DEVELOPING INNOVATIVE, SUSTAINABLE SOLUTIONS FOR CLIMATE CONTROL SYSTEMS

climalife®
IDS Refrigeration Limited

Newsletter

reclamation

January 2018

Contents

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WELCOME AND INTRODUCTION

Welcome to the first IDS Climalife UK Newsletter dedicated to refrigeration and air conditioning professionals in the UK

Allan Harper
Managing Director, IDS Climalife UK

I am sure that many of you will remember me saying earlier on this year that the honeymoon period with F-Gas is over and now we have to make the marriage work! We have certainly seen some changes where we have seen the price of refrigerants rising steeply during the course of the year with R-404A bearing the brunt with a 900% increase in less than 12 months. The good news is that we have seen a big move from the industry to the much lower GWP refrigerants and as I write we have not seen any problems with any of our customers using the HFO blends R-448A & R-449A as replacement products for R-404A.

During the course of 2017 I think that all of us faced some tough challenges in dealing with the implications of the quota and my feeling is that 2017 gave us a good lesson on how we could expect to manage the looming 2018 major cut in quota. All quota holders will have to reduce the CO_2 tons equivalent placed on the market by 32%. This I am sure you realise is a major reduction and is basically designed so that end users stop using high GWP refrigerants such as R-404A or R-507A. Although some might see this as excessive, there are plenty of replacement options with much lower GWP values which in theory will ensure that F-Gas will be successful and that there will not be any major shortages in the supply of refrigerant.

In the UK we always tend to be a little bit ahead of the curve and it has been great to see that we have seen many announcements from the major retailers on their plans to move to the low GWP refrigerants. This unfortunately is not the case in some parts of Europe which seem to be much slower in making this transition but I am happy to report that all of our Climalife offices across Europe are working really hard to help customers to meet the F-Gas requirements and challenges.

Over the coming months we will have a big push on promoting and helping customers to understand A2L refrigerants. As many of you are aware A2L refrigerants are mildly flammable but as such they come with even lower GWP values than those containing a HFO blend (non flammable). Some of you might say that the industry is still coming to terms with the new products such as R-448A & R-449A but we have to remember we started talking about these products over 2 years ago. We now need to start another transition of working with these new mildly flammable refrigerants which again will ensure that the demands of F-Gas are met. Remember that we started with 182 million CO_2 tonnes equivalent in 2015 and in 2030 that figure needs to be no more than 33 million! This can only be done by choosing the lowest possible GWP refrigerant according to system and charge size.

2018 will be another challenging year however we have been working hard to prepare and ensure that we have the right products available for our customers and more importantly that we are continuing to advise and guide the market on new products and services. During the course of 2018 we will all also have to understand what the implications of BREXIT may bring and how this might or might not affect F-Gas – I think we will all have a very busy year!

Again, I would like to thank you for your business and your continued support and we look forward to seeing you all over the coming months.

The Need to Move to Lower GWP Solutions

THE REFRIGERANT LANDSCAPE IS CHANGING VERY QUICKLY AS THE CONSEQUENCES OF THE F-GAS PHASE DOWN PART OF THE LEGISLATION HAS AN EFFECT ON PRODUCT AVAILABILITY AND PRICE WELL AHEAD OF ANY EQUIPMENT BANS.

Peter Dinnage, Technical Director, IDS Climalife UK, shares his views on the challenges ahead.

Each supplier, producer and importer can place on the market a set amount of CO_2 equivalent tonnes each year according to the total quantity of quota allocated to them. Once placed on the market product can be traded. The exact quantity of each refrigerant that can be placed on the market is dictated by the mix of refrigerants and their GWP. Selling more of a high GWP refrigerant means less of other refrigerants to compensate, but alternatively more lower GWP refrigerants can be sold as it allows the allocated quota to go further.

Price dynamics, planning and demand also have a big part to play and we have already seen that price increases for the high GWP refrigerants have reduced demand for those refrigerants. We are certainly seeing a big switch to lower GWP refrigerants however this move can only be successful if they can be easily used and more importantly that the demand can be correctly forecasted.

