Position Paper on the Proposed Revision of the EU F-Gas Regulation

The F-Gas Regulation revision must strike the balance between reducing F-gas emissions and achieving the EU's climate and energy goals

EPEE – representing the Refrigeration, Air Conditioning and Heat Pump (RACHP) Industry in Europe – supports the F-Gas Regulation as an essential tool to reduce emissions of F-gases. To tackle the global climate change crisis, F-gases with high global warming potential, such as HFCs, must be contained, phased down and their emissions reduced as much and as fast as possible.

F-gases, and HFCs in particular, are used as refrigerants in RACHP equipment, which in turn are key technologies to achieve Europe's climate and energy goals by decarbonising heating and cooling. The current EU F-Gas Regulation[1] has already been delivering 13% emission reductions in EU27 since its entry into force[2] and become the effective gold standard worldwide for reducing emissions from F-gases. Already with the current HFC-phase down schedule, the RACHP industry will have reduced its consumption of HFCs by 88% compared to 2014.

The revision of the EU F-Gas Regulation must combine a number of important objectives:

- further reduce emissions from F-gases;
- consider the drive for decarbonising of heating as well as for EU energy independence;
- foster the EU as a centre of production and export base for sustainable RACHP equipment.

Against that background EPEE welcomes many provisions in the proposal which extend requirements on leak checks, containment, reporting and certification and training.

But the industry also has strong concerns about the potentially negative impact of the proposal on the required growth of climate-friendly and fossil-fuel-free equipment in the heating and cooling sector by 2030.

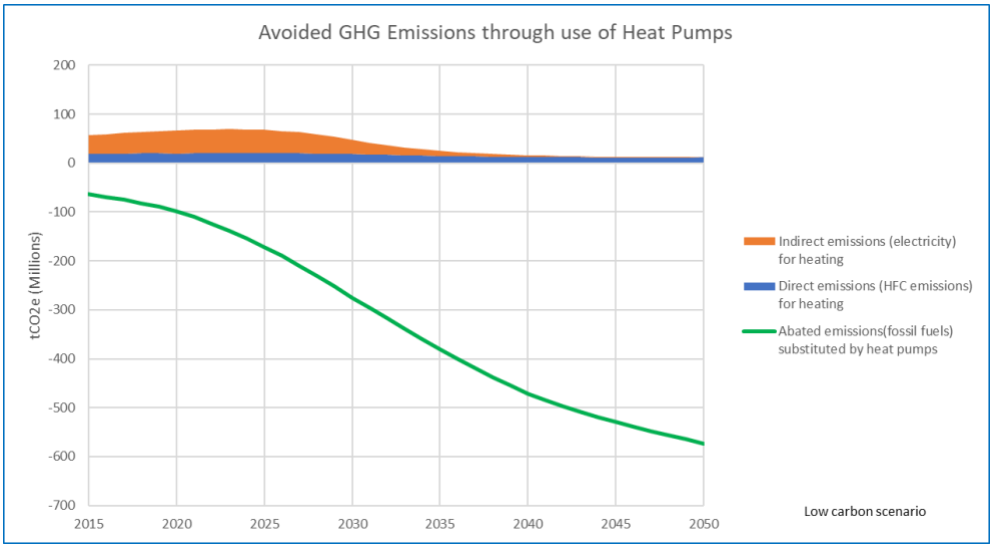
Our industry has a successful history of innovation: phasing out ozone depleting F-Gases (CFCs, HCFCs) in the 1990s and moving towards F-Gases with ever lower Global Warming Potential since 2010. We are committed to further innovating and accelerating the move to lower GWP HFCs, to

