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Eurovent Position Paper on the review of space heaters Ecodesign and Energy Labelling Regulations (EU) 813/2013 and 811/2013 after the Consultation Forum meeting on 27 April 2023

In a nutshell

This Position Paper provides comments of Eurovent members on the working document of the reviewed Space Heaters Regulations, regarding in particular:

- Scope and exclusions + proposed requirements for cooling for reversible units
- Third Party Conformity Assessment
- Ecodesign minimum requirements
- Requirements for sound power level
- Material resource efficiency
- Self-Monitoring
- Controls Verification Procedure
- Temperature Regime Heat Pumps

Background

Eurovent appreciates the European Commission's initiative of organising an additional Consultation Forum in light of the multiple changes that occurred in the last years/months and considering the importance of these regulations, since it covers the most energy-consuming applications in Europe. In the paragraphs below, Eurovent states its official position on the most relevant topics for the hydronic heat pump industry, and its members and secretariat remain at the disposal of the Commission for any further clarification.

Scope and exclusions

Article 1 (1) + Article 1 (2-j)

"This Regulation establishes Ecodesign requirements for the placing on the market and/or putting into service of hydronic central space heaters and combination heaters with a rated heat output ≤ 1 MW, including [...] electrically or thermally driven heat pumps, possibly supplemented by an electric resistance back-up heater."

"This Regulation shall not apply to: [...] (j) reversible heat pump heaters with a rated heat output > 400 kW" [...]

As stated in the previous position papers delivered to the European Commission (dated 2019-05-28, 2020-05-13, 2021-02-22 and 2021-11-15), Eurovent stresses that hydronic heat pumps and hydronic reversible heat pumps of any capacity up to 1 MW must be covered by the same Ecodesign Regulation, thus lot 1.

Considering the situation that manufacturers are facing today and considering that the revision of Regulation 2281/2016 has just started and, therefore, there will be a different PEF for products under the new lot 1 Regulation and the same products under lot 21 just because of a higher capacity until the new lot 21 will enter into force; without considering all the other divergencies that two different regulations applicable to the same products are already causing today, Eurovent asks the Commission

that heating only heat pumps up to 1 MW as well as reversible heat pumps below and above 400kW (up to 1MW) will be covered by the scope of LOT 1.

Proposed cooling requirements for reversible heat pumps

At the last technical meeting on 12 June 2023, the European Commission proposed to extend the scope of the Regulation to reversible units up to 2 MW capacity.

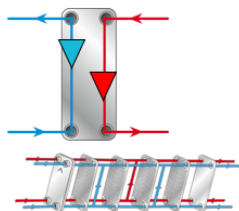
While we welcome and support in principle the proposal, as stated above, we think that the technical peculiarities of reversible units must be considered before assessing the values proposed.

The technology of reversible units

The reversible units are a derivative of the cooling-only chillers with some modification (e.g. additional 4-way valve, another air-type heat exchanger) and their components are somehow optimized for one of the operating modes. For example, in the 4-way valve for physical reasons, there are internal leakages and thermal losses between the high-pressure and low-pressure sides. It must be also considered that in the case of a cooling-only unit, the condenser and the evaporator can be internally optimized for that task while on the reversible unit, they cannot.

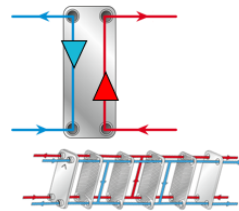
Reversible units have in most common cases 2 heat exchangers: one on the source side and one on the user side and, in most of the cases with traditional designs, those heat exchangers can either work in co-current mode or counter-current mode.

