

Brussels, April 15th 2011

POSITION PAPER
Document 2 of Ökorecherche
F gas regulation 342-2006 & Montreal Protocol related

Eurovent would like to thank the Commission and Ökorecherche for giving Eurovent more insight in the Cost Abatement analysis. We would like to make the following comments to the working document 2nd studies received:

A. General approach of the study

The study lists a number of alternative refrigerants that may be used for various sectors. The market feasibility of such alternatives is based on a cost comparison, on the condition that energy efficiency should be kept at the same level.

1. Whilst cost and energy efficiency are indeed important parameters to assess, we would like to emphasize that feasibility also depends on a lot of other factors, that cannot be ignored, e.g. safety limitations, size limitations in buildings, and qualification requirements for installation & servicing people. Even at the same energy efficiency and same or lower costs, alternatives may still have limited feasibility, but this is not reflected in the study.
2. The list of possible alternatives isn't complete and not in line with the latest findings of the UNEP Refrigerant Technical Option Committee (RTOC).
For example, R32, R1234ze and the new blends are not mentioned in the report, although they can deliver a significant contribution to reduce the global warming impact. Also R410A is not mentioned as a possible alternative in the refrigeration sector, although the GWP is half of the commonly used R404A and it is already considered as a best available technology in this sector in the Commission studies for Ecodesign DG-ENTR Lot 1, and also accepted as such by the UNEP-RTOC.
3. Not all cost aspects have been taken into account. For example, even if the average energy efficiencies of alternatives are the same, they can still be less efficient in very cold or hot conditions. As a result, additional investments may be required for power plants and for the grid to cover such peak load. This cost to the society is not taken into account in the study, although it may be very important especially for developing countries. Also the cost for recycling or recovery is not taken into account in the study, although there are large differences between refrigerants on this aspect.
4. Energy efficiency requirements are kept constant, but in reality they are regularly revised upwards. Alternatives which may meet the energy efficiency requirements of today do not necessarily meet the efficiency requirements in the future. This is for example explained in the study for Ecodesign DG-ENER Lot 10 (air conditioners below 12 kW).
5. Not all parameters in the model are explained. It is unclear for us how consumption and emission rates of refrigerants are calculated in the study. Annual leakage rates are explained, but not the refill rates, and not the end of life emission rates. It would be wrong to assume that every leakage is refilled every year, as applications can typically have slow leakages which are refilled rarely or even not at all. This of course influences the amount that could be recovered or leaked at end of life. In appendix COM_1102.051 you can find some graphs which explain this, including different scenarios for leakage, refill and end of life emissions. As such rates are variable from country to country and from sector to sector, we recommend making a sensitivity analysis on these parameters, to arrive to some minimum and maximum scenarios.
6. Climatic differences are not sufficiently taken into account. Not all alternatives work equally efficient in all climates. Although the study sometimes refers to this aspect (eg CO₂ in chillers), it isn't mentioned for other sectors (CO₂ in single splits, heat pumps etc.), or for other alternatives, such as R1234yf.

7. The study doesn't distinguish cost & feasibility factors between highly flammable and mildly flammable refrigerants. This is not a correct judgment. Mildly flammable refrigerants are considered to have a wider market potential and capital investment costs for factories for example are also lower.

In addition to the general comments, additional sector comments are given below:

B. Specific sector comments

Stationary air conditioners, single split & multi split types.

8. The analysis is based only on the cooling function, while in reality most units are also running in heating mode. For example in the EU, nearly 100% of the market are reversible types. Therefore the energy efficiency in the heating mode has to be assessed as well, and the related energy costs and operating hours should be higher values. Please note that some alternatives may be energy efficient in cooling mode, but not in heating mode. See for example the graphs in the Annex which shows a comparison for a 3.5 kW split unit, including an alternative with R32.

Lifetime of the units in A2 countries should be longer than 10 years. For example, Ecodesign uses 12 years. Leakage rates are overestimated. For example, the JRAIA field study in Japan shows 2 % leakage rate for single split and DG-ENER Lot 10 Eco-Design study on Air conditioners uses 3%

For hydrocarbon use, the unit cost is assumed to be 2% cheaper, whilst for heat pumps, a cost up of 4-6% is estimated. Can this be explained?

Heating only heat pumps

9. A similar remark can be given here. Only the heating function is taken into account, although many heat pumps also have a cooling function. It is not clear whether reference is made to space heating only, hot water heating only or a combination of both.

Commercial Refrigeration – condensing units & centralized systems

10. See our remark given above: R410A should be added to the list of possible options, which is already available on the market. Also R1234ze, R32 and the new blends have to be added as a future potential here.

Stationary air conditioning – small chillers & large chillers

11. R410A, R32 and R1234ze should be added to the list of alternatives.

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