[1] EU 517/2014

[2] European Environmental Agency 2021 Report on Fluorinated Greenhouse Gases

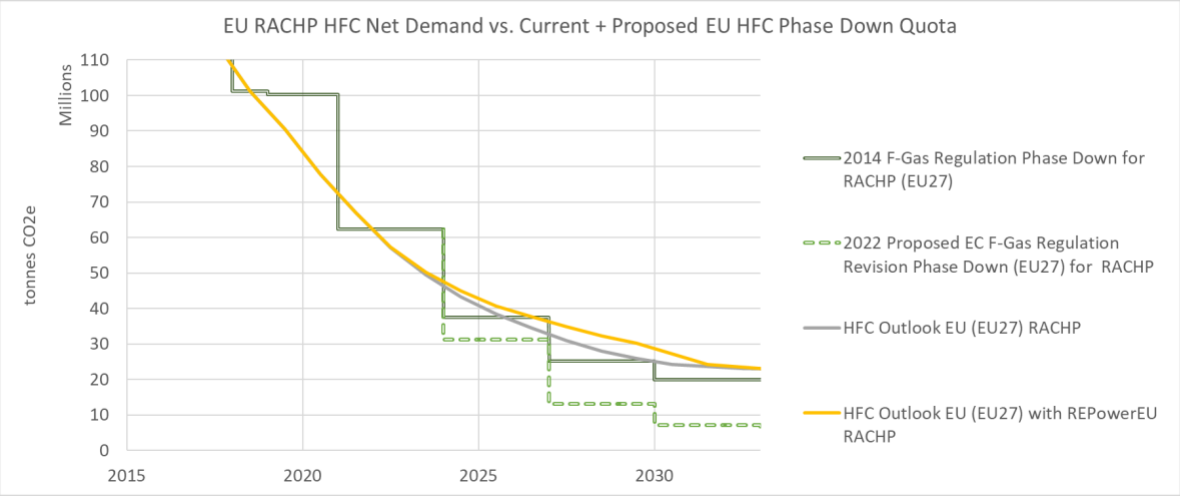
the newest generation of F-Gases (such as HFOs), as well as to natural refrigerant gases such as hydrocarbons or CO_2.

This transition must consider that by far the biggest contribution of our industry to the European Green Deal is to move heating and cooling away from fossil fuel use and towards efficient heat pump equipment based on clean electricity. EPEE modelling shows that abated CO_2 in 2050 from heat pumps systems will be 47 times greater than their direct (i.e. refrigerant) and indirect (i.e. electricity) greenhouse gas emissions:



The proposed HFC phase-down is in reality an HFC phase-out by 2027 that would seriously jeopardize an accelerated and comprehensive heat pump roll out in the EU in the coming years

The EU needs millions of new heat pumps to be installed quickly to fulfil its 2030 climate targets. This urgency has further increased with the need to achieve fossil-fuel independency as soon as possible. In that context, EPEE has updated its HFC Outlook EU model[3] to take into account the REPowerEU objective of 10 million new hydronic heat pumps by 2027 and further 20 million by 2030/31. In the graph below, the yellow line shows the increased need in HFC compared to the original (grey) trajectory based on the decarbonisation goals of the Fit-for-55 package and the European Green Deal. **Even without the RePowerEU remodelling, the needed amount for RACHP[4] is much higher than the HFC quota now proposed by the European Commission.**



