EPEE
The voice of the heating, cooling and refrigeration industry

Brussels, April 2021

EPEE Position Paper on the REACH restriction proposal of all per- and polyfluoroalkyl substances (PFASs)

Introduction

EPEE, representing the refrigeration, air-conditioning and heat pump industry in Europe, has been following with interest the recent call for evidence issued by the Netherlands, Germany, Norway, Sweden and Denmark related to a possible REACH restriction proposal to limit the risks to the environment and human health from the manufacture and use of all per- and polyfluoroalkyl substances (PFASs).
EPEE understands that the above-mentioned Member States Competent Authorities (MSCAs) are currently working on an analysis for PFASs in the context of a regulatory management option analysis (RMOA), with Norway having the lead on fluorinated gases (F-Gases).

As major downstream users of hydrofluorocarbons (HFCs), hydrofluoroolefins (HFOs) and hydrochlorofluoroolefins (HCFOs) in refrigeration, air-conditioning and heat pumps, EPEE members wish to share their concerns about a possible inclusion of F-Gases in a PFAS restriction proposal, as this could lead to significant unintended consequences and seriously jeopardise the European and international climate and energy goals.

Executive Summary

The broad assessment of PFAS as a wide group of substances would be extremely complex and not adequate to address F-Gases since the **risks are already sufficiently addressed** by other EU legislation. Therefore, EPEE strongly:

- Recommends addressing all F-Gases, including the HFOs, solely under **the F-Gas Regulation as the most suitable framework** establishing measures already adequately taking into account safety, energy efficiency, environment and health.
- Calls to carefully consider the impact of a blanket ban of all PFASs, including HFC and HFOs, on competitiveness and innovation in Europe.
- Calls for a harmonised approach prioritising technology solutions which are in line with the EU Green Deal objectives.
- Recommends adopting coordinated actions on harmonised, transparent, predictable policies in the chemical sector, allowing for a coherent approach between the chemical and F-Gases sectors.

1. Restricting F-Gases under REACH would be disproportionate

A REACH restriction for F-Gases would be disproportionate: In order to justify a restriction under REACH, it has to be the most appropriate action compared to other EU-wide Risk Management Options Analysis (RMOA). Otherwise, it would lack its legal basis under Article 69, paragraph 4, of REACH. In the case of F-Gases, the risks are already addressed by the F-Gas Regulation and the measures in place within the EU market.

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a. What is the F-Gas Regulation?

The first 2006 F-Gas Regulation was successful in stabilising F-Gas emissions – which would otherwise have grown significantly – through control/leakage measures and specific use restrictions. The revised 2014 F-Gas Regulation went further and introduced additional requirements in order to control emissions and use. This approach results to be highly successful, and demonstrates that EU legislation on F-Gases is well in line with the European Green Deal's goals. By 2030, it is expected that F-Gas emissions will be reduced by two-thirds compared to 2014 levels on a tonnes of CO2 equivalent basis. The expected cumulative emission savings are 1.5 Giga tonnes of CO2-equivalent by 2030 and 5 Giga tonnes by 2050.

b. Can additional restrictions under REACH be justified?

During the decision-making process under REACH, MSCAs and ECHA would have to provide the justification that the proposed restriction is the most appropriate EU wide measure assessed against the three following criteria: "*effectiveness, practicality* and *monitorability*"[1]. EPEE challenges the fact that restricting F-Gases under REACH would fulfil these criteria:

Effectiveness

- For safety and energy efficiency reasons (*see also Chapter 2*), non-fluorinated refrigerants are not suitable for all uses. The phase-down mechanism established within the F-Gas Regulation provides the required flexibility to the market to select the best suited refrigerants for a given application from a safety, technical feasibility, efficiency, environmental and cost perspective.
- From an environmental perspective, the purpose of the F-Gas Regulation is to prevent F-Gases from being intentionally released to the environment and to gradually reduce their consumption through the phase-down mechanism and targeted use restrictions. The Regulation is already highly successful, and it can be further improved, for example by extending recovery, recycling, and reclamation (RRR) provisions to all types of refrigerants, including to HFOs and to non-fluorinated gases in order to address the full lifecycle of refrigerants. An additional restriction of PFASs for F-Gases would therefore not be justified as other RMOs are already in place and represent the most suitable and successful instruments to control the release of F-Gases into the environment.
- Finally, the F-Gas Regulation is geared towards preventing the release of F-Gases into the environment, therefore, also the discussion concerning the risk that certain F-Gases may break down into TFA, if released into the environment, should be framed within this specific context. In addition, UNEP's Scientific Assessment Panel (SAP) shared its supported scientific evidence, by concluding that "*the current and estimated future concentrations of TFA and its salts resulting from degradation of HCFCs, HFCs, and HFOs do not pose any known significant risk to human or ecosystem health*".

