Climalife Contact

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The magazine for refrigeration, air conditioning and heating professionals in Europe

R-22 ban: a chilling prospect?

Regulations Page 2



HCFC ban: the deadline is approaching!



Recovery: methods, choices and precautions





Retrofit: three practical examples of real-life applications



Recovery reclamation, destruction: the Climalife approach

Editorial



Alain Lelièvre - Damit Coordinator, Climalife Europe

A nightmare scenario...

Just how bad could things get if you don't act now?

Imagine the scenes if cooling systems had to be shut down due to a shortage of R-22... offices with no air conditioning, IT servers overheating, food processing industries brought to a standstill, warehouses closed, hospitals and other healthcare establishments paralyzed... the potential consequences on our society are frightening!

The 22th of September 2009, there will be 100 days to go until the ban on hydrochlorofluorocarbons (HCFCs) takes effect. A new era begins for refrigeration and air conditioning professionals.

From 1st January 2010, the use of virgin or blended HCFCs will be prohibited. Only recycled or reclaimed HCFCs will be allowed for the maintenance and servicing of systems until the end of 2014.

It is estimated that some 100,000 tonnes of R-22 are currently in use in Europe. We already know that the amount of R-22 recovered annually will fall well short of covering the maintenance needs. The need to replace this refrigerant is therefore more urgent than ever.

Since 2007, Climalife has been raising awareness of this situation and offering you guidance in choosing alternative solutions, as recovery, retrofits or reclamation of R-22. It remains to be seen whether there will be enough available manpower to implement these solutions.

So minimize the risks by acting now! Doing nothing is not the option.

Climalife Contact, the first European magazine for refrigeration, air conditioning and heating professionals, takes a look at where things stand in relation to the HCFC ban. In this issue, you will find details of the current legislation, real-life case studies, news of upcoming events and much more.

Enjoy the reading !

HCFC ban: the deadline is approaching!

Regulation

y virtue of EC Regulation No. 2037 / 2000 on substances that deplete the ozone layer, published in the Official Journal of the European Communities on June 29, 2000, "from 1st of January 2010, the use of virgin hydrochlorofluorocarbons shall be prohibited in the maintenance and servicing of refrigeration and air-conditioning equipment existing at that date; all hydrochlorofluorocarbons shall be prohibited from 1st of January 2015."

The products concerned include:



Ist of January 2010: Ban on the use of virgin HCFCs.

From 01.01.2010 to 31.12.2014: only recycled or reclaimed HCFCs will be allowed in the maintenance or servicing of existing equipment.

From 01.01.2015: Ban on the use of all HCFCs in Europe.

Possible changes to bear in mind !

The European Parliament and the Council of the European Union have embarked upon a revision of EC regulation No. 2037/2000.

Changes have been proposed concerning recycled hydrochlorofluorocarbons. Under these proposals, resale of recycled HCFCs would be prohibited and their use would only be permitted if they were recovered from refrigeration or air conditioning equipment solely by the company that performed or commissioned that recovery. We will of course let you know as soon as the new regulation is published in the Official Journal.

To find out more about the current legislation visit : www.climalife.dehon.com

HUNGARY

Scepticism about 2010 HCFC ban

Despite an intensive information campaign on the subject, Hungarian refrigeration contractors believe that R-22 will still be available after the ban takes effect.

Why?

"The main reason is the similarity between the ban on R-22 now and the ban on R-12 in the late nineties," explains Laszlo Szalay Nagy, sales director of Climalife's Hungarian subsidiary.

"Back then, the ban on CFCs had very little impact on the Hungarian market. Professionals had no trouble getting hold of R-12 by importing it from outside the EU."

But the situation with HCFCs is not the same! "The regulations will be applied in the same way in Hungary as in the other European countries." It is unlikely to be possible to import recycled R-22, which is already predicted to be in short supply in the various European countries.

Today, it is estimated that only 10-15% of the amount of recycled R-22 that would be required to maintain existing installations is available.

It seems that industries in which refrigeration plays a vital role could be the first to suffer from the scepticism of the Hungarian refrigeration contractors!

Recovery: methods, choices and precautions

By Serge François, Climalife Technical Applications Consultant

urrent regulations make recovery of refrigerants an absolute necessity for European refrigeration and environmental engineering companies.

Recovery has become extremely important, particularly for R-22, regardless of the quantities involved and the reason for the operation (repair/maintenance, system modification, retrofit with transitional refrigerants, end-of-life disassembly).

