements.

Jointly sponsored by Refrigerant Reclaim Australia and Refrigerants Australia, roundtable participants included:



Actrol regional leader, Greg Brooker



Refrigerant Reclaim Australia general manager, Kylie Farrelley



Refrigerant Australia executive director, Greg Picker



Fujitsu General's head of product, Kyle Rafter



Grosvenor Engineering CEO, Nick Lianos



CCN editor, Sandra Rossi

Following is an edited transcript of the roundtable. Readers are invited to view the roundtable on the CCN web site. Each topic will be published online over a four week period commencing early February. *





Identifying the challenges ahead

TOPIC ONE: EQUIPMENT

SANDRA ROSSI: *We are here today to discuss a wide range of issues. As an industry we have been very successful when it comes to environmental performance. But there is still a lot of work to do which is what this roundtable is all about.*

KYLE RAFTER: I think in terms of technology it's been really pleasing to see the last 10 to 15 years the developments that the industry has made; it has been leaps and bounds but that doesn't mean that it's finished yet. In terms of HFOs there's a big separation between safety and efficiency and Global Warming Potential (GWP). We're seeing with a lot of products, especially low pressure equipment, that moving to refrigerants such as 1234ze which has a GWP of less than one, is relatively easy. The challenge that we have as an industry is incorporating this into high pressure equipment and training the industry in how to deal with these products, that is the challenge moving forward.

NICK LIANOS: When we talk about why we don't have more high efficiency equipment it is because we tend to put high efficiency equipment into new buildings. But what about replacing aged equipment in existing

buildings? Greenfield is one per cent of nothing but brownfield is 99 per cent of everything. We need to somehow make landlords understand that the existing equipment they have are second hand clunkers. If they were to replace it with new equipment it would actually be profitable for them. It would lower their running costs, it would make tenants happier, but we need to present an effective business case then


**HIGH EFFICIENCY
EQUIPMENT TENDS TO END
UP IN NEW BUILDINGS"**

they would have no problem replacing equipment. But we as an industry aren't extracting the data that we need out of these buildings to actually make a business case. The one demand that I see from landlords is that they want five outcomes. They are tenancy experience, less breakdowns in the building, reduced running costs and maybe CAPEX costs as well, less energy and water consumption, less operational risk and cyber risk. As an industry we need to show that we can deliver those outcomes.

KYLE RAFTER: There is some pretty good kit out there in relation to heat pumps, chillers and four pipe chillers as well. We are seeing a lot of developers, for their ESG strategies, trying to electrify buildings. I think the National Construction Code and GEMS have worked really well to improving product efficiency and how they are installed. It's great to have really efficient products in the market but if they are not installed correctly or sized correctly the product can go from efficient to non-efficient pretty quickly. The more the installation and sizing can be added and incorporated into some of these codes is really important to make sure out equipment runs effectively. NCC and GEMS need to be aligned we don't want them contradicting each other. A new residential standing was incorporated recently in relation to sizing but commercially the challenge is securing a profit but making sure it's not undersized.

GREG PICKER: Kyle has done a great job talking about how the glass is half full let me talk a little about the glass being half empty. The NCC and GEMS and other programs have all focused on efficiency at point of sale which means installations, sizing and maintenance are not covered. This area dealing with the delivered energy efficiency is the most practical, cost effective thing

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we, as an industry, can do to really have an impact on electricity demand today.

NICK LIANOS: One of the things that has delayed us from publishing our service data on different types of chillers, packaged units and their mean time to failure, is that we were very concerned about an even playing field. If we published the data that we have stating this system is better than that one in terms of serviceability or whatever we would be doing the wrong thing by the manufacturers. This is because a lot of the equipment is quite good but we need to quantify the quality of the installation. It's unfair to say this type of unit is not good because it wasn't installed correctly. It's not just about the equipment if it is not installed correctly or undersized it's not going to perform. Until we can isolate the environmental factors and make it a level playing field it's hard to put information out there stating that this type of equipment performs better than that one. It's been a big challenge for us because we have wanted to publish this information for years.



"DEVELOPERS WILL USE SMALLER UNITS TO BE COST COMPETITIVE"



GREG BROOKER: I see customers going to smaller sized machines just to be cost competitive. That is when all considerations about efficiency and energy go out the window. How do you address that? It is something worthy of consideration.

GREG PICKER: One of the challenges to the current approach to the NCC particularly for residential buildings is that it focuses on the efficiency of the equipment but does nothing about the size of the equipment. So if I've got a whopping big space and I put in a small, highly efficient unit that, maybe will cut it when its 30 degrees but by the time it hits 33 its running at a 100 per cent, you lose the efficiency. As the building developer I get extra credit for that because it's a highly efficient unit even though it is undersized.