Practicality

- Implementability, enforceability and manageability aspects need all to be considered during the decision-making process. The F-Gas Regulation provides an adequate framework in that respect with a dedicated phase-down, quota system and enforcement measures within the entire EU market. The latter can further be strengthened and improved with coherent and dissuasive penalties across the EU.

[1] Guidance on Annex XV for restrictions chapter 5.3.

- Introducing additional restrictions under REACH would risk causing inconsistency with the existing regulatory requirements, double legislation, add unnecessary administrative burden for those responsible for the monitoring activities and lead to disproportionate cost compared to the avoided risks (*see also Chapter 5*). The same consideration can be made also with respect to the monitorability.

Monitorability

- Under REACH, it must be possible to monitor the results of the implementation of the proposed measures establishing a PFAS restriction. Such monitoring may include for example the follow up of the amounts of substance manufactured and imported, the concentration of the substance in preparations or articles, as well as the measuring of the relevant emission and/or exposure levels.
- The F-Gas Regulation provides the ground for such monitoring and can be further strengthened in that sense. For instance, the EU F-Gas portal requires the registry of EU-produced, imported and exported gases, and EU member states such as Italy, Poland, Hungary, Estonia and Slovakia have put in place dedicated online F-gas databases, which have proven to be very effective, together with other instruments, such as logbooks, to monitor compliance and correct application of the F-Gas legislation.

2. Restricting F-Gases under REACH would have unintended consequences

Including F-Gases in a broad PFAS restriction proposal would have unintended consequences for the refrigeration, air-conditioning and heat pump (RACHP) sector. In particular, it would negatively impact the large supply chain that would be inadvertently affected by a such a broad restriction.

A PFASs restriction or other considered RMOs under REACH must be manageable and consider the characteristics of the sectors concerned. However, the RACHP market is a very fragmented market with a large supply chain and downstream users. A study[2] carried out in 2012 by the research firm SKM Enviros, on behalf of EPEE, shows that the RACHP market can be split into at least 43 sub-sectors, where each of these sub-sectors has different characteristics including the type of technology used, the market size, rates of market growth, life-time expectance, refrigerant type, charge and leakage rates, energy efficiency, capital cost, etc. (please refer to Annex II of this paper for a detailed overview of the RACHP market). A broad restriction of F-Gases under REACH would not be able to consider these specificities, hitting companies and users across the society (see also point 3 of this paper).

The example of Commercial Refrigeration allows to demonstrate the vast variety of applications, even within one segment. For example, a hypermarket operator will have different requirements from a flower shop owner, the technologies used are different and the type of contractor working on the installation will differ as well. In case of the flower shop, the condensing unit will not get much attention (it will probably run until there is a failure), and it will be installed by a small or very small installer company (often family owned). In case of the hypermarket, the central system will be at the heart of the market's operation and installation will be taken care of by own specialised personnel or by a bigger installer company structure.

[2] „Further Assessment of Policy Options for the Management and Destruction of Banks of ODS and F-Gases in the EU, Final Report, Revised Version 2 in March 2012.

Other sub-sectors have similar challenges: for example, chillers are used to service critical infrastructure such as data centres and hospitals. In these applications, technologies require the ability to service different operating conditions, system sizes and other site-related criteria such as safety. For these systems, different refrigerant fluids must be used and have different properties. The nature and size of these systems often require or have on-site maintenance personnel, or higher levels of maintenance that help to prevent emissions.