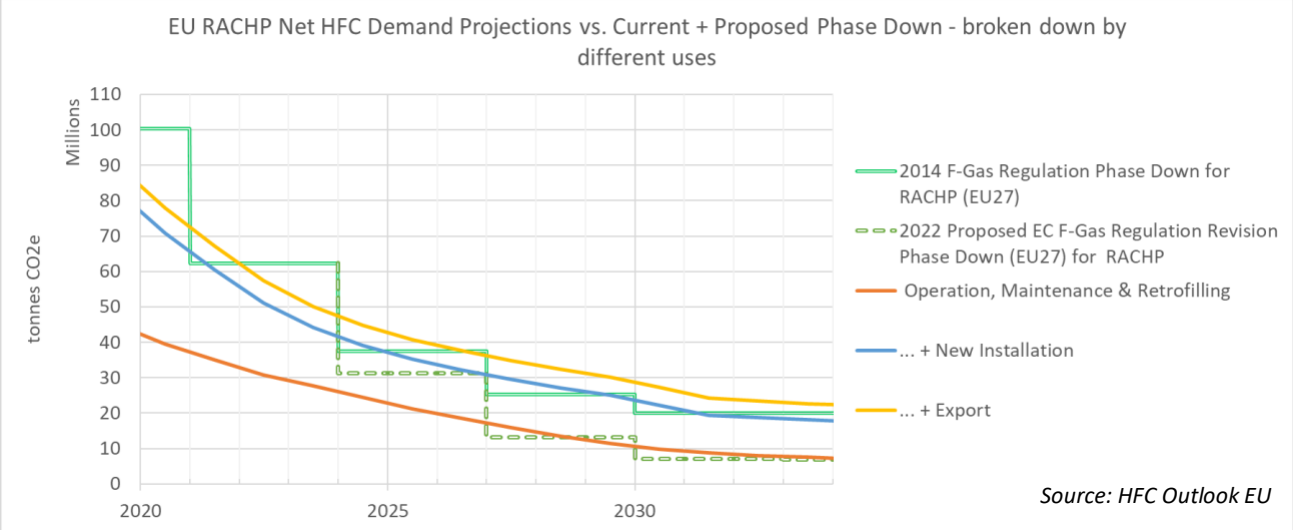
Source: HFC Outlook EU

As the second graph shows, **just the HFC demand for servicing existing RACHP equipment[5]** would **exceed the available quota from 2027**, **so nothing would be left for new equipment in the EU, let alone exports**.

[3] The modelling tool "HFC Outlook EU" projects the demand and emissions of refrigerants in the EU as well as the energy use and CO2 emissions of RACHP equipment,. Link to slides with HFC Outlook Narrative on EPEE Website

[4] The HFC quota available for RACHP, pictured in this graph, are the proposed maximum quota in the Commission proposal reduced by the quota allocated to the production of Metred Dose Inhalers (MDIs) which the revision proposal has included again in the HFC phase down.

[5] Servicing means: operation and maintenance to top up leakages and for retrofitting to replace the high GWP refrigerant R404a.



These projections already take into account a massive, expected increase in the re-use of HFCs through recycling and reclamation from end-of-life equipment.[6] Also, the current 68mtCO_2e of unused authorizations, which allows non-EU manufacturers to import pre-charged RACHP equipment into the EU, is likely to be used up by 2027 considering the expected strong growth in heat pump equipment.

The proposed HFC phase-down is a de facto phase out of HFCs in new equipment as of 2027, which would seriously jeopardise the 2030 climate and energy goals, including the move towards Zero-Emission Buildings, and even more to the accelerated heat pump roll out objective with 30 million additional heat pumps to wean the EU off Russian gas imports.

According to the proposal, all new equipment from 2027 would need to immediately use near zero GWP refrigerant, such as hydrocarbons or HFOs, which is an unrealistic timeline both in terms of technological development and in terms of the needed number of installers trained and certified to handle the new refrigerants, many of which are flammable.

In addition, if new equipment is now purchased using low GWP HFCs then maintenance possibilities would be greatly reduced considering the currently expected lifetime of new equipment is more than 10 years. Having to replace relatively new equipment for lack of HFCs would go against the circular economy principle, recently underpinned by the EU Sustainable Products Initiative.

[6] EPEE strongly supports measures to incentivize the re-use of HFC refrigerants from existing equipment at their end-of-life. The HFC Outlook EU projects that by 2025 the amount of HFCs that can be used from reclaimed and recycled HFC refrigerants will be around 28mtCO2, which would already be a massive increase from current levels.

The European Commission's model makes a number of unrealistic assumptions about the speed of the refrigerant transition

The Impact Assessment study made for the European Commission to design the proposed phase down ambitions shows a number of assumptions that lead to overestimating the speed of the refrigerant transition in the RACHP sector between 2024 and 2030.

While the study shows that the current phase down would ensure meeting the Montreal Protocol ambitions, the choice has been made to propose moving towards a much more ambitious phase down scenario proposal already from 2024. However, the assumptions and projections made to sustain this scenario are not realistic. Contrary to the assertions of the study, individual sectors require much more than four years to transition to new refrigerants – from R&D development until the market reaches full production and mass deployment, installations and adoption by consumers.

