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Climate-friendly refrigeration in supermarkets Systems with natural refrigerants have best climate balance - grants available for energy efficiency and use of natural refrigerants

Supermarket refrigeration systems that contain natural halogen-free refrigerants are the most climate-friendly of all technologies currently available for the purpose. These are the findings of *Comparative assessment of the climate relevance of supermarket refrigeration systems and equipment* research project, which was presented and discussed by over 50 experts at a conference held on 5 September 2008 at the Federal Environment Agency (UBA) in Dessau. At present, the costs for natural refrigerants are sometimes higher, but the costs for the systems will decrease considerably in the near future as mass production increases. Furthermore, conventional systems with synthetic HFCs as refrigerants must meet higher tightness standards in future, which will increase costs. "Effective protection of the climate can only be achieved through large-scale use of natural refrigerants in supermarkets. Carbon dioxide as refrigerant can serve the purpose well since it is 3,300 times less damaging to the climate than the R 404A which is commonly used," said Jutta Penning, Head of Division III at UBA. Many innovative and energy-efficient refrigeration systems using natural coolants are already available on the market.

Conventional refrigeration systems and equipment in supermarkets contain fluorinated hydrocarbons (HFC) as their refrigerant. If these synthetic halogenated substances escape into the atmosphere, they can do damage to the climate. Commercial refrigeration systems, which include the supermarket sector, are one of the greatest sources of HFC emissions in Germany. In 2006 the commercial refrigeration sector alone accounted for 3.4 million tonnes of emissions in CO₂ equivalents, which is nearly 35 per cent of total HFC emissions in Germany. The final report on the research project provides a comprehensive overview of the supermarket refrigeration systems fitted with natural halogen-free refrigerants which are available in Germany and the rest of Europe. Their performance and economy are compared to conventional systems containing synthetic halogenated refrigerants. Moreover, the report illustrates total emissions of supermarket refrigeration systems that affect the climate. The analyses of greenhouse gas emissions in various scenarios and selected model technologies

are based on input data approved by a large pool of experts. It turns out there is great potential for savings, both in terms of refrigerant and energy-related emissions. Refrigeration systems are renewed about once every 14 years in Germany. Besides the cost factor of investment in new equipment, the choice of refrigerant is also becoming more critical: an ecological means of cooling in supermarkets seems relevant in light of global warming. In order to absorb additional costs and promote climate-friendly refrigeration systems on the market, the Federal Ministry for Environment established a climate protection impulse programme for commercial refrigeration systems. The programme funds 15 per cent of net investment costs for measures to increase energy efficiency in existing systems. If existing systems replace HFCs with natural refrigerants, funding can even increase to 25 per cent. Funding for new commercial refrigeration equipment at a rate of 25 per cent of net investment costs requires the application of innovative and energy-efficient technology and use of natural refrigerants.

The final report of the *Comparative assessment of the climate relevance of supermarket refrigeration systems and equipment* research project can be downloaded from the <http://www.umweltbundesamt.de/produkte/fckw/massnahmen.htm> web page.

More information on the climate protection impulse programme as well as application forms can be uploaded from <http://www.bafa.de/bafa/de/energie/kaelteanlagen/index.html>.

Dessau-Roßlau, 12 September 2008