27 May 2024

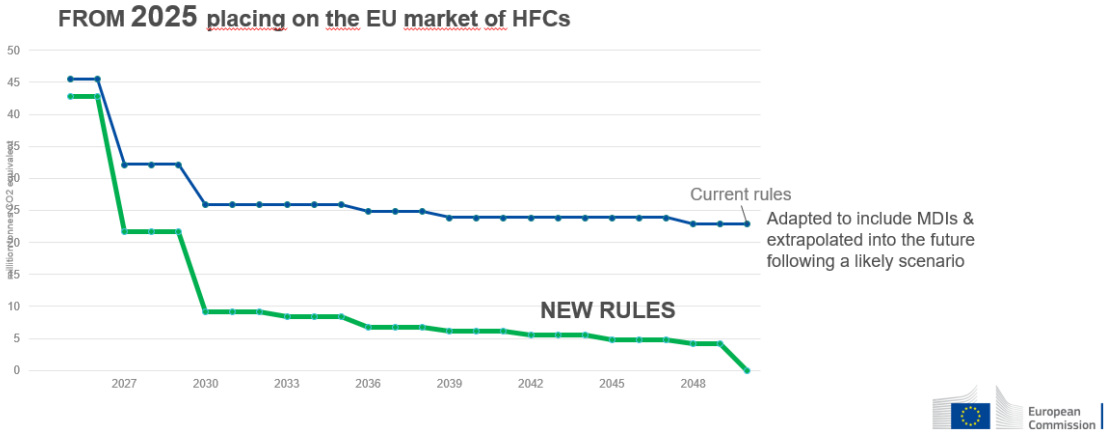
Industry proposal for fair efficiency requirements for split air-to-air heat pumps and air conditioners (ENER Lot 10)

"Striking the balance for the most efficient and cost-effective heat pumps"

The European Partnership for Energy and the Environment (EPEE), together with APPLiA, Eurovent, the Japan Business Council in Europe (JBCE) and the Japan Refrigeration and Air Conditioning Industry Association (JRAIA), representing the refrigeration, air conditioning and heat pump (RACHP) industry, wish to express important concerns following the latest Consultation Forum in March 2023 on the revision of the Ecodesign Regulation for air-to-air heat pumps and air conditioners (ENER Lot 10).

The co-signatories wish to emphasize the impact of the recently published F-Gas Regulation in relation to the proposed minimum energy efficiency requirements (MEPS) for split air-to-air heat pumps and request that the proposal is reviewed, in view of the new refrigerant landscape. This should go hand in hand with adapted energy labelling classes maintaining comparability with products which have the same functionalities.

Although the industry has always been supportive of higher MEPS for Lot 10 products in the past, the landscape has meanwhile drastically changed. The new European F-Gas Regulation (EU) 2024/573[1] introduces a prohibition for air-to-air heat pumps containing refrigerants with a global warming potential (GWP) of 150 or more, from 2029 onwards and a full ban of all F-Gases as of 2035. The large majority of air-to-air heat pumps today use a refrigerant with GWP 675 (R-32) and require a transition towards lower GWP alternatives. Alternatives remain unknown for the moment for many products under the revised Lot. Additionally, the availability of future refrigerants and components options remains uncertain due to the ongoing PFAS restriction process under REACH.



Most importantly, the transition to alternative refrigerants will lead to a drop in efficiency for a significant capacity range and system types. Some alternative refrigerant options, due to their high flammability, are limited in applicability given the limited charge allowed for direct expansion systems installed partly or completely in occupied spaces. The limitation of the charge is also an important factor which impedes the achievement of higher efficiencies. Only smaller capacity single split systems could transition to such highly flammable alternatives, and even then, the location of where they will be installed may prevent their use.

[1] European Parliament legislative resolution of 16 January 2024 on the proposal for a regulation of the European Parliament and of the Council on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014 (COM(2022)0150 – C9-0142/2022 – 2022/0099(COD)). Available here: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R0573

Other refrigerant options will remain necessary, but often have further efficiency restrictions and/or lower performances for equal equipment.

Split air-to-air heat pumps[2] stand out for their energy efficiency, being 3 to 4 times more energy-efficient than fuel-based or electric resistance systems. The long-term benefits include significant energy bill savings, reaching up to 35% in Germany and 50% in France compared to gas boilers, according to the International Energy Agency[3]. It is a reality that needs to be acknowledged if we want to reduce the greenhouse gas emissions by at least 55% by 2030, as targeted under the Fit for 55 package.