NICK LIANOS: There needs to be a whole-of-life cycle perspective so all these factors are considered. Building that level of sophistication into our codes and standards will take time. In relation to under sizing, I think ultimately you need to decapitalise the industry, deliver everything as a service.

Accepting a highly technical, data driven future





TOPIC TWO: INSTALLATIONS

NICK LIANOS: If you look at all the technical systems installed in buildings like air conditioning they are invisible. You only fix them when they break. The whole industry tends to be reactive. When we go into a building we do an audit to understand the remaining life of the assets. Typically 20-30 per cent of these assets are being sweated way beyond their economic life. We've only got four per cent of the market but if you extrapolate those numbers it is millions of assets. There is a lot of buildings out there with second hand clunkers, therein lies an opportunity. It requires a compelling business case. OPEX is typically recovered from the tenant as an outgoing. CAPEX is paid for by the owners. If you think about that what behaviours does that set up? Put as much into OPEX as possible so you don't have to do any CAPEX but if the outgoings get too high the building becomes unattractive for tenants. There are misaligned interests here in terms of who pays for the OPEX and who pays for the CAPEX. Why would the landlord want to spend all this CAPEX to get a new lighting system in the building when it just



"THERE IS A GREATER RECOGNITION OF TECHNICIANS AS PROFESSIONALS."



means the tenant is now going to pay less outgoings in energy. Why should I do this when the tenant gets all the benefits? How do you overcome that misalignment of interests? The solution is to deliver it as a service, put the new lighting in and the landlord can pay for it over five or 10 years. Outgoings will go down for the tenant and it will be a win/win for both parties. It's happening in other industries and if we do it in the built environment there would be no CAPEX and it will reduce the running costs of the building.

GREG PICKER: Around 80 per cent of the licensed trade in Australia work for three man bands. How do we help them change their market offering to meet this transition from repair to service?

NICK LIANOS: It's doing what we did at Grosvenor and taking it to the whole industry. Using software and data collection and giving



LEFT: There was plenty of lively discussion on a wide range of topics.

BELOW LEFT: Lianos said up to 30 per cent of assets are being sweated way beyond their economic life.

BELOW: Greg Picker (left) and Kyle Rafter exchange ideas.



these people an opportunity to grow their businesses. It's about being proactive not reactive. It may take time to collect the extra information but look at all the extra sales that could come to you because you are going to give the customer a solution to reduce his running costs and it will make the building more energy efficient.

GREG PICKER: Kylie has data showing consumers are keeping their splits, on average, for 13.7 years maybe 12 years is a better timeframe. But we will need to help consumers understand the benefits of replacing their air conditioners earlier.

