



Star Refrigeration supplies world's largest natural heat pump



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The world's largest natural heat pump for district heating has over 14MW power, can save 15% of energy and uses ammonia as the refrigerant. Renowned for its expertise in the field of natural refrigerants, UK-based Star Refrigeration is designing and manufacturing the system for a town in Norway and sees the project as a major step towards natural refrigerants.

Having been honoured with the "contractor of the year 2009" award for its "ground-breaking installations and pioneering approach to the use of natural refrigerants" from the rac magazine (refrigeration & air conditioning), Star refrigeration is about to take it to the next level. The company is right now in the design and manufacturing process of a large heat pump that will deliver over 14MW of heat at over 90°C. The system components are specifically designed for



NH₃ and pressures up to 65bar. A special design and the application of cutting edge technology will deliver 3-fold heating capability compared to an electric heating system. Norsk Kulde AS, one of Norway's largest manufacturer of refrigeration equipment is Star Refrigeration's partner in this project.

Next generation heat pumps

Dave Pearson, involved in this project as Director of Innovation for Star Refrigeration, considers the 14 MW heat pump as a massive step towards a natural carbon free heating solution. He adds that the ammonia-based system is very environmentally friendly, as it will not leak any chemical refrigerant with a high global warming potential. In addition, it will reduce the energy consumption by approx. 15% compared to the more established district heating systems using R134a.

The large heat pump system will serve for district heating in the town Drammen in Norway. The final system will be handed over in January 2011 to the client Drammen Fjernvarme, a partnership between the city of Drammen and a Norwegian energy company.

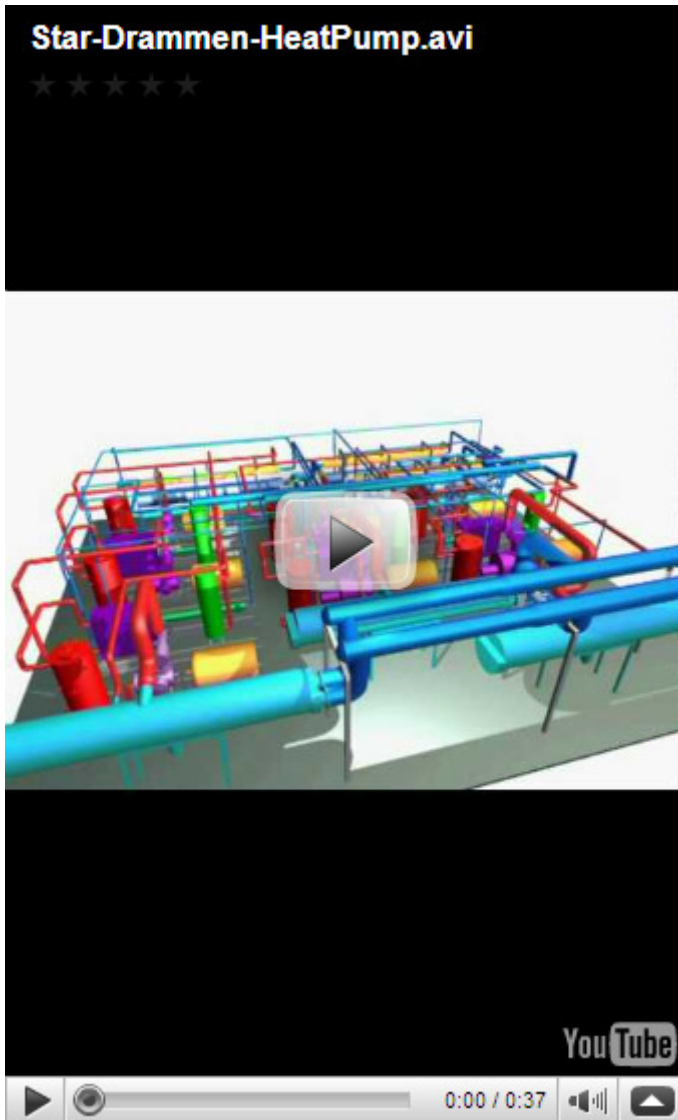
District heating going natural?

District heating as a system for distributing heat generated in a centralised location for residential and commercial heating can provide higher efficiencies and better pollution control than localised boilers. It is already well advanced in the Nordic counties, however so far, they have been mainly relying on the chemical R134a. These typically have very large charges (some as much as 80,000Kg). Even with leaking rates of 1% every year this represents a massive CO₂ effect.

Trusting in the real potential of this new market for natural refrigerant heat pumps, Star Refrigeration

has also appointed a specialist advisor within the process and building services team to support it and is planning on more projects related to district heating.

Visual representation of equipment



Reaction

Dave Pearson concludes: "As we approach peak oil, and governments introduce carbon taxes, any system that burns fossil fuel, whether coal, oil or gas, to do the relatively simple task of low temperature water heating (<90°C) will suffer from dramatically increasing fuel and tax costs. A heat pump might not be driven by zero carbon electricity right now, but at least as our power generation systems become decarbonised, so too these heat pumps become decarbonised. A Combined Heat and Power system is far harder to decarbonised and with payback schemes based on untenable fuel costs, these could be a huge mistake. In addition, our heat pumps will require 1/3 as much renewable fuel as an electric heater, so will need fewer low carbon sources such as wind turbines, nuclear or tidal stream systems. I am confident that our heat pumps can deliver at least a 30% saving on the fuel bill for any medium to large heat user. If R22 or HFC refrigeration systems are being replaced anyway, this fuel saving will effectively pay for this replacement equipment in as little as 2 years".

About Star refrigeration

Star is the UK's largest independent industrial refrigeration engineering company. Renowned for

innovation, the company focuses on environmentally refrigeration and air conditioning. The portfolio of the total solution provider includes the design, manufacture, installation, commissioning as well as the aftercare of industrial cooling systems.

Contact Information

If you would like to contact [Star Refrigeration](#) for any enquiries, you may [send a request](#) to David Pearson directly.

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