3. Restricting F-Gases under REACH would disregard the safety and socio-economic benefits of F-Gases in RACHP

The socio-economic analysis under REACH is framed as a clear cost/benefit analysis for society, aimed at the progressive substitution of substances of very high concern. However, by including F-Gases in the envisaged PFASs REACH restriction, environmental considerations would be prioritised and, by default, weighed higher than safety, reliability, and cost-efficiency. Moreover, a broad PFAS ban would be counterproductive for competitiveness and innovation, as well as the technology solutions in line with the energy efficiency and EU Green Deal objectives.

a. F-Gases are essential for the safe operation of RACHP equipment

- F-Gases were originally introduced due to their excellent safety features which made them more reliable and safer to use as refrigerants when compared to highly flammable, highly toxic or high-pressure alternatives. While the situation is continuously evolving, there are still safety limitations associated with the use of many non-fluorinated gases.
- Safety during installation, servicing, decommissioning and end of life treatment is already regulated under the ATEX "Workplace" Directive 1999/92/EG. This means an installation, servicing or waste treatment company has the duty to protect the safety of its employees, also when the company is self-employed. Despite precautions, it will be impossible to reduce the risks to zero when flammable products are used due to possible human errors. Recent accidents have demonstrated that even well qualified people can make mistakes. In the case of highly flammable refrigerants such as hydrocarbons, such accidents have serious consequences. F-Gases have been used for decades and due to their characteristics pose a lower risk when compared to hydrocarbon alternatives.

b. Socio-economic aspects for the RACHP sector

- There are hundreds of thousands of companies in Europe that are involved in the RACHP sector. They range from major OEMs, gas distributors and wholesalers through to tens of thousands of SMEs. For example, in a country like France, there are roughly 34,000 installation companies certified according to the F-Gas Regulation, over 600 gas importers and distributors and over 100 manufacturers of pre-charged equipment. It can be assumed that the same sort of market structure is true for the EU-27, with SMEs broadly dominating the company landscape. Indeed, according to Eurostat[3], SMEs represent 98.7% (a total of 23.5 million) of the overall enterprises in the EU-27. They employ about half of the workforce in Europe and contribute 44% of total value

[3] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/WDN-20180627-1

added to the economy. Roughly the same ratio can be expected in the overall RACHP sector with small companies (below 10 employees) dominating the installers' base, which are a critical part at the bottom of the supply chain.

- A REACH restriction on top of the F-Gas Regulation's restrictions and phase down would be disproportionate and simply eliminate a large number of these companies from the market, leading to major unemployment, less options for end users when it comes to installations and higher overall prices for products and installations, thus severely eroding the competitiveness of already vulnerable European companies. In addition, since very few installers are currently trained for the use of non-fluorinated refrigerants a PFASs REACH restriction would further exacerbate this effect, adding an increased risk of accidents and additional safety concerns.
- The end users of RACHP equipment would be severely impacted, and again it would be predominantly SMEs. With a REACH restriction on F-Gases, they would no longer be able to repair equipment or to convert it to a lower GWP refrigerant (retrofit) in case of failure. Rather, they would need to scrap the old equipment and replace it by a new one since it is not possible to use flammable or high pressure or toxic refrigerants in systems which have not been designed for those hazardous properties. Not only would this come with a much higher cost, but it would also be against the principles of the circular economy, in relation to the generation of waste. As an example, there are 20,000 butchers and 45,000 bakery shops in Germany alone. These are sectors which are already struggling for survival in many cases due to competition with larger structures and now as well with the pandemic. The obligation to buy new equipment simply because the old one cannot be repaired any more could simply be the final straw.
- The secondary effects of a failing RACHP system could lead to dramatic consequences. Coming back to the example of butchers and bakeries, it would lead to food waste and further increase the financial loss for the butcher. Lastly, an additional example concerns the low temperature applications to store products at temperatures below -50°C, which are required to store material for medical or biochemical use. For such applications there is still no viable alternative to replace F-Gases and the consequences would be dramatic. The list is of course much longer, and the total impact is certainly still completely underestimated.

