Brussels, 23, June 2023

Ecodesign and Energy Labelling for space and combination heaters, and Ecodesign and Energy Labelling for water heaters and storage tanks

EHPA would like to thank the European Commission and the study team for the work already carried out and welcome the opportunity given to comment on the proposals part of the review of the Ecodesign Regulation 813/2013 and Energy Labelling Regulation 811/2013 for space heaters and combination heaters and the review of the Ecodesign Regulation 814/2013 and Energy Labelling Regulation 812/2013 for water heaters and storage tanks.

Chapter 1: Ecodesign Lot 1

Definition of Prated,HP:

EHPA recommends keeping the definition of **Prated,HP:** in the existing regulation with P_rated is the capacity of the heat pump space heater at T_design, including backup heater capacity.

Scope of the reversible heat pumps

This discussion comes very late in the legislative process to establish a new requirement. No study was conducted and there is a need for more investigations. The Commission should not only study the current landscape, but also the future products after the F-gas and Pfas regulation. However, we should not further delay the Lot 1.

For this reason, EHPA proposes a distinction between the reversible heat pumps below and above 400kW.

- We can support the introduction of the MEPs (from the current Lot 21) for reversible HP above 400kW. Please note that we are still checking and assessing the values, we will come back to you as soon as possible.
- We strongly recommend having only information requirements for the reversible HP below 400kW: cooling coefficient of performance (EER) for reversible heat pumps in accordance with standard EN 14511-2.

EHPA is not in favour to have any MEPS for the cooling requirements of reversible heat pumps below 400kW. Today we have no information and no study, it is impossible to define MEPS. Using Lot 21 MEPs <400 kW originally defined for cooling only systems, will potentially penalize heat pumps optimized for heating. Therefore, it can be a potential issue for our sector and in particular for the units most needed for decarbonization.

As explained during the technical meeting, a reversible unit optimizes for cooling or for heating. If designed for heating, then the unit will have better heating performance and perform less efficiently in cooling operation due to reverse refrigerant flow.

Finally, no third-party certification shall apply to cooling efficiency.

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Third Party Conformity Assessment

In light of REPowerEU, Fgas/Pfas and the large number of new models of heat pumps expected in the next few years, has an assessment been conducted to enquire that notified bodies and third-party testing capacities will be available in sufficient numbers before the application date? No notified body is available in 2023 which raises concerns of the feasibility of application by the proposed date. Has there been an assessment to avoid overlap with national testing/certification requirements and by when the MS could accept ErP data?

In consequence, EHPA recommends, if TPCA is introduced, **limiting the scope** to heaters with a power of up to 70kW for heat pumps and hybrid heat pumps and **delaying the implementation to tier 2**, in 2029. In addition to A2, **modules B+C/D/E should be kept**, and the **definition of the type for module B** aligned with the sub-type of HPKEYMARK.

While we see the benefits in having the **certification of the software/performance map**, we need more time to further detail this proposal. To avoid further delays in Lot 1, we recommend assessing further this option in the early review planned in Lot 1 for the testing method. For now, we should keep the possibility to have TPCA on performance declared in Ecodesign. Please note that the standardisation is under work, and it will take time to align the work of TC113 and TC228.

Finally, we suggest using the HP Keymark European certification system (96 certificate holders, 1470 certificates and 6447 certified models), to **define the points to be tested on heat pumps and hybrid heat pumps** *(see part 3 - Scope, testing and certification basis of European KEYMARK Scheme for Heat Pumps)*, as well as the test procedures as well as the inspection procedures.

Ecodesign Minimum Energy Efficiency Limits

1. **Minimum Energy Efficiency level for all space heating products from September 2029**

EHPA strongly supports the European Commission's proposal to introduce a minimum energy efficiency for all heaters from September 2029. Using a market-based mechanism like setting minimum requirements via Ecodesign that can be met by manufacturers through several technology options is the right thing to do. This is crucial for the roll-out of heat pumps and meeting the REPowerEU targets.

The industry is committed to decarbonise the heating sector, this is demonstrated by the billions of Euros the industry has invested and the announced new investments for the 3 year period 2022 - 2025 exceeding 5 billion euros. The transition is in full swing, questioning its foundation will create uncertainty with investors, jeopardize investments and may negatively affect jobs.

During the technical meeting, we heard some Member States' concerns regarding the heat pump applications in multi-family buildings. We invite you to consult the following studies[1] presenting the different applications and technologies already available. If you have any doubts or questions, please do not hesitate to contact EHPA.