Below are a number of examples on how the study is underestimating the need for quotas and refrigerants at least until 2030:

- For split Air Conditioning Systems and Heat Pumps below 12kW, the study assumes[7] that all units would move to R-290 between now and 2024, while today the market penetration rate is very low for R290 units. This means that more than 4.000 Air2Air models[8] and more than 600 heat pump models[9] would need to be redesigned and changed to a new flammable refrigerant in 3 years. In addition, the supply chain would need to be ready to deliver the adequate compressors and other components, and the new models would need to be accepted by consumers and installers to be trained and certified for flammable refrigerants. Furthermore, the study fails to give details on the feasibility of such a shift to R290 for multi-split units which represent more than 15%[10] of total split AC sales <12kW.
- A second example is for the small and large chiller categories [11]. The study assumes that, by 2024, respectively more than 50% of small chillers and 70% of large chillers will rely on water/ammonia as a refrigerant, rather than on HFCs or HFOs, while today to our knowledge there is only one prototype on the market using water as a refrigerant.

[7] Page 140, of study annex
[8] Eurovent Certification Database
[9] KEymark database
[10] Review of Regulation 206/2012 and 626/2011 Air conditioners and comfort fans Task 2 report
[11] Page 144 study annex

As the examples above could be extended to further sub-sectors, EPEE cautions for a more balanced phase down approach, taking into account the realistic transition time of the sector, the Green Deal ambitions and the REPowerEU acceleration.

Maintaining the current phase down at least until 2030 would ensure sufficient refrigerants are available to accommodate for the needed roll out of heat pumps.

The scope of the proposed bans would create uncertainty and enforcement challenges for market authorities

General Comments

Even though the proposed placing-on-the-market bans for RACHP equipment would not have much meaning with the proposed HFC phase down scenario as the quota would be in reality a phase-out in 2027 for new equipment, the way they are currently formulated would create uncertainties due to unclear definitions and lead to counterproductive effects for energy efficiency and the circular economy. Some of the definitions would be very difficult, if not impossible, to enforce by market authorities.

The placing-on-the-market-bans of products and equipment now also include "**parts thereof**", which would impact spare parts and thus make the repair and upgrading of existing equipment impossible. This is contradictory to the EU Circular Economy Strategy and EU Sustainable Product Initiative (SPI).

Comments on specific bans relevant for the RACHP Sector

Annex IV (12): Any self-contained refrigeration equipment that contains fluorinated greenhouse gases with GWP of 150 or more – from 2025

- The definition of "self-contained" is not clear.
- It should be clarified that transport refrigeration is not included in this ban. Transport refrigeration faces unique challenges as regards the selection of the optimal refrigerants compared to stationary refrigeration applications – the risk factor of road transport is greater, with consequent restrictions on the use of flammable or explosive refrigerants banning their use on routes involving ferries and alpine tunnels.
- It is unclear why the safety exemption, included in bans on split systems, would not also be applicable to the equipment in this ban which may be faced with safety limits as well.

Annex IV (15): Multipack centralized refrigeration systems for commercial use with a rated capacity of 40 kW or more that contain, or whose functioning relies upon, fluorinated greenhouse gases listed in Annex I with GWP of 150 or more, except in the primary refrigerant circuit of cascade systems where fluorinated greenhouse gases with a GWP of less than 1 500 may be used – from 2022

- industrial refrigeration applications should be included in the ban with a later new prohibition date for industrial refrigeration applications in 2024/ 2025.
- The specific GWP for the primary refrigerant circuit of cascade systems is not necessary anymore and could fall at a later prohibition date.

Annex IV (17): Plug-in room and other self-contained air-conditioning and heat pump equipment that contain fluorinated greenhouse gases with GWP of 150 or more – from 2025

- The scope of the ban is unclear. There is no definition of "self-contained" and no reference to size of the equipment to which this would apply. According to the EN378 Standard, "self-contained" is a wide variety of products including chillers, roof tops but even some type of split systems.
- The Impact Assessment suggests that the ban would cover factory-sealed equipment such as domestic cooking or washing/drying appliances not yet covered by other bans. However, in the absence of clear definitions, this ban could be interpreted differently among national authorities and market actors. In principle it could be applied to monobloc heat pumps regardless of their capacity. As these products where not subject to any ban under the current regulation, such an abrupt transition (less than 2 years between publication and implementation) would be impossible to implement for manufacturers.
- It is unclear why the safety exemption, included in bans on split systems, would not also be applicable to the equipment in this ban which may be faced with safety limits as well.