2017 has seen some raw material shortages and pre-charged equipment from outside the EU needing to use quota for the first time, combined with a small quota reduction causing higher than expected demand for quota early in the year. With a 32% reduction in the total quota for 2018, further pressure is going to be exerted on a number of the higher GWP refrigerants. The need to move to lower GWP refrigerants for new equipment has never been greater, even where there are no bans envisaged for an application.

In the last couple of months we have seen a rush to move from R-404A and R-507 to lower GWP alternatives such as R-448A and R-449A. Whilst this transition should have started much earlier it is now happening and will continue into 2018 as Honeywell have already announced that they do not intend selling R-404A and R-507 in Europe in 2018. Demand for R-448A and R-449A is growing rapidly as they provide the lowest non flammable options for both existing and new equipment. With most compressor manufacturers approving R-448A and R-449A for new equipment, they are also well suited for conversion of existing systems. Feedback from the market on the performance and use of both HFO blends is very positive.

Other mid-range GWP alternatives have a niche role in moving away from R-404A and R-507A. In the supermarket sector CO_2 is providing a low GWP option for new stores and Ammonia in the Industrial sector.

It is not all about refrigerant choice, leak detection and early prevention of leaks have a part to play in reducing the need to buy expensive refrigerant whilst recovery and reprocessing of the recovered refrigerant can also help to reduce and spread costs. This is also a means of keeping existing equipment running on the higher GWP refrigerants but without the need to rely on buying product that will come from quota.

Although it is the refrigeration sector that has borne the brunt of the F-Gas phase down reductions, the air conditioning sector will also feel the effect as R-410A with a GWP of 2088 may see reduced quota availability. R-32 is already being used for small split AC systems which are available on the market from a number of manufacturers however the use of R-32 for use in >3kg charge size systems is more of an issue as the equipment is currently still under development and will not be in the market until the earliest 2019.

For new chillers consider if R-410A and R-407C are the best option for longevity, HFOs such as R-1234yf, R-1234ze and HFO blends such as R-513A or R-450A have manufacturers approval and would have a much longer service life with these refrigerants. As is the case with all new equipment the choice of refrigerant is primarily influenced by the equipment manufacturer but they also need to know that the market is demanding and needs lower GWP options urgently. The best people that message can come from is their customers.

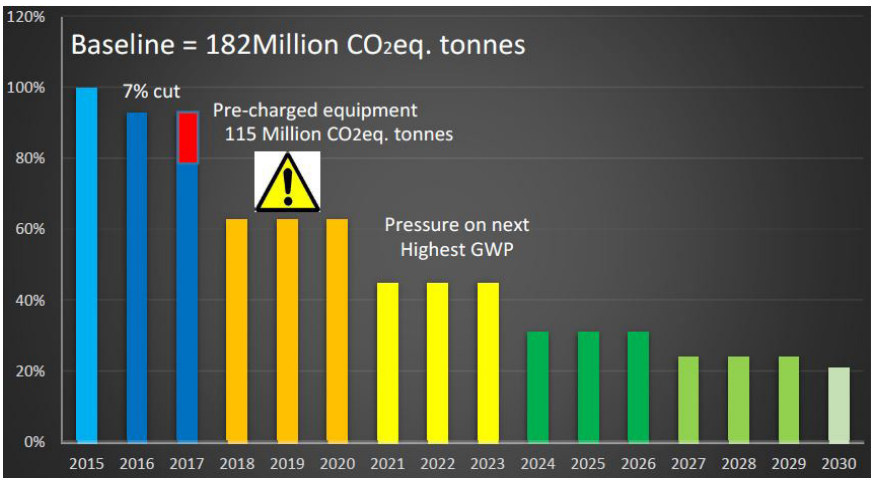
For new equipment, the compressor manufacturer has a big part to play in both testing and approving their range for different operating temperatures and conditions. Where possible look to choose as low a GWP refrigerant as you can for the application and operating conditions and consider the required longevity. Further cuts in GWP quota will put pressure on availability and the price of higher GWP refrigerants as producers apply CO_2 equivalent pricing strategies.

For existing equipment, keep leaks to a minimum, detecting them early and fixing them quickly will mean the need for refrigerant can be kept to minimum, avoids the unnecessary use of quota and helps to avoid paying high prices for topping up.