2. **Ajustement of minimum energy efficiency level as a result of the change from PEF 2.1 to PEF 1.9:** More specific comments on the thermally driven heat pumps:

EHPA welcomes the inclusion of the new category of LT TDHP. However, we have noticed that the minimum energy efficiency for the MT TDHP is more than the adjustment of the change in the primary energy performance factor from 2.1 to 1.9. There is no rationale to justify a change for TDHPs since

[1] https://publications.jrc.ec.europa.eu/repository/handle/JRC134045
https://hptour.ehpa.org/10-11-preston-together-housing-renovation-of-multiple-high-rises-with-heat-pumps-and-a-shared-ground-loop/;
https://www.ehpa.org/publications/heat-pumps-and-high-rise-homes-case-studies-from-across-europe/ ;
https://www.iea.org/articles/demonstrating-the-potential-of-heat-pumps-in-multi-family-buildings
https://rt-re-batiment.developpement-durable.gouv.fr/IMG/pdf/etude_sur_les_freins_et_leviers_a_la_diffusion_de_la_pompe_a_chaleur_en_logement_collectif_pouget_consultants.pdf

energy input is already expressed in terms of primary energy. Therefore, the minimum energy efficiency should be kept unchanged (= as per Draft 1 with PEF of 2.1). The minimum energy efficiency for TDHP should then be at 112%.

Sound Power Level:

EHPA welcomes the positive corrections on sound power level but the measurement for air-to-water HP has to be done at an outdoor temp. of +7°C using compressor and fan settings of B conditions (2°C) but not at an outdoor temp. of +2°C. As explained in our position paper from May 2021, we believe that the test conditions shall allow to use all acoustic generic test methods already specified and used in the standard EN 12102-1 without needs of modifying test facilities (such as reverberant rooms) nor possible damage of the instrumentation (sound probes, analyzer) due to low temperature and/or frosting conditions. Therefore, the outdoor temperature shall be tested at +7 °C for heat pumps using air as heat source. If some units are can operate at lower or are not able to operate at +7 °C t (e.g. compressor and fan speed or stage) of B conditions (2°C), the manufacturer shall provide the tested outdoor temperature.

Finally, we would like to highlight that combination heaters should have the same sound power measurements as the space heaters.

Resource efficiency Requirements

EHPA supports the inclusion of material efficiency requirements but has several comments and recommendations.

1. The scope of Lot 1 is wide and includes different capacity limits products. Spare parts for larger units are not always in stock as there are fewer numbers sold. These products are often custom-made and rely on maintenance contracts for repair. EHPA would therefore recommend limiting the **scope to appliances ≤ 70 kW**. Additionally, there should be an exception for products that are no longer available on the market due to technical problem or legal requirements.

2. In line with the other similar products lots (washing machines[2], fridges[3]), EHPA strongly recommends **maintaining the 15 working days.** A period of 15 working days can be already challenging in some cases, as sometimes supply might be tensed due to the seasonality of the business. Under such circumstances, the manufacturer should be able to have more days to provide an adequate solution/remedy to the customer. When considering such requirement, the European Commission should take into account that it will increase the product costs and waste. Additionally, manufacturers will have to create more stock locations to be more flexible and be able to react fast, as Europe covers a very large geographical area (from well-connected locations to remoted ones). It should be kept in mind that many areas are difficult of access e.g., many islands across the EU or remote Nordic regions.

3. *For safety and quality insurance reasons**, duly trained and qualified installers** are allowed to maintain and repair heat pumps. We do not want to see that any installers can have access to spare parts and repairability information and thus claim to be in the position to be able to maintain and repair the heat pump. For this reason,* we recommend adding verification requirements on competences/training and liability for making available the spare parts as already included for access to repair information under 5) (3) (a).

4. The draft specifies that components and materials can be removed with the use of **commonly available tools.** It shall be noted that for our product group, some components such as heat exchangers etc., cannot be removed by simple tools and require specific instruments used by qualified personnel as well as specific procedures to remove them from the unit in order to

[2] EUR-Lex - 32019R2023 - EN - EUR-Lex (europa.eu)
[3] EUR-Lex - 32019R2019 - EN - EUR-Lex (europa.eu)

prevent leakage of refrigerant in the atmosphere and to mitigate potential safety risks in case of toxic and/or flammable refrigerants.

Requirements on self-monitoring:

While EHPA supports the idea of the inclusion of self-monitoring requirements, there are crucial issues to solve in this proposal:

- **Date of entry into force:** we believe that it should only apply to all heaters from 2029). Many new models will be placed on the market on or after September 2025 (especially due to multiple range changes / F-Gas).

