

# The road ahead

**From 2018 to 2019 refrigerants unsurprisingly dominate the industry, but other concerns are coming to the foreground at the beginning of what is set to be a tumultuous year. ACR News spoke to representatives from throughout the sector to get their take on the issues that are impacting most on industry.**

**T**he biggest challenge in 2018 was without a doubt the effects on refrigerant pricing and availability as a result of the F-Gas regulations.

**Andrea Voigt, Director General of EPEE:** The F-Gas regulations have created some uproar in the market, with rapidly increasing prices for all HFCs and, in some cases, also product shortages. Many market players were taken by surprise and suffered from these consequences – which could have been avoided, at least to a certain extent, had there been better communication about the principle of the phase-down, how it works, and about the importance of anticipating its impact.

**Roberto Mallozzi, managing director, Gree UK:** Our biggest challenge throughout 2018 has been the rocketing refrigerant prices. Not long ago, they were £9 per kilogramme for one refrigerant, but we are now paying around 200% more.

At one point in the year, prices were increasing by 20% per month. It can often take months between giving a customer a price for an installation and the installation itself. During that time, the price of refrigerant could have gone up by as much as 75%, sometimes adding thousands of pounds to the cost.

This is something that generally had to be

absorbed by the installer, eroding most of the profit. Our sister installing company, LH, has started quoting excluding the cost of refrigerant, but many customers still will not wear the increase.

**Gary Piper, mechanical director, Synecore:** Some wholesalers have maintained larger stocks of R404a, while restricting the sale of other medium GWP gases such as R410A despite there being no alternative for a great many applications yet for R410A. This seems not only to compromise the intent of the phase-down process, but it is starting to put at risk the financial stability of hundreds of contractors affected by the rising cost of refrigerant gas.

**Brent Hall, technical manager, ICS Cool Energy:** We entered 2018 anticipating continued refrigerant price escalation and some severe shortages due to the F-Gas phase-down's second major reduction down to 63% (of the pre-2015 average totals). What happened was that after an initial spike, prices tended to stabilise, and some fell back, although not all the way to pre-2015 levels. What's more, despite the quota drop, we saw no shortage of main stream gases.

**Polly McConachie, director, AMP Air Conditioning:** With the full switch to R32 announced by

Panasonic at the start of 2018, one of our main challenges this year has been overcoming contractor resistance to this new refrigerant. While the change is desirable, it is often slow to happen. We are confident, however, that with continued promotion and raised awareness of the benefits of R32, contractor's trust will develop over the next year or so. When considering future legislation and the anticipated reduction in the availability of refrigerants, plus a drive towards the use of lower GWP refrigerants, I believe contractors will opt for R32 in the future.

However, refrigerants were not the only issue last year.

**Brent Hall, ICS Cool Energy:** Our biggest challenge was the need to build on the growth of recent years, whilst at the same time educating our customers on the need to improve refrigerant containment and energy efficiency to put sustainability ahead of economic constraints.

**Dave Bostock, refrigeration division director, Integral:** We had to manage through a period of downturn on contracting in the first half of 2018 because of customers delaying their order placements for six months. We also concentrated on managing our business to be less reliant on retail service for our turnover.

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**Luke Marriott, technical director, Integral:** In the retail sector there has been a large decline from new build other than the discount brands. There is also a skills shortage in several areas away from the engineers that is not always as commonly looked at.

**Martin Reed, chief executive, Incentive FM:** The hardest thing for us as a growing business is getting hold of qualified, well-motivated staff. As there has been a reduction in immigration from the EU in the last two years this is now starting to have an impact on the general talent pool in the construction and associated sectors.

**Kelly Butler, group marketing director, Aspen Pumps:** Preparing for Brexit has been a significant challenge. To cope with potential demand a key part of our Brexit preparation has been the expansion of our warehouse and operational facilities.

### What does 2019 have in store?

With Brexit becoming an imminent reality, and further refrigerant developments on the horizon, this year looks set to be one to remember.

**Gary Piper, Synecore:** The cost and potentially the availability of R410A will no doubt continue to be a problem in 2019. I am interested to learn more about the development of the new refrigerants, such as R466a, however I am cautious at this early stage. Of course, before the industry considers adopting any potential alternative refrigerants, manufacturers and contractors need to know how they will perform, while taking into account negative side effects on applications considered. I am intrigued as to how the industry will adapt in terms of equipment and training into 2019 and beyond.

**Brent Hall, ICS Cool Energy:** I think 2019 will be a continuation of 2018, but with a potential shortage of the more popular HFCs due to pre-2018 stockpiles running down. It is also likely that global HFC production will be reduced to balance the A2 (non-A5) countries beginning their HFC phase-down with a 10% reduction at the start of the year. Finally, I think there will be increased market pressure for lower GWP refrigerants and a demand for clearer guidance relating to safe, long-term R410A alternative options.

