

**JRAIA Comments on the draft Ecodesign Regulation of
“Possible requirements for air heating products, cooling products and high
temperature process chillers”**

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JRAIA (The Japan Refrigeration and Air conditioning Industry Association) is Japanese equipment and component manufacturers association. Member companies and their subsidiaries have significant market share of commercial air conditioning products in Europe. JRAIA believes it should properly be involved in the process to establish regulations for these products in the EU, since major portion of technical development works are carried out in Japan.

JRAIA is pleased to have an opportunity to comment on the draft ecodesign regulation and related documents. As JRAIA is also a member of EPEE, it basically supports the EPEE position. So JRAIA would like to refer to the full EPEE position. Nevertheless, JRAIA would like to shortly emphasize the most important position points of EPEE, but also explain some additional points from JRAIA:



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1. Key points of EPEE position

a. Sound power

Sound power requirements should be deleted as sound power requirements limit the energy efficiency. The products in the scope of the working documents are non-residential products. For these products the importance of the sound emission heavily depends on the installation site. Sound emissions in a residential area, e.g. outside bedroom window in a hotels, will be more important than sound emissions in an industrial area, e.g. factory rooftop. It would be illogical to hamper energy efficiency improvement due to sound limitation in places where the sound emissions is not that important. National legislations are in place do regulate sound emissions on site where necessary. Some measure can then be taken on site that do not influence energy efficiencies, e.g. sound walls. On EU level, the machinery directive (2006/42/EC), already regulates the safety aspect of sound emissions. Finally, if sound power values are set, they should be based on a good basis and on all the products in the scope. For the moment no sound power database is available for VRF units. The catalogue data only shows the data of sound pressure not sound power. For all these reasons we believe that sound power requirements should be deleted and information requirements on sound are sufficient for these products.

b. Energy efficiency requirements

Overall JRAIA finds the energy efficiency requirements are too high for both air to air heat pumps and chillers.

Current draft proposes the minimum efficiency value that bans 95% of all chiller models currently on the market. That appears too ambitious. For air to air heat pumps JRAIA feels that the requirements are so high that the uptake of renewable technologies of heat pumps on the market would be hindered, if these proposed minimum efficiency values are employed.

c. Timing

JRAIA appreciates that the Tiers start in January, but would like to ask for at least 2 years in between entry into force and the 1st Tier, in addition, would like to assure 4 years between the 2 tiers. As these products require more time and cost to re-design than smaller products, current model change cycle is considerably longer than small equipment such as those products within the scope of ErP ENER Lot 10. That means there is not enough engineering power to redesign such units in such short period of 2 year time.

2. Additional JRAIA comments

1) Other comments on Ecodesign document.

- The draft regulation Annex II clause 6) i); Current draft requires information on instruction manual for installers and end-users and free access websites of manufacturers. However, such performance information is not important after installation or after the product reached the installer, as they already chose the product or system. These products are not sold on the shop shelf. Such information should only be required at manufacturers' website when an owner or an installer chooses a model. We propose that the following requirements are added to the free access website: Annex II.6. ii, iii, iv, v, vii, viii and following should be included to the instruction manuals: Annex II.6. ix, x.

- For the moment, the definitions create uncertainties whether multi-split and split systems are in scope and how these should be rated.

From the definition of 'cooling product' one cannot conclude that cooling products, which transfer condensed refrigerant to an air based cooling system are in scope of the regulation. Technically, condensed refrigerant is already given potential to absorb heat. If expansion device is located in outdoor unit, large temperature difference is already generated in there. As such, one may conclude that split and multi-split systems are not in scope of the regulation.

From the definition of 'heat pump', one can conclude the condenser is not part of the air based heating system, while the definition of 'air based heating system' includes the components needed for local cooling of air. In our opinion this also means the condenser.

This ambiguity results in uncertainty how to assess the efficiency and comply with the requirements in the regulation. The definitions should safeguard application of the current practice for split and multi-split systems with regard to assessment of performance.

We are preparing detailed technical comments how to address this issue in a robust way and will send this by the deadline for comments set by the commission.

- Some type of outdoor units of VRF systems and some type of air cooled chiller systems are modular, that means more than one single outdoor units of VRF system or chillers are combined to achieve larger capacity. The draft regulation does not clarify how to rate these type of unit for efficiency and sound. JRAIA would like to propose rating them as each module and not combined set of modules, since multiple non-modular type units are also installed in a place many cases but they never required to achieve the performances as total. In addition, multiple modules can achieve higher efficiency than single module, as operation capacity range is wider and more flexible.

