Joint Industry expert group on professional refrigeration
Ecodesign ENTR Lot 1

Re: Draft Working documents on Ecodesign requirements on ENTR Lot 1 Refrigeration and Freezing equipment

Brussels, 18 January 2012

Dear Ms. Baillargeon,

The Joint industry expert group on ENTR Lot 1 would like to thank the European Commission and you in particular, for the preparatory work done on ENTR Lot 1 - Refrigerating and Freezing equipment.

Members of the group particularly appreciated your open-minded approach to our industry and your consideration for our technical input during the process which led to a constructive and fruitful cooperation and outcome.

As an industry group, we take note of the first draft of the working documents on possible Commission ecodesign requirements on Refrigeration and Freezing equipment, in particular process chillers and remote condensing units, and would like to present you with our latest position on the documents circulated.

We hope that this paper will help you in a positive and constructive way, in your technical work on the working documents.

We will raise these points during the Consultation Forum meeting on Thursday 19 January 2012.

Should you have any questions, we remain at your disposal.

Kind regards,

Jochen Winkler	**Andrea Voigt**	**Joop Hoogkamer**
Asercom	**EPEE**	**EUROVENT**

Part 4 – Refrigeration process chillers

1. Energy efficiency requirements COP, Option 1

First COP is applicable only if operation conditions are constant and in real life this is not the case. The cooling demand depends on temperature profiles, thus the COP is influenced by the actual ambient temperature (influencing condensing temperature) and cooling demand and cannot reflect the energetic efficiency during changing operation conditions in a season.

For that reason, we recommend the use of Seasonal Energy Performance Ratio (SEPR). SEPR is defined as the total seasonal cooling load divided by the total seasonal energy demand.

2. Absorption technology

Further we noticed that there are some discussions about absorption chillers.

This technology has been taken and according to the group based on the right reasons.

The driving force is not an electric drive compressor but mostly waste heat available at the site without extra costs. Large absorption cooling installations makes use of circulation pumps and these pumps of course must be in compliance with the relevant Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council.

3. High temperature process chillers

We welcome the fact that process chillers operating at a high temperature between 2°C and +15°C are now treated under the same Commission Regulation as the low and medium process chillers. This means that all chillers with the same technical definition are covered by the same Regulation which makes it for manufacturers more logic and transparent.

4. Chillers < 50 kW

We consider that the minimum requirements are too high. Standard technology uses a swing or a scroll compressor for this typically small chiller sizes to overcome technical limitations (size,…). The present requirements are too high and will ban these types of applications.

5. Editorial and technical comments on the annexes

<u>Annex I</u>

- In Table 1, 2, 3 and 4 second column, medium temperature: > 300 kW should be ≥ 300 kW.
  In Table 1, 2, 3 and 4 second column, low temperature: > 200 kW should be < 200 kW and < 200 kW should be ≥ 200 kW. Chillers with lower capacities have

lower efficiencies than chillers with higher capacities due to a different the type of compressor.

- In the sentence above Table 3 'remote condensing units' should be replaced by 'refrigeration process chillers'.

Annex II

Underneath the formula n is not explained, it should say: n = the amount of BINS.

Appendix A to Part 4

- In 5.2.1.1.1 the Cd value in option 1 is given as in between 0.1 and 0.25, this should be fixed at 0.25 according to prEN14825.

- In 5.2.2.1.1 the Cc value in option 1 is given as in between 0.1 and 0.25, this should be 0.9 according to prEN14825. This also holds for option 2, where it says in the last sentence, the Cc shall be 0.25, this should be 0.9.

- Figure 1 is not correct, the refrigeration load should be constant before 5°C but also after 35°C, according to the method described in the appendix.

Part 5 – Remote condensing units

1. Segmentation

Our analysis has shown that the market of condensing units is more fragmented than the initial proposal and the general trend can be observed to show higher energy performance as the cooling capacity increases. It is therefore justified to implement segmentation by cooling capacity which stipulates higher MEPS targets as higher capacity segments are concerned. The proposed segmentation reflect in a much better way the product efficiency used in the field and will results in a reliable and accurate efficiency evaluation. This segmentation should be as simple as possible but still reflect the differentiation of the market by cooling capacity.

Likewise segmentation is required to differentiate between low temperature and medium temperature applications. For consistency the number of capacity segments in the low temperature application should be kept identical to the one for the medium temperature application but the capacity segments should be adequately reduced to reflect the lower cooling capacity demand in low temperature application. Our analysis of the product offering on the market shows that the capacity range for low temperature applications is substantially smaller than for medium temperature applications. Any attempt to keep the same segmentation in low and medium temperature would be inadequate with respect to setting the proper MEPS values as well as to the improvement potential.

