

## Freezing Out The Competition

### Background

CeeD member Star Refrigeration is the UK's largest independent industrial refrigeration engineering company, employing 350 people in the UK, 130 of which are based at its head office in Thornliebank, Glasgow. In a four-way effort between Star, Vilter (USA) and CoolPartners (Denmark), and Norsk Kulde (Norway) the team has recently been awarded a £5m contract to provide the world's largest natural district heating system to a town in Norway. At the core of this is a new heat pump developed by Star. This 'NEAT Pump' captures the waste heat produced by air conditioning and other large scale cooling processes that is usually discarded to the atmosphere. This heat is then recycled to provide building heating and hot water at up to 90°C, saving up to a third on energy costs. Factories, hospitals, office buildings, shopping malls, airports - even entire communities in this case - are ideal candidates for employing this green technology.

Drammen District Heating Plant Room Proposal



August 2009

Click [here](#) to see in 3D on Youtube

Unlike anything of its type, the NEAT pump systems operate on natural refrigerants and do not require any synthetic global warming gases (HFCs). Aside from carbon savings, real running cost savings are evident too, as Renewable Heat Incentives (soon to be finalised by the government) will **halve the cost** of heating