In the future, operators failing to comply with

the regulations on this matter may see their certification withdrawn.

Recovery requires operators to employ qualified personnel. Such personnel must be made aware of the rules they must follow when performing recovery operations. This article summarises the methods to use and precautions to take when performing recovery operations, as well as the risks to the recovery operative and the other people concerned at the various stages of the recovery chain.

Recovery unit XLT

Recovery methods



Vapour recovery:

This is suitable for small systems that are not equipped with a liquid outlet cylinder, and for final recovery of the vapour phase of a larger system, after the liquid phase has been recovered.



In the case of an extreme heat, it is possible to connect the valve of the recovery container to the intake valve of the transfer machine via a hose. This will allow the container to cool down. The hose must be fitted with a restrictor or a valve for adjusting the degassing rate.



Making the right choices

The recovery machine must be compliant with standard EN 35-421. This standard provides information about the objective and comparative performance levels of the various machines on the market.

These machines must be capable of recovering all of the refrigerant from the system (a low-pressure switch will stop the machine when absolute pressure reaches approximate-ly 0.5 bar).

They are equipped with an end-of-cycle selfpurging feature (a task generally performed manually) in order to keep to a minimum the amount of residual refrigerant in the recovery station at the end of the procedure. Do not forget to close the valve on the recovery cylinder before disconnecting the transfer machine. The user must check that high-pressure refrigerants can be recovered (e.g. R-410A). There is no very high-pressure recovery machine for R-23 or R-508B. High-pressure pumps must be used (250 bar).

The recovery containers must be subjected to a specific working pressure of 33 to 47 bar for ordinary fluids and 250 bar (in forged steel, like the air gases O_2 , N_2 , etc.) for high-pressure fluids (R-23, R-508B).

Climalife produces two types of container: recovery containers and transfer containers.

• **Recovery containers** are drained and vacuum pumped.

• **Transfer containers,** of which there are fewer, are used only for repair or maintenance operations. They are cleaned in order to prevent any contamination of the refrigerant being reintroduced into the system from which it came.

All our containers are equipped with a liquid-vapour valve to allow all possible recovery methods.

Special report



Liquid recovery

This is performed either with a pneumatic or electric pump designed for refrigerants, or with the recovery machine, set to the liquid recovery position.



Push-pull recovery

This is the quickest method for recovering large quantities of refrigerant. The recovery machine pulls the vapour phase from the recovery container and creates excess pressure in the vapour phase of the liquid tank. The pressure exerted on the liquid pushes it towards the liquid valve of the recovery cylinder.

The push-pull method is simple and very effective on systems fitted with a liquid tank. Before starting up the transfer machine, you should open the liquid valve of the vacuum pumped recovery container. This will make the liquid to migrate from the system into the recovery container until the pressures balance. Once this balance is confirmed, the recovery machine can be started up.

· Generally, with the machines currently on the market, vapour phase recovery will allow around 5kg* of refrigerant to be recovered per hour.

• Direct liquid recovery, if available, will allow 50kg* per hour to be recovered

• With push-pull liquid recovery, 250kg of refrigerant can be recovered per hour*.

(*These values are intended purely as a rough guide. Consult the constructor documentation for each individual machine).





Precautions

Be sure to identify the nature of the fluid being recovered, as the refrigerants will generate different pressures at different temperatures.

You can use containers with a liquid-vapour valve, fitted with a suitable safety relief valve:

- ->33 bar or more for low-pressure refrigerants, e.g. R-134a, R-22 **36 bar** for R-407C, R-404A, R-507, R-427A, R-422D, R-417, 45 bar or more for R-410A.

For very high-pressure refrigerants, singlephase valves are used. It is essential to adhere to the prescribed filling limit (contact Climalife for more information).

In all cases, the recovery containers must be weighed to avoid any risk of over-filling. We stipulate that the mass recovered must be less than or equal to 80% of the container's initial capacity, depending on density. If you have any doubts, please contact Climalife. This factor should always be borne in mind, as a recovered refrigerant may contain water and large quantities of oil. The density of halogenated fluids is generally greater than 1.2 or even 1.3, while the density of water is 1 and the density of the oil will vary according to its nature (less than 0.8 for mineral oils, 0.9 to 1 for synthetic oils). It is important to be aware that the filling limits are calculated on the basis of the change in the liquid's specific volume for virgin refrigerants. Any container subjected to a temperature greater than 65°C may rupture, and the consequences can be very serious. (This temperature can easily be reached in the passenger compartment of a vehicle parked in direct sunlight, for example).