Furthermore, split air-to-air heat pumps are the most affordable heat pump technology available, increasing the accessibility of heat pumps to the wider public. Next to being a popular solution in the south of Europe, their presence is also rapidly increasing in Northern (Sweden, Finland, Norway[4]…) and Central European countries, where the systems are primarily used for heating purposes. Similar benefits can be seen for cooling since reversible air-to-air heat pumps are more efficient than other cooling technologies.

In the current landscape, increasing the MEPS levels for these systems will simply shift consumer choice towards low cost and much less efficient alternatives, such as fossil fuel boilers and other ad hoc cooling equipment.

The price difference between efficient air-to-air heat pumps, versus simpler, less expensive, and less efficient equipment, will further increase if the proposed new ecodesign requirements for air-to-air heat pumps, in combination with the revised F-gas Regulation, are adopted. We fear this will result in consumers rethinking investing in air-to-air heat pumps, ultimately resulting in the EU not reaching its overall energy-efficiency and climate target.

EPEE, together with APPLiA, Eurovent, JBCE and JRAIA, therefore ask the Commission and Member States to reconsider the proposed MEPS and avoid an unfair treatment of split air-to-air heat pump technology, considering the mandatory transition to alternatives mandated by the new F-Gas Regulation. Considering the above, the industry has developed this proposal:

	GWP <150		**GWP ≥ 150**	
	SEER	***SCOP***	***SEER***	***SCOP***
Single split <6kW	**6** *MEPS proposed*	**4** *MEPS proposed*	**6** *MEPS proposed*	**4** *MEPS proposed*
Single split ≥6kW	**3.87** *Current MEPS*	**3.42** *Current MEPS*	*As those products have limited lifespan per the F-Gas regulation, they cannot be required to be redesigned and retested, so we suggest keeping current MEPS.*	
Multi-split ≤12kW	**3.87** *Current MEPS*	**3.42** *Current MEPS*		

The proposal is built up as follows:

1. **Distinction between single split <6kW and ≥6kW:** For smaller capacities, below 6kW, it is deemed possible to adhere to the efficiency requirements as proposed by the Commission. However, efficiency improvements for single split from 6kW and above will be much more limited compared to current solutions, due to the characteristics of future refrigerants.

[2] Next to commonly known technologies such as air to water heat pumps and ground source heat pumps (covered in Lot 1 – space heating)
[3] Home heating technologies, Latest findings, Last update: 11 July 2023, https://www.iea.org/energy-system/buildings/heating
[4] Number of heat pumps sold (2022) in Norway, Sweden and Finland, Norsk Varmepumpe Forening (NOVAP), https://heatpumpingtechnologies.org/wp-content/uploads/2023/06/iea-hpt-tcp-member-country-report-norway-2023.pdf

2. Due to safety restrictions in view of charges and site installation for those types of equipment, the opportunity to use flammable refrigerants such as R290 (propane) is limited. Consequently, the possibility of increasing the efficiency of those systems will be limited.

3. **A separate category for multi-splits is needed**, given the additional safety risks for these types of systems. These safety risks are relevant as these systems use multiple indoor units and more complex and longer piping, and have to apply charge limits that must consider the smallest room.

4. **Distinction between GWP≤150 and GWP>150:**
    - **GWP≤150:** there are no products on the market above 6kW, and the number of models commercially ready and available on the market meeting those criteria is very limited. Moreover, future alternatives will be more limited in efficiency improvement potential compared to current refrigerants. We suggest maintaining current MEPS.
    - **GWP>150:** current products have a limited lifespan due to the F-Gas regulation product ban and should not be required to be redesigned & re-tested, so we suggest keeping current MEPS.

In conclusion, the current Commission proposal (SEER 6/ SCOP 4) is acceptable for the category of single splits <6kW. This category of products represents the majority of split air conditioners in the EU (~60% according to the Lot 10 study). For the categories of single splits ≥6kW and for multi splits however, the co-signatories propose to maintain the MEPS from the current Regulation. In addition, besides the MEPS, the proposed labelling thresholds for splits air-to-air, already challenging with the current refrigerant options, will need to be reassessed.