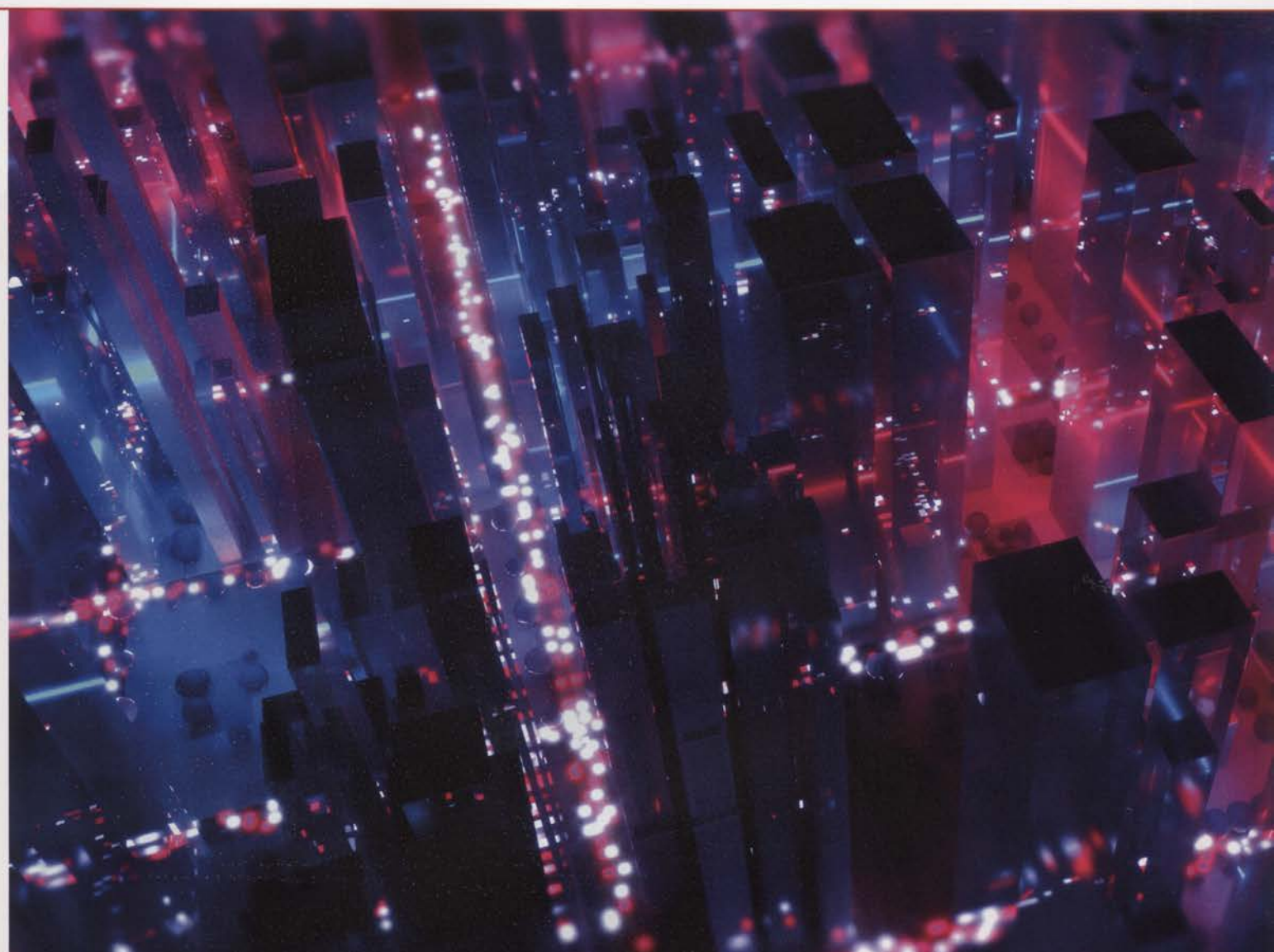
KYLE RAFTER: The more we can promote servicing equipment and the benefits of that the better. Simple things like cleaning filters are important. I always go back to how many people actually hose their outdoor unit? We need to quantify the gains.

KYLIE FARRELLEY: If we use the example of R22 equipment which was really popular. The government banned R22 equipment in 2010. The average age of new R22 equipment now is approaching

13 years old but there is equipment older than that still being serviced and still being used. RRA has encouraged the reclamation of R22 but the unintended consequence of that is that it has artificially extended the life of equipment that would have been replaced earlier. We need to make sure we don't repeat mistakes of the past.

GREG PICKER: As this industry has become increasingly professional remuneration has increased and there is a greater recognition of technicians as professionals. As we move forward there is an opportunity to make this an even more profitable industry for those tradespeople that can really lead this data driven wave. The industry is becoming increasingly technical but there are opportunities for the industry to grow.

KYLE RAFTER: On the topic of consumer education, GEMS and MEPS are good for making purchasing decisions. But they won't tell you what outdoor ambient your unit will be operating at. By dealing directly with consumers tradies can educate the public on how to select, operate and maintain a unit effectively.



High GWP gases still have a price

TOPIC THREE: REFRIGERANTS

SANDRA ROSSI: *What can the quota drive in terms of refrigerant change and what further action is needed?*

GREG BROOKER: It will drive mixed change in the type of refrigerants we're bringing in. Obviously someone with a commercial interest will want to maximise that quota. There will be challenges. For example if I want to bring in R404 which has a GWP of around 4000. I can bring in alternative gases such as 448 or 452 which have a half or a third of that GWP. So it will definitely drive a greater mix and that will influence the type of equipment being installed. But at the moment there is a cost differential between these lower GWP gases because they are in lower production. The high production, high GWP gases have a price advantage but that will change as the quotas starts to bite.

We will be having conversations with

customers about the type of equipment choices they will be making as well as exploring alternative technologies such as glycol chilled water for large scale refrigeration plant so quotas will definitely have an impact. In terms of driving change we need to talk about recycling some of the more erroneous gases like R22, 404, to serve potential legacy equipment. Europeans have gone down the path of equipment bans for both new installations and servicing. Prescribed GWP limits have created some bad behaviours. Sensible, pragmatic equipment bans can work but they need a level of regulation and enforcement. Going forward we will see more people using hydrocarbons, CO2 and ammonia, however, none of these refrigerants are regulated anyone can get their hands on them. This means the quality of workmanship and safety considerations are going to be highly variable. We could see some ugly incidents which we have seen already. This is one of the potential pitfalls down the track.