You must always check the amount of refrigerant you recover, and you should check the accuracy of your weighing scales at least once a year. For large containers, if you are checking the filling rate from the high point, check that it is horizontal.

Climalife has a Service Engineering Department, to which this kind of operation can be outsourced. Please do not hesitate to contact us to discuss your needs.

Protecting the environment is important



You can do your bit, however small, to limit greenhouse gas emissions.

Handling refrigerants is never risk-free unless the rules are followed to the letter: be methodical and follow procedures and recommendations.

Retrofit of two second-hand liquid coolers



Asked to provide a cooling system for use in a manufacturing process in the food industry, Tec Froid recommended reusing two R-22 liquid coolers retrofitted to R-422A, as a cheaper alternative to installing a brand new system. This unconventional solution was entirely to the satisfaction of the end customer.



A Tec Froid technician adjusts the system

he end customer required a secondary refrigerant to be cooled to -20°C. They needed a cooling capacity of 360kW and they wanted to keep investment costs to a minimum.

Presented with these requirements, Yannick Le Priellec, managing director of Tec Froid, a company specializing in industrial refrigeration, contacted Climalife to seek expert advice. He then suggested reusing two second-hand liquid coolers currently operating on R-22.

Each of the two second-hand R-22 liquid coolers consisted of two accessible and airtight TRANE reciprocating compressors and a

Company: TEC FROID Business: Industrial and semi-industrial refrigeration Location: Queven (Department 56) France Founded: 2002 Workforce: 6 direct-expansion multi-tubular heat exchanger. The system was completed with a secondhand evaporative condenser and two new water-cooled condensers. The new watercooled condensers were necessary to the process if the goal of recovering 400kW of energy was to be achieved. With virgin HCFCs to be banned from 1st January 2010, a solution had to be found to the R-22 matter.

Which refrigerant should replace it in the newly retrofitted chillers? In view of the requirements of the project, the Temper® - 30°C secondary refrigerant, distributed by Climalife, was selected by Tec Froid for its properties under the desired conditions (good specific heat, low viscosity and compatibility with the materials in the circuit). R-422A was chosen as the replacement refrigerant after thermodynamic studies conducted by Tec Froid and by Pierre-Emmanuel Danet, Climalife's Technical Support Manager. Furthermore, R-422A has the advantage of having an instantaneous power requirement close to that of R-22 and lower than that of R-404A or R-507. It would not, therefore, require any alterations to be made to the electrical system.

The theoretical calculations performed anticipated that, given a required evaporating temperature of -24°C and a starting temperature of -20°C, Temper®'s refrigera-

tion capacity would be 10-15% lower than that of R-22 under the same operating conditions. As a result of the studies, it was decided that additional modifications should be made to the various components to ensure the proper operation of the system:

replacement of the HP fluid lines
 replacement of the R-22 expansion valves with R-404A expansion valves, which are

better suited to the characteristics of R-422A, the refrigerant selected for the retrofit • replacement of the mineral oil (MN) with a polyol ester (POE) oil in order to facilitate oil return and improve the heat transfer coefficient of the multi-tubular heat exchangers • replacement of the various gaskets with gaskets compatible with the POE oil.

This new configuration allowed TEC FROID to meet the project requirements and saved the end customer a lot of money.

The start-up of the coolers posed no problem. It was performed in exactly the same way as for a cooler using R-404A or R-507, but with a more environmentally friendly replacement refrigerant with a lower GWP.

The temperature conditions of the Temper[®] in the heat exchangers are as initially anticipated and the results of the new manufacturing process are in line with the initial theoretical calculations.

This unconventional retrofit solution left the customer completely satisfied.

