European Data Centre Association's
**Technical Committee**

# F-Gases Regulation update: need to know details for data centres

EUDCA Viewpoint

EUROPEAN
DATA CENTRE
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**F-Gases Regulation Update**
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# Regulation updates cover repair, replacement and alternatives for high GWP gases

Since 2014, the European Union (EU) has regulated the production and use of fluorinated gases (F-gases) with the aim of increasing the adoption of F-gases with lower global warming potential (GWP).

This is due to the far higher GWP of F-gases when compared with gases such as $CO_2$. For example, compared to the baseline of $CO_2$ which has a GWP of 1, the F-gas sulphur hexafluoride ($SF_6$) has a GWP of 24,300. It is expedient therefore that F-gases are tightly controlled in terms of new production, transport, handling, and disposal.

In 2024, the F-gas regulation was significantly updated, with major implications for the data centre industry. The F-gas Regulation (EU) 2024/573 was adopted on 7 February 2024 and started to apply on 11 March 2024.

The European Data Centre Association (EUDCA) welcomes regulations that seek to reduce emissions that are harmful to the environment and reduce the advance of global warming and its effects.

The industry in Europe has tended to act quickly and decisively in support of net zero goals through initiatives such as the Climate Neutral Data Centre Pact (CNDCP) that measures, manages, and reduces Scope 1, 2, and 3 emissions. F-gases fall within Scope 1 emissions, and the EUDCA supports a realistic phase-out of climate-impacting substances.

The primary focus of the updated F-gas regulation is to ban new equipment relying on higher GWP gases, with additional restrictions on the production of F-gases as well as their use in the maintenance of existing equipment.

## Categories

The new regulation is divided into multiple categories, but the key criteria for data centres apply to cooling equipment including chillers, heat pump air conditioning, and self-contained or split systems.

Relative to chillers, the regulations stipulate: no more equipment relying on F-gases ≥150 GWP with rated capacity ≤12kW from 1 January 2027; equipment with F-gases for rated capacity ≤12kW from 1 January 2032; and equipment with F-gases ≥750 GWP with rated capacity >12kW from 1 January 2027.

Heat pump air-conditioning, self-contained air conditioning and heat pump equipment >12kW (<50kW from 1st January 2027) can only be placed on the market if they rely on refrigerants ≤ 150 GWP. Self-contained air conditioning and heat pump equipment from 1 January 2030 can only be placed on the market if they rely on refrigerants ≤150 GWP.

Split air-conditioning and heat pump air-to-water systems, similarly, have deadlines from 1 January 2029 up to 2033, for ≤12kW systems depending on the refrigerant they rely on ranging from ≤150 to ≤750 GWP.

With regard to the export of stationary refrigeration and stationary air-conditioning equipment, or where functioning relies upon fluorinated greenhouse gases with a GWP of 1000 or more, these will be prohibited from 12 March 2025.

Full details of the restriction schedules are available here.

## Gas handling

F-gas handling is another point covered by the updated regulation, with specific reference to leaks. Where a refrigerant is leaking, the equipment is required to be repaired without undue delay and shall be verified by a certified person within 1 month of the leak being detected.

Requirements for leak checks are now mandatory for all F-gas equipment. The frequency and equipment required depend on the quantity and $CO_2$ equivalent GWP of the refrigerant. These are split into two Annexes in the legislation.

- Annex I refers to Hydrofluorocarbons, perfluorocarbons and other fluorinated compounds, such as HFC-32 (GWP 675), HFC-134a (GWP 1430), and HFC-125 (GWP 3500).
- Annex II, Section 1 refers to unsaturated hydro(chloro)fluorocarbons, such as HFC-1234yf (GWP 0,501), HFC-1234ze (GWP 1,37), HCFC-1233zd (GWP 3,88).

For additional refrigerants, the F-gas regulation should be consulted. For stationary air-conditioning, heat pumps and refrigeration, leak checks are mandatory across Annex I and Annex II Section 1, except where Annex I gases are less than 10 tonnes of $CO_2$ equivalent, and for Annex II Section 1 where there is less than 2kg.

Leak detection frequency is also specified, varying from at least every 24 months for equipment using refrigerants in Annex I, where there are less than 50 tonnes of $CO_2$ equivalent, to every 3 months for more than 500 tonnes of $CO_2$ equivalent, with qualifications where automatic leak detection facilities exist.

For Annex II, frequency varies from 24 months for less than 10kg of F-gas, down to 3 months for greater than 10kg of F-gases, with qualifications where automatic leak detection facilities exist.

Leak detection systems must be checked for proper functioning once every 12 months.

## Equipment refurbishment

Previously installed equipment with refrigerants which exceed the requirements can continue to operate under the updated regulation, but replacing the refrigerant may not be viable or prove more expensive than previously accounted for, meaning that equipment may require replacement prior to its expected economic lifespan.

Market placement of parts for products and equipment required for repair and servicing of existing equipment is allowed, provided the repair or servicing does not result in an increase in the capacity of the product and/or an increase in the amount of F-gas contained in the product, or a change in the type of F-gas used that would lead to increased GWP.

For cooling equipment, there are also limits to the types of F-gases that can be used to service or maintain the equipment.

Depending on the availability of reclaimed F-gases on the market or the ability of operators to recycle the F-gases recovered during the maintenance or repairing of the equipment, it may be more cost-effective to replace equipment rather than repair or replace the gas.

Under the new regulations, data centre operators should review requirements under a number of headings, including design and projects, leak detection, and F-gases log.

For any new design or build, equipment must be reviewed to ensure compliance with the new regulations. F-gases logs will facilitate determining which equipment may be at risk of early replacement due to F-gas phase out. In general, operators should consider purchasing

cooling equipment utilising low-GWP refrigerants as the best long-term strategy.

Vendors generally have low-GWP alternatives for equipment currently on the market which should be suitable for the foreseeable future. Alternative 'natural' refrigerants can be used as there are no plans for these to be phased out, but currently they present increased health and safety risks, with regard to toxicity, flammability, and increased purchase cost.

## Towards compliance

In the continued drive towards lower data centre PUEs, the F-gas regulations constitute an additional hurdle as restrictions on high GWP refrigerants take effect.

In this time of increasing climate change, reducing high GWP refrigerant use and taking measures to minimize leakages is a sustainable step in keeping with best practices in the industry:

- options are available for low GWP refrigerants for new equipment from the majority of vendors
- maintenance requirements for leak detection are increased but are not considered overly onerous and are in line with good practice maintenance activities.
- drop-in replacements of refrigerant are possible in existing equipment if the reductions in capacity specified can be accepted.

Also, looking at regulation trends, limiting the options to natural F-gas (GWP=0) may compromise sustainability improvement objectives for the same capacity, as the industry will still need some time to demonstrate equivalence performance – if not even better – compared to current low GWP synthetic F-gas.

The EUDCA will continue to review and publish information covering the new F-Gases legislation, through working with members, other associations, vendors, and regulators. This collaborative approach will be instrumental in navigating the evolving landscape of F-Gas regulations, ensuring compliance, and contributing to a greener and more sustainable future.