Refrigerant prices may have a part to play in refrigerant selection and whilst nothing is certain, it is a reasonable to assume that in general, higher GWP refrigerants will be more expensive and increase in price more rapidly than those with a lower GWP. With a quota reduction step every three years, the pressure on price will not go away if there is too much demand for the higher GWP refrigerants.

Those refrigerants with a high GWP or are difficult to obtain may need to be replaced. Not all refrigerants can be used as retrofit refrigerants, so check suitability and compatibility for your applications. At the moment there is no direct replacements available for R-410A equipment.

When converting equipment consider having the recovered refrigerant reprocessed so it can be re-used elsewhere and in other systems that may not be as easy to convert.



INDUSTRIAL REFRIGERATION

Making the switch to the low GWP refrigerant: first hand experience with Opteon™ XP40

GEA IS ONE OF THE LARGEST SUPPLIERS OF PROCESS TECHNOLOGY FOR THE FOOD INDUSTRY AND A WIDE RANGE OF OTHER INDUSTRIES. THE INTERNATIONAL TECHNOLOGY GROUP FOCUSES ON PROCESS TECHNOLOGY AND COMPONENTS FOR SOPHISTICATED PRODUCTION PROCESSES IN VARIOUS END-USER MARKETS.

WE SPOKE WITH DAVID WILKINSON, HEAD OF SERVICE FOR THE MIDLANDS REGION AND ASKED HIM TO SHARE HIS EXPERIENCE WITH LOW GWP REFRIGERANT REPLACEMENT FOR R-404A.

What is the biggest challenge in your business?

Getting all the Service and maintenance contracts in place and being able to provide what the customer needs, which is not always what he thinks he wants!

What is the most important factor when you choose a refrigerant?

Suitability for the job, along with long term viability.

What was the "deal breaker" for you to start using Opteon™ XP40?

Performance against R-404A and its low GWP. What are the benefits using Opteon™ XP40? Plain and simple – it works with a minimal amount of changes to the system and is compatible with the same oils as the products it is replacing.

Did you have to make any adjustment in your processes/systems when you started using Opteon™ XP40?

Only some adjustments to the expansion valve to stop liquid flooding back.

What advice can you give to the companies still using R-404A and R-507 refrigerants?

Make the move away in a structured and planned way wherever possible, concentrating on process critical plant first to avoid down time on unplanned retrofits.

Do you think there is enough information about F-Gas regulations and phasing down of refrigerants and is it getting to the end user?

More than you can shake a stick at, the problem is getting end users to read and understand what is put in front of them!

What are your predictions for the Industrial Refrigeration industry in the short medium and long term?

In the short and medium term, retrofitting away from high GWP products such as R-404A , R-507 and R-422D, in the longer term installing new equipment using Naturals such as ammonia and ammonia/glycol systems.

Would you recommend Climalife and why?

I would recommend Climalife because they are always there when I need them, whether that is calling someone for a weekend delivery, or help and advice on what refrigerant or oils to use. They have never let me down and if they cannot do something they tell me, instead of making false promises.

Opteon™ XP40 (R-449A)

Opteon™ XP40 (R-449A) is a non-ozone depleting, low global warming potential (GWP) hydrofluoro-olefin (HFO) based refrigerant replacement for R-404A/R-507, R-407A/F, and R-22 for new equipment and retrofit of existing systems. Opteon™ XP40 has a GWP of 1397, which is a 67% reduction, and provides energy consumption 8-12% lower than R-404A/R-507. Compared to R-407A, Opteon™ XP40 offers improved performance, similar capacity and 33% lower GWP.

Opteon™ XP40 is used for low and medium temperature commercial and industrial refrigeration, food service, cold storage, self-contained systems and supermarkets. It is not flammable and approved by major compressor manufacturers

More info on:
climalife.co.uk/refrigerants

Refrigerant Reclamation is key to F-Gas Legislation success

A GOOD RECLAMATION STRATEGY CAN EASE THE TRANSITION TO LOW GWP REFRIGERANTS.

The F-Gas Legislation requires recovery of HFCs from refrigeration and air conditioning systems as mandatory and also allows the continued use of reclaimed and recycled refrigerants with a GWP over 2500 for a further 10 years after the service ban on the use of virgin product on 01/01/2020.