System operating conditions

	Unit	Cooler No. 1	Cooler No. 2
Evaporating pressure	bar	1,4	1,6
Evaporating temperature	°C	-25	-23
Condensing pressure	bar	15,3	15,8
Condensing temperature	°C	35	36
Temper [®] temperature at input	°C	-16	-16,5
Temper [®] temperature at output	°C	-19	-20
Compressor electric current requirement	А	55	77
Discharge temperature	°C	59	68
R-422A charge	kg	270	360

TERTIARY SECTOR

Retrofit of a 1.2MW chiller in Paris's Opéra quarter

Aware of the risk of an R-22 shortage from 2010, Parabis Froid Industriel informed its customer of the situation and recommended that the chiller serving its prestigious 10,000 m² office building be retrofitted to R-427A in three stages. This quick and efficient retrofit falls within the scope of Icade Eurogem's environmental policy.

cade Eurogem and its Facility Management department are responsible for managing the Antin Opéra building, located at 66 rue d'Antin, Paris. Keen to avoid future environmental risks, the Site Manager, Mr Bakkti, enlisted the help of Parabis Froid Industriel to retrofit the chiller supplying the building's air conditioning system.

The Climaveneta chiller consists of three circuits, each containing a Refcomp 8-cylinder reciprocating compressor with a cooling capacity of 400W. Its total cooling capacity is therefore 1.2MW.

In early 2008, Parabis Froid Industriel, represented by Mr. Aubéri Lecat, informed its customer, Icade Eurogem, about the potential R-22 shortage, and proposed a three-stage retrofit, so as not to inconvenience the building's occupants and in order to spread the cost of the retrofit over time. Icade Eurogem accepted this proposal. **"By acting now we can limit the risks in the event of a leak in the system,"** explained Mr Bakkti.

The first stage was performed in September 2008, with the retrofit of circuit number 3. The second circuit was retrofitted in June 2009 and the third and final stage is scheduled for early 2010. Let's take a look at the methodology used for each of these three stages.

Company: PARABIS FROID INDUSTRIEL Business: Industrial refrigeration and air conditioning Location: La Courneuve (Department 93) - France Founded: 1974 Workforce: 6





System identification plate



Parabis refrigeration technician Joël Poiret secures the system and recovers the R-22 fluid charge

in transfer bottles. The compressor is purged, then opened so that a mechanical service can be performed (replacement of worn parts and identified valves, springs and neoprene rubber gaskets).

The four dryer cartridges are replaced and the compressor is refilled with 20 litres of MOBIL EAL Arctic 68 polyol ester oil, then the system is vacuum pumped. In order to recover as much as possible of the residual mineral oil contained in the circuit, the 52kg charge of R-22 is reintroduced into the system for 24-30 hours of operation. Readings are taken.

A 4-phase retrofit procedure:

Parabis Froid Industriel takes a comprehensive set of readings to determine the system's performance levels, then performs a periodic oil diagnostic test (DPH A). "I explain to customers that the oil sample is essential, as it will tell us whether or not the system is in good condition. It's like taking a blood sample before an operation," says Aubéri Lecat. A thorough search for leaks is also conducted, which makes it possible to anticipate any repairs that may be necessary. At this point, all the data are sent to Climalife, who create a thermodynamic model of the system in order to determine the most appropriate replacement refrigerant. R-427A is selected for its energy performance and its cooling performance.

3

The system is again secured and the R-22 is recovered in specific recovery cylinders. The recovered

R-22 is weighed before being transferred to Climalife for treatment, along with the duly completed Waste Tracking Form. The compressor's oil charge is replenished and the dryer cartridges are changed for a second time. After being vacuum pumped, the system is charged to around 95% of its nominal charge (50kg) with the replacement refrigerant, R-427A. The system can now operate again. All that is required is an adjustment of the expansion valve. An extremely thorough search for leaks is performed to ensure optimum containment. A label is affixed to the system, as required by current regulations, and a final set of readings is taken for comparison with the initial measurements, to identify any changes in performance.

HOTEL INDUSTRY

VRV system retrofitted to R-422D in a a large hotel in Kensington



The hotel's Daikin VRV (Variable Refrigerant Volume) system supplies air conditioning for eight rooms, providing a high level of comfort and reducing energy consumption.

he challenge for Temperature Control, in view of the impending ban on R-22, of which its customer was well aware, was to offer a solution compatible with the hotel chain's environmental policy, while keeping customers comfortable and minimizing system downtime.