KYLIE FARRELLEY: It's important to note that quotas only cover bulk gas, there is no quota on

equipment. If we want demand to change it would be good to take a look at what regulations or complementary measures can be taken to control the equipment coming in and to reduce future demand for high GWP products. The quota is driving change but is it happening fast enough? I think we could look at controls on equipment coming into the country to reduce future demand for some of these legacy refrigerants.

KYLE RAFTER: I think we are seeing through the GEMS database that 90 per cent of equipment in the splits space has moved to R32. I think it's important to have a global approach. For most manufacturers Australia and New Zealand is only part of their business.

GREG BROOKER: There's a significant challenge that probably goes unseen in industry and that is bespoke equipment when you look at the refrigeration industry where their matching up evaporators and building large scale cool rooms from scratch nothing is pre-charged. A lot of this



advantage



MAIN: Customers are rethinking equipment decisions.

ABOVE: Rafter believes safety and training should be priorities.

LEFT: CCN editor, Sandra Rossi, moderated the lively event.

equipment is multi refrigerant so it's the contractors or consumers choice as to which refrigerant they choose. How do you police this if you bring in those equipment bans? The end user has to be educated and people who own the plant have to bear some of the responsibility for this to drive and demand change through the industry.

GREG PICKER: What do we do about getting rid of the refrigerant we already have in the bank? By cutting the quota further it means having to use all of that refrigerant in the bank that's currently installed for as long as possible because there isn't enough alternative product coming in. So when we think about 404 if you can't get various alternatives what is the commercial response? The commercial response is to hold on to that high GWP refrigerant that they already have which leads to a poor environmental outcome. Australia should do everything it can to drive change as quickly as possible but not to push too hard because that also leads to a poor outcome. The government has to realise that if the dial is turned too much, not only does it

cause commercial disruption, it leads to an even worse environmental outcome.

GREG BROOKER: I think Europe is moving way too fast and industry can't keep up. I see that from the supply chain side when trying to

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"AUSTRALIA HAS AN APPETITE FOR CHANGE BUT IS SITTING BEHIND EUROPE WAITING FOR EQUIPMENT."

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get refrigerants for the new lower GWP equipment; spare parts, compressors it's challenging. The process need to be pragmatic and staged.

HFO's will have a large part to play particularly in the sub-50kW commercial refrigeration sector certainly the chilled water sector is going to have a large part to play. The issue

around HFO technology currently is again Europe is going hard but America is lagging behind, Asia is even further behind. Australia has an appetite for change and is sitting behind Europe waiting for equipment. We don't want to be too fast committing to this gas and this compressor but then you are unable to get it. This is why pragmatism really needs to be the order of the day.

GREG PICKER: One of the things that makes Europe's F gas policy different is the size of the market. If Europe tries to set a new limit companies will try to meet it. Manufacturers will try to meet it because it's a big market share for global production. Even when the product is available in Europe trying to divert that product to Australia and New Zealand is a real challenge. I believe Australia should be an early adopter but we can't be on the cutting edge we need to recognize that we are not well set up to be on the cutting edge. When there is equipment that starts to become available we need to be able to start getting it here in a reasonably short timeframe.



Is the rebate high enough?

Hard work has only just begun

TOPIC FOUR: END OF LIFE

KYLIE FARRELLEY: RRA has the obligation of taking back and destroying every kilo of refrigerant that is installed in equipment throughout Australia. We are largely reliant on the contractors and technicians to do the right thing, to put it in the cylinder before we can do our part. We've probably got one of the best programs, of its kind, in the world. But we only get somewhere between 45 to 55 per cent of what is being retired out of equipment at any given time. We do have good data so when we look at different sectors we can see what type of equipment is installed, the type of refrigerant, the size of the bank, the average retirement age of equipment. We know what we should be getting back and when. And when we look at different sectors we see that we

have a tough time getting refrigerant back from splits and motor vehicles. We see that these are two sectors we can really try and target to improve recovery rates. Within the industry we are good at speaking to each other but it is harder to educate householders to do the right thing. The householder needs to recover refrigerant from their end of life units and they need to pay for that service. I think people will want to do the right thing if they know what they need to do. It's about education. I would love to see more compliance and enforcement but that is out of our hands.

