

Brussels, 17 January 2014

**Additional Comments on Rooftops and VRF Systems
Ecodesign ENTR Lot 6/ENER Lot 21**

Dear Mr. González Álvarez,

EPEE and Eurovent would like to thank you again for providing us with the opportunity to comment on the Working Documents on air heating products, cooling products and high temperature process chillers (Ecodesign ENTR Lot 6/ENER Lot 21 and parts of ENTR Lot 1).

In addition to our previous comments on the level of ambition, sound power requirements, and the issues of HT chillers, EPEE and Eurovent would like to share with you additional comments on rooftops and VRF systems.

EPEE and Eurovent consider these additional comments to be of high relevance for the finalisation of this Ecodesign Lot, taking into account the latest Eurovent data on the performance of rooftops as well as the recently achieved Political Agreement on the revision of the F-gas Regulation.

These comments come in addition to the following positions that we have shared earlier with you:

1. **24 September 2013**: Position paper on working documents on Ecodesign ENTR Lot 6/ENER Lot 21
2. **25 November 2013**: Amended position paper on working documents on Ecodesign ENTR Lot 6/ENER Lot 21
3. **20 December 2013**: Addendum (HT Process Chillers) to position paper on working documents on Ecodesign ENTR Lot 6/ENER Lot 21

We of course remain at your disposal for any questions or comments you may have.

Kind regards,

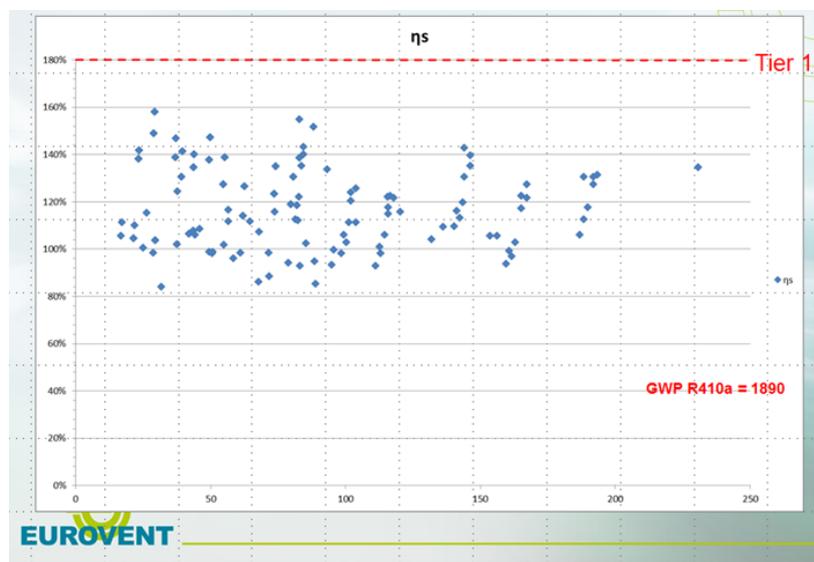
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1. Rooftops

EPEE and Eurovent would like to draw the European Commission's attention to rooftops, a technology which has not been considered in depth in the category of air-conditioners under this Ecodesign Lot. Rooftops are the traditional solution to provide cooling/heating of large single zone areas in single story buildings such as supermarkets and warehouses. EPEE and Eurovent are very concerned that rooftops will not be able to meet the proposed minimum energy efficiency requirements.

New Eurovent data on the seasonal energy efficiency (SEER) of rooftops, confirm this concern and show that among 138 rooftop models, 0% comply with Tier 1 and Tier 2 requirements as currently proposed by the European Commission. EPEE and Eurovent therefore urge the Commission to adapt and lower the requirements accordingly.



- **Improvement options are already implemented today**

EPEE and Eurovent emphasize that the improvement options as outlined in Task 6 of the Preparatory Study are already reality today. Some rooftop models already use the most efficient compressor arrangement (tandem or trio compressors), the most efficient heat exchangers and the most efficient fan technology (variable speed fan with premium efficiency EC motors) that are currently available on the market. EPEE and Eurovent consider that all units above 140% efficiency already feature best in class technologies today. While EPEE and Eurovent members continuously strive for more efficient products, currently there is no room for efficiency improvement of these products in cooling mode.

