



EFCTC NEWSLETTER

An update on fluorocarbons and sulfur hexafluoride

ISSUE 27 - September 2005

CAUTION ABOUT CO₂ EQUIPMENT BETTER EFFICIENCY CLAIMS, AN ACADEMIC STUDY REVEALS

An independent academic study on the Energy Efficiency of Carbon Dioxide (CO₂) in Small Commercial Cooling Applications comes to the conclusion that caution should be given regarding claims – especially from commercial sources – of energy improvements for CO₂-technology between 18 and 37% for example, in order to get objective results from such comparisons.

The study has compared CO₂-technology with HFC-technology for light commercial cooling applications, on the base of thermodynamic considerations and on a literature review. There are very few explanations for the claimed advantages of CO₂-technology compared to the so-called baseline HFC-technology. However, a number of often non disclosed information, like the choice of the compressor, or of its motor, could have influenced considerably the energy efficiency in both 2 cases.

Basically, using data from optimized CO₂-technology together with those from standard non-optimized HFC-technology cannot produce objective comparison results.

Indeed, for [thermodynamically reasons](#), the CO₂ cycle is intrinsically less efficient than classical cycles with standard refrigerants like HFCs. Such cycles have reasonable thermodynamic efficiencies, despite the fact that they were firstly price-optimized, so that they could be further energy optimized.

When trying to substitute this technology by the CO₂ cycle it is definitely necessary to modify it further on, in order to be able to compete with the standard HFC cycle, so that optimizing CO₂-systems only can achieve the same energy consumption than existent HFC-systems. When those would be further energy-optimized they would therefore be largely more energy efficient than CO₂-technology.

The only situations when CO₂-systems can show a better efficiency are in heat pump applications where the high temperature from the compressor side can be utilized for certain heating tasks (like in [heat pumps](#)), but this is not the case in commercial cooling when heat is absorbed from a cold room and directly rejected to the ambient air.

Source: [EPEE](#)



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GERMAN REFRIGERATION ASSOCIATION TO BUILD A REFRIGERATION UNITS DATABASE

The German refrigeration association VDKF has launched the [VDKF-LEC Leakage & Energy Control](#) software, specially developed for monitoring refrigeration and air conditioning units. Through this software, the users will be able to send to a third party, information about such units, which will anonymously gathered by the association, in order to build a comprehensive database. The reliability of the collected information and data will be an asset for further discussions with the authorities.

Indeed, the requirements for [monitoring and containment](#), contained in the future [F-Gases Regulation](#) and other standards, will create the need for comprehensive leakage controls, energy efficiency reporting, emission reduction measures, recording of direct and indirect emissions, etc.

VDKF-LEC is a tool designed to help refrigeration and air conditioning operators to fulfil these requirements.

[VDKT Press release October 2004: VDKF-LEC Leakage Energy Control.](#)

ENERGY-SAVING EQUIPMENT IN MOBILE AIR CONDITIONING

[Mobile air-conditioning](#) equipment manufacturers are constantly improving the quality and the energy efficiency of HFC-134a systems components.

Two recent examples:

- An extra-thin and light condenser allows meeting weight reduction goals while maintaining high levels of performance and passenger comfort. It significantly lowers the R-134a refrigerant charge while reducing energy consumption, an overall benefit to the environment. Besides, its reduced packaging space gives more room under the hood.
- A super lightweight external variable displacement compressor has been developed, 25% lighter than previous compressors, making possible to reduce fuel consumption by 60%. This helps therefore to conserve energy and resources and reduces CO₂ emissions.

Source: Equipment manufacturers



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HFC AIR CONDITIONING PRESERVES OLD ARCHITECTURE AND TREASURES

Beijing Palace Museum was established on the foundation of the Forbidden City. It boasts the largest and best-preserved ancient architecture complex in China, with a wealth of cultural relics and treasures.

Combining advanced air conditioning technologies with ancient styled architecture, [HFC air conditioning](#) was selected for the 25 outdoor units and 86 indoor units providing to the Halls of Treasure and the Halls of Clocks at the Museum the precise cooling necessary to preserve these treasures, without damaging the displays or the structure of the historic building.



Source: World ACR compressors market – BSRIA Study on:

http://www.jarn.co.jp/News/2004_Q2/40615_World%20Comp.htm

NEW ON OUR SITE

Regulatory Developments

Update of the [F-Gas Regulation page](#) with the Common Position publication in the Official Journal



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Refrigeration

[On the Energy Efficiency of Carbon Dioxide in Small Commercial Cooling Applications](#) (📄 800 K)

[L'industrie a besoin des HFC](#) (in French – 📄 1 M)

With additional comments by M Duminil, vice-president of the AFF ([Association Française du Froid](#))