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R-22 Replacement solutions: Improve buildings with cost-effective, energy-efficient alternatives by Carrier

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E-News is a monthly newsletter published by CARRIER S.E. EUROPE S.A about HVAC industry, new technology and commercial products for HVAC professionals, contractors, engineers and specifiers.

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R-22 Replacement solutions: Improve buildings with cost-effective, energy-efficient alternatives by Carrier

Over 100 years ago Carrier pioneer in airconditioning industry, and in the last two decades we have pioneered environmentally sensitive products with a reduced impact on the environment.

We recognise that there must be a responsible balance between the technology we provide today and the world we will live in tomorrow. We have consistently demonstrated our adherence to these values by creating environmentally sound products that consume less energy and incorporate innovative materials.



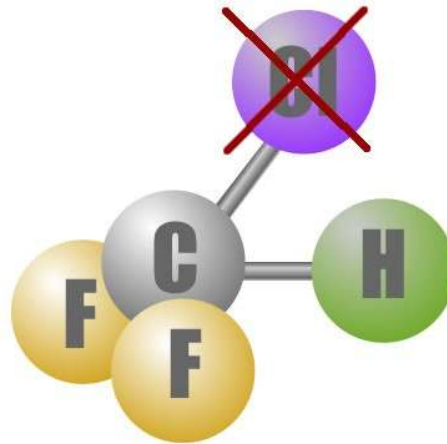
We are committed to reducing the greenhouse gas impact of our products through

energy efficiency advancements and the refrigerants we use.

Refrigerants

Customers look to Carrier for sustainable refrigerant solutions, especially given the current climate change considerations. Refrigerants are gases that are compressed to create cooling for air conditioning and refrigeration.

Many of these gases are chemicals with an environmental impact. For decades, the industry relied on chlorofluorocarbon (CFC) chemicals as refrigerants because of their energy efficiency, safety and economic benefits.



In the 1970s and 1980s, scientists began to observe that CFCs contributed to the depletion of the Earth's stratospheric ozone layer that blocks harmful ultraviolet radiation from the sun. This led to an international accord to phase out ozone-depleting substances.

Today, Carrier continues to help international markets meet new non-ozone-depleting requirements, while focusing on the next chapter in refrigerant evolution to reduce the direct greenhouse gas effect.

Much of the existing installed product base uses R-22 (an HCFC refrigerant). Carrier is committed to developing and deploying products and technologies that are HCFC free and minimise the environmental impact to serve customer needs.

Carrier seeks the right refrigerant solution for every application, and not every application will necessarily have the same refrigerant solution.

For more than forty years R-22 (HCFC-22) has been the main refrigerant choice for residential heat pump and air conditioning systems. Scientific research has shown that releases of R-22 amongst other substances into the atmosphere (mainly from product & system leaks) contribute to ozone depletion.

Therefore environmental agencies from all over the world have agreed on a schedule for the total elimination of R-22, forcing refrigerant producers and air conditioning equipment manufacturers to find less harmful alternatives.



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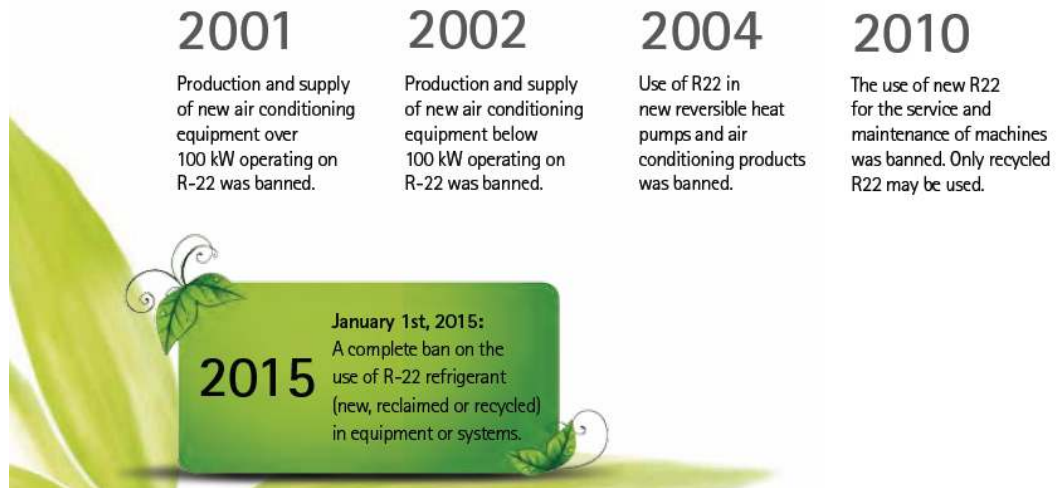
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Regulation and key deadlines

All statements regarding regulation and regulatory deadlines refer to the European Union Regulation (1005/2009) controlling the use of substances that deplete the ozone layer in the EU. For ease of terminology, we have used the term Montreal Protocol, the international treaty protecting the ozone layer, the obligations of which the EU is fulfilling through Regulation 1005/2009.