CO-CURRENT MODE (parallel mode)



- Less efficient
- Outlet Temp. of the cool fluid can NOT exceed outlet Temp. of warm fluid

COUNTER CURRENT MODE



- Most used mode
- Higher heat exchange due to higher logarithmic mean temperature difference (LMTD)

Figure 1: plate exchanger working in co-current and counter-current mode

Therefore, it is possible to design a reversible unit optimized for the cooling or heating mode (which one will be in counter-current mode). Below is a simple working scheme:

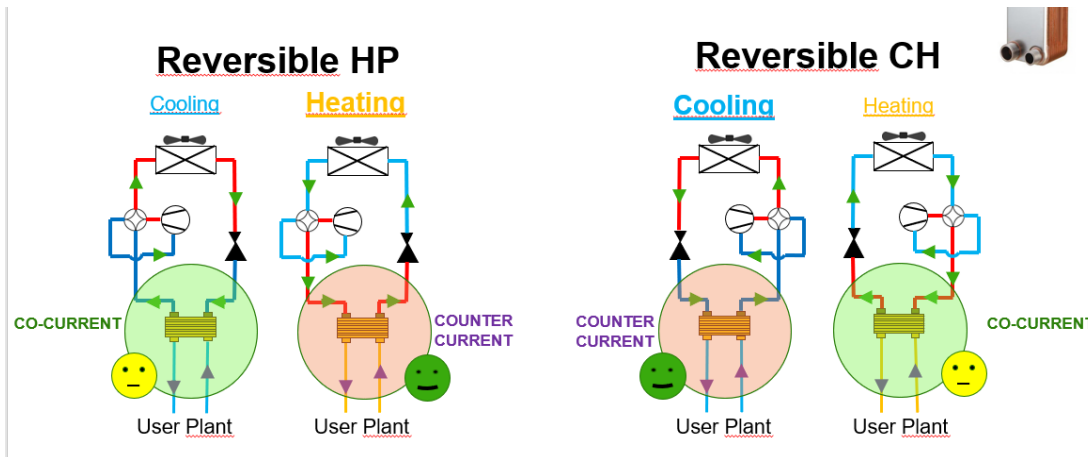


Figure 2: reversible unit optimized for heating or cooling

The result is that a unit optimized for heating will have better heating performances and worse cooling one, and vice versa.

MEPS proposed by the Commission

SCOPE: Heat pump Lot 1 vs. Lot 21 (EU) 2016/2281
(New Proposal 2023 → Fast track for reversibles, also cooling ≤ 400kW in Lot 1 → same CC=1.9, otherwise cool ED as today)

TYPE		SCOPE	declaration	
Air-to-water and water/brine-to-water chillers			Cooling CC reversible =1.9 (other 2.5)	Heating CC=1.9
Cooling only	≤ 400kW	LOT 21	η _{cool} AW> 161, BW> 200 TDAW> 154	
	>400kW (up to >2 MW)	LOT 21	η _{cool} AW>179, BW>252/272	
Reversible	≤ 400kW	LOT 1 (CC=1.9)	η _{cool} AW>212, BW>263, TD-AW>154	η _{heat} MT>145, LT>175
	> 400 kW (up to 2 MW)	LOT 1 (CC=1.9)	η _{cool} AW>235, BW>331/357	η _{heat} MT>145, LT>175
Heating only	≤ 400kW	LOT 1		η _{heat} MT>130, LT>155
	> 400kW (up to 1 MW)			
Air-to-air air conditioners (>12kW)		LOT 21	η _{cool} at CC=2.5	η _{heat} at CC=2.5

The values that have been proposed as cooling requirements come from Regulation 2281/2016, and are applied to chillers, therefore units optimised for cooling purposes.

Differently from the cooling-only unit, the technology available for heat pumps above 400kW is the same for heat pumps below 400kW, moreover, both units are often made by the same modules, of course with more modules for bigger units. Consequently, for a reversible heat pump the hypothetical dedicated SEER threshold above 400kW must be the same as below 400kW, indeed for the SCOP there is already a unique threshold.

Moreover, it is not clear why the LT value has been raised again, being now even higher than the LT value proposed for heating-only heat pumps.

It is not clear also under which conditions the units should be tested considering that bigger units work with different emitters.