The refrigerant selected was R-422D (DuPont Isceon MO 29), supplied by IDS Climalife Refrigeration, the Dehon Group's UK subsidiary. Temperature Control started by measuring the operating conditions of the system containing the R-22, for the purposes of comparison after the retrofit, using the Daikin VRV inspection system, linked up to a laptop computer. As they did so, Neil Roberts from DuPont analyzed the readings using Climacheck. After one week of measurements, the contractor replaced the refrigerant. In this particular case, the original mineral oil was retained, as were all of the system components. The replacement process only took one day. The R-22 was recovered and weighed. The system was pressurized with oxygen-free nitrogen to check its tightness, in accordance with standard EN 378, then vacuum pumped to eliminate all traces of moisture. A charge of R-422D, identical to the R-22 charge previously used, was then introduced into the system. The system was monitored for 15 days and the results were collected and studied. The system works just as well with R-422D as it did with R-22. Energy consumption comparisons have shown that R-422D has reduced the hotel's electricity bill by 7% in heating mode (the measurements were taken during the winter). Since the retrofit, there have been no complaints from customers about the comfort of their rooms. Another goal has also been met, in that the system has been kept in perfect working order, thus sparing the customer the considerable investment costs that purchasing new equipment would entail. Now that this system's lifespan has been extended, the customer can prepare a replacement schedule that fits in with its renovation plans. This approach means that decisions to invest in new equipment can be made on the basis of environmental policy, rather than as the result of a compromise.

NB: On relatively short VRV systems with uncomplicated geometry, such as the one described here, it is possible to keep the existing mineral oil. This method cannot, however, be applied to all systems. A more thorough preliminary analysis may be required, depending on the configuration of the system to be retrofitted.

Company: TEMPERATURE CONTROL LTD Business: Refrigeration and air conditioning Location: Manchester – United Kingdom Founded: 1926

4

After a few days of operation, another oil sample is taken using a Climalife DPH E, in order to deter-

mine how much of the original oil remains after the retrofit. According to Aubéri Lecat, "this final stage is crucial to ensure that everything is working properly. It tells us whether we have to purge the system again or not".

Ultimately, the retrofit operation has proved a real success, in terms of both the procedure implemented and the performance levels obtained. The loss in cooling capacity observed was very close to that initially predicted in the theoretical studies. The 1% difference is due to the fact that the chilled water temperature is lower with R-427A than with R-22.

(See table below)

System operating conditions

		Theoretical study		On-site measurements	
	Unit	R-22	R-427A	R-22	R-427A
Mean evaporating pressure	bar	4,4	4,3	4,8	4,4
Mean evaporating temperature	°C	-3,5	-3,5	-3,5	-3,5
Mean condensing pressure	bar	15,3	15,9	15,3	16,3
Mean condensing temperature	°C	40	40	40	40
Discharge temperature	°C	75,2	65,7	76	56,7
Cooling capacity	kW	354	326	358	326
Compressor power	kW	80,1	78,8	65	60
Condenser power	kW	434	406	439	406
Chilled water temperature	°C			10,5/9,6	9,3/8,2
Loss in cooling capacity	%	- 7,9		- 9	
Refrigerant charge	kg			52	50

Recovery, reclamation and destructions and services

s far back as 1980, the Dehon Group was already developing refrigerant recovery and recycling activities at its Bry-sur-Marne site in France (department 94).

In 1990, the process was industrialized and rolled out at the Group's various production sites. Today, having accumulated a wealth of know-how and expertise in refrigerants, Climalife offers these services in every European country in which it operates: France, the United Kingdom, Spain, Italy, Belgium, the Netherlands, Germany, Hungary, Switzerland and Sweden.



What do we mean by "recovery", "recycling" and "reclamation"?

«Recovery» is the collection and storage of refrigerants from products, equipment or containers during their maintenance or servicing, or prior to their disposal.

«Recycling» is the reuse of a recovered refrigerant after a basic cleaning operation.

«Reclamation» is the re-processing of a recovered refrigerant (a controlled substance) to meet the same performance specifications as a virgin substance, taking into account the use for which it is intended.

From collection to reclamation to resale: what happens to re-

Let's take R-22 as an example.

The R-22 fluid is recovered from refrigeration or air conditioning systems using purposedesigned fluorescent green containers and is transferred to our industrial sites for treatment. At these sites, the forklift truck operators receiving the recovery containers identify the product from the documents affixed to the containers (e.g. the Waste Tracking Form and the bristol board sheet in France) then dispatch these documents to the department responsible for traceability. The containers are then moved to the reclamation shop (photo 1).

The quantity of R-22 contained in each recovery container is weighed (photo 2) even before the nature of the product is analysed (photo 3) to determine whether it can be reclaimed or not.