Annex IV (18b) Split systems of a rated capacity of up to and including 12 kW containing, or whose functioning relies upon, fluorinated greenhouse gases with GWP of 150 or more, except when required to meet safety standards – from 2027

- While it is a positive recognition that safety always comes first, it is entirely unclear how the exception "when required to meet safety standards" could be enforced by Market Surveillance authorities. EU harmonized standards can be referred to in the context of EU legislation to show that they can be safely used taking into account the instructions of the installation & user manual. As such the reference is not related to possible alternative products that use a different refrigerant. Moreover, not only standards but also building safety codes or local regulations could prevent the use of flammable refrigerants in a number of cases.
- The ban concerns any split system - single or multi-split, regardless of its vector (air, water, direct expansion, indirect etc). We doubt that even with upcoming revised safety standards, all the ranges, especially the higher capacity ranges above 6kW as well as multi-split units, which represent a significant share of installed air conditioners and heat pumps, would be

able to transition to refrigerants with GWP<150, due to energy efficiency, safety and installation consideration.

Annex IV (18c): Split systems of a rated capacity of more than 12 kW containing or whose functioning relies upon, fluorinated greenhouse gases with GWP of 750 or more, except when required to meet safety standards.

- Here again, we put a word of caution on the practicability and enforceability of the "when required to meet safety standards". Especially for larger capacity equipment, certain national codes for certain public buildings do prevent the installation of mildly and flammable refrigerants. Member States should commit to address this issue.

EPEE is looking forward to working with the co-legislators in order to define clear definitions and denominations that will ensure legal certainty and enforceability of the legislation, avoiding loopholes, while also discussing the relevance and appropriateness of certain bans, in light of safety standards, energy efficiency considerations and installations needs.

The extension of provisions to effectively prevent emissions and support installers are welcome and should go further

- Extend training and certification requirements to all refrigerants

EU Training and Certification requirements are extended to HFOs, but it is not required to have a certificate for non-fluorinated refrigerants. This is a missed opportunity given the need to use also non-fluorinated refrigerants in the phase down transition, which can be flammable (hydrocarbons) or high pressure (CO_2) or highly toxic (ammonia). From a safety point of view, certification to handle such refrigerants is essential. In the absence of an EU common certification scheme, member states will have to set up their own national schemes which will take time to develop and mutual recognition between member states may not be guaranteed.

- Extend requirements on containment and recovery to all refrigerants

EPEE welcomes the proposed extension of the requirements to HFOs, but recommends to widen the scope to all types of refrigerants, including non-fluorinated alternatives. This would have numerous benefits in terms of environmental protection, safety, and energy efficiency

- Use electronic logbooks to move towards an EU-wide overview on leakage and recovery.

EPEE welcomes that Member States (in Article 27) should enable the recording of the information collected in accordance with Article 7 via a centralised electronic system. EPEE recommends that European Commission, by delegated act, defines further requirements for centralised system reporting to facilitate consolidation of data at EU level. For example, unified categories for "type of equipment" need to be established, in line with the F-gas reporting categories.

EPEE also welcomes the creation of the F-Gas Portal which should ease the administration of the F-Gas Regulation provisions in general.

About EPEE:

EPEE represents the Refrigeration, Air-Conditioning and Heat Pump industry in Europe. Founded in the year 2000, EPEE's membership is composed of over 50 member companies as well as national and international associations from three continents (Europe, North America, Asia). With manufacturing sites and research and development facilities across the EU, which innovate for the global market, EPEE member companies realize a turnover of over 30 billion Euros, employ more than 200,000 people in Europe and also create indirect employment through a vast network of small and medium-sized enterprises such as contractors who install, service and maintain equipment. Please see our website (https://www.epeeglobal.org/) for further information.