The Lot 10 Regulation also covers **double duct appliances.** The F-gas regulation, mandating the migration of Fixed Double Duct air conditioners and heat pumps (FDD) to GWP < 150 refrigerants from 2029, will force industry to redesign the full range of products with A3 flammable refrigerants. The safety regulations and product standards heavily limit the allowable amount of charge, particularly for the floor application (by far the largest of FDD), negatively limiting the achievable energy efficiency.
A full MEPS proposal considering all technologies can be found in Annex I.

All in all, the European Union environmental objectives cannot be attained without heat pumps and especially air-to-air heat pumps. We wish to caution the Member States and the Commission against working *in silos* and urge to consider the broader implications. **Affordability remains a top priority for Europeans when it comes to heating their homes.** Especially in times of inflation and when the EU Green Deal achievements and future targets are being challenged. Without a clear strategy to keep split air-to-air heat pumps and air conditioners affordable, the effective roll-out of 60 million new heat pumps by 2030 will remain a distant reality.
Through this letter, we hope we have been able to communicate our concerns and reasoning for amending the minimum efficiency performance standards as proposed, while putting into perspective what the current challenges put on the industry will mean for Europeans.

We thank you for your reading and appreciate your consideration.
Sincerely,

EPEE, APPLiA, Eurovent, JBCA, JRAIA.

Annex I: proposed amendment of Energy efficiency requirements

1) Energy efficiency requirements
    a) The seasonal space cooling energy efficiency of air-to-air air conditioners, including reversible air-to-air heat pumps, shall not be less than the values in Table 1:

Table 1

Minimum SEER, expressed in decimals

	The value of SEER shall not be less than	
	If GWP of refrigerant ≤150	If GWP of refrigerant >150
Single duct	1.9	
Portable double duct	2.9	
Fixed double duct	2.9	
Other single split air-to-air air conditioners <6kW	6.0	6.0
Other single split air-to-air air conditioners ≥6kW	3.87	4.3
Other multi split air-to-air air conditioners ≤ 12kW	3.87	4.3

b) The seasonal space heating energy efficiency of fixed double duct and other air-to-air heat pumps, including reversible double duct and other air-to-air air conditioners, established for the 'average' heating season, shall not be less than the values in Table 2:

Table 2

Minimum SCOP, expressed in decimals

	The value of SCOP shall not be less than	
	If GWP of refrigerant ≤150	If GWP of refrigerant >150
Fixed double duct	1.9	
Other single split air-to-air heat pumps <6kW	4.0	4.0
Other single split air-to-air heat pumps ≥6kW	3.42	3.8
Other multi split air-to-air heat pumps ≤12kW	3.42	3.8

About APPLiA

APPLiA – Home Appliance Europe represents home appliance manufacturers from across Europe. By promoting innovative, sustainable solutions for EU homes, APPLiA has helped build the sector into an economic powerhouse, with an annual turnover of EUR 47.6 billion, investing over EUR 1.4 billion in R&D activities and creating nearly 1 million jobs. For more information: https://www.applia-europe.eu/.

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 40 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.

About EUROVENT

Eurovent is the voice of the European HVACR industry, representing over 100 companies directly and more than 1.000 indirectly through our 16 national associations. The majority are small and medium-sized companies that manufacture indoor climate, process cooling, and cold chain technologies across more than 350 manufacturing sites in Europe. They generate a combined annual turnover of more than 30 billion EUR and employ over 150.000 Europeans in good quality tech jobs. (https://www.eurovent.eu/)

About JBCE

Founded in 1999, the Japan Business Council in Europe (JBCE) is a leading European organization representing the interests of about 100 multinational companies of Japanese parentage active in Europe. Our members operate across a wide range of sectors, including information and communication technology, electronics, chemicals, automotive, machinery, wholesale trade, precision instruments, pharmaceutical, textiles and glass products. For more information: https://www.jbce.org/

About JRAIA

The Japan Refrigeration and Air Conditioning Industry Association (JRAIA) was originally established in February 1949 as the Japan Refrigerating Machine Manufacturers Association which was thereafter reorganized in February 1969 to become an incorporated association and renamed as it is at present. JRAIA is the industry association representing over 160 manufacturers of refrigeration and air conditioning equipment in Japan. We, the members of JRAIA, have so far been dedicated to offering quality products to the markets of EU. JRAIA aims to promote and improve production, distribution and consumption of refrigeration and air conditioning equipment and their applied products, as well as auxiliary devices and components, automatic controls and accessories and thereby contribute to the steady development of Japanese industry and the improvement in people's standard of living. For more information, please see JRAIA's website: www.jraia.or.jp / Email: jraia-global@jraia.or.jp