30th April 2021

EPEE-JRAIA-JBCE POSITION PAPER for the working documents on Lot6 Revision (NRVU)

The European Partnership for Energy and the Environment (EPEE), The Japan Refrigeration and Air Conditioning Industry Association (JRAIA) and Japan Business Council in Europe (JBCE) appreciates the European Commission's continuously work for the for the review of the review of the Ecodesign requirements (Review EU1253/2014)and Energy Labelling requirements (Review EU1254/2014) on ventilation units. With taking this opportunities, we would like to provide comments on draft working documents issued by the Commission for the consultation forum.

Attached in the ANNEX, you will find our comments, and we sincerely hope that the Commission will take our comments into consideration during the review.

We would like to make further contributions whenever it is useful and needed and share the knowledge and experience of our members. We remain at your disposal and look forward to corporate with you.

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 see our website (http://www.epeeglobal.org) for further information.

About JBCE

Created in 1999, the Japan Business Council in Europe (JBCE) is a leading European organization representing the interests of 85 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, railway, textiles and glass products. Together, our member companies represented in 2013 global sales of 1.4 trillion euros.Building a new era of cooperation between the European Union (EU) and Japan is the core of our activities, which we perform under several committees focusing on: Corporate Policy, Corporate Social Responsibility, Digital Innovation, Environment & Energy, Standards and Conformity, and Trade.
For more information, please see JRAIA's website: https://www.jbce.org Email: info@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

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<Recommendations >

on DRAFT WORKING DOCUMENT ON Ecodesign Requirements for Ventilation Units (Review EU1253/2014)

#	Article / Annex	Comment
1	**ANNEX I** Specific definitions for NRVUs	We would like to ask for clarification of the newly added paragraph in (6) (underlined text). [quote from the text] *(6) 'nominal flow rate (q_{nom})'(expressed in m^3/s) means the declared design flow rate of an NRVU distributed to and/or extracted from the building, including any leakages or any pressure balancing flow at standard air conditions 20 °C and 101325 Pa, whereby the unit is installed complete (for example, including filters) and according to the manufacturer instructions; in case the design flow rate is not known, 'nominal flow rate' refers to the range of design flowrates and related external pressure (Q/ΔP-values) for which the minimum requirements are met, and has to be indicated with at least five Q/ΔP-points for which nominal flow rate, ΔP_{ext}, SFPint, η_{vu} (if applicable), $\Delta P_{s,ext}$ and L_{wa} are given.*
2	**ANNEX III** Specific ecodesign requirements for NRVUs	Regarding "Requirements for all NRVUs", We suggest to combine the following two individual texts in to one: (In current DRAFT WORKING DOCUMENT) • *All BVUs shall have a ERS.* • *The ERS shall have a thermal by-pass facility.* (Our proposal to change) • "All BVUs shall have an ERS **and** a thermal by-pass facility. [Reasons for our position] ① The thermal by-pass facility is defined as not only the construction itself but also the combination of construction and control in (42) of ANNEX I (see below). The current texts written separately seem to mean the construction only because ERS itself does not normally have any control. (42) 'thermal by-pass facility' means any solution that circumvents the heat exchanger or controls automatically or manually its heat recovery performance, without necessarily requiring a physical airflow bypass (for example: summer box, rotor speed control, control of air flow); There are a lot of BVUs in which the thermal by-pass facility (its construction) is separate from the ERS. The texts written separately do not correctly take into account this kind of BVU construction.
3	**ANNEX III** Specific ecodesign requirements for NRVUs	We suggest to add the text as below (underlined text): *If a filter unit is part of the configuration the product shall be equipped with a visual signaling or an alarm in the control system which shall be activated if the filter pressure drop exceeds the maximum allowable final pressure drop by measuring the actual pressure drop, measuring operation hours or being calculated using motor rotation, running current, power consumption, and/or other means.* [Reasons for our position] ① The current text seems to indicate that all BVUs must equip pressure sensors before and after filter to measure filter pressure drop changes. Conditionality of pre-installing sensors is against the principle of improving material efficiency. Additionally, because of its prescriptive nature it is likely to prevent innovation and/or hamper freedom of product designing. ② By adding the proposed sentence (underlined text), manufactures can have more design choices like to equip pressure sensors, to calculate using the motor rotation changes, to calculate using the motor power consumption and/or other means. This is more innovative and less technology prescriptive. ③ This requirement seems to be indicating the demand control by CO_2 concentration. On one hand, this would mean that VUs would operate at the