- **Comparability of heating technologies and uptake of renewables**

A major part of rooftop models feature reversible technology. As is the case for cooling, EPEE and Eurovent expect the seasonal heating efficiency (SCOP) of rooftops also to be significantly lower than indicated in the study. Consequently, requirements for heating need to be lowered accordingly to ensure comparability of different heating technologies and the uptake of renewable and energy efficient equipment. This implies as well that requirements for air-heating products under ENER Lot21 need to be comparable to other heating technologies such as covered by ENER Lot1 (space heaters, biomass boilers, etc.).

In conclusion, reducing the energy efficiency requirements for rooftops as well as for ducted air conditioning packages is indispensable to ensure a level playing field, competitiveness and the promotion of renewable energy sources whilst maintaining an adequate level of ambition.

2. VRF systems

The recently adopted Political Agreement on new F-Gas rules will have a significant impact on products falling under ENTR Lot6 / ENER Lot21, and in particular on VRF systems.

Among others, it includes an HFC phase-down of 79% by 2030 which is expected to achieve fluorocarbon emission savings of approximately 74 million tonnes of CO₂ equivalent. EPEE and Eurovent welcome this as an important step for the heating, cooling and refrigeration sector to contribute to achieving the low carbon roadmap.

The phase down will limit the availability of conventional refrigerants and will ultimately lead to the uptake of refrigerants with a lower global warming potential (GWP). EPEE and Eurovent are concerned, however, that the impact of the phase-down combined with the ambitious energy efficiency requirements proposed under Ecodesign for air heating products, cooling products and HT chillers, will result in indirect bans for certain VRF systems due to the inherent characteristics of available refrigerants.

Explanation: Most of the refrigerants with a GWP below 750 (for example R-32, R-1234yf) are flammable or have a lower efficiency in this type of products (CO₂). EPEE and Eurovent caution that the preparatory study and the current impact assessment of this Ecodesign lot have not analyzed yet the impact of the phase-down. EPEE and Eurovent therefore call upon the European Commission to carefully re-evaluate the impact of the HFC phase down and to consider the following aspects:

- **Standards and national building codes as obstacle to flammable refrigerants**
While the preparatory study recommends R32 as the most viable alternative refrigerant option in the case of VRF systems¹, European and international standards as well as building codes in several Member States, do not allow the use of flammable and mildly flammable refrigerants, such as R32 and R1234yf in the quantities required for VRF systems. Changing these standards and building codes is work in progress, but will require time and resources. Consequently, today there are still significant restrictions to the use of R32, R1234yf and similar refrigerants in VRF systems.
- **CO₂ may significantly reduce the efficiency of VRF systems**
Today, the only non-flammable alternative refrigerant option for VRF systems seems to be CO₂. However, as shown in the preparatory study, the efficiency of VRF systems using CO₂ is significantly lower than that of products using other refrigerants: SEER values are expected to decrease by 12% and SCOP values by 6%². The study seeks to address this reduction in efficiency by suggesting a bonus of 10% on the energy efficiency requirements for refrigerants with a GWP < 675. While it is correct that this 10% bonus represents more or less the difference between the values of the initial base case and the CO₂ model, the improvement options that were proposed for the base case are not necessarily suitable for a CO₂ system. It needs to be taken into account that CO₂ possesses very different

¹ ARMINES (2012) [Lot 6: Air conditioning systems final report of Task 6](#).

² Report, Page 81, Task 6

characteristics than R410A, requiring a different design of VRF systems. Consequently, the real energy efficiency potential of VRF systems using CO₂ as a refrigerant is currently unknown.

In conclusion, EPEE and Eurovent urge the European Commission to carry out further analysis on the impact of the HFC phase down, to re-evaluate the Least Life Cycle Cost and to reduce the minimum efficiency requirements accordingly in order to ensure the achievement of the climate and energy goals for the heating, cooling and refrigeration sector.