Reclaimed HFCs are 'quota free' and therefore will be critical in playing their part in ensuring there is enough product available on the market to meet demand as the successive cuts in quotas impact upon availability. The big quota reduction in 2018 will be the first real test and EPEE (European Partnership for Energy and the Environment) has estimated that as much as 25% of the quota shortfall will need to be met by product from reclaimed sources.

By converting or replacing equipment running on higher GWP products such as R-404A, R-507 and R-422D to much lower GWP refrigerants the recovered product can be reprocessed and brought back to its original ARI specification. When recovered the refrigerant is typically out of specification for moisture content, acidity and high boiling residue such as particulates, but it can be reprocessed and brought back into specification for reuse.

As part of the F-Gas Regulations it is mandatory to recover all refrigerant from systems and in particular at end of life. Specially identified recovery cylinders in a range of sizes are available for this purpose. The recovery must be done by those holding the correct qualifications for handling refrigerants and in conformance with the hazardous waste regulations for documentation and transportation. Only if the recovered product does not leave site and is put back into the system it came out of, does it avoid being classified as waste.

What does reclamation of refrigerants mean?

Reclamation of HFC refrigerant means *"the reprocessing of a recovered fluorinated greenhouse gas in order to match the equivalent performance of a virgin substance, taking into account its intended use"*. The refrigerant is cleaned of all impurities to an AHRI 700 standard (the standard required for virgin product) enabling it to be resold as regenerated product to the market. It will perform in exactly the same way as virgin product.

Reclamation or Recycling

Recycling is putting the recovered refrigerant through a basic cleaning process and usually means there is no analysis or quality assurance attached to the product in terms of specification or purity. It may not perform in the same way as virgin product and the risk is with those using it.

For peace of mind, best quality and system operation it is recommended recovered product is bought back to ARI specification by reclamation.

A gradual replacement strategy

For those companies who have more than one or several systems running on high GWP refrigerants either at the same site or across a number of sites, it is possible to convert equipment to lower GWP replacements one at a time and have the recovered product reclaimed back to specification for use on systems not yet converted. If done in an organised and planned way this can eliminate the need to purchase high GWP quota products at high prices and have the reclaimed product at a much reduced cost for when it is needed.

There is no need to panic about getting out of high GWP refrigerants if a planned replacement programme is in place.

Climalife can discuss Bespoke Reclamation arrangements to suit either the end user or a contractor looking after multiple sites.

+ More info on:
www.climalife.co.uk

Lowering GWP with R-32 and A2L refrigerants

TO KEEP MOVING TO LOWER GWP AND ACHIEVE THE PHASE DOWN TARGETS OF F-GAS THROUGH TO 2030, IT WILL BE NECESSARY TO USE MUCH LOWER GWP REFRIGERANTS. WITH A FURTHER F-GAS PHASE DOWN STEP EVERY THREE YEARS, THERE IS A NEED TO START THE MOVE TO MUCH LOWER GWP REFRIGERANTS FOR NEW EQUIPMENT NOW.

The lead for new equipment has to come from the manufacturer and compressor builder as they need to be sure their products are both safe and functional for the purpose of use. To get to much lower GWP there will be a need for A2L classified refrigerants and a range of such products are undergoing thorough testing by equipment manufacturers.

A2L refrigerants are already on the market and although classified as mildly flammable they have much lower flammability limits and a much lower burning velocity when compared to Hydrocarbons which are classified as A3.

Already we are seeing the emergence of R-32 for small air conditioning units and further equipment launches on a regular basis. R-32 (GWP 675) is very similar in properties to R-410A (GWP 2088) although it cannot be used in existing R-410A equipment as there are design changes required.
R-1234yf is already in extensive use in car AC with all new cars on the European market now required to use a refrigerant with a GWP less than 150.
R-1234ze is already approved for use in a number of chillers and other HT applications. It is classified as non-flammable below 30°C but has an A2L classification as it is flammable when tested for flame propagation at 60°C.

Blends containing R-32, R-1234yf or R-1234ze already have Ashrae classification and are commercially available and now waiting for completion of test and evaluation from equipment manufacturers.

R-454A, R-454C and R-455A are the leading candidates for R-404A type applications with two of them having a GWP below 150. Whilst R-452B and R-454B are being looked at as potential alternatives to R-410A.
The use of these A2L mildly flammable refrigerants will need to follow the requirements laid down in EN378 for charge size which varies depending upon room size, location and access categories defined in the standard.

