

4 questions to...

Thomas Spänich, eurammon board member and Director Configuration Engineering Compression at GEA.

## **Energy efficient and future-oriented: Heat pumps with natural refrigerants**

The European market for heat pumps remains on a constantly high level following a long phase of growth. This technology is an attractive means of generating refrigeration and heat particularly in times of increasing energy prices. In view of their thermodynamic properties, heat pumps with natural refrigerants are not only highly energy-efficient but also particularly environmentally friendly, because natural refrigerants such as ammonia and CO<sub>2</sub> have only a negligible global warming potential (GWP), if any. Thomas Spänich, eurammon board member, about the current situation and future trends.

**1. *Which branches are already making broad use of heat pumps with natural refrigerants, and where do you see future market potential?***

**Thomas Spänich:** Heat pumps with natural refrigerants are already in widespread use, particularly in the sector for large industrial heat pumps. Economic operation options emerge wherever the waste heat generated by refrigeration processes can be put to further use on a higher temperature level. Potential can be found above all where refrigeration and heat utilisation is still viewed and planned separately along traditional lines.

**2. *From your point of view, how could this potential be utilized more effectively in the future?***

**Thomas Spänich:** For this purpose, it takes more integrative energy managers. These calculate the balance limit across all heat sources and sinks of an installation and identify

synergy potentials. Thus, processes of energy conversion can be connected, utilising all available technologies in order to save electricity resp. fossil fuels.

- 3. Heat pumps that produce hot water for sanitation purposes have enjoyed particularly high growth on the European market in recent years. But even in this area, there are still obstacles to be negotiated. What are these barriers from your point of view?**

**Thomas Spänich:** It would take more legislative pressure in order to drive forward the development. Europe is currently only making sparse use of the potential offered by CO<sub>2</sub> heat pumps. Especially where smaller capacities are concerned (<100 kW), the efficiency advantages of natural refrigerants are not yet economically apparent in every case. This is due to technical machinery costs and the current low energy costs. In contrast to this, in Asia, hundreds and thousands of EcoCute hot water heaters are sold every year, using carbon dioxide as a refrigerant.

- 4. According to the Federal Environment Agency, domestic heat pumps in Germany currently have a market share of about five percent.<sup>1</sup> What development chances do you see for using smaller heat pumps with natural refrigerants in the domestic sector?**

**Thomas Spänich:** Highly efficient solutions operating with either hydrocarbons or CO<sub>2</sub> are already available today. These technologies offer the possibility of heating and ventilating in an environmentally friendly way even in a private setting. But as long as normal consumers only look at operating costs and initial outlay, any further development will be held back. Unfortunately, this is still an issue of component prices. But, in fact, one of the reasons heat pumps with natural refrigerants are environmentally friendly is that they are very energy efficient. Once sufficient low-cost components are available for domestic pumps with natural refrigerants while energy costs increase at the same time, consumers will also pay more attention to this alternative solution. Specific start-up subsidies would help to see this put into practice much sooner.

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<sup>1</sup> <http://www.umweltbundesamt.de/themen/wirtschaft-konsum/produkte/fluorierte-treibhausgase-fckw/anwendungsbereiche-emissionsminderung/waermepumpen> [as of: June 2015]



**Caption:** Thomas Spänich, eurammon board member

#### **About eurammon**

eurammon is a joint initiative of companies, institutions and individuals who advocate an increased use of natural refrigerants. As a knowledge pool for the use of natural refrigerants in refrigeration engineering, the initiative sees as its mandate the creation of a platform for information sharing and the promotion of public awareness and acceptance of natural refrigerants. The objective is to promote the use of natural refrigerants in the interest of a healthy environment, and thereby encourage a sustainable approach in refrigeration engineering. eurammon provides comprehensive information about all aspects of natural refrigerants to experts, politicians and the public at large. It serves as a qualified contact for anyone interested in the subject. Users and designers of refrigeration projects can turn to eurammon for specific project experience and extensive information, as well as for advice on all matters of planning, licensing and operating refrigeration plants. The initiative was set up in 1996 and is open to companies and institutions with a vested interest in natural refrigerants, as well as to individuals e.g. scientists and researchers.

Internet URL: [www.eurammon.com](http://www.eurammon.com)

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