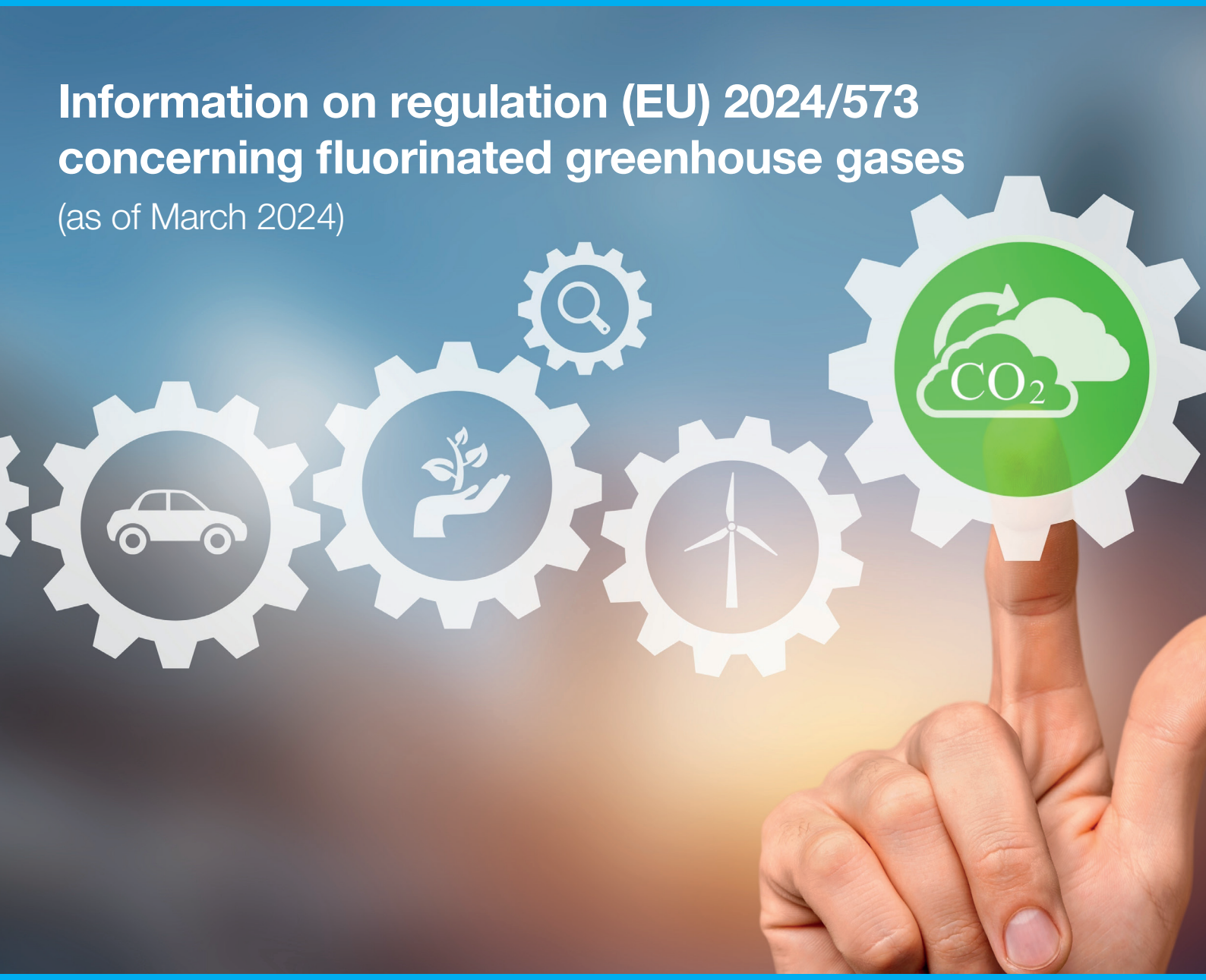
Information on regulation (EU) 2024/573 concerning fluorinated greenhouse gases

(as of March 2024)



Pfannenberg as a competent partner in sustainable production

The European Parliament has revised the F-Gas Regulation and this is now valid as Regulation (EU) 2024/573. Enclosure and liquid cooling units contain F-gases, which are necessary for their function, and therefore fall under this regulation. In this flyer, we inform you which points have a detailed influence on enclosure and liquid cooling and which steps Pfannenberg is already taking.