Handling the mildly flammable refrigerants requires knowledge of their properties, although existing training qualifications cover their use and handling.

The main aim when working with A2L refrigerants and any other flammable refrigerants is that all precautions are taken and rigidly implemented to ensure that the lower flammability limit can never be exceeded and all ignition sources are kept a safe distance away from the refrigerant and any potential leak.

Many of the current tools can be used with A2L refrigerants and a risk assessment should be carried out to identify exactly what is required. Talking to the equipment suppliers should provide guidance but recovery units and leak detectors will need to be approved for use with A2L refrigerants.

Those who are able to move quickly will be a step ahead of the next phase down step at the end of 2020.

R-454A has already been identified by Dawson Rentals as their preferred replacement beyond R-404A for new equipment and they are looking to roll this out as soon as possible in conjunction with their compressor suppliers.

Retrofitting with A2L is not currently recommended by any of the refrigerant or equipment manufacturers and if this was to be considered there would be a need to ensure the system was compliant with EN378 charge size requirements and a risk assessment to ensure it was safe to do so.

Low GWP Refrigerants for Existing Equipment

	REFRIGERANT	TRADE NAME	ASHRAE CLASS	GWP (IPCC4)	GWP (IPCC5)
R-404A REPLACEMENTS	R-407A		A1	2107	1923
	R-442A	RS50	A1	1888	1754
	R-407F	Performax® LT	A1	1825	1674
	R-452A	Opteon™ XP44	A1	2140	1945
	R-449A	Opteon™ XP40	A1	1397	1282
	R-448A	Solstice® N40	A1	1387	1273
R-134a REPLACEMENTS	R-450A	Solstice® N13	A1	605	547
	R-513A	Opteon™ XP10	A1	631	573
R-422D REPLACEMENTS	R-438A	Freon™ M099	A1	2729	2059
	R-453A	RS70	A1	1765	1636

THERE ARE CURRENTLY NO RETROFIT OPTIONS FOR R-410A

Note: Prior to retrofiting check conversion guidelines and safety to make sure the replacement is suitable for your application

Low GWP Refrigerants for New Equipment

Check compressor approvals and recommended applications, also refer to EN378 for charge size limitations for application

REFRIGERANT	TRADE NAME	ASHRAE CLASS	GWP (IPCC4)	GWP (IPCC5)	APPLICATION
R-452A	Opteon™ XP44	A1	2140	1945	Transport refrigeration and small hermetics
R-407A		A1	2107	1923	MT and LT refrigeration
R-407F	Performax® LT	A1	1825	1674	MT and LT refrigeration
R-449A	Opteon™ XP40	A1	1397	1282	MT and LT refrigeration
R-448A	Solstice® N40	A1	1387	1273	MT and LT refrigeration
R-513A	Opteon™ XP10	A1	631	573	HT and MT refrigeration, chillers, heat pumps
R-450A	Solstice® N13	A1	605	547	HT and MT refrigeration, chillers, heat pumps
R-1233zd	Solstice® zd	A1	5	1	Low pressure chillers
R-744	CO_2	A1	1	1	Supermarket and industrial refrigeration
R-32		A2L	675	677	Air conditioning and heat pumps
R-452B	Opteon™ XL55 Solstice® L41y	A2L	698	676	Air conditioning and heat pumps
R-454B	Opteon™ XL41	A2L	466	467	Air conditioning and heat pumps
R-454A	Opteon™ XL40	A2L	239	238	MT and LT refrigeration
R-454C	Opteon™ XL20	A2L	148	146	MT and LT refrigeration
R-455A	Solstice® L40X	A2L	148	146	Self contained MT and LT refrigeration
R-1234yf		A2L	4	<1	Car AC, chillers, vending, refrigerators
R-1234ze	Solstice® ze	A2L	7	<1	MT,chillers, heat pumps, cascade systems
R-290	Propane	A3	3	3	MT, LT, air conditioning, chillers, small hermetics
R-600a	Iso-butane	A3	3	3	Domestic refrigeration, small MT hermetics
R-1270	Propylene	A3	2	2	MT and LT refrigeration, small hermetics
R-717	Ammonia	B2L	0	0	Industrial Refrigeration

Dawsonrentals and Chemours - first commercial implementation of Very Low GWP HFO blend refrigerant at Park Cakes

GROUND BREAKING CASE STUDY OF THE FIRST COMMERCIAL USE OF A VERY LOW GWP HFO BLEND THAT WON A RAC COOLING AWARD IN THE LOW CARBON ACHIEVEMENT CATEGORY IN 2017.