**James Lalley, air con ancillary product manager, SBS:** Because the European market is getting access to cheaper contraband higher GWP refrigerants, I think it is going to be difficult to move people onto lower GWP refrigerants due to the larger quotas now available through the lack of sale of the legitimate refrigerants.

**Clive Parkman, managing director, Daikin Applied UK:** The government has pledged to continue implementing the phase-down of HFC

refrigerants in line with EU legislation after the UK leaves the EU in March, but it remains to be seen whether the Environment Agency has the necessary resources to police the process properly.

The industry's skills shortage will be a key challenge and the post-Brexit landscape for investment and recruitment looks confusing.

**Michele Gioachin, export sales area manager, Aermec:** There is too much uncertainty on what kind of deal will be in place. This first step only relates to the UK leaving the EU block. We then have more years of negotiating our trade deals with the EU and other countries we want to trade with. Delivery times are likely to increase due to customs and potential tariffs if there is no deal. Foreign exchange fluctuations will also be a major concern, but only if the pound bombs.

**Polly McConachie, AMP Air Conditioning:** The fragile world economy and uncertainty of Brexit is likely to continue to have an effect, potentially slowing spending in 2019 and may be used as a reason for industries not to invest in construction which may have a knock-on effect on the building services sector.

**Steve Gill, consultant:** For me, the biggest challenge for this industry in 2019 will be to stop thinking and acting short-term and start to address longer term issues. I foresee the industry focus being on the refrigerant phase-down over the next few years, and whilst this is urgent, we need to also focus on the important long-term view of the industry which will inevitably include energy transition, sustainability, and climate change. The biggest challenge for 2019 will be to join the wider debate on these important issues and to encourage and support innovation in sustainable cooling (and heating) technologies. We need to take our place at the table of these world affairs, otherwise we will not be included in the global discussions and solutions.

**Andrea Voigt, EPEE:** Climate change, urbanisation, a growing middle class – these are just some of the trends that shape the environment in which we are operating and where we can and have to take responsibility considering the market growth that can be expected in the coming decades. A broad array of sustainable cooling technologies is readily available. What is now needed is the right political framework, removing barriers and stimulating the uptake of all these solutions, to make them a true business case. To make this happen, it is crucial that associations work together, forming partnerships and coalitions, to address these huge challenges of the future.

**Russell Beattie, chief executive, FETA:** In some ways it is tempting to conclude that at a macro political level the Brexit machinations will

take whatever course they take and anything we say or do will exert little influence on the outcome. But we must continue our efforts to be as prepared as possible for all eventualities and of course, whatever happens we will still face the fundamentally unaltered issue of how to influence and develop technical areas such as regulations and standards, across the national and international dimension.

We fervently hope the momentum will be preserved following Dame Judith Hackitt's seminal review following the Grenfell tragedy and we stand ready to assist. Likewise we will continue to press the case for a fundamental change to the toxic payment practices in the construction industry – a situation felt particularly acutely by our ADCAS ductwork community.

**Graeme Fox, head of Refcom:** Confusion over what Brexit means to so many will only increase if there is further indecision caused by another delay in implementation. The government has been quite clear in its published documents regarding what will happen post Brexit and yet the media continues to confuse the general population with its mixed messages and deliberate obfuscation.

**John Barker, managing director, Humidity Solutions:** Currency fluctuation could be a big one for 2019, and the potential delivery delays depending on the outcome of the Brexit negotiations. We cannot influence the situation, however we do have plans in place to ensure stocks are healthy and that we have done all we can to smooth out any short-term issues if they arise.

**Kelly Butler, Aspen Pumps:** We do need to steer our course through regulatory uncertainty since it is still not clear how the UK will operate important parallel structures for regulations such as REACH.

**Gboyega Obafemi, managing director, Hitachi:** Growth will also be a challenge. The main reason is with regard to investment in the building industry due to Brexit effect; more and more projects are being delayed.

**Trevor Dann, technical and sales director, ThermOzone/ThermaCom:** Pricing for jobs to make a reasonable profit will continue to be difficult. Brexit instability is not helping anyone presently.

**Martin Reed, Incentive FM:** I don't think any of the political upheaval will make much difference to our trading position but it will certainly continue to cause us problems in human resources.

### Industry at its best

**Steve Gill:** I think the industry as a whole has responded well to the changes in refrigerants.

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Andrea Voigt, EPEE.



Brent Hall, ICS Cool Energy.



Clive Parkman, Daikin Applied.



Dave Bostock, Integral.



Hywel Davies, CIBSE.

While we can all point to examples where we (as an industry) have failed to either get the message across or actions have been inappropriate, generally, I think the industry should congratulate itself as we have moved through the early stages of the refrigerant phase-down relatively smoothly.

**Clive Parkman, Daikin Applied UK:** Generally, our industry has coped well with a tough combination of economic pressures, Brexit uncertainty and the rapidly changing refrigerant market. Product quality remains high and there are a number of innovations emerging that bode well for the future.