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Legal situation | Use of refrigerant

Thermal Management (Cooling units)

Pfannenberg enclosure cooling units are hermetically sealed systems and condition the temperature of the air within a defined space. According to Annex IV of the F-Gas Regulation, enclosure cooling units are classified in Category 8 Group e:

STATIONARY AIR CONDITIONING SYSTEMS AND HEAT PUMPS		
(8) Self-contained air conditioning and heat pump equipment, except chillers, that:	e) Other self-contained air-conditioning and heat pump equipment that contain fluorinated greenhouse gases with GWP of 150 or more, except when required to meet safety requirements. When safety requirements would not allow using fluorinated greenhouse gases with GWP of 150 or less, the GWP limit is 750.	Date of the ban: 01.01.2030

Refrigerants with a GWP (Global Warming Potential) of less than 150 pose a challenge for enclosure cooling because they are sometimes flammable or have unfavorable material properties. The use of flammable refrigerants is described in the harmonized standard DIN EN 378. According to this standard, 150g of flammable refrigerant is always permissible as long as the refrigeration system is manufactured in such a way that escaping refrigerant cannot collect in areas where there is a source of ignition. As there are various potential ignition sources in an enclosure, which also has a small internal volume, such as switches or contactors, DIN EN 378 together with our product standard EN 60335-2-40 for enclosure air conditioning cannot be applied without restriction. It can therefore be assumed that additional safety requirements must be met for cooling units in enclosure air conditioning due to the confined installation space, which justifies the use of a refrigerant with a GWP of 750 even after 2030.

The F-Gas Regulation defines "safety requirements" in the definition no. 42 as follows:

"Safety requirements" means requirements on the safety of using fluorinated greenhouse gases and natural refrigerants or products and equipment containing or relying on them, [...] due to site and application specificities that are either:

(a) set out in Union or national law; or
(b) set out in a non-legally binding act containing technical documentation or standards that have to be applied to ensure safety at the specific location, provided that they are in line with relevant Union or national law.

Impact on the application

Refrigerants with a GWP of less than 150 pose a challenge for enclosure cooling because they are sometimes flammable or have unfavorable material properties.

There are various ignition sources in an electrical enclosure, including main switches, contactors, relays and circuit breakers. In the event of a leakage, refrigerant could enter the switch cabinet. There is a risk that an ignitable mixture could form and cause ignition. Therefore, from a current perspective, flammable refrigerants with a GWP of less than 150 cannot be used in enclosure air conditioners without further efforts.

Reaction by Pfannenberg

New enclosure cooling units from Pfannenberg will be equipped with the safety refrigerant R513A in 2024, which has a GWP of 631.

Pfannenberg is therefore already implementing the future requirements of the new F-Gas Regulation, enabling our customers to plan for the long term without additional safety risks. Development does not stop at refrigerants either. Pfannenberg is investigating various alternatives in order to be able to offer the right solution at all times. Both natural refrigerants and new refrigerants that are still being developed by the manufacturers are taken into account.

Legal situation | Use of refrigerant

Liquid cooling (Chillers)

Our Pfannenberg liquid cooling portfolio chillers range from 1.1 kW up to 148.0 kW. According to Annex IV of the F-Gas Regulation, chillers are classified in Category 7 Group b, c and d:

STATIONARY CHILLERS		
(7) Chillers that contain, or whose functioning relies upon:	b) fluorinated greenhouse gases with a **GWP of 150** GWP or more for chillers **up to and including a rated capacity of 12 kW**, except if required to meet safety requirements at the site of operation;	Date of the ban: 01.01.2027
	c) fluorinated greenhouse gases for chillers up to and including a rated capacity of 12 kW, except if required to meet safety requirements at the site of operation;	Date of the ban: 01.01.2032
	d) fluorinated greenhouse gases with a **GWP of 750** for **chillers above 12 kW**, except if required to meet safety requirements at the site of operation;	Date of the ban: 01.01.2027

Impact on the application

Some refrigerants with a lower GWP are a challenge for our chiller components. In some cases parts of the chiller configuration need to be replaced in order for them to be suitable to the new refrigerant. Other chillers of our portfolio can be operated with a refrigerant with a lower GWP, thus there can be a safe drop-in.

Reaction by Pfannenberg

We are continuously working on the improvement of our chillers. Pfannenberg will realise all product series in accordance with the requirements of the regulation and offer corresponding solutions. In addition, we are always ready to develop and adapt customised solutions with you. Our appliances up to 12 kW will be equipped with a natural refrigerant or a refrigerant that is compliant with respective regulations by 1 January 2027 in order to continue to meet safety requirements, especially for indoor installation and machine integration. For larger chillers above 12 kW, we will ensure that they are filled with a refrigerant with a GWP below 750 by 1 January 2027.

