

"Natural refrigerants make economic sense."

eurammon experts explain the economic advantages of natural refrigerants

Frankfurt/Main (Germany), 17th December, 2013 – Whether in food production or in the manufacturing of chemicals or medical drugs, refrigeration and air-conditioning are essential parts of the production process and subsequent storage. Natural refrigerants offer the most environmentally friendly option for refrigeration applications as they have no impact on the greenhouse effect. But the potential of natural refrigerants goes way beyond just the ecological advantages. eurammon's experts Janos Winter, refrigeration consultant at QPlan and Bernd Kaltenbrunner, managing director at KWN Engineering and member of the eurammon Board, explain how natural refrigerants can be put to energy- and cost-efficient use.

Mr Winter, you have drawn up a payback calculation that shows both the economical and ecological advantages of using natural refrigerants. How did you go about calculating this?

Janos Winter, QPlan: Basically, there is one main thing that has to be taken into account: when calculating the payback period of an investment, it is important to consider all the costs incurred throughout the entire life cycle. The total operating costs include the initial outlay and all subsequent costs for the plant, together with the costs for repairs, energy, maintenance and service. It is in this area in particular that plants operating with natural refrigerants are so convincing. Thanks to the lower operating costs, the initial outlay for these refrigeration systems can be recouped after just a few years.

So the payback period for a system is calculated according to the whole life cycle. Are systems with natural refrigerants also particularly economical in terms of their service life?

Janos Winter: We cannot really generalise here: the service life can vary in each individual case. The life cycle of a system depends on various aspects, such as the technical concept and the specific application or external factors, such as climatic conditions. High outside temperatures, for example, require a greater refrigerating capacity. And so each application has to be viewed individually and compared with suitable alternatives. But in most cases it is usually easy to find alternative applications with natural refrigerants that offer a long life cycle, which therefore also makes them more economical.

It is difficult to compare various systems using differing refrigerants. Nevertheless, are there any reference values or key figures that give an indication of how energy-efficient a system is?

Janos Winter: Definitely. For example, when we compare the annual energy consumption of refrigeration systems, we use software-based computation programs such as "Pack Calculation", which was developed by the Danish IPU Institute. It takes account of most aspects of technical implementation as well as the climatic conditions. One thing transpires here again and again: ecological and economic advantages often make natural refrigerants the best choice – for nearly every application.

Mr Kaltenbrunner, which requirements have to be taken into consideration when planning a system with natural refrigerants?

Bernd Kaltenbrunner, KWN Engineering: Basically the same planning requirements apply as for synthetic refrigerants. But the increased safety requirements for systems with natural refrigerants mean that particular care must be taken in all aspects of operating safety. In addition, it is also important to give due consideration during the planning phase due to the fact that, as a general rule, systems with natural refrigerants have a long service life of up to 25 years and more.

Ammonia is a refrigerant with outstanding thermodynamic properties that is deemed to be particularly efficient. Do systems with ammonia offer the greatest potential for saving costs and energy?

Bernd Kaltenbrunner: Ammonia systems in particular are convincing in terms of their long service life. Accordingly, the planning procedure for these systems gives especially careful consideration to the sustainable selection of individual components in the interests of long-term energy and cost efficiency. This already gives ammonia systems a clear advantage over other systems in terms of potential savings. But in every profitability analysis, the operator also has to decide which approach he wants to take for his system. Experience shows that environmental aspects in particular play an increasingly important role in this process. And ammonia offers clear advantages with regard to environmental concerns. This gives us two powerful arguments that explain why ammonia systems have already become an established force in the refrigeration industry.

In which branches do natural refrigerants make particular economic sense?

Bernd Kaltenbrunner: Natural refrigerants are recommended for companies in every branch of industry that set store not only by the environment but also by business indicators. The key point here is that ecological awareness and economic efficiency are mutually compatible when natural refrigerants are used.

Mr Winter, what role do operating costs play in refrigeration systems? Is this another area where systems with natural refrigerants can rate highly?

Janos Winter: Systems with natural refrigerants generate considerable savings, particularly when it comes to the life cycle costs. Increasing annual operating hours make energy costs a crucial factor. A direct comparison shows that this is an area where natural refrigerants really stand out, as they permit more energy-efficient refrigerating machines. But energy efficiency depends on more than just the choice of refrigerant: it is also affected by external environmental factors, the specific design of a system or the level of training that the operators have had.

There are many successful examples to illustrate the efficient use of natural refrigerants. Can you name a project that gives a particularly clear demonstration of this increased efficiency?

Janos Winter: The retail sector is clearly the pioneer here, particularly in supermarket refrigeration with systems using natural refrigerants. In Scandinavia, for example, we have seen particularly high efficiency rates in systems with natural refrigerants in this sector – resulting, among other factors, also from the advanced state of knowledge among planners and clients. In Hungary, too, there are clear demonstrations of the energetic advantages of

natural refrigerants in supermarkets. NH₃/CO₂ cascade systems in particular generate annual energy savings of up to 35% compared to similar HFC systems.

To foster the development of "green refrigeration", some countries offer subsidies for systems with natural refrigerants, while others even put a tax on refrigerants with a detrimental effect on the environment. What is the situation in Germany?

Bernd Kaltenbrunner: Through the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the German governments offers a subsidy for climate protection measures in industrial refrigeration systems. If the subsidy criteria are fulfilled, a maximum of €200,000 of the net investment costs are refunded. Needless to say, refrigeration systems with natural refrigerants are also subsidised, as they rate above all other options when it comes to efficiency, and, furthermore, they cause no harm to the environment. The extremely low global warming potential – ammonia, for example, has a GWP value of 0 – naturally also plays a major role in obtaining subsidies from the BMU.

For more than 15 years, eurammon has been committed to promoting the use of natural refrigerants. "These applications with natural refrigerants become all the more attractive with the prospect of not only acting on environmentally sustainable lines but of also generating long-term financial advantages", emphasises Bernd Kaltenbrunner, member of the eurammon Board. "Given current developments with the revision of F-gases and the challenge operators face in converting sooner or later to environmentally friendly refrigerants, it is now also important to be able to verify the economic advantages. Fortunately, this generates greater acceptance, while also showing how necessary it is today to act in a sustainable fashion in terms of both ecology and economy."

About eurammon

eurammon is a joint European 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 European 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

Contacts

eurammon contact

eurammon
Dr. Karin Jahn
Lyoner Strasse 18
D-60528 Frankfurt
Germany
Phone: +49 (0)69 6603-1277
Fax: +49 (0)69 6603-2276
E-mail: karin.jahn@eurammon.com

Press contact

FAKTOR 3 AG
Katarina Lisci
Kattunbleiche 35
D-22041 Hamburg
Germany
Phone: +49 (0)40 679446-6132
Fax: +49 (0)40 679446-11
E-mail: eurammon@faktor3.de