- **Scope:** This self-monitoring requirement should apply to all technologies in Lot 1, not only heat pumps. It is important to keep a level playing field for all technologies covered by Lot 1. It should cover **all single heaters up to to <70kW** (excluding DHW) at rated heat output. The electrical back- up heater is not included. For the following reasons:

    - The energy monitoring as it is discussed at the moment is only for the single user (residential use case) who can influence the heat consumption behaviour. Heating power above 70kW is linked to multiples users (multi-family buildings) or specific use cases.
        - In case of too many users no useful information can be given form the main generator data because the impact of each user energy saving measures cannot be identified and followed up.
        - In case of specific uses cases such as non-space heating applications we are out of scope of ErP (but would have to fulfil it anyhow).

    - At higher outputs, energy monitoring does not usually carry out at the level of the single heating appliance, but at the level of the heating system or even at a higher level of building, considering building automation and control systems. For these levels (system or building), a professional energy measurement by an external company is more likely. This cannot be compared to the energy monitoring approach. A comparison would probably show huge differences and cause many confusions in the field.

    - 70kW would be in line with the scope of the Energy Labelling Regulation which aims exactly for the same customers as the currently discussed energy monitoring approach.

    - The relative costs for the introduction of energy monitoring are by far higher as the amount of sold units is much smaller. Here the use of new functions has to be checked even more carefully.

    - The accuracy calculations we have done so far are only referring to outputs in residential use. If the scope is now extended the accuracy of discussions and proposals will have to be reconsidered altogether.

    - The lack of installer capacity should not be worsened by additional tasks with little effect.

- **Type of data:** acceptable except point (d) number of on/off cycles (periods with no input)

- **Instantaneous data:** we are strongly against, and we should restate our existing position:

    - EHPA questions both the relevance of real-time data as well as the interpretation of these data (even by professionals) for heating appliances.

    - Relevance: There are many examples why this requirement, originating from the car industry, is not suitable for the heating industry. For instance, the use of this function

(instantaneous display) depends on the full presence of the user while using the product, which is the case of driving a car. A car driver is constantly confronting the real-time data and could improve his/her driving pattern which leads directly to a reduction of fuel consumption. In the case of a heating appliance, it is obvious that the end-user is not sitting in front of a heating appliance or looking at an application permanently, while the heating appliance is in operation.

  - Interpretation: This is unrealistic to expect that the professionals guide the end-users or take action on what is appropriate for the situation, since an appropriate action can be taken only by considering and analysing the other parameters such as outdoor temperature, heat demand etc. As such, an instantaneous action based on instantaneous data occurs very rarely and cannot be set as a general requirement for heating appliances. Real-time data would be a best case for cloud provider, but indeed an immense and unnecessary cost driver for OEMs. The added value for the end-users is minimal. Last but not least, the frequency of real-time is dependent on communication. The data transport within the end-to-end chain (end-user, device, gateway, backend, application) takes a lot of time, which could be reduced through advanced and expensive technologies. This disadvantages cloud-based solutions and limit technology open approach.

- **Data display**: we should propose to display an appropriate average value of at least an hour (and it will be up to the manufacturer to define the sampling rate).

- **Acquisition frequency:**

  - **Cumulative data for at least the three previous years**: we can accept it as a compromise.

  - **Detailed cumulative data day/week/month/year covering the period of at least the previous 24 months**: we can accept it as a compromise.

  - **Detailed analysis quarter of an hour values:** we should fight to take it out of the proposal.

- **Tolerance and test points**: the proposal is incomplete and inapplicable: We should restate our existing position.

  - Validation of self-monitoring and its quality shall be surveilled by comparing measured annual energy output and measured annual energy input (only the input of the heat pump) of a specific unit under the test conditions addressed in Annex XX, with the displayed values (on-board display, smartphone applications, or website, etc.) under the same test conditions. The deviation between these results shall not exceed 15%. Concerning the annual energy input or output, this amount of energy will have to stick to the definitions as mentioned in EN14825.

- As suggested during the technical meetings, the Commission should prepare a **standardisation mandate**.