**Brent Hall, ICS Cool Energy:** In the main, industry

has been ready to take on board the transition to a cleaner and more efficient regime when procuring and applying refrigerated and other cooling products.

**Roberto Mallozzi, Gree UK:** Undoubtedly it has been the promoting and marketing of heat pumps. The industry has been shouting about the virtues of heat pumps for more than 50 years, but suddenly everyone has woken up to the message.

This is largely due to the fact that the heat pump is the only form of cost-efficient heating that uses electricity as a power source, which is the one form of energy that has become greener in recent years. Less electricity is being generated by burning coal, gas and oil and more is coming

from solar, wind and other renewable, non-CO<sub>2</sub> producing sources. This is appealing to those who want to be greener and has been boosted by low running costs and government schemes.

**James Lally, SBS:** I have seen an increase in the sale of service and maintenance products in the HVAC industry, which could suggest people are recognising the benefits of regular maintenance.

**Kelly Butler, Aspen Pumps:** F-Gas prices and availability have been a real issue for the industry this year but it has coped well through the distribution chain. We have to remember too that this has been a phenomenal year in terms of summer temperatures and there has been a high demand from the retail and catering industries.



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James Lalley, SBS.



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Luke Marriott, Integral.



Martin Reed, Incentive FM.



Michele Gioachin, Aermec.

The contracting industry has done a fantastic job of keeping up with this pace.

**Dave Bostock, Integral:** We've managed the process of refrigerant phase-down well; our biggest problem seemed to be a shortage of CO<sub>2</sub> for carbonated drinks!

**Luke Marriott, Integral:** We've provided innovation even though a lot of end users are now governed largely by reducing capital costs. Providing energy saving options is often overlooked when tenders and scopes are provided.

**Graeme Fox, Refcom:** We've pulled together as one to lobby the politicians over the Aldous Bill to the extent that this now has real momentum and buy-in from cross party MPs and looks likely to make a real difference to the sector for the long-term benefit of all.

**Trevor Dann, ThermOzone/ThermaCom:** I was expecting fireworks over lack of HFC refrigerant availability, particularly R410A, but presently the Industry seems to have coped. Indeed, we have seen gas prices reducing, so likely lots of forward purchasing going on last year. From my perspective the AC market is in turmoil over the refrigerant issue ahead, however this is because the Industry buried its collective head in the sand over R410A.

**Russell Beatty, FETA:** Probably remaining stoical in the face of uncertainty would be my general observation. Our refrigeration gas A2L group have done sterling work to educate the wider stakeholder community to prepare appropriately for the changes and to train their workforce accordingly.

**Quentin d'Aboville, marketing director, Tecumseh:** By moving to ErP compliant products and new refrigerants, the industry is showing that we want to take up more environmentally friendly solutions for the long-term reduction of greenhouse effect.

**Polly McConachie, AMP Air Conditioning:** Manufacturers are engaging and taking responsibility for highlighting the benefits and the need to reduce global warming by reducing the use of refrigerants with high GWP figures.

There has also been much more investment from companies into energy-saving HVAC technologies, which have seen an increased profile over the last 12 months.

### Areas for improvement

**Roberto Mallozzi, Gree UK:** The industry did not prepare and plan well enough for new refrigerant proposals, so no one was ready, and we are still in limbo. We basically knew that mass production of R410A would stop by 2020, knowing that there was not enough time to adapt, so no one is really ready. Manufacturers have to rework their whole catalogue. They are too busy with this and sorting out the bureaucracy to produce anything new. The deadlines are so tight that they cannot get on with their day job.

It's like saying from the end of 2019 we will have no more petrol cars, without having enough charging points. We are not ready, and we knew we would not be ready. It is quite chaotic, but it was predictable. We are now talking to factories that are uncertain as to what gas they will be using in 2019 in larger systems.

**Michele Gioachin, Aermec:** The price control on refrigerants. Technology was not readily available to enable a smooth transition. This allowed refrigerant manufacturers to increase prices at an unreasonable rate, 500% in some cases.

**Kelly Butler, Aspen Pumps:** It's a hard question to answer but in these uncertain times with Brexit, the anecdotal evidence would suggest a number of companies may not have sufficiently prepared for the range of eventualities on the table and that is a worry.

For manufacturing across many sectors, not just HVACR, the manufacturing challenge will be sourcing components and security of supply as new technologies such as renewables and EVs soak up resource. We are already seeing lead times of over one year for certain component products and that makes an efficient operational plan absolutely essential.

**James Lalley, SBS:** I think the industry needs to start doing more to get more apprenticeships.

**Luke Marriott, Integral:** More in the grass roots of the Industry. The current downward turn could add to the current skills shortage when any upturn in market conditions applies.