The Montreal Protocol clearly defines the dates for the phase-out and elimination of R-22 refrigerant from production and from installed units:



The non-availability of R-22 refrigerant poses new challenges for servicing units in operation.

Installed R-22 units typically have a life expectancy of more than 10 years and most have already reached two thirds of their operational life. Every owner therefore R-22 system needs to be fully aware of the consequences of the protocol and their options.

Leakage

Maintenance routines for these units require leak tests and refrigerant top-ups. These procedures are permitted with reclaimed or recycled R-22, but only until the end of 2014.

Maintenance cost: R-22

The scarce availability and the high demand will likely increase the price of R-22. For those who have not signed long-term contracts with gas suppliers this can be a huge problem.



Skilled technicians

Since the year 2000 technicians have been trained and equipped to service new refrigerants, therefore will be difficult to find personnel with the competency and the tools to perform maintenance of these units.

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Downtime

Longer maintenance and servicing periods disrupt the regular operation of the system, leaving the equipment owner with unexpected unit downtime.

R-22 replacement - FAQ

Q: Why should I act now?

A: New solutions enhance the efficiency of your system, and the resulting energy savings contribute to a reduced carbon footprint and to increased cost-effectiveness.

Q: How can I find out if my system contains R-22?

A: All Carrier and other machines have a nameplate with the main system data, including the refrigerant type. If the unit is not accessible, you can check this data in the installation manual or ask the service company. Carrier units with R-22 refrigerant are listed on our dedicated website (www.sustainablechillers.com), and you can check if your machine is included.

Q: Can Carrier do a site evaluation specifically for me?

A: Yes, Carrier technicians can evaluate your site and demonstrate the potential savings you would make in terms of energy, cost and carbon emissions.

Q: Will I be forced to stop using my R-22 air conditioner?

A: No, this will not be the case. Units with R-22 refrigerant in operation can continue to run. However, in the case of failure, leaks or other services required these units cannot be repaired properly. It would be better to plan a replacement in advance and ultimately save money instead of risking a higher cost and long downtimes, when an old unit starts to malfunction.

Q: Does the replacement of R-22 units by a new unit with an alternative refrigerant require changes in the system?

A: No. The refrigerant is in the unit and therefore the pipe-work and ductwork will not be affected. New models with the same efficiency benefit from at least ten years of technology innovations, and are therefore nearly always more efficient, smaller and quieter.

Q: Can I take the opportunity to replace my cooling-only system with a reversible heat pump?

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A: Yes, Carrier has a wide range of heat pump solutions and depending on the location where the unit is installed, a heat pump can significantly reduce your overall energy consumption.

Q: Does unit replacement require any additional service or maintenance?

A: No. System operation is the same and Carrier service can provide you with customised service programmes. It is important to remember that a well-maintained system saves you money, increases the system life span and reduces the risk of breakdowns.



Whatever type of building and whatever the application, from commercial centres, office applications through to industrial processes, Carrier offers a wide range of solutions to meet customer needs - integrating comfort, performance and rationalised investment aspects.

In 1996 Carrier launched the Global Chiller range, the first commercial screw machines designed specifically for R-134a, followed in 2004 by the Aquasnap PURON range - the first air-cooled machines in its segment to use an environmentally considerate refrigerant, R-410A.



AQUASNAP
Reversible

Heating and cooling
from 5 to 460 kW
30RA/RH, 30AW, 30RB/RQ,
30RY, 30RW

AQUASNAP
Heating

Heating from 20
to 1000 kW
30XWH, 61AF

AQUAFORCE

Cooling and heating
from 230 to 5300 kW
30XA, 30HX, 30XW, 19XR

The introduction of the Aquaforce (252-1700 kW) air-cooled liquid chiller in 2006 was another innovation for the HVAC market.

Aquaforce uses an all-aluminium condenser coil, that allows a reduction of up to 30% in the refrigerant charge with an improved efficiency, compared with a predecessor unit of the same capacity.

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Energy efficiency website

A dedicated website has been created to assist distributors, service and customers during this delicate transition phase offering a simplified energy consumption calculator and product specifications to guide in the selection of the right solution.

Registered users will have the possibility to use a simplified on-line version of Carriers' Chiller System Optimizer (CSO) tool to perform an in-depth analysis of the energy consumption and possible savings and request more detailed equipment audit.



Carrier is leading the industry in the phase-out of ozone-depleting refrigerants and has introduced many of the world's most energy-efficient heating, air conditioning, and refrigeration systems.

Today Carrier continues to improve the environmental performance of products, services, operations and culture to help achieve a sustainable society and protect the natural environment for generations to come.



For more info visit: <http://www.sustainablechillers.com/>

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