Tpeak

In the draft regulations presented before the Consultation Forum meeting (before the corrigendum documents), the Tpeak proposal in Lot 1 and Lot 2 were different. As a solution, EHPA recommended aligning both texts during the meeting. We still believe that this solution is allowing for more granularity in the penalty with a penalty for above or equal to 52 ºC and a penalty below 52 ºC. **See EHPA draft proposal below:**

(b) For heat pump combi heaters, if during a tapping the Tpeak of 55 °C in the load profiles of table 9 cannot be achieved by the heat pump the average of the measured hot water temperature over the

tapping shall not be lower than 50 ºC. If the average of the measured hot water temperature over the tapping is:

- ***below 52 ºC**, the water heating efficiency ηwh shall be lowered by **4** percentage points,*
- ***above or equal to 52 ºC**, the water heating efficiency ηwh shall be lowered by **2** percentage points.*

Heat Pump Water Heaters using indoor air for DHW (Annex 3 point6 (f) & (g))

The limitations for heat pump water heating using indoor air are obviously rooted in an assumed common domestic use and not considering the wide range of application of non-heated space air (garage, cellar, laundry room, …). In the indoor (heated space air) application, an excessive use of heated air as a heat source should be avoided. For that purpose, the electrical power input and permissible air flow rate are limited (Lot 2, additionally: tank volume and load profile). But non-heated space air as a heat source is also widely used in Europe and such appliances were formerly tested by default as indoor air appliances.

Consequently, the indoor air and non-heated space air test conditions should be stated and clearly separated in two different test conditions for ambient air, as already described in EN16147:2017.

Heat source	*Outdoor air*	***Indoor air***	***Non-heated space air***	*Exhaust air*	*Brine*	*Water*
Temperature	*+7°C/ +6°C*	***+20°C (maximum +15°C)***	***+15°C (+12°C)***	*+20°C (+15°C)*	*+5°C (inlet)/ +2°C (outlet)*	*+10°C (inlet)/ +7°C (outlet)*

Compensation method and alternative solutions

EHPA supports the conclusion of the Commission that the compensation method is not yet fit for regulatory application and should be postponed to later on, considering the lack of information and limited results as available today. More time is needed for additional round-robin tests, investigations, standardization activities etc. Our full position is available on EHPA website.

Chapter 2: Energy Labelling Lot 1

Rescaling

EHPA is supportive to the current process of re-designing the energy label. Within this process, we ask the European Commission and Member States to take into consideration the administrative and operative consequences which this procedure and changes create for the industry, market surveillance authorities and consumers.

EHPA supports a single step rescaling as a result. It should include:

- the introduction of the new conversion coefficient (currently 1,9) giving a positive signal to end users,
- a rescaling from A-G,
- a definition of energy classes boundaries in a way that increases the differentiation between boilers and HPs,
- the display of the seasonal energy efficiency (eta s - η_S) for average climate on the label, and
- the provision of a full 2-year transition period

The implementation of this "all-in-one" relabelling and rescaling should happen at a pace compatible with market reality, considering technical and commercial processes of the industry and leaving sufficient time to the industry and market, especially consumers, to adapt to all the changes. Therefore, we would like to flag that it is necessary to inform the manufacturers of the foreseen measures as early as possible and to provide a full 2-year transition period between the entry into force and the applicability of the new label.

Energy Efficiency Classes

EHPA has the following remarks on the proposed labelling classes:

- **MT**: The label threshold for the B class is too high to allow for different heat pump technologies to achieve. Today less than 6% of HP, mainly water and ground source HP, could access this category. Air source heat pumps should also be able to achieve the B class. For this reason, we suggest changing the current value of 200% to 183%, which is in line with the proposal from the interim report of VHK and allows for more differentiation in the B class.
- **LT**: the thresholds for low temperature are still very ambitious for classes C and B especially as this category include not only very small residential units but also reversible chillers/HP up to 70kW. We question why the limit of class D is not adjusted with the proposed MEPS for LT HP (170).
- **DHW** same as above, the thresholds are quite ambitious compared to current product distribution on EPREL database and were significantly raised compared to previous proposal.

EHPA believes that the distribution of the classes for all functions should still enable the consumer to find products in classes C and B for all capacities.

Water heating efficiency of a space heat pump converted to a combination heat pump

1. Calculation

Though the general approach is reasonable, this calculation expression leads to results that are too penalizing and should not open the door to the calculation of Etawh for LT heat pumps. So, we suggest a new calculation expression as below with the new COPrated :

$$\eta_{wh} = 0.95 \cdot f_{COPwh} \frac{COP_{rated}}{CC} \frac{Q_{ref}}{Q_{ref} + S \cdot 24}$$

2. f_{COPwh}

The values related to Outdoor air or Direct exchange for Colder Climate and Average Climates are not correct:
Colder = 0,840
Average = 0,919
The value related to Brine (5°C) is not correct :
Brine = 0,923

3. COP_{rated}

COP_{rated}:
Other refrigerants than CO2: rated coefficient of performance at standard rating conditions at medium temperature application (55°C outlet temperature) according to EN 14511 for air-to-water, brine-to-water, water-to-water HP or to EN 15879 for direct exchange-to-water HP CO2 as refrigerant: rated coefficient of performance according to water inlet/outlet temperatures at 45/60°C.