- Table 29 in annex III of the ecodesign document lists various operational hours, but it list

all climate condition evenly. It should differentiate “average” that is mandatory condition from other voluntary conditions. In addition, such hours for reversible products should be provided to ensure proper calculation.

- Current values in the table 29 of annex III are for cooling only and heating only units and not for reversible units. Values for reversible units should be added.

2) Consistency to ENER Lot 10 regulation

Several points are not consistent with Lot 10 requirements. Following points should be modified to harmonize with the ENER Lot 10 regulation.

- Annex I, clause 5; Definition of the sound power level should include operating conditions. *‘Sound power level’ (L_{WA}) means the A-weighted sound power level indoors and/or outdoors measured **at standard rating conditions** for cooling (or heating, if the product has no cooling function)’*
- Annex I, clause 68; Design load for heating is not capacity but it should be heating load. *‘Design load for heating’ ($P_{designh}$) means the **declared heating load** of a heat pump at the reference design temperature, whereby the design load for heating $P_{designh}$ is equal to the part load for heating with outdoor temperature T_j equal to reference design temperature $T_{designh}$, expressed in kW.*
- Annex I clause 76; Cc and Cd are mixed. Air cooled systems generally use Cd instead of Cc and default value is 0,25. Default value for Cc is 0,9, but formulae to use them are completely different.

3) Comments on Transitional method

- Clause 3.1 (b); in SCOP explanation. Eliminate the word “in active mode”, as it includes non-active mode power consumption.
- Clause 3.2 (a); The formula; SEER should be divided by CC.

4) Other required editorial modification

1) Ecodesign Regulation

- Chapter 1, clause 2)-b) “No 206/2011” should be “No 206/2012”.
- Chapter 2, clause 10), more precise definition is preferred to avoid misunderstanding. Current texts define an air purifier and a dehumidifier as a fan-coil. First sentence of the clause should be as follows;
‘fan-coil unit’ means a factory-made assembly which provides cooling and/or heating with forced circulation of indoor air for thermal comfort of human beings,

which may include function of dehumidification and filtering of circulating air, but which does not include the heat or cooling generator nor an outdoor heat exchanger.

- Annex I, clause 3, GWP values are taken from “2007 IPCC report”. It is not third report in 2001, but “Fourth report in 2007”. Current proposed draft of the F-gas revision refers it as follows; “Based on the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change, unless otherwise indicated.”
- Annex I, clause 56 definition of Q_{CE} ; The word heating should be cooling. “pertaining to a designated **cooling** ~~heating~~ season”
- Annex I, clause 57 definition of Q_{HE} Last part; the word “cooling” should be “heating”. “and crankcase heater-mode during the **heating** ~~cooling~~ season expressed in kWh;”
- Annex I, clause 75, “cycling test interval, calculated as the integrated ~~heating~~ **cooling** capacity over the interval,”
- Annex III, clause 4) c) The active mode seasonal energy efficiency ratio $SEER_{on}$ or active mode primary energy ratio $SPER_{cool,on}$ shall be calculated on the basis of the part load for cooling load ~~$P_h(T_i)$~~ $P_c(T_i)$ and the bin-specific energy efficiency ratio $EER_{bin}(T_i)$ or bin-specific primary energy ratio $PER_{cool,bin}(T_i)$, and weighted by the bin-hours the bin conditions occurs, using the following conditions:

2) Transitional Method

- Clause 3.1; the seasonal space heating energy efficiency ~~$\eta_{S,heat}$~~ $\eta_{S,h}$ is defined as:
- Clause 3.1; Where:
 - $F(i)$ are the corrections calculated according to point ~~3.4~~ **3.3**, expressed in %.
- Clause 3.2; the seasonal space cooling energy efficiency ~~$\eta_{S,cool}$~~ $\eta_{S,c}$ is defined as
- Clause 3.2; Where:
 - ~~$SEER_{cool}$~~ $SPER_{cool}$ is the seasonal space cooling energy efficiency ~~in active mode~~, expressed in %;
 - $F(i)$ are the corrections calculated according to point ~~3.4~~ **3.3**, expressed in %.

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