**Dave Bostock, Integral:** Not allowing the large retailers to continue dictating terms to the industry.

**Trevor Dann, ThermOzone/ThermaCom:** Not to have developed a replacement for R410A. The gas that has been marketed to replace R410A (new equipment) will undoubtedly be used for retrofit/service purposes unless Honeywell closely controls its issue, and all this is doing is kicking the stone down the road.

**Quentin d'Aboville, Tecumseh:** In general, the market is moving fast and the main driver is the regulation. We think there could be better coordination between the different standards and local regulations.

**Polly McConachie, AMP Air Conditioning:** In my opinion, the F-Gas phase-down could have been better regulated with a more staggered approach to the increase in refrigerant costs. I also believe that more could be done to police and monitor air conditioning installations that show the industry in a bad light. Bad practice makes it costly for all bona fide installers when trying to compete against rogue installers – and this needs to be stamped out.

**Roberto Mallozzi, Gree UK:** The government has said it is going to be harder on large organisations that use payment terms that harm smaller companies. This has not happened.

Some key firms are paying on 120 days, which is hugely unfair on smaller contractors, which must pay salaries at the end of the month and suppliers demanding payment on 30-day terms. In effect, small companies are financing large companies. It is a situation that is not healthy for contractors or the industry. They often don't pay then, and just play for as much extra time as possible, knowing they won't be sued and if the larger organisation goes under, like Carillion, before the 120 days are up, it can take the small company with it.

Also, more transparency is required. Sometimes, we will lose a tender, but no one tells us why. On some occasions we have lost a tender to a rival that has had a lower price, but when you examine their tender, it doesn't comply with the specification. Once it has been accepted, if no one has noticed, it will not be re-tendered.

**Martin Reed, Incentive FM:** The FM services sector had a lot of bad press with Carillion, but the woes of the likes of Interserve, Serco, and Babcock have all added to the general unease about dealing with outsourced providers. As a contractor, we need to make sure there is not a race to the bottom on price chasing work to keep staff busy. We have to be efficient and make sure we are utilising technology and systems rather than just volume of work to retain profitability.

**Michele Gioachin, Aermec:** Work together – collaboration is important to achieve a successful outcome. Sometimes a lot of time and effort goes into designing a project to hit specific noise or efficiency targets, which is then totally disregarded at the order stage, as the project then becomes price driven.

**Trevor Dann, director, ThermOzone/ThermaCom:** Increase the focus on environmentally beneficial aspects of products. Energy efficiency, reliability and equipment longevity should be in primary focus, but still it is cheapest that wins the order. Cheap to purchase at the beginning does not mean it is cheap over its (often very short) lifespan.

**Steve Gill:** Energy-transition is happening all around us and the acr industry could work closer with those generating power and supplying energy to improve efficiencies. How energy is used and how it is stored will become increasingly important and the acr industry can play a key role in this.

**James Lalley, SBS:** I think more product training availability for customers and their employees could be very beneficial as a lot of contractors may not be aware of the full benefits of certain products.

**Dave Bostock, Integral:** Train more young people in the 'non-technician' areas of our industry. There's certainly a shortage of service technicians, but all other skills seem to be worse.

### Skills shortage

**Michele Gioachin, Aermec:** There is a shortage of engineers at the consultant stage and on-site with contractors. Plus, there is a requirement for technically competent sales engineers at the supplier end.

**Gary Piper, Synecore:** Air conditioning and refrigeration doesn't seem to be a trade widely considered by young people when joining the

construction industry. I fell into the industry, having known someone else who did it. It's not like plumbers, carpenters and builders, which are renowned jobs in construction; this is a relatively new trade and there is a distinct lack of courses available, so yes there is a skills shortage. Consequently, it can be very difficult to find the right applicant for AC engineering positions with the right attitude.

**Roberto Mallozzi, Gree UK:** Good engineers are very hard to find and even harder to keep. Because there is such a shortage, companies keep offering more money to attract them, which can be good for the engineers but not for the companies that have invested in training. This means there is little incentive for companies to extend the training they do at the moment. We can spend £5,000-£10,000 on training courses alone, only to have that engineer lured away with more money, so we have lost that investment. Often, they will be stolen away even before they are fully trained. Unfortunately, this is making us think twice before we send newer employees for training.

We can't even fill the gaps we have from overseas workers. Refrigeration engineers are classified for immigration on the same level as cleaners. We had a very good Australian engineer that we lost because of this.

**Steve Gill:** There is a continuing and, in some ways, accelerating need to update skills as technology advances and refrigerants change. In that sense, those currently working in the industry may quickly fall behind and contribute to the skills shortage if they do not have the latest knowledge and skills. So while we, as an industry, must always be looking to attract talent into the industry and retain it once it is there, we must also work hard to ensure that we also update the skills that we have.