Dawsonrentals introduced the concept of mobile cold stores in Europe and now offers more than 2,500 mobile cold rooms, industrial freezers, blast chillers and tempering units for rent, making Dawson Group the market leader in renting cold storage solutions. Many of these units use R-404A as the refrigerant which was chosen when there was a need to move away from R-22 following the ban on ozone depleting substances.

Dawson Temperature Control Solutions were looking for a long term replacement for R-404A for their new installations and had been working with Chemours on the new A2L blends at their site in Sutton-in-Ashfield Notts. The tests showed that Opteon™ XL40 (R-454A) was an ideal replacement for R-404A in many of the applications. Existing equipment designs could be used with only minor modifications to take into account the use of A2L fluids following the guidance in 2016 EN378.

Park Cakes Bakery

Park Cake Bakery, subject of a recent high-profile MBO and a leading supplier of premium private label cakes and desserts in the UK, has opened a new temperature controlled storage facility, custom-built at its Oldham site by Dawson. The new unit was designed by Dawson specifically for the site, working closely with the Park Cakes' team under the overall guidance of Supply Chain Manager, George Walsh.
The new unit replaces ten modular units, each capable of holding 36 pallets, supplied on rental to the Oldham Bakery over preceding years. The new building, designed to run on the latest Opteon™ XL40 (R-454A) refrigerant gas, takes the same volume of pallets, but in a smaller and far more controllable area.

The new Park Cakes unit is fully racked and fork-lift compatible inside, offering the producer faster and easier access to the stock it needs. The mono-pitch steel structure is constructed to BS EN 1993-1 with 40mm thick, Loss Prevention Certification Board approved, PIR roof and fascia cladding. Kevin Smith, Technical Manager of Dawson temperature control solutions comments "Refrigeration is handled by a number of the latest low noise, energy-efficient units, utilising the industry-leading R-454A refrigerant gas with a very low GWP of 239. It took the Dawson on-site team just 22 weeks to build and get operational".

The team installing the refrigeration units were fully trained in the handling and use of flammable refrigerants and the installation followed the guidance given in the applicable standards such as EN378.

Environmental benefit

The GWP of Opteon™ XL40 (R-454A) is only 239 compared to R-404A at 3922. This represents a reduction in GWP of 94%. In addition the HFO blend has been developed to ensure that while having a capacity similar to R-404A, its C.O.P. is better in both medium and low temperature applications. This means that the overall carbon footprint of XL40 is reduced from both a direct (potential leakage) and indirect (energy used to run the system) standpoint.

Innovation - Opteon™ XL40 (R-454A) refrigerant

Chemours (formerly DuPont) has been working over the past 6 years to develop low GWP HFO blends based on HFO-1234yf. The first products brought to market were non-flammable blends designed to replace legacy HFCs in existing equipment. Products such as Opteon™ XP40 (R449A) are well established in the market with widespread use.

At Chillventa 2016 Chemours launched the Opteon™ XL range of Very Low GWP HFO blends for use in new equipment for refrigeration and air conditioning. Following recent publication of EN378:2016 there is now clear guidance on using mildly flammable A2L class products.

Opteon™ XL40 (R-454A) is one such product and is a blend of R-32/R-1234yf (35%/65%) designed to replace R-404A in refrigeration applications such as condensing units.

Cooling Capacity

The key benefit of R-454A as an A2L class refrigerant compared to that of A3 highly flammable refrigerants is the larger charge size. For a given room volume it is possible to use 10 times the amount of an A2L compared to a hydrocarbon.