What happens to existing installations?

Article 13 of the regulation describes a ban on the use of new, non-recycled refrigerant from January 1, 2032 for maintenance work with a GWP greater than 750. Consequently, refrigeration appliances equipped with R134a may not be charged with new refrigerant. Refilling with recycled R134a is still permitted.

Impact on the application

The European Union‘s Green Deal provides for a drastic reduction in CO2 emissions. As a result, there will be a severe shortage of refrigerants with a high GWP in the future. If a cooling unit needs to be refilled with R134a during maintenance, this can lead to higher costs.

Reaction by Pfannenberg

Pfannenberg checks the costs with every service. If the appliance is due to be refilled during maintenance, it will be checked whether it is cheaper to replace it with a modern appliance with new refrigerants.

Legal situation | Export ban

Article 22 of the regulation states that from March 12, 2025, no products containing F-gases that are not already regulated in Annex IV of the regulation and that have a refrigerant with a GWP greater than 1000 may be exported.

Impact on the application

Pfannenberg assigns its enclosure cooling units to Annex IV (8) - e). Therefore, the export ban on enclosure cooling units with refrigerants with a GWP greater than 1000 does not apply until January 1, 2030.

Reaction by Pfannenberg

New refrigerators are already being equipped with R513A, a refrigerant with a GWP of 631. Refrigeration appliances that are currently still equipped with R134a will be gradually converted so that no more refrigeration appliances with a refrigerant with a GWP greater than 750 are placed on the market by 2030. This will ensure long-term planning for the export of appliances.

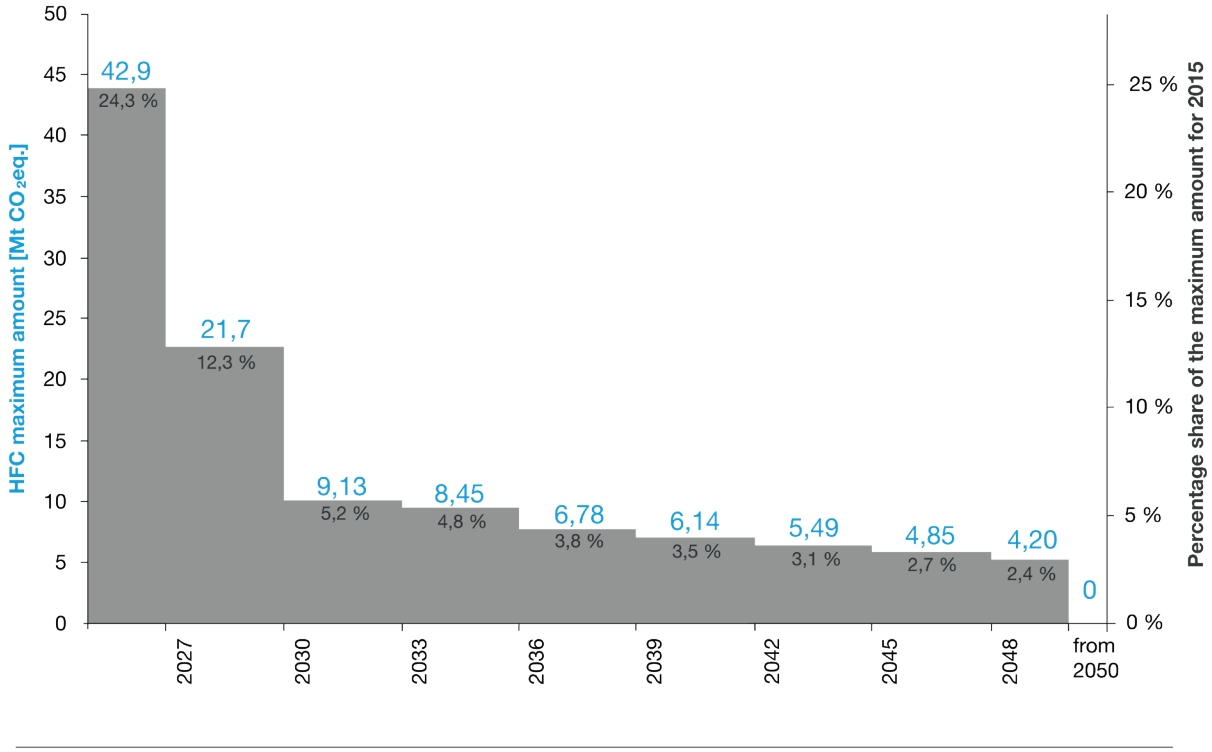
Phase-Out Scenario

In addition to the aforementioned bans, the quantities of **hydrofluorocarbons (HFCs)** placed on the market in the EU will be **gradually reduced in a phase-out**. The new **reduction steps** (see illustration) have been **significantly tightened** compared to the previous regulation from 2014. The permitted quantity is to be reduced to zero by 2050.