**Trevor Dann, director, ThermOzone/ThermaCom:** We have seen a dumbing down of standards, with the result that many 'engineers' with dubious experience and qualifications are being increasingly over paid for under delivery. We ourselves entirely rely upon bringing in non-industry staff of varying levels of experience, capability and qualification, and are getting by just fine with our own in-house training routine.

I think the F-Gas course where the company sponsors the individual should be invalidated if the individual leaves within a two-year period; to become transferable, then a journeyman's time period needs to be served. This works for forklift driver qualifications, so why not for F-Gas?

**Martin Reed, Incentive FM:** There is not a shortage of people applying for jobs but the quality of applicant is sometimes questionable

and you have to kiss a lot of frogs to find your prince or princess.

**Quentin d'Aboville, Tecumseh:** Especially with respect to flammable refrigerants use generally and also CO<sub>2</sub>, among smaller installers in commercial refrigeration.

**BSRIA:** We are in an age where we are facing the retirement of the baby boomers. 22% of workers in the sector are aged between 50 and 60, compared with only 9% being 24 or younger. The challenge is how to transfer all that knowledge to new entrants before it is lost.

**Polly McConachie, AMP Air Conditioning:** I do believe there is a skills shortage within the industry and is getting worse in recent years with fewer skilled engineers coming through. I see part of the problem of encouraging new people into the industry is down to time and money. The contractor's days are filled with running their business and installations of projects and are often too busy to take on more staff to train.

Training is important but continued improvement and promotion of apprenticeship schemes is required to improve the situation for the future. I believe that manufacturers and contractors within the industry should partner with colleges and universities by sponsoring engineering labs, and engage with and speak to students at events to help heighten the profile of the HVAC industry.

**Kelly Butler, Aspen Pumps:** Aspen has developed relationships with the education sector this year, employing an intern from the University of Sussex as well as funding product development research projects with the University of Surrey. We firmly believe that as a responsible UK manufacturer we should be supporting educational establishments, and in the coming 12 months we will be looking at a plan for encouraging modern apprenticeships within the business.

**Clive Parkman, Daikin Applied UK:** This has been going on for some time but the sector is dealing with it in a number of ways. For example, using off-site monitoring of equipment using digital connected systems allows FMs to anticipate and deal with potential problems without having to use site-based specially trained staff.

There is still an urgent need for more skilled people to come into our industry and Brexit will not help the situation. As employers we all have a duty to step up training and ensure we are developing 'home grown' talent on a far greater scale; we must widen our recruitment activity.

### Encouraging new people

**Clive Parkman, Daikin Applied UK:** Our sector is not diverse enough and we do not have enough women or people from BAME backgrounds. We

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Polly McConachie, AMP.



Quentin d'Aboville, Tecumseh.



Roberto Mallozzi, Gree.



Russell Beattie, FETA.



Steve Gill, consultant.

need to appeal directly to different segments of our population and present the industry as a cutting edge business with great career prospects. We need to demonstrate that this is an industry for everyone and that the range of jobs now offered by acr employers are broad enough to attract most types of skilled person.

More young people are now opting for vocational education because of high university tuition fees and the rising burden of student debt. In many cases they have far better career prospects if they are able to take up apprenticeships or other such routes that allow them to learn while they earn. This is something that could prove increasingly useful to acr firms, but we have to get out there and promote our industry in order to secure our fair share of potential recruits.

**Martin Reed, Incentive FM:** The industry needs to hold firm on the value proposition so we can pay people the right rates that encourage others into the trade. It is also essential that we expand apprenticeships into the older sector and not focus only on younger people. If you can train a 40-year-old to be an AC engineer, you are still going to get 15 years plus from them and full pay back on the training.

**Steve Gill:** One way of encouraging more people into the industry is showing them what we do. Cooling plays such an integral part in modern life which is not widely recognised. Generally, we all have a idea of what we many professions do, such as a doctor, a firefighter, a lawyer, a train driver, but outside of the industry most people, including career advisers and influencers, have no idea what we do. Much more needs to be done to promote what this industry does, and not simply using the stock photos of people either wearing a hard hat or brazing.

**Gary Piper, Synecore:** We are on the cusp of a Brexit deal or no deal and already very aware that access to a skilled workforce could become more of a major problem going forward. Now is the time to start encouraging the next generation to consider professions in construction, particularly

the HVACR industry. I think schools could do more to educate young people about the various jobs available in the construction industry, and include AC and refrigeration.

**Michele Gioachin, Aermec:** The government could be far more proactive and help with incentives for building services apprenticeships and degree courses with employers and universities. Companies and schools should also work much more closely and develop collaborative practices to help create the competencies of the future generations. But as an industry, we are not good at showing how crucial engineering and building services skills are to the fabric of society and how they impact every industry and improve lives, processes and environments.

**Graeme Fox, Refcom:** Increased engagement at local level by industry trade bodies needs to take place to ensure that careers advisers know about who we are and what we do.