The Commission proposal will therefore strongly hit Reversible Heat Pumps.

It must be noted that the proposed values relate to units working with commonly used refrigerants and the efficiencies of the units working with refrigerants in line with the future F-Gas requirements are indeed not yet available.

According to the above assessment, Eurovent keeps asking that all the reversible units are covered under lot 1 and the product's performance should be related only to heating requirements.

If the Commission still wants to consider cooling requirements, Eurovent asks that dedicated SEER values are to be properly assessed and defined. In this respect, Eurovent asks the Commission its final position and then will be available (within a sustainable timeframe) to provide a possible assessment of the efficiency of the products currently on the market and alternative proposals.

Third Party Conformity Assessment

Article 4

1. For fuel boiler, heat pump and hybrid heater models whose first unit is placed on the market on or after [Date of application], the conformity assessment of the seasonal space heating efficiency shall be certified by an EC-type examination in accordance with module B and by a declaration of conformity to the approved type in accordance with module C, D or E, as described in Annex II of Decision 768/2008/EC8.

Eurovent does not support the introduction of any TPCA for heat pumps and asks to maintain the status quo.

The status quo implies recognising that the voluntary third-party certification is working well and contributes to the pursuit of efficiency of the products placed on the market. A stronger market surveillance system, independently from third party certification, is to be achieved.

Furthermore, Eurovent does not support any TPCA approach resulting in any deviation from the EN 14825 standard, Eurovent also does not support any market surveillance approach based on local requirements according to the national implementations of EPBD resulting in approach not aligned with the EU single market principle.

Ecodesign minimum requirements

Annex II 1(a) – as shown during the Consultation Forum



Ecodesign CH space (combi) heaters

Changes 2021 vs 2023 ANNEX II Ecodesign Requirements

1. REQUIREMENTS FOR SEASONAL SPACE HEATING ENERGY EFFICIENCY (with new CC=1.9)

(a) From 1 September 2025, the minimum seasonal space heating energy efficiency η_s (in %) of the specified space heaters in the average climate conditions is given in the table below.

Parameter	heater	η_s in %	at CC=2.1 (2021)
A	B1 Fuel boiler ≤ 10 kW & combi boiler ≤ 30 kW	76	77
B	Fuel boiler ≤ 70 kW	87	88
C	Fuel boiler > 70 kW ≤ 1 MW (η_1 and η_4)	87 (η_1)	88 (η_{sh})
		95 (η_4)	
D	Electric (combi) boiler	48	43
E	Cogeneration space heaters < 50 kWel (to be corrected)	115 100	100
F	Hybrid heat pump/solar hybrid, MT <i>new</i>	125	(125)
G	Thermally Driven (TD) heat pump, MT	120	115
H	Thermally Driven (TD) heat pump, LT <i>new</i>	125	()
I	Electric heat pump, MT (Medium Temperature)	145	130
J	Electric heat pump, LT (Low Temperature)	170	155

Eurovent welcomes the new Primary Energy Factor = 1,9 and the proposal to increase the minimum efficiencies to 115% after 4 years, implying that heaters that cannot achieve this minimum shall no longer be placed on the market. This proposal will strongly help the decarbonisation and particularly the local pollution of cities, where fossil-fuel boilers and cars are the main polluters.

Eurovent also asks for a coherent approach among the different technologies, thus adjusting only the LT minimum value to 165% as done for the MT heat pumps.

Requirements for sound power level

Annex II point 3

3. REQUIREMENTS FOR SOUND POWER LEVEL

Note that the **noise** measurement conditions for heat pumps are different to the **heat output** conditions used to categorise them.