2. MEPS Metrics

We consider it adequate in the spirit of the eco-design directive to use metrics which properly reflect the actual operational use and the related power consumption.

We therefore strongly advise to use the concept of seasonal performance from certain cooling capacity proposed in the final segmentation factors. However, we recognize that condensing units installed in an indoor environment where the ambient conditions vary to a lesser degree (very limited variation compare to AC appliances) make the concept of seasonal performance factors less necessary.

We therefore agree to use a rating point efficiency concept (COP – coefficient of performance) for the lower capacity segments allowing reliable and simple existing measurement methodology.
However, we strongly suggest using the concept of a seasonal performance average in the form of SEPR (Seasonal Energy Performance Ratio) as the adequate efficiency metric for the larger capacity segments. Although it imposes some additional effort for the manufacturers to establish these values it will more adequately reflect the true power consumption and will put you in a better position to adequately calculate the energy savings to achieve from setting thresholds on the MEPS.

3. Minimum COP & SEPR values

The expert group is committed to improve in a constant way the energy performance of their products including condensing units. However, as technological change goes along with substantial efforts in development and production investment we advocate moderate initial MEPS values which should be targeted at the removal of the lowest performers from the market. These MEPS thresholds can be raised in a second step to such values which are more demanding but leave enough time for producers to respond and find the most economical ways to achieve the targets. These thresholds should find the proper balance between the savings generated for energy consumption and additional costs imposed on the consumers.

4. General remarks

Most products are derived from the same base model. As such it is not necessary to test all the units, but to at least test a basic model and derive for other models the efficiency based on calculation and interpolations. However, these methods should of course be duly documented in the technical documentation, and validated. This concept is applied already in ecodesign ENER lot 10., (see Annex II paragraph 3).

5. Technical comments

Annex I

The cooling capacity > 20 kW (1st column) in Table 1 and 2, should be $\geq$ 20 kW otherwise the capacity 20 kW is not included.
The same for > 8kW (4th column) in Table 1 and 2, which should be $\geq$ 8 kW.

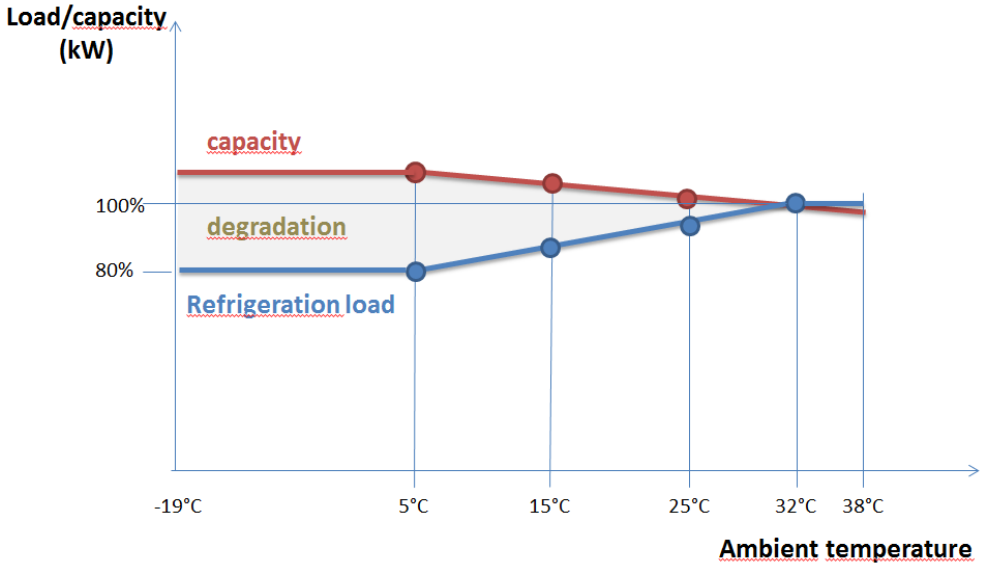
Annex II

Underneath the formula n is not explained, it should say: n = the amount of BINS.

Appendix 1 to Part 5

- Table 1 and 2 should be the same as Table 1 and 2 of Annex II.

- Figure 1 is not correct, the refrigeration load should be constant below 5°C but also above 32°C, according to the method described in the appendix. Please find herewith the correct figure:



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