<table>
<tr><th>#</th><th>Article / Annex</th><th>Comment</th></tr>
<tr><td></td><td></td><td>minimum airflow in order to keep low CO_2 level and to minimize airflow. This is because much airflow would lead to higher air conditioning load and waste of energy. On the other hand, this pressure measuring is assuming the constant airflow control at the maximum airflow. These two conditions seem to be inconsistent and contradictory.
④ This kind of technically prescriptive matters should be defined in a harmonized European standard, not included in the law.</td></tr>
<tr><td>4</td><td>ANNEX III
Specific ecodesign requirements for NRVUs</td><td>We suggest to change the text as below:

(In current DRAFT WORKING DOCUMENT)
• The minimum fan efficiency (η_{vu}) is
6,2 % * ln(P) + 42,0 % if P ≤ 30 kW and
63,1 % if P > 30 kW.

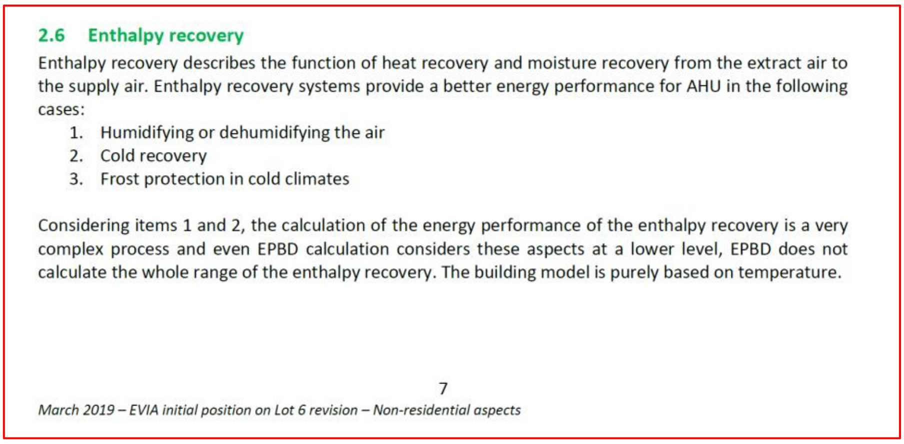
(Our proposal to change)
This text should be changed as below (by adding the underlined text).
• <u>For VUs using motors with an electric input power less than 125W per motor, </u>the minimum fan efficiency (η_{vu}) is
6,2 % * ln(P) + 42,0 %

[Reason for our proposal]
① Motors with an electric input power between 125W and 500kW are already in the scope of the COMMISSION REGULATION (EU) No 327/2011. To avoid a ‘double regulation’, only smaller motors which are less than 125W should have minimum fan efficiency set in the COMMISSION REGULATION (EU) No 1253/202X.</td></tr>
<tr><td>5</td><td>ANNEX III
Specific ecodesign requirements for NRVUs</td><td>Regarding the minimum thermal efficiency for both thermal energy recovery only type and total (thermal and moisture) recovery type, We proposed that the minimum requirements should be same at 73%.

[Reason for our proposal]
The total (thermal and moisture) recovery type is a more energy efficient product than the thermal energy recovery only type. Setting a higher requirement for total (thermal and moisture) recovery type, unfairly punishes this more energy product and restricts its wider adoption in the market which runs against the goals of the eco-design legislation.
②In the below table of case study:
Total recovery type (example B and C) will not meet the requirements even though the amount of the total recovered energy is higher than the thermal recovery type (example A). It is contrary to the concept of eco-design that better products do not meet the performance requirements and are not selected by the market.