Heat output categories, based on $P_{designh}$	Sound power level (L_{WA}), indoors	Sound power level (L_{WA}), outdoors
	measured at part load condition B (+2°C for outdoor air, etc.), as set out in Annex III, Table 4	
≤ 6 kW	60 dB	65 dB
> 6 kW and ≤ 12 kW	65 dB	70 dB
> 12 kW and ≤ 30 kW	70 dB	78 dB
> 30 kW and ≤ 70 kW	80 dB	88 dB

Eurovent welcomes and appreciates the corrections made to the text before the Consultation Forum and the clarifications given during the meeting.

As understood from the Commission during the meeting, manufacturers can choose the outdoor temperature between 2°C and 7°C depending on the stability of the unit. Eurovent asks to confirm and better clarify this in the final text.

Eurovent supports the proposal to limit the scope to 70 kW $P_{designh}$.

In the current proposal, there is also the possibility of using TOL instead of $T_{designh}$ which is very confusing, therefore Eurovent suggests to better clarifying that TOL can be used only when $T_{designh}$ can't be reached.

Requirements for material resource efficiency

Annex II point 5(2)

(2) Maximum delivery time of spare parts

During the periods mentioned under 1 (b), the manufacturer, importer or authorised representative shall ensure sending of the spare parts within 10 working days after having received the order.

Eurovent appreciates that the Commission welcomed and implemented the proposal of a list of detailed spare parts.

Regarding the time for the delivery, we suggest keeping 15 days as a reference time for the delivery of components, as in the previous draft proposal.

It has also to be stressed that the Regulation covers a wide range of capacities, with different applications and operation & maintenance strategies, therefore Eurovent suggests applying these requirements only to those units covered by the Energy Label regulation.

Requirements for product information

Annex II point 6

ix. The manufacturer shall indicate how to access the information allowing the independent setting of the units to establish the regulated parameters. This information shall be available upon request to any test laboratories in less than five days.


As it is written today, the point ix is very generic. Eurovent suggests limiting access only to independent testing laboratories and market surveillance.

Requirements related to self-monitoring

Annex II point 7 + Article 3 points 1 and 2

“All units placed on the market as from [Date of application]: [...] (v) among heaters, those whose first unit is placed on the market on or after [Date of application], shall also meet the requirements set out in Annex II, point 7.”

“All units placed on the market as from [4 years after Date of application]: [...] (ii) heaters shall also meet the requirements set out in Annex II, point 7”



Ecodesign CH space (combi) heaters Changes 2021 vs 2023 ANNEX II Ecodesign Requirements

7. REQUIREMENTS RELATED TO SELF-MONITORING (fully reviewed)
 There are requirements for self-monitoring of the space heating efficiency (only, not WH) with specific tolerance levels as a basis for a standardisation request and possible implementation per 1 Sept. 2027 (3 y after entry into force).

- Instantaneous measurement data to be sent to user interface/cloud (at sample rate or asap)

Stored data:

- Annual data: as for smart meters.
- Last 24 months: also weekly & monthly data
- Last 10 days: data per 15 minutes

Tolerance level (derived from MID, translated to a twice as tolerant indirect assessment level*)
heat energy output, a staged maximum permissible error (MPE) applies as in the table below

Temperature difference range $\Delta\theta$	$\Delta\theta \leq 5K$	$5 < \Delta\theta \leq 10K$	$\Delta\theta > 10K$
MPE \pm	15%	10%	7,5%

For the assessment of electricity, gas and fuel input or cogenerating electricity an MPE of $\pm 5\%$ applies. This means that in the typical middle power-range the MPE of the efficiency is $\pm 15\%$

*Values may be derived from measurement of relevant technical parameters or calculation with default multipliers, as long as values are within the MPE.

Eurovent considers that starting the application of this requirement in 2025 as proposed by the draft Regulation before the Consultation Forum on 27 April 2023, is too early, therefore we suggest extending the time to 2029 also for the new models.

Considering the broad scope of application of the new Regulation, Eurovent suggests applying the provision of self-monitoring only to those units covered by the Energy Label regulation.