4. Qréf [4]

We suggest the introduction of a table to determine the reference useful energy Qref for standalone storages from tank volume (l):

Load Profile	M	L	XL	XXL	3XL	4XL
Q_{ref} (kWh)	5,845	11,655	19,07	24,53	45,76	93,52
Storage tank volume (l)	≥ 65	≥ 130	≥ 210	≥ 300	≥ 520	≥ 1040

Energy Label

As explained in previous positions, EHPA believes that we should maintain the label as simple, clear, and understandable as possible for the end-user. All information on the label should be understandable by the consumers. There are too many symbols which also are not self-explanatory. All symbols should be described so that they are clearly understood. It is, for example, hard to distinguish a hybrid heat pump and a gas heat pump (same symbols). EHPA also believe that too much information could water down the value of the label for end-users. The QR code is a very easy bridge for customers to retrieve more detailed data when needed.

For combination heat pumps, the water heating and space heating function should be displayed on the same label. This is the case for other combi heaters, there is no reason to do it differently for heat pumps combination heaters.
EHPA supports the proposal to display the seasonal energy efficiency ηs with the rated heat output for average climate on the label. Due to the rescaling, many products will be situated in the same label class. If the etas value is added, it will provide more differentiation for products within the same class and in between classes.

[4] Ecodesign Annex III chapter 10 and labelling Annex VIII chapter 11 each provide two proposals: For boiler, cogeneration, hybrids … in letter a) and for heat pumps in letter b). Both calculations use Q_ref of the standalone storage tank and consequently, our proposal for the derivation from net storage volume should also apply to the calculation for boiler.

In addition, Prated, hp is to be mentioned on the label. As Prated, hp is measured at TOL, which can be any temperature between Tdesignh (-10°C) and -7°C the comparison of products cannot be strictly made on the same parameters and the end-user is not aware of that on the label itself.

Finally, we would like to raise the fact that the multivalent units should be tested as multivalent, and the label should indicate it too.

Packages

"What should be the future of package?" We would like to have a clarification from the European Commission.

Chapter 3: Ecodesign & Energy Labelling Lot 2

Resource efficiency Requirements

Same comments as the one made for the Ecodesign Lot 1.

Tpeak

Same comments as the one made for the Ecodesign Lot 1.

V40

EHPA does not support the V40 measurement and calculation as proposed. We would recommend adapting the text as follows:
(l) To measure the mixed water at 40 °C (V40) of a storage water heater, the product is kept at its nominal operating temperature Tset (in °C) for at least 12 hours and then, at the end of the first thermostat cut-out thereafter, is switched off and the water is withdrawn at the maximum flow rate in the declared load profile until the water temperature at the outlet, measured and registered at the most at every 3s, drops below 40 °C. The cold water at temperature Θc is nominally 10 °C. The average outlet temperature during withdrawal Θ'p (in °C) is assessed, corrected for sharp fluctuations in temperature readings as appropriate. The normalised value of Θ'p is Θp (in °C), which is calculated as Θp, and the volume of the hot water withdrawn with temperature.

Standing loss of hot water storage tanks

The requirements are between 20-25% stricter than the current requirements. EHPA proposes to segment the requirements for storage tanks according to their storage capacity and to have a **2-step approach** as follows:

- **Hot water storage tanks with a volume =< 500 l – From September 2027:**
  - Maximum standing loss **=<** 12 + 5,93 · V0,4 Watts
  - Maximum standing loss **=<** 12 + 6,43 · V0,4 Watts if multivalent tanks with a volume > 80 l
- **Hot water storage tanks with a volume > 500 l:**
  - From September 2025: Maximum standing loss **=<** 16,66 + 8,33 · V0,4 Watts
  - From September 2029:
    - Maximum standing loss **=<** 12 + 5,93 · V0,4 Watts
    - Maximum standing loss **=<** 12 + 6,43 · V0,4 Watts if multivalent tanks with a volume >80 l

Energy Label

Same comments as the one made for the Ecodesign Lot 1.

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The European Heat Pump Association (EHPA) represents the European heat pump sector. Our over 190 members include heat pump and component manufacturers, research institutes, universities, testing labs and energy agencies.

EHPA advocates, communicates and provides policy, technical and economic expertise to European, national and local authorities, and to our members.

We organise high level events and manage or partner in multiple projects.

We work to shape EU policy that allows the heat pump sector to flourish, and to become the number one heating and cooling choice by 2030. Heat pumps will be a central part of a renewable, sustainable and smart energy system in a future decarbonised Europe.