**Quentin d'Aboville, Tecumseh:** We can encourage more new people by pointing out that the market is evolving and more than ever open to new technologies and connectivity – and that they can actively contribute to cooling for a better tomorrow.

### On apprenticeships

**Clive Parkman, Daikin Applied UK:** The New Standard apprenticeships being developed by employer bodies are creating a new form of qualification for life that supports growing enthusiasm for vocational learning and training.

There have been problems with the Apprenticeship Levy, but the decision to allow levy paying firms to share up to 25% of their funds with supply chain partners could make a big difference to SMEs interested in taking on apprentices.

The government could also use some of the £3bn raised annually by the Levy to subsidise engineering apprenticeships in universities and colleges as well as opportunities for young people to take up work-based training opportunities.

**Gary Piper, Synecore:** To overcome the shortage of suitable applicants, we do encourage

apprenticeship schemes. This way, we produce a better-quality engineer who has the right skills and work ethic.

The apparent skills shortage in HVACR highlights how the construction industry should be doing more to promote mechanical engineering. It is a very rewarding and well-paid profession that doesn't necessarily rely upon other trades before the installation process, as we can do everything ourselves. Certainly, it is a profession that more young people should be made aware of.

**Martin Reed, Incentive FM:** They work but could always be improved. The cost burden, even with the levy, is still relatively high and the payback is not short.

**Dave Bostock, Integral:** Apprenticeships work, but the funding and legislation is too complex, and reducing them to two or three years is short-sighted.

**Luke Marriott, Integral:** But only on the basis that we have the in-house structure to support the candidate. A sponsorship with end-users and industry bodies would help this.

**Gboyega Obafemi, Hitachi:** Apprentices need to be tied to a company so they can see a future for themselves.

**Polly McConachie, AMP Air Conditioning:** Apprenticeships have worked for us at AMP. However, success does depend on how much time you, as the employer, are prepared to invest in the programme. There does have to be a long-term approach put in place for each apprentice, with clear goals of where they can aim to be in five to 10 years' time and after their apprenticeship ends.

**James Lalley, SBS:** Although the academics of an apprenticeship is important, I feel the experience of practical skills is more important, I would like to see more problem solving included in the education of apprentices.

**Graeme Fox, Refcom:** We have a raft of experienced workers already who just need a formal end assessment to be awarded an NVQ or equivalent. At the moment the training providers are not making it easy for these workers to

attain skillcards to get access to sites. They are protecting their self-interest without realising that they get none of that money just now and they'll never get the experienced workers attending full college courses as they don't have the time and, frankly, are often better qualified than the lecturers – if not on paper then in terms of experience.

**Roberto Mallozzi, Gree UK:** Apprenticeships don't work as they currently stand. We need a properly recognised scheme that encourages apprentices to stay with the company they train with for at least a few years.

**Michele Gioachin, Aermec:** Apprenticeships are not working as effectively as they could. Far more needs to be done at the secondary school level to encourage and attract youngsters into our industry. This could be achieved by incentivising schools, colleges and providing help with university fees. This would be well received by all.

**Trevor Dann, ThermOzone/ThermaCom:** Have you tried to set up an apprenticeship scheme as a small business? We find ourselves attracting the lower end, non-achievers, so to combat this we have to offer way above minimum wage to attract decent staff, even then without effective training.

This can work but we have to be tough if personnel do not play their part and make the necessary effort. Of a typical five new starters, two will be gone within the first month, three by month three and four within the first six months. We will only invest in the one who is still with us after a full year.

**Russell Beatty, FETA:** Although we have enthusiastically and constructively contributed to a number of Trailblazer programmes, there is no doubt that the wider roll-out of the government's revamped apprenticeship scheme, including the Levy, hasn't been a particularly smooth journey. This of course is a huge topic and there are both sector and regional dimensions to it.

### The future of refrigerants

**Roberto Mallozzi, Gree UK:** It is currently something of a mess, but ultimately only low GWP refrigerants will be used, so we have to get over the fear of using natural refrigerants such as propane and ammonia. One of our sister company's supermarket customers already has more than 350 chillers using propane safely and they are all working very well. Ammonia, which has a GWP of zero, has a number of advantages; in particular, it can be diluted with water if there is a spill and it smells strongly, which makes even slight leaks obvious.

**Michele Gioachin, Aermec:** Refrigerant pricing is already increasing and combined with legislation is encouraging manufacturers to use greener

alternatives. We are in a fast-paced industry where change is happening at a faster rate than ever before. Those businesses that are late to develop will suffer as they will be less competitive and will be overtaken by companies that are proactive.

**Brent Hall, ICS Cool Energy:** While the commercial sector seems to be successfully embracing CO<sub>2</sub> and other natural refrigerants in place of high GWP HFCs, the HVAC and process sectors are still overwhelmingly dependent on R410A (2088GWP), for which there are few safe (A1), readily available and long-term alternatives. The current options available are R513 (A1) (631GWP) and a handful of A2L refrigerants with varying GWP figures in the 'low' and 'very low' regions.

