



## **Reduce the air conditioning costs**

*By Henrik Kudsk  
Product Manager  
Sabroe Refrigeration (YORK Denmark ApS)*

Air conditioning systems and other refrigeration systems use a lot of electrical power. If you look at the fixed and variable costs over 10 years you will typically find that more than 70% will be spent on electrical power. In other words, the energy efficiency is much more important than the initial investment.

When you decide to buy a car and need to choose between a petrol and a diesel model you will see that the diesel car is more expensive than the petrol car, but the variable costs are considerably lower. The same relation exists when we talk about chillers for air conditioning purposes.

Diesel cars used to be slow and expensive. Nowadays they are fast and efficient. The same can be said about ammonia chillers. Some years ago they were mainly large industrial units built on site, but now you can buy a factory-built and tested unit with an even smaller footprint than an HFC chiller with the same capacity. And no compromise is made on reliability and durability.

Many of the chillers in operation around the world use R22 which is an ozone-depleting refrigerant that contributes to global warming (1500 times more than CO<sub>2</sub>). Many countries have banned the use of R22, and the production of this refrigerant is being reduced according to the Montreal protocol 2000. The normal substitutes for R22 are not as efficient, and this means that you must accept either a larger system or a poor efficiency - meaning larger power consumption.

However, there is one other solution, namely to use ammonia as a refrigerant. Ammonia has been used in industrial refrigeration systems for over 100 years. It provides a better efficiency than all the other refrigerants on the market. It is a little more complicated to use and consequently not so popular. The problem is that the usual copper pipes and components cannot be used and must be substituted by steel. This makes the chiller more expensive to build, but on the other hand the durability is improved.

An ammonia chiller costs about 70% more than a low cost HFC chiller. However, the power consumption can be reduced by 40 to 50%, which means that the break-even point is reached within only 2 or 3 years, depending on how many hours it is used.

The ammonia chiller should be the preferred solution to companies; institutions etc. who pay for both the chiller and the power consumption. Not only is it the cheapest solution. It is also the most environmentally acceptable, because ammonia is a natural refrigerant which does not affect the global warming.

Visit [www.sabroe.com](http://www.sabroe.com) and read more about ammonia chillers or contact your local YORK office to hear more about the ChillPAC.