



TO: Mr Kestner, Mr Kemna
CC: Mr Brisaer, Ms Lichtenvort.

Topic: EUP – lot2 – annex IV v2 – comments on draft proposal

Dear Mr Kestner

JBCE (<http://www.jbce.org/>) welcomes the new proposal for an annex, and appreciates very much the hard work that has been done to simplify the document as much as possible.

JBCE has reviewed this proposal for annex IV, and feels that the principle proposed is acceptable. Meaning that the requirement for testing is a more representable way of determining the efficiency of the waterheater. Nevertheless, when reviewing the document, still some issues are unclear, and we have questions that we would like to see answered, preferably on a meeting.

Criteria

Will the criteria efficiency value to ban the product be reviewed according to new test method? Theoretically, the value should be the same, but in reality, it probably has difference between calculation tool results and test results according to the annex IV test method. So, the value should be reviewed.

General approach

1. Again, we repeat former comments:

The testing & calculation should take into account the system boundaries that are specific for certain technologies.

The prescribed tapping patterns are very much technology prescriptive, based on conventional heating systems. This proposal does not take into account how new technologies function.

The current proposal for tapping patterns presently prescribes to achieve 55°C. However, for heat pump application, tapping temperatures are lower or higher, depending on technology used. For example, heat pump water heaters with R410A have a different optimization compared to conventional heating systems and heat pumps using CO₂. Typical R410A systems will use a larger tank, with low temperatures, as this is optimal and give sufficient comfort. For CO₂ systems, the optimal is to provide higher temperatures.

Again, the product sheet should be able to show the performance of the appliances in the condition it is used. Since the efficiency determination is based on this tapping pattern, then this hampers fair comparison and does not allow for a level playing field for heat pumps.

We suggest to leave the tapping temperature open, but not lower than 45°; and use the temperature of the manufacturers declaration.

The present tapping temperature does not take into account these new technologies properly.

This comment is also to be extended to lot 1, space heating. Also there, the application field of heat pumps is not well considered in the calculation of efficiencies.

2. The manufacturer shall declare **one or more** Load Profiles: We understand for now that one product can be declaring the efficiency for one or more load profiles, providing the product meets the minimum efficiency requirements. Furthermore, is it correct understanding that the product does not need a separate reference, product number, or similar to differentiate for different loads?

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3. Furthermore, “off peak” appliances can never show the benefit on the primary energy efficiency in this methodology. The present methodology requires just a marking in the data report, and the testing is set up accordingly that these just need to be energized during 7-22h, together with the tapping patterns test. Of course during the tapping patterns, heat loss only will be reflected, but the benefit for the CO2 emissions for the network is not shown. We feel that this should be reflected in a better way.
4. The present proposal indicates on page 7, the last paragraph, that water heating devices that do not meet the minimum output performance of any load are excluded from the scope.
In order to meet the output performance you need to meet the prescribed temperature & capacity. This implies that if you can not achieve the 55° tapping temperature that you are considered out of the scope.
Is this a correct understanding?
The sentence needs to be clarified to avoid misinterpretation.

Test conditions

1) general test procedure for heat pumps.

The testing procedure for heat pumps (iterative tests) is more elaborated than the one for conventional systems.

2) Warmer and colder outdoor

It is mandatory in the proposed annex IV for heat pump application that the efficiency in different climates needs to be shown. Warmer (16°C) and colder (5.5°C) weather condition may put excessive testing load to manufacturers and testing laboratories.

We feel that one test should be sufficient, and that the performance in other climate zones can be calculated based on this test result.

Furthermore, it should be possible to indicate that a certain climate is not applicable. Heat pump water heaters may be designed specifically for northern or southern climate. Then there is intention to sell it in another climate, and as such it should be possible to indicate this accordingly.

It should also be clarified that the minimum criteria to be met are the ones on average conditions. This is now not fed back into the implementing measure.

Furthermore, it not clear how these tests results are used. Are they just indicated as data in the report? Otherwise, are they used as criteria for labeling and restriction for put on the market in certain country or region? Do these regions need to be added on the Energy label?

In our understanding, it is clear that the efficiency for the other climates is purely information for the end-user.

Does 5.5 °C condition have a specific meaning? As it is boundary for defrost operation requirement, the results may put excessive merits to the units that have slightly lower defrost start temperature less than 5.5°C. If it is the purpose, it is okay. If it is not the purpose, the temperature should be more explicit condition for simple low temperature or for low temperature with defrost cycle.

Also, these are temperature conditions that are not indicated in present harmonized standards for heat pumps.

3) Allowance and uncertainty

Why heat pump has larger allowance of temperature ($\pm 5^\circ\text{K}$) for indoor unit than other type of units ($\pm 2^\circ\text{K}$). Similar difference is found in volume flow measurement uncertainty. ($\pm 2\%$ and $\pm 0.5\%$).



For all test cold water of $10 \pm 2^\circ\text{C}$ is to be used, however, we believe that tighter allowance such as indicated in EN14511-3 should be employed. Such a big tolerance may affect efficiencies largely when there are small temperature differences between inlet and outlet.

4) Designated Product position indoors/outdoors:

What if systems have several components part from which is located outside and other part inside?

5) Manual thermostat

on p12 If the Product requires manual thermostat operation: Does this actually mean that the thermostat value can be adjusted during the test. We suppose it is as such allowed to optimize the test results by adjusting temperature settings during the running test.

Table 8 - airspeed

For HP output side air speed of ambient is 3 times higher than other products. Why such difference is necessary? It may increase heat loss.

Smart control

Smart control should be clearly defined. For the moment, there is too much room for interpretation. We assume that there is a clear direction from the commission what controls are assumed to be a “smart control”.

Regarding the explanation “without smart control activation” in clause 4.4 the first dotted paragraph is a problem, because most units in Japan are designed to study the demand pattern always. It means that smart control is always activated to minimize energy use and cannot be disabled. Such units should be tested over a period of 2 weeks to demonstrate optimized control after one week, but such merit of the control is included in the measurement result.

Why the effect is limited to 10%? Some units may have larger effects while others are less. It also varies depending on type of units such as combustion type equipment and heat pumps.

Regarding the smart control, a manufacturer can intentionally reduce the first week efficiency, and then achieve relatively higher efficiency more than 10% in second week. As the test condition is not the same as the efficiency test. This point should be covered to avoid that there are different interpretations possible on the test methodology.

Data Report

Real significant digits are only 2 or 3, but some part of the data report requires 5 digits figure.

For determining the noise power levels it should be clear that for heat pumps the standard EN 12102 is applicable.

Relation with lot 1, in particular for combisystems.

It is for us clear that the present annex IV v2 does not apply to water heaters that are part of a combi-system, due to the fact that water-heating is not the primary function of the system.

Nevertheless, the requirements for such systems are still unclear, or at least to calculate these systems.

Is it possible to clarify what time schedule the commission has for lot 1?

Other remarks:

On p14 Note [3] : de formula for the correction factor K is incorrect. It should be as follows

$$K = (p_a + p_g) / 1013,25 \times 288,15 / (273,15 + T_g) \quad (\text{the “+” should be changed in “\times”})$$

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Kind regards,

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