As much of this sector's equipment is often sited on, in or adjacent to occupied residential and commercial buildings, there is a reluctance to change to an A2L or A3 refrigerant, nor is there any appetite to choose only a short-term alternative. We await with great anticipation the universal panacea of a safe, ultra-low GWP, efficient and cheap refrigerant. However, the reality is that we must be prepared to adapt to changing attitudes to sustainability, which put very low GWP and high efficiency at the top of the preferred properties list, displacing price and safety.

**Polly McConachie, AMP Air Conditioning:** We see that the future will hold a clearer way forward for refrigerants. The industry will move slowly and when regulations dictate. Lower GWP gases will come along and make the industry more stable with a standardisation of refrigerants and costs lowered.

**Graeme Fox, Refcom:** An increased uptake of CO<sub>2</sub> in smaller projects and HFOs in larger systems will ease pressure on the F-Gas quota.

**Trevor Dann, ThermOzone/ThermaCom:** Until shortages actually bite the industry will do what it has always done and sit on its hands. Clients are run by accountants mostly with a one to two year time horizon, so if the gas is available today or within a few days they will not seek to upgrade to lower GWP gases, even if the costs of the gas are exorbitant, in the overall scheme of new plant the cost of even an expensive base refrigerant remains a low percentage.

We have been pushing for R513A and are looking at R1234yf and R1234ze, but for us these gases present technical issues with application onto older plant. However, actual take up of any new gas will only happen when the gas being taken on new is cheaper than the gas being phased out. For this reason, high gas prices are a very good thing.

**Russell Beatty, FETA:** The work to educate on A2Ls is key at the moment and will be for a few years yet. Whatever the pros and cons from a climate and energy perspective, it is likely we will see an increase in demand for domestic AC.

### On counterfeits

**Michele Gioachin, Aermec:** Counterfeit refrigerant is a growing problem particularly as prices increase. Counterfeit material manufactured outside of the EU or sold on through various outlets on the internet and black market, is difficult to control.

Governments need to crack down on counterfeit suppliers but this requires much greater collaboration and we as an industry could be more proactive. For example, we could supply equipment without a charge so the refrigerant charge only happens on commissioning and the maintenance is then covered by F-Gas. This would put in place an audit trail which would ensure that any company supplying counterfeit refrigerant would be trackable and would be punished for breaking the law.

**Roberto Mallozzi, Gree UK:** We haven't seen any, but we have been offered refrigerant 20-25% cheaper from Europe. It's not counterfeit, just cheaper; it has all the appropriate certification. This saving is a huge amount with the prices the way they are. I think if the re-sellers in this country are honest and truly compete with their pricing, any counterfeit market could become irrelevant. That said, the policing and control of movement of greenhouse gases is important, so any legislation must have teeth and our government agencies must have the resources to enforce it.

**Gary Piper, Synecore:** Synecore has never experienced anyone selling counterfeit refrigerants, as we only use reputable suppliers. However, that is not to say it doesn't happen because there are severe disparities in supply and demand for R410A, which has caused the prices to rise.

Personally, I believe this could lead to a wider issue of refrigerant theft. We've worked on air conditioning systems containing as much as 360kg of R410A. If you put that into monetary terms, that is over £30,000 worth of refrigerant at retail cost rates. In all honesty, it wouldn't be that difficult for someone who knew what they were doing to remove the refrigerant and for said gas to arrive on the black market.

While I don't think this is currently a problem, it could potentially be an issue for the industry in the future as refrigerants become less readily available and costs continue to rise.

**Dave Bostock, Integral:** Any threat is only in

## STATE OF THE INDUSTRY

the same area it has always been – the ‘cowboy’ minority of the acr industry and end users. The majority of both remain both compliant and conscientious.

**Clive Parkman, Daikin Applied UK:** There is a huge future for low GWP gases and alternative refrigerants and the quicker we develop these solutions and roll them out to the market, the less incentive there will be for people to try to profit from counterfeit refrigerants.

Monitoring the online marketplace is important as much of the underhand activity takes place there. We would like to see the Environment Agency given more powers to police online retailers and punish offenders who are putting people's lives at risk with the practice of advertising gases that are not what they claim to be.

**Graeme Fox, Refcom:** The illegal trading will increase in the coming years as the quota bites ever harder. There are dangers inherent in this, as if the supplier doesn't care about using illegal disposable bottles, for example, then how can the buyer have confidence that the contents are genuine? We've already seen methyl chloride supplied in bottles marked R134a from the Far East with the resultant loss of life – how many more instances like this will we see?

Border agents need to be given resource and be educated in what they are looking for. The European Commission have to take their heads out of the sand and acknowledge that things are not as rosy as they pretend. By pretending that all is well they do nobody any favours and merely encourage those circumventing the rules to carry on with impunity.

