Showcase Production of Hydrocarbon Room Air-Conditioning Systems in China

Background

Room air-conditioning systems in China contain hydrochlorofluorocarbons (HCFCs) as refrigerant gas. This is the main source of ozone- and climate-damaging HCFC emissions in China which totals 260 million tonnes of CO_2-equivalent emissions per year. The air-conditioning sector is a fast growing sector in China and alternative, environment-friendly technologies are urgently needed to reduce negative climate impacts. Conversion to the use of hydrocarbons as refrigerants would not only cut greenhouse gas emissions but also achieve energy savings compared with conventional technology. It is also intended to minimise the need to switch from HCFCs to HFCs (e.g. R-410A), which have an even higher climate impact than the currently used HCFCs.

Project Description

The project aims to introduce the production of room air-conditioning systems by the Chinese manufacturer Gree Electric Appliances Inc. using natural refrigerants (hydrocarbons) instead of HCFCs, thereby establishing a best-practice model. The company Gree is the biggest manufacturer of air conditioners worldwide with 70 million units manufactured in 2007/2008.
The project also includes comprehensive training for production and service technicians; this covers the responsible and safe handling of flammable refrigerants as well as maintenance of the equipment. In cooperation with technical institutions, training material is being produced and distributed in Chinese and other languages. Workshops will facilitate an exchange of experience on the conversion process, with other companies also being invited to participate. Possible financial instruments and market incentives will be studied, which may help to market the new technology. The project is implemented in cooperation with the Chinese Ministry for Environmental Protection/Foreign Economic Cooperation Office (MEP/FECO) and the China Household Electrical Appliances Association (CHEAA).

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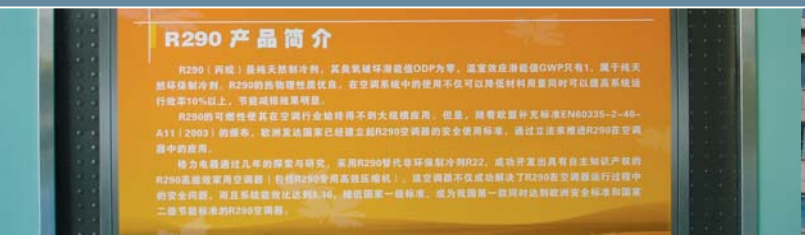
Funded by
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety



Project Impact

Every sold unit of the new air conditioners will permanently and sustainably reduce direct emissions of climate- and ozone-damaging HCFCs. Additionally to that, the new technology is more energy-efficient, which reduces indirect emissions of greenhouse gases and also saves electricity costs for the consumer.
Such energy efficiency will be achieved through new system designs, but also through the use of hydrocarbons which are more efficient refrigerants compared to the currently used HCFCs.
The project may greatly contribute to China's efforts to achieve compliance with the new requirements under the adjusted Montreal Protocol. The experience gained with the project will be considered in the national HCFC phase-out plan. The energy savings, which will become possible through the introduction of the new air-condition models, are also in line with China's broader energy policy.
Through the technical assistance and safety training provided by the project, an innovative technology will be introduced to the Chinese market. It is anticipated that other air-conditioning manufacturers in China and elsewhere will follow suit and replicate the results of the project. This would lead to a wider diffusion of the hydrocarbon technology to other countries, also because a large part of the Chinese AC production is for export.

Title Pilot production of climate-friendly room air conditioners in China
Country People's Republic of China
Sector AC industry
Objective Pilot conversion of room AC production in China from halogenated to natural refrigerants
Target Group Chinese manufacturer Gree Electic Appliances Inc.; China Household Electrical Appliances Association (CHEAA); Chinese Refrigeration and Air-Conditioning Industry Association (CRAA); technical institutes in China; technical committees of international environmental agreements
Project Executing Organization BMU (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
Implementing Partner Organization Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH; Chinese Ministry of Environmental Protection/Foreign Economic Cooperation Office (MEP/FECO); China Household Electrical Appliances Association (CHEAA)
Project Approval October 2008
Project Duration Until December 2010
Project Budget EUR 2,000,000
Funds The project is funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety within the framework of the International Climate Initiative based on a decision of the German Federal Parliament.
Impact on the Ozone Layer and Climate Protection
One production line will produce 180,000 HCFC-free units per year. The replacement of the HCFC refrigerant will prevent 560,000 tonnes CO_2e of direct emissions during the life-cycle of the units. Additionally, indirect emission of 320,000 tonnes CO_2e will be avoided through improved energy efficiency of the units.
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