NICK LIANOS: When we take over a building we take a photo of the asset and we nominate its remaining life as best we can as well as its replacement cost. Now we have made it visible with the photo and information. The minute you show that to a customer and you

never show it to them again, they forget. How do you keep that asset visible? Every time the tradesperson is at that site to do maintenance or repairs you force the customer to acknowledge that you did work on that piece of equipment. This is the asset we touched. We invoice the customer and remind them we did work on that asset. So when you look at the asset what do you see? You see a picture of it and all the times we went to work on it and what we invoiced. They can see it costs \$58,000 to replace, it has three years of life left and in the last 12 months we've spent \$12,800 on it. The burden it places on the tradespeople is that they need to tell us the asset they are working on. Now can we get the whole industry to do that?

SANDRA ROSSI: Should RRA provide support to companies that do reclaim?



Participants agreed the time to act is today.

"SOME 70 PER CENT OF THE PHASE DOWN IS IN THE NEXT NINE YEARS, ONLY 30 PER CENT TAKES PLACE IN THE NINE YEARS THAT FOLLOW."

KYLIE FARRELLEY: We provide a financial incentive for technicians to recover refrigerant and we do that by providing a rebate. We did this when reclamation was voluntary and continued it when it became mandatory. There's the argument that we don't get paid not to speed, should we be paying this incentive? We believe that while we're in a position where we can pay, we should continue to provide rebates for people that do the right thing. Is the rebate high enough? That's something that we're considering as an organization. But largely reclamation would be a good thing for low GWP products. We know the largest installed bank of 410A is in splits. As the market moves to R32 there's not going to be a market to replace 410A but R410A is made up of 50 per cent R32 and 50 per cent 125. In this case it would make sense to reclaim the R32 and send back the high GWP part of that which is the 125. Reclamation absolutely

has a place but we can also see the perverse outcomes of doing that for products like 404A which has a high GWP. If there are safe, retrofit alternatives available we should be encouraging their use and the early retirement of products.

While high GWP product is installed in equipment it has the opportunity to leak. We'd love to see the early retirement of high GWP products, again 404 is a classic example of that, where there are safe alternatives available for that equipment. We're looking at ways to make that happen without intervention from the government.

SANDRA ROSSI: *What would be your ideal regulatory mix if you could have a wish list?*

KYLIE FARRELLEY: In an ideal world if I had a wish list it would be a combination of things including many of the ideas we've discussed here today. We could introduce equipment bans in areas where it makes sense to do so, there could also be service bans. If there is a piece of equipment that needs to be serviced and there is a lower GWP, safe alternative product available why aren't we using that? That is hard to police and enforce but this is my wish list and that would make sense to do that. I'd like to see maybe bans on reclamation of GWP products; it would need to be staged and planned so we don't get the perverse outcomes we've seen in

Europe. There are lots of possibilities, we need to work together as an industry, consult with government and work together.

GREG PICKER: There's a whole range of other things we can do in terms of expanding the current licensing program to cover all refrigerants. HFC emissions today are about eight million tonnes per year carbon dioxide equivalent. By 2040 they are projected to be about two to two and a half million tonnes which creates a nice curve. This is because of the way the phase down works. How much emissions are we going to have in total between now and the year 2031, and between 2031 and 2040? A total of 70 per cent of the phase down is in the next nine years, only 30 per cent takes place in the nine years that follow. That is more than two to one, what does that mean? It means the time for RRA to shine is right now. The quota is going to work, the phase down is going to work. But, it works over time and the question is: Where do we still have pain in terms of our industry's performance? Where we have pain is what's in the existing bank. We also need to shift to high efficiency equipment. What we cannot afford to do is blind ourselves to the reality and that is, that the time to act is today. It is not tomorrow and it's certainly not 10 years from now. We need to get on with what it is we can do because that is how we can have the most impact. The great thing about this is we can do this in an environment where companies can prosper, trade can prosper and consumers can prosper. There doesn't have to be losers here we can just have winners. But we have to act decisively and promptly. *

SETTING 2023 AGENDA

Roundtables are the ideal format to facilitate industry discussion.

It's an opportunity to bring together experts and debate the issues in need of attention. More importantly, it is an opportunity to act on these issues.

It isn't just about the discussion, CCN provides a platform to share those ideas with the entire industry and to encourage feedback and participation.

Thought leadership is for the brave willing to commit to driving debate and setting the industry agenda. To sponsor a CCN hosted roundtable contact Michael Northcott on 0420 403 044.