These first two stages are also used to check that the product information provided by the customer is accurate. If the R-22 analysed is 95% pure or more, then the product can be reclaimed and the entire contents of the recovery cylinder will be purged at a specific station (4-8 tonne batch) for reclamation (photo 4). If the R-22 is less than 95% pure, or is too contaminated (mixed with other refrigerants, for example), the product cannot be treated and will be immediately sent for destruction, as reclamation has no impact on the purity of the refrigerant.



The Climalife approach: Our experienced team can rea whole range of services tailored to yo



• Disposal (outsourced according to the nature of the produc

Processes



ecovered refrigerants

Treatment of the batch (photo 5):

- eliminates non-condensable gases
- filters solid particles
- separates contaminants
- dries the refrigerant.

After this treatment, the R-22 is analysed again before being stored. A sample is taken from the station containing the reclaimed R-22 (photo 6), then the Climalife laboratory

on of refrigerants:

analyses the refrigerant's purity and composition by chromatography, its water content using the Karl Fisher method, and its non condensable content and acidity by chemical determination.

If, after these analyses (photo 7), the R-22 is deemed to be of the required quality, it will be stored in a tank (photo 8) before being packaged and placed on the market again under the name R-22T (the name given to R-22 reclaimed by Climalife).

If this is not the case, it is retreated until it meets our quality requirements.



commend and coordinate ur needs...

System recharge:

:t).

with new or reclaimed refrigerants

BELGIUM

Recovery:

a new procedure for better traceability

For over twenty years, Climalife Belgium has offered a comprehensive refrigerant recovery service, fully compliant with all applicable regional legislation. The waste is taken to the Sint-Niklaas plant, where a lab analysis is performed to determine whether it will be recycled or destroyed.

The administrative procedure was recently reviewed and adapted in order more effectively to meet customers' traceability needs.

Under the new procedure, introduced on 1st June, customers wishing Climalife to dispose of waste for them must submit a duly completed Waste Disposal Request form (Demande d'Enlèvement des Déchets or D.E.D.). This form will contain key information required to track the waste effectively and will be used to prepare essential transport documents. The cylinders and drums containing recovered waste must be accompanied by an identification sheet on which the customer indicates the origin of the waste. The information from these documents is used to produce a final document, which is essential for customers' refrigerant inventory management, particularly the sending of the recovery certificate proving the purpose of the recovered waste.

This document will now also bear a unique hologram, proving its authenticity and preventing the circulation of illegal copies.

Products





Discover R-22T: Climalife's reclaimed refrigerant product

In Europe, Climalife sells reclaimed R-22 under the name R-22T. R-22T's specifications ensure a recycled product that surpasses the requirements of the ARI standard, with at least 95% purity guaranteed. To ensure that the R-22T we produce is of the highest quality, Climalife's laboratories always perform analyses both during and after the reclamation cycle.

R-22T is available in small and large containers and in bulk. At your request, Climalife will treat your R-22 and provide you with R-22T in the containers of your choice. We can also store your R-22T for you at our industrial sites, after signing a storage agreement with you.

Our Services team will be happy to discuss any specific requests you may have (recovery from your site, system recharge, etc.).

Contact your Climalife sales representative for further information on our offer.

The system label: every system needs one!

The new system label meets the regulatory requirements stipulating that systems containing refrigerants (in quantities of more than 2kg, for France) must bear indelible markings.

It gives not only the type of refrigerant and the charge in kg, but also the type and quantity of oil, in order to facilitate system maintenance. There is also a space for indicating the name and telephone number of the maintenance company.

This label consists of two parts: The body of the label, on which the information is entered. The adhesive used on the back of the label is very strong so as to prevent it from being removed. A transparent adhesive flap (with special anti-UV treatment), which is folded down over the body of the label to ensure that the information entered is not altered or deleted. It is recommended that you use an indelible marker. These labels are sold in rolls of 25 and contain text in two languages: French and German in the case of France, Germany, Switzerland and Belgium.

Other combinations are available in the other countries in which Climalife operates.

eveloping the refrigerants of tomorrow



Honeywell is developing fourth-generation, low-GWP refrigerants

Yves Desuter, Senior Account & Marketing Manager for Refrigerants in Europe, takes us through the stages involved in researching and developing the refrigerants of the future:

"Following European Union legislation aimed at limiting the use of greenhouse gases (the MAC Directive and the F-Gas Regulation), Honeywell has developed various fourth-generation gases known as HydroFluoroOlefins (HFOs).