4. Risks of inconsistency with European and international law

The envisaged broad PFASs REACH restriction represents a major departure from the current REACH framework and would cause inconsistencies among Union legislation, as well as with respect to the international law and the criteria established within the Montreal Protocol and its Kigali Amendment.

a. The risks of a double regulation under REACH

As highlighted in Chapter 1, a broad PFASs restriction for F-Gases cannot be supported by the legal basis for a Union action established under Article 69, paragraph 4, of REACH, if the risks are already sufficiently addressed by the other EU legislation as is the case with the F-Gas Regulation, MAC Directive etc. A REACH restriction as the most extreme measure, if broadly applied to all PFAS including F-Gases, would be disproportionate, also in light of the fact that the F-Gas Regulation already establishes F-Gas restrictions and bans. Therefore, EPEE reiterates the fact that the two pieces of legislation cannot apply to a broad category of substances as such without causing prejudice to each

other and calls for a more consistent approach that takes into consideration climate diplomacy and the European commitments at the international level.

b. International commitments within the Kigali Amendment

With the F-Gas Regulation, the EU has pioneered the Kigali Amendment to the Montreal Protocol, which is expected to avoid up to 0.4 °C of global warming by 2100, and the upcoming COP26 is offering further important opportunities to push the European climate and energy agenda of the EU.
Ultra-low GWP fluorinated gases (HFOs) are essential to turn this into reality. As developing countries are preparing their Kigali HFC phase-down management plans (KPMPs), lower GWP HFCs and HFOs will have a major role to play to achieve the phase-down objectives. Restricting F-Gases via REACH in the EU could therefore also jeopardise the major climate benefits of the Kigali Amendment to the Montreal Protocol and its significant benefits for the climate.

5. A restriction of F-Gases under REACH would undermine the EU Green Deal objectives of carbon neutrality by 2050

The EU wants to achieve at least 55% GHG emission reduction by 2030 and climate neutrality by 2050. Lower GWP HFCs and HFOs are essential to decarbonise the heating and cooling sector in a safe, reliable, and cost-efficient way. A broad PFASs REACH restriction would jeopardize this important achievement, given that the heating and cooling represent half of the final energy consumption in Europe.

With over 70% of total GHG emissions in the EU related to energy production and consumption, transitioning to renewable energies, and increasing energy efficiency are crucial to achieve carbon neutrality. Heating and cooling is a top priority as it represents half of the total final energy consumption in Europe. The European Commission's recent impact assessment lays out several pathways in that sense, where the "Energy Efficiency First" principle (EE1), electrification of the heating sector and increasing the share of renewables in heating and cooling are explicitly mentioned as key avenues. Heat pumps, whether residential or industrial, in buildings or powering district heating and cooling systems, will have a major role to play, as will thermal storage, waste heat recovery and demand side flexibility.

Starting from the 2012 SKM Enviros Study EPEE has been continuously updating and extending its modelling work with Gluckman Consulting, now also including emissions related to energy use when operating heating and cooling systems. The results have not been finalised yet and are therefore not available at this point in time. However, EPEE would like to share a graph derived from the ongoing modelling work, which gives an indication of the trend as well as of the importance to reduce energy related emissions and the key role of heat pump technology to achieve carbon neutrality by 2050.

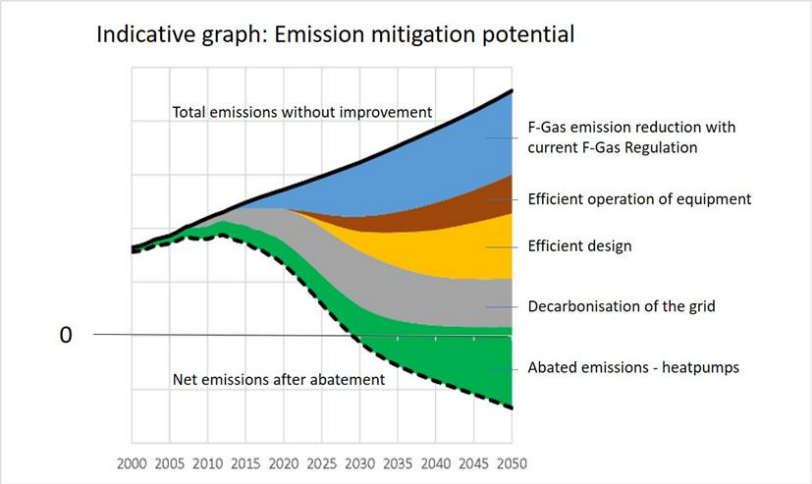

Figure 2: Emission mitigation potential in relation to different areas.

The wedges of the graph indicate the relative emission mitigation potential by abatement measure, including emissions related to refrigerants and emissions related to energy production and consumption. The solid upper line indicates how total emissions would evolve with a business-as-usual scenario, the dotted lower line shows the total abatement potential. The negative emission offset (green wedge) is generated by heat pumps as they will allow to move away from fossil fuel-based technologies.