<table>
<tr><th>Product No.</th><th>Type</th><th>Limit</th><th>ηt</th><th>ηx_c</th><th>ηe</th><th>Meet the requirement?</th></tr>
<tr><td>A</td><td>Thermal recovery type</td><td>73%</td><td>73%</td><td>-</td><td>No bonus
= 73 %</td><td>Comply</td></tr>
<tr><td>B</td><td>Total recovery type</td><td rowspan="2">75%</td><td>73%</td><td>20%</td><td>73+0.08*20 = 73+1.6
= 74.6 %</td><td>No</td></tr>
<tr><td>C</td><td>Total recovery type</td><td>71%</td><td>40%</td><td>71+0.08*40 = 71+3.2
= 74.2 %</td><td>No</td></tr>
</table>

η_t = efficiency of the thermal heat recovery (sensible heat)
η_{x_c} = efficiency of the humidity recovery
η_e = efficiency of the total recovered energy (thermal + humidity)</td></tr>
<tr><td>6</td><td>ANNEX V
Information requirements for NRVUs with passive ERS</td><td>We suggest to exclude (q) declared static internal leakage rate (%) of bidirectional ventilation units with recuperative heat exchangers from Information requirements for NRVUs with passive ERS.
We agree to declare EATR stated in (r) in ANNEX V, but disagrees to declare static internal leakage rate sated in stated in (q) in ANNEX V. For manufactures</td></tr>
</table>

#	Article / Annex	Comment
		who cannot measure/declare EATR, it is acceptable to declare static internal leakage rate as an alternative option. [Reasons for our proposal] ① NRVU with 'regenerative' heat exchangers is allowed to declare EATR only, hence NRVU with 'recuperative' heat exchangers should be allowed the same. ② OACF and EATR show the actual leakage performance in real operating conditions. Thus, it is enough to declare the EATR only. Declaration of the static internal leakage rate becomes redundant in this case and represents an unnecessary additional burden for manufacturers of NRVU with 'recuperative' heat exchangers.
7	**ANNEX VII** Measurement methods and calculations for NRVUs	Regarding *b) Humidity ratio of a non-residential energy recovery system,* We propose that; ① η_x should be measured at the conditions t_{21} =25° C / 18° C (dry bulb / wet bulb temp.) and t_{11} = 5° C / 3° C (dry bulb / wet bulb temp.), in line with the winter W2 (Table 11) conditions as set in prEN308:2019. These are the appropriate testing conditions for humidity recovery type, and only one mandatory testing conditions. In addition, Summer conditions are explained as "optional". ② The total energy recovery ratio is calculated by the following equation, $\eta_{e\_nrvu} = \eta_{t\_nrvu} + 0{,}08 \cdot \eta_{x\_nrvu}$, therefore both η_t and η_x should be theoretically measured in the same winter conditions, not mixing up winter condition + summer condition. ③ x should be 'absolute humidity', therefore the correct unit is kg/kg[DA]. ④ As EVIA position paper states, the superior function of the Enthalpy recovery is described mainly under winter conditions. Considering this better performance of the enthalpy recovery systems associated with the winder conditions, we suggest to measure the humidity efficiency under winter conditions.  **2.6 Enthalpy recovery** Enthalpy recovery describes the function of heat recovery and moisture recovery from the extract air to the supply air. Enthalpy recovery systems provide a better energy performance for AHU in the following cases: 1. Humidifying or dehumidifying the air 2. Cold recovery 3. Frost protection in cold climates Considering items 1 and 2, the calculation of the energy performance of the enthalpy recovery is a very complex process and even EPBD calculation considers these aspects at a lower level, EPBD does not calculate the whole range of the enthalpy recovery. The building model is purely based on temperature. 7 *March 2019 – EVIA initial position on Lot 6 revision – Non-residential aspects*

Additional Comment

#		Comment
1	Scope of the proposed Regulations	Regarding the MFUs, we support the current proposal which is information requirements only. We do not support the inclusion of MFUs HP function into the scope of NRVUs aspects, if the declared function of the unit is not ventilation, as this would create a double regulation with Lot21, Lot1, Lot10.