**Quentin d'Aboville, Tecumseh:** For sure it's a threat. The industry is putting in place regulations to drive the transition to decrease our impact on environment and we shouldn't let the door open to counterfeits that could derail this trend.

**Polly McConachie, AMP Air Conditioning:** In the UK, customs controls are generally good, but it is a growing problem elsewhere and a more dedicated policy is required to eradicate rogue installers.

### On Brexit\*

**Dave Bostock, Integral:** Other than a potential delay in receiving goods, very little impact which will steadily be offset by 'stocking' in the UK, and/or having to extend programme periods, with order placement to start on site.

**Luke Marriott, Integral:** On my latest estimate of a soft Brexit then I think that 2019 should not see too many changes reflected by this process. Either a no deal or hard Brexit will ultimately cause short-term uncertainty and no doubt cause

a decline in industry.

**John Barker, Humidity Solutions:** Political and financial stability is what business requires to generate a positive environment in which companies can expand and invest. We have seen a few projects put on hold until the outcome of Brexit is clearer. However, as a nation in the past 10 years we have gone through a recession, austerity and now Brexit – I think we are all getting used to uncertainty and realise that the world keeps turning.

**Michele Gioachin, Aermec:** It all hinges on what deal is struck. At the moment there are a number of possible scenarios, and all can be dealt with. But costs will unfortunately rise as a consequence. Free trade zones are also important otherwise tariffs and taxes will come into play, which again pushes the prices up further. This impacts research and development at manufacturing levels too.

**Quentin d'Aboville, Tecumseh:** It has been clear during these last weeks that the deal was potentially at risk and the situation is becoming clearer now. We will analyse in early 2019 what the impact could be. This will be mainly on price/cost for next year. The longer term could be affected by a progressive split between the EU regulations and the UK's.

**Clive Parkman, Daikin Applied UK:** Uncertainty does not help anyone and many important projects have already been delayed by investors waiting to see what the Brexit 'deal' looks like.

In the end, it will be product development and best practice engineering that will have the biggest influence on whether or not F-Gas meets its goals. The industry has already made significant progress and our technological innovations are what will make the real difference.

The industry is perfectly capable of delivering the ever-increasing amounts of cooling capacity required globally without driving up energy consumption or penalising consumers. However, our success in this depends on us being able to persuade specifiers to opt for the best available technology, including the wider use of free cooling.

I do not think we are going to see any problems with UK-manufactured products but I am sure anything imported from the EU will incur an increase in price.

**Trevor Dann, director, Thermozone/ThermaCom:** As already mentioned Brexit uncertainty is, I believe, affecting spend decisions. We work predominantly in the higher end business sector (large building AC chillers, with much work in the Mayfair, City and Canary Wharf areas). The installed plant supporting these businesses has

always been a second class area, and when any cuts bite these will be the first to see investment shortages.

From our perspective, a weak pound should help us because although we import, we import only a part of an overall chiller. This means our pricing could become proportionately more attractive against our main competition which is imported chillers; after all, with one notable exception, chiller manufacture in the UK is virtually extinct.

**Martin Reed, Incentive FM:** Apart from the free movement of people I don't think Brexit will have any impact in 2019. Tariffs and elongated supply chains might have an impact but I am optimistic that OEMs, service providers, logistics and governments all want as smooth a transition as possible and we will all adapt to whatever the final outcome is.

**Polly McConachie, AMP Air Conditioning:** In my opinion, once Brexit is finalised and a clear future outlined, we will see an increase in businesses, such as hotels, refurbishing their properties. At present, the uncertainty is causing a lack of confidence to invest. I do anticipate that this may take some time to take place and we may see a drop in investment before an upturn is seen.

**Roberto Mallozzi, Gree UK:** What we need is certainty. I would rather have it one way or the other, and then move on from there. If it is not exactly the right deal, we'll work around it. The British public are very good at getting on with it, but just not good with uncertainty. If we know what the obstacle is, we will usually find creative ways to get around it.

**Gary Piper, Synecore:** Like every industry, we don't know how Brexit is going to affect us. The skills shortage could become more of a problem. The cost of refrigerants could rise even more so, which will no doubt create even more challenges for this industry. Until we have a definitive deal, or no deal, we can't tell. What we do know is we must be prepared for rises in the cost of refrigerant, labour and equipment.

**Brent Hall, ICS Cool Energy:** From a purely technical viewpoint, Brexit is a distraction. The global HFC phase-down will plough on regardless of what changes in our relationship with the EU take place in 2019. On a commercial scale there are many unknowns, but long-term and strong relationships with European partners will continue as they have in the past. There will undoubtedly be some difficulties to encounter and overcome in the next 12 months, but overcome them we will and we'll come out of 2019 with a stronger bond as a result.

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\*Opinions are as of 30 November 2018.