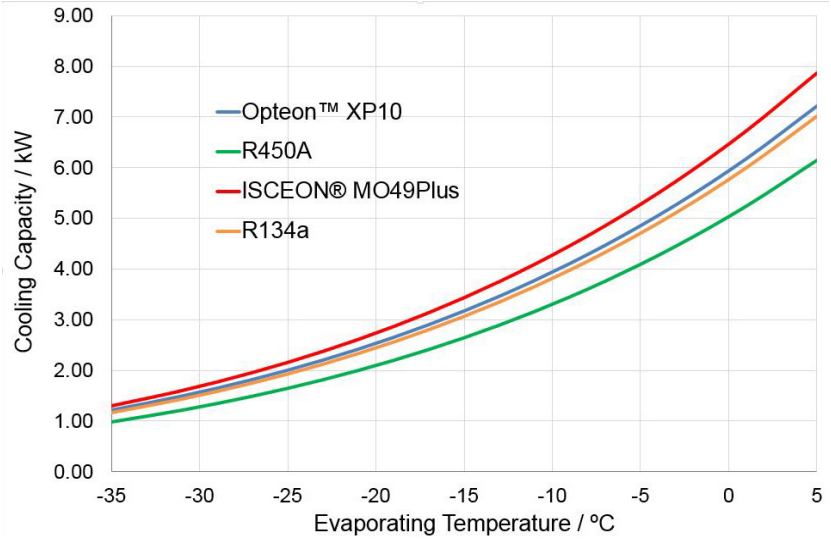
Conclusion

This project is a collaboration between Chemours and Dawson Temperature Control Solutions. The client was very happy with the results and George Walsh commented, "*We went for what we believed was a low cost option with those original modular units, but suffered in terms of both innovation and service. I'm very happy to be working with Dawson this time. The new building is far better value: delivering the same storage capacity from a much smaller footprint, and with the added benefits of lower running costs and easier access. It is far more economical and convenient in every respect. The fact we are not opening and closing ten individual doors, and now have R-454A gas at work, this makes a significant contribution to reducing our environmental impact.*"

R-513A (Opteon™ XP10)- More than just a R-134a Replacement

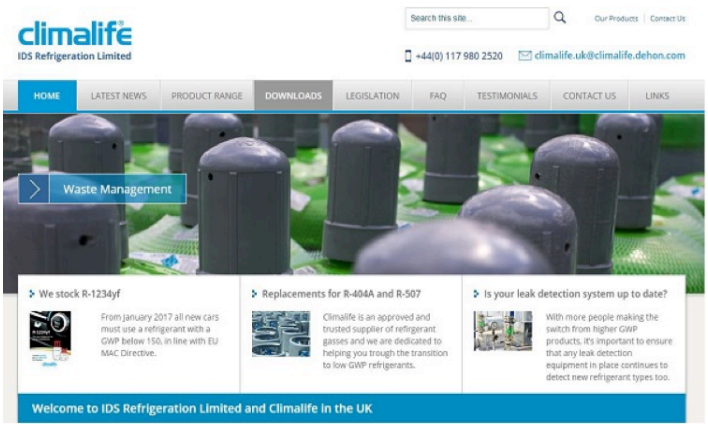
WITH THE NEED TO MOVE TOWARDS LOWER GWP REFRIGERANTS TO MEET THE TIGHTENING RESTRICTIONS PLACED ON GWP QUOTA, R-513A PROVIDES AN OPPORTUNITY THAT GOES BEYOND JUST BEING A R-134a REPLACEMENT.

R-513A is a very close match to R-134a and actually has slightly more capacity than R-134a, its GWP at 631 is more than half that of R-134a and it is one of the lowest non-flammable GWP refrigerants on the market. It has the added advantage of being an azeotrope and so has no temperature glide. As a R-134a replacement it can be used without any loss in performance in either new or existing equipment.



In addition to the obvious R-134a applications, the real opportunity to lower the GWP, comes from looking at new equipment in applications where much higher GWP refrigerants are being used. The first is chiller applications; where there are no restrictions on using R-410A in such chillers, however, with a GWP of 2088, the price and availability of R-410A is going to be affected with successive cuts in quota. The use of R-513A in new chillers instead of R-410A or R-407C makes the equipment much more future proof for the lifetime of the chiller.
Its use in high and medium temperature refrigeration applications should also be considered for new small hermetic condensing units. Why look at using R-452A in such applications when R-513A has a GWP over 3 times lower and is also approved by those same compressor manufacturers who only approve R-452A. The compressors may be slightly bigger to achieve the same capacity, but the benefits of using a much lower GWP refrigerant would be realised in the longer term.