In addition to the introduction of the refrigerant R513A for cooling units, Pfannenberg is working on further measures to reduce the global warming potential.

Maximum quantities for the placing on the market of hydrofluorocarbons

according Regulation (EU) 2024/573 (maximum amount 176,7 Mt CO2eq.)



Source: German Environment Agency

Do you have any further questions about the EU regulation concerning fluorinated greenhouse gases?

Our Global Product Manager Christoph Kähler will be happy to help you ensure the sustainability of your enclosure cooling units at:

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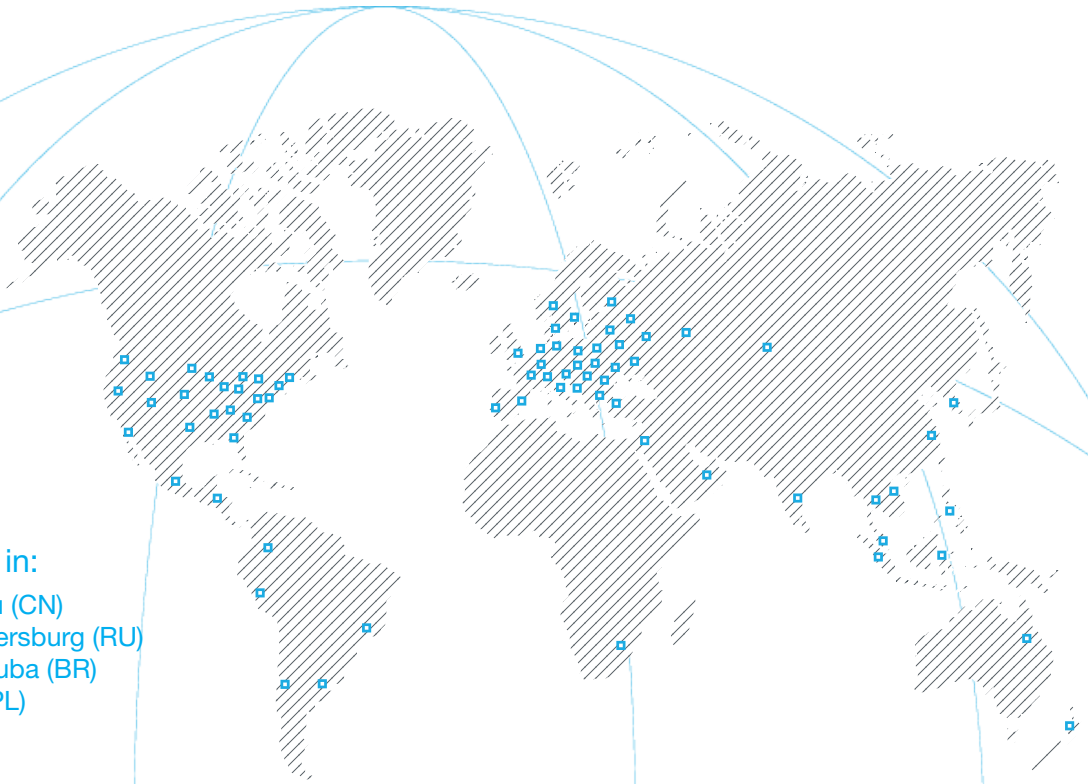
Pfannenberg – Protecting People, Machines and the Environment

Vision

One Pfannenberg for Our Customers – We are constantly working to develop the best and most sustainable products for you..



Global availability

Nine Pfannenberg locations in:

Hamburg (DE) - HQ
Rotherham (UK)
Fidenza (IT)
Lancaster N.Y. (US)
Singapore (SG)
Suzhou (CN)
St. Petersburg (RU)
Indaiatuba (BR)
Łódž (PL)

In addition, we at Pfannenberg work in partnership with sales representatives and regional agents worldwide in order to be able to present our product portfolio to you.

Sustainability

We combine the flexibility of a family-run company with the agility of a global corporation. In our work, we emphasize the importance of combining tradition with innovation in order to be able to act in a future-oriented manner.

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