Our earliest projects focused on finding a replacement for the R-134a used in the automotive industry.

The replacement we found was HFO-1234yf. R-134a is also used as a blowing agent for insulation products and in some aerosols. In these cases it will be replaced by HFO-1234ze.

These two gases have a GWP (Global Warming Potential) of 4 and 6 respectively. In accordance with the aims of the applicable legislation, they also help to increase energy efficiency in the systems in which they are used.

-> HFO-1234yf and HFO-1234ze are direct replacements for R-134a in these applications.

> HFO-1234yf has been tested for a number of years in the automotive industry. It allows air conditioning units to operate in all climatic conditions and has been recognized as the safest and most suitable solution by the SAE – the Society of Automotive Engineers.

HFO-1234ze, which has been marketed by Honeywell since 2007, has similar chemical properties to R-134a, and allows single-component foams to retain their flexibility and solidity.

The formulations of HFO-1234yf and HFO-1234ze are such that it is possible to consider the replacement of R-134a in other applications such as industrial and commercial refrigeration.

Honeywell is currently working on this development and on extending its HFO range to meet the needs of refrigeration and air conditioning professionals.

As our key partner in a number of European markets, Climalife is regularly kept informed of the progress of our research into fourth-generation refrigerants and will, going forward, be our main point of contact as we help various European industries to find environmentally friendly, energy-efficient and high-performance solutions.

Events

Dates for your diary !

Belgium

Cool & Comfort Happening exhibition



This trade show for refrigeration, air conditioning, ventilation and heat pump professionals will take place on 22 and 23 October 2009 at the Nekkerhal exhibition centre, Mechelen. The Climalife team will be there at **Stand 071 in Hall 1** to tell you about R-22 replacement solutions and all our latest products.

Switzerland

20th Y-Symposium



This symposium for refrigeration professionals in French-speaking Switzerland, organized by the ASF (Swiss Refrigeration Association, French-speaking section) will be held in Yverdon-les-Bains on 11 November 2009 Prochimac Climalife will be an official partner of the event.

Hungary

Honeywell-Climalife Symposium: "The Final Countdown: R-22 replacement solutions"

3 September 2009, Budapest. Contact your Climalife sales representative to sign up.

Hungarian Refrigeration and Air Conditio-

ning Association (HRACA): a meeting will be held on 4-6 November 2009 - Conference Service - Hôtel Ezüstpart, 8600 Balatonszéplak, Liszt Ferenc sétány 2-4. An exhibition entitled "The Day of Hungarian Building Engineers" will be held on 3 and 4 December 2009 at Budapest University of Technology and Economics (BME).

The Netherlands

Installatie Vakbeurs, Hardenberg The Climalife team will be in Hardenberg on 8-10 September 2009 for this trade fair on installation and sanitation technologies. You'll find us at Stand 453 in Hall 4.



France

Salon Energies Froid



This regional trade show for refrigeration and thermodynamics professionals will take place in:

- Rennes on 30 September and 1 October 2009
- Bordeaux on 25 and 26 November 2009

Come and find out about all the latest regulatory changes and product releases:

- Frionett® new formula,
- Reclaimed R-22T and related services
- Secondary refrigerants and heat transfer fluids
- The new Thermonett® range

Get your free invitation now from your Climalife sales outlet.

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Interclima



The "Interclima+elec" energy efficiency fair will be held on 9-12 February 2010 at the Porte de Versailles, Paris.

You'll find the Climalife team in Hall 3 (Stand F92).

Germany

Following the success of the "heat pumps symposium" in 2007 and the "Industrial Heat Pump Village" at Chillventa 2008, the NürnbergMesse exhibition centre will host a new forum for dialogue on heat pump technologies on 9 and 10 September 2009.

taly

Mostra Convegno

Climalife will be present at the Mostra Convegno, the key international trade show for the heating, air conditioning and refrigeration sector on 23-27 March 2010 at the Fiera Milano exhibition centre in Milan.

USA

AHR Expo

Galco Climalife will be taking part in AHR Expo 2010, the world trade show for HVAC & Refrigeration professionals, which will be held on 25-27 January 2010 in Orlando, Florida (USA).

All the information: www.climalife.dehon.com

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Ist of January 2010: the ban on HCFCs (R-22) takes effect





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