

FIRST SESSION

Perspectives on refrigerants with regulations on energy use

Global warming confirmed; consequences on the refrigerants

The Working Group I of the Intergovernmental Panel on Climate Change (IPCC) met in Paris in February 2007 to discuss the Fourth Assessment Report. The report describes progress in understanding of the human and natural drivers of climate change and estimates of projected future climate change.

The understanding leads to “very high confidence that the globally averaged net effect of human activities since 1750 has been one of warming, with radiative forcing of + 1,6 (+ 0.6 to 2.4) W/m².” It considers as “virtually certain” that there will be “warmer and more frequent hot days and nights over most land areas” and “very likely” that “warm spells/heat waves” will become more frequent over most land areas.

Although the US have not ratified the Kyoto Protocol yet, a sufficient number of countries have signed the Protocol for it to enter into force. Countries of the European Union are among the most conscious of the problem; they have decided to follow its lines even before it entered into force.

HFC are all the more taken into consideration that neither CFCs nor HCFCs are included in the statistics on greenhouse gases although they are greenhouse gases.

Still problems related to the ozone layer

Regulations on CFCs and HCFCs, related with the Montreal Protocol, state that the use of recycled/reclaimed HCFCs (R 22, etc.) for maintenance is allowed until 2015. However, the Commission has to review the “technical and economic availability of alternatives”, by Dec. 31, 2008, “with the view to avoiding undue abandonment of equipment”. Then the Commission will determine whether the phase-out date of 2015 should be altered or not, and, if so, how. The general opinion seems to lead to stay with this date. Nevertheless, experts say that there may be a shortage in recycled R22. If users wish to keep their equipment running, they have better to be very attentive and avoid leaks.

Containment: a need to avoid raising costs in refrigeration

If containment is important for HCFCs, so is it for HFCs too. Pressure on HFCs may increase because of their relatively high Global Warming Potential (GWP), although GWP of a gas should be balanced against energy consumption of the system (TEWI). If the refrigeration industry is able to contain refrigerants in the system better, they will be more credible when stating that the weight of GWP is to be lowered in the calculation of TEWI.

If not, they are likely to have to consider high cost alternatives that, in addition, are not always as reliable as HFC systems.

CO₂ / NH₃, ice slurries:

Looking for alternatives, a few companies have sold industrial systems with “natural refrigerants”, including new systems with NH₃ and CO₂. In many cases, such systems are not the best solution from the point of view of energy efficiency; but they may be more efficient than those they have to substitute, while they provide their owner with quite flexible systems and with a “green image”.

Ice slurries may be part of the “green solution”. It is not clear why systems using ice slurries are not expanding more widely. The AFF Commission on secondary refrigerants has started a query on the subject.