Following the debate of the Consultation Forum, some questions remain open for further clarification from the Commission:

- How it will be checked if the tolerances are respected? Please revise the tolerances since are too severe as they are not referring to the real operation of the units.
- What is the benefit of showing instantaneous data?

Controls verification procedure

Annex III point 12

Eurovent welcomes the introduction of the Control Verification Procedure instead of the Compensation Method.

It is also to be stressed that the new Regulation will cover a wide range of capacities, with different types of compressors, therefore we suggest limiting the scope to those units covered by the Energy Labelling Regulation.

Temperature regime heat pumps

Given the implementation of the Directive (EU) 2018/844 on the Energy Performance of Buildings (EPBD), and considering the upcoming adoption of its revision, the insulation of buildings will be significantly improved. To that end, the EPBD has mandated individual room or zone thermostatic controls in new buildings when installing the heat generator. EPBD's higher energy efficiency targets will lead to better-insulated buildings, which in turn will also require lower-temperature heating systems.

High-temperature heat pumps able to supply 65°C water temperature can be found on the market; however, these products are dedicated to a niche market and do not represent the vast majority of systems and applications. It is also to be considered that data at 65°C could result in a misleading message to installers and final users. Installers and final users might think that there is no need to adapt houses/buildings to allow for lower temperatures.

Considering the "energy efficiency first" principle, a reduction of the energy demand must be always pursued before the installation of a new heating system, even if the new system will have a considerably higher efficiency itself.

Thus, Eurovent does not support the introduction of any indication of performance and seasonal efficiency at the High-Temperature regime also as an optional part of the product information and we recommend keeping the Medium Temperature regime testing at rated T supply 55°C.

Eurovent and transparency

When assessing position papers, are you aware whom you are dealing with?

Eurovent's structure rests upon democratic decision-making procedures between its members and their representatives. The more than 1.000 organisations within the Eurovent network count on us to represent their needs in a fair and transparent manner. Accordingly, we can answer policy makers' questions regarding our representativeness and decisions-making processes as follows:

<p>1. Who receives which number of votes?</p> <p>At Eurovent, the number of votes is never determined by organisation sizes, country sizes, or membership fee levels. SMEs and large multinationals receive the same number of votes within our technical working groups: 2 votes if belonging to a national Member Association, 1 vote if not. In our General Assembly and Eurovent Commission ('steering committee'), our national Member Associations receive two votes per country.</p>	<p>2. Who has the final decision-making power?</p> <p>The Eurovent Commission acts as the association's 'steering committee'. It defines the overall association roadmap, makes decisions on horizontal topics, and mediates in case manufacturers cannot agree within technical working groups. The Commission consists of national Member Associations, receiving two votes per country independent from its size or economic weight.</p>
<p>3. How European is the association?</p> <p>More than 90 per cent of manufacturers within Eurovent manufacture in and come from Europe. They employ around 150.000 people in Europe largely within the secondary sector. Our structure as an umbrella enables us to consolidate manufacturers' positions across the industry, ensuring a broad and credible representation.</p>	<p>4. How representative is the organisation?</p> <p>Eurovent represents more than 1.000 companies of all sizes spread widely across 20+ European countries, which are treated equally. As each country receives the same number of votes, there is no 'leading' country. Our national Member Associations ensure a wide-ranging national outreach also to remote locations.</p>

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We are Europe's Industry Association for Indoor Climate (HVAC), Process Cooling, and Food Cold Chain Technologies – thinking 'Beyond HVACR'

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Eurovent's roots date back to 1958. Over the years, the Brussels-based organisation has become a well-respected and known stakeholder that builds bridges between the manufacturers it represents, associations, legislators and standardisation bodies on a national, regional and international level. While Eurovent strongly supports energy efficient and sustainable technologies, it advocates a holistic approach that also integrates health, life and work quality as well as safety aspects. Eurovent holds in-depth relations with partner associations around the globe. It is a founding member of the ICARHMA network, supporter of REHVA, and contributor to various EU and UN initiatives.