Key messages:

- Carbon neutrality can only be achieved with a combination of measures, including the reduction of direct F-Gas emissions via the F-Gas Regulation, improved operation, control and maintenance, improved efficiency of new equipment, reduced cooling demand and decarbonisation of the grid.
- Heating is currently still mainly based on fossil fuels. Heat pumps play a crucial role to decarbonise heating, potentially creating a large “negative emission offset”.
- To ensure the broad deployment of heat pumps, all types of refrigerants will be needed, including lower GWP HFCs and HFOs to provide safe, reliable, and cost-efficient solutions adapted to application and local circumstances.

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About EPEE

The European Partnership for Energy and the Environment (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 visit our website www.epeeglobal.org and www.countoncooling.eu for information about our sustainable cooling campaign.

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ANNEX I
Simplified description of the RACHP sector

The value chain

Given the complexity of the RACHP market, the value chain is fragmented as well, with different actors, depending on the application segment.

The following, simplified drawing illustrates three key messages:

1. A refrigerant manufacturer / blender has little overview on the end-user to whom the refrigerant is eventually sold.
2. The value chain is dominated by a vast number of key actors, many of them being SMEs (installers).
3. OEMs, component manufacturers and installers are the main specifier of what gases will be used in which application.

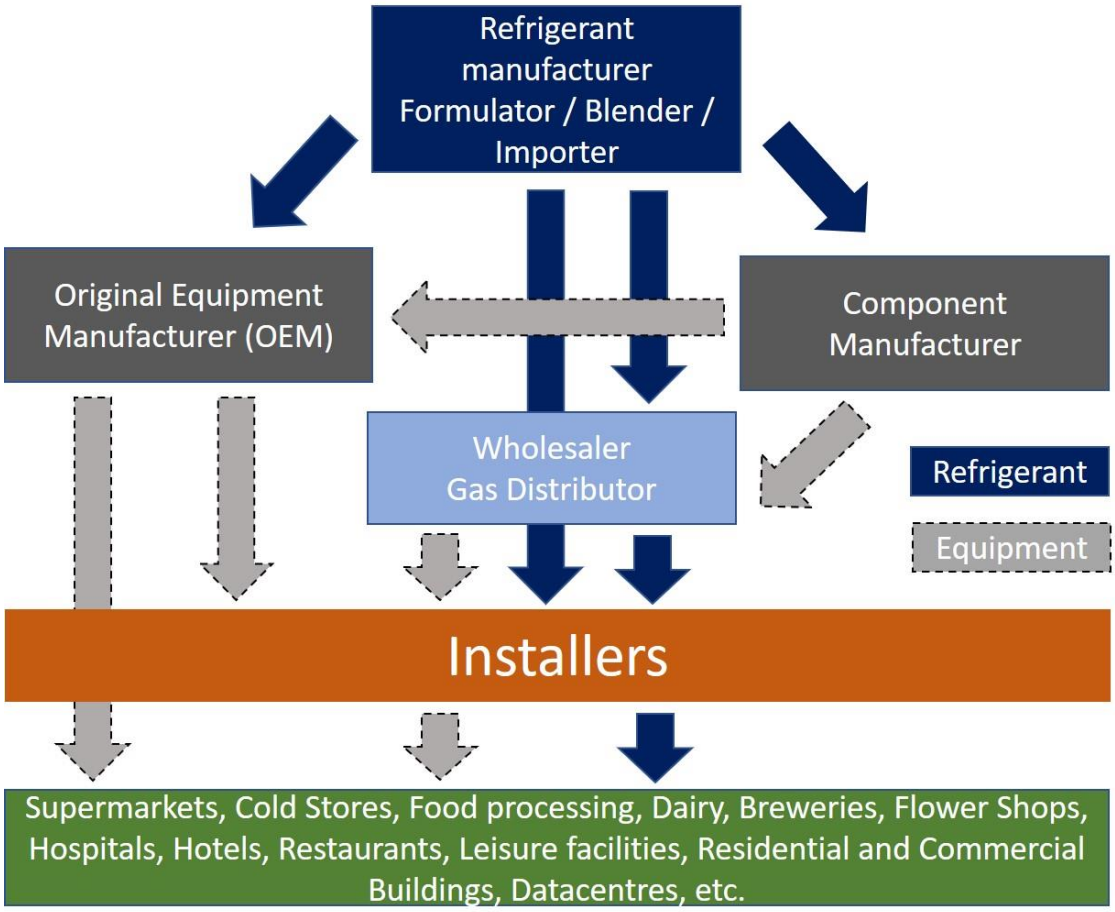
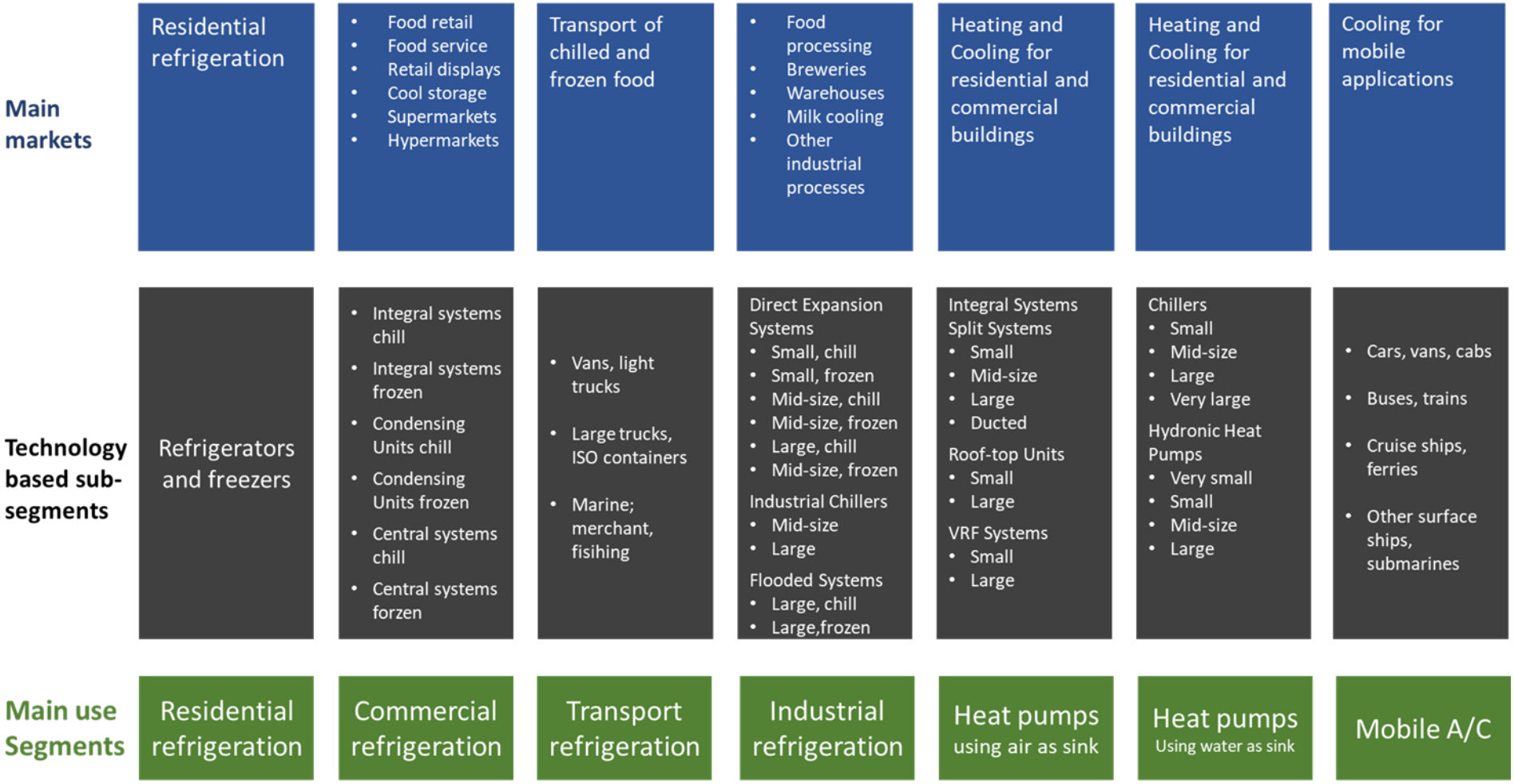


Figure 3: Simplified overview of the RACHP value chain

ANNEX II

Simplified overview of the RACHP sector



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