As well as being a replacement for R-134a, it is also a potential retrofit option for R-437A, R-413A, and other R-12 type replacements if still in use, although an oil change to a POE would be required.



CLIMALIFE.CO.UK VISITORS CAN NOW ENJOY OUR NEW MOBILE FRIENDLY WEBSITE WITH ACCESS TO PRODUCT INFORMATION AND TECHNICAL DATA SHEETS.

The newly designed website offers quick and easy access to essential product information and offers a more comprehensive understanding of Climalife products and services. The clean and uncluttered design improves customer experience and page navigation.

"We are pleased to launch our new website and believe it will be an informative tool for our customers. At Climalife, we value the time of our clients, and given the speed of the current market it is essential to have all of the information on hand all the time. Having a mobile friendly website gives the customer the ultimate advantage", Allan Harper, Managing Director, IDS Climalife UK.

News and Legislation areas are dedicated to guiding and supporting existing and new customers in understanding the F-Gas regulations and changes in RACHP industry. Enhanced content focused on latest product updates and market insights is updated regularly. Climalife.co.uk visitors can now share the website content on preferred social media sites using integrated sharing tools.

+ More info on:
www.climalife.co.uk

F-Gas Challenge

Reasons to act now:

• Product availability • Price changes
• Engineer availability • Environmental benefits

ACTION CHECKLIST

✔ **SWITCH** to lower GWP refrigerants ✔ **PREVENT** leakage
✔ **DESIGN** for less refrigerant charge ✔ **REDUCE** usage of high GWP refrigerants
✔ **RECOVER** during retrofit/end of equipment life

F-Gas = EU Regulation from 1 January 2015

AFFECTING NEW & EXISTING EQUIPMENT

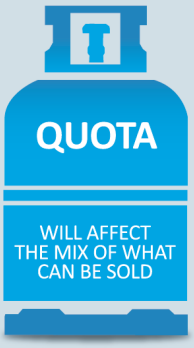
TARGET
To dramatically reduce F-Gas emissions over next 15 years

EU Regulation 517/2014 Requirements

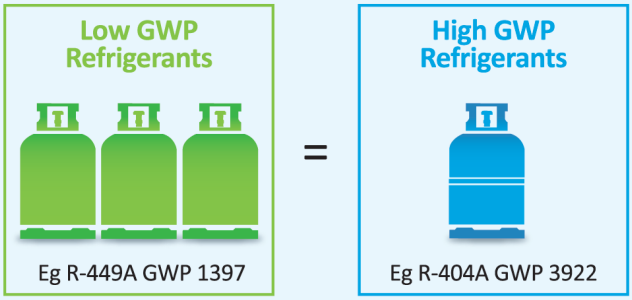
- **Application or refrigerant use bans** from certain dates
- **Regular leak checks**
- **Good record keeping and training**

QUOTA =

The total quantity of HFC refrigerants allowed to be placed on the market expressed as CO_2 equivalent tonnes



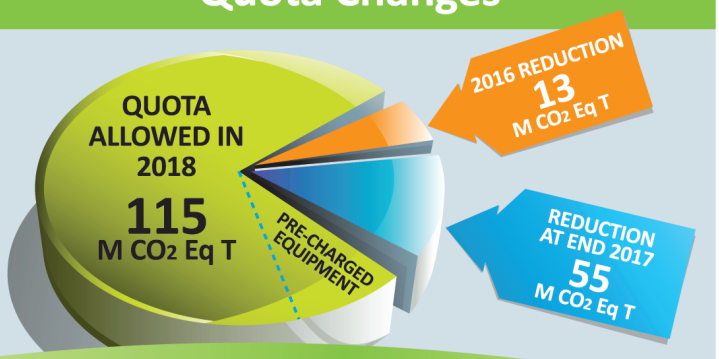
A greater quantity of lower GWP refrigerants can be sold compared to those with a higher GWP



Reductions in Quota

2015 = 182 Million CO_2 TEq
7% ↓ **in 2016**
32% ↓ **at the end 2017**
2018 = 115 Million CO_2 TEq

Quota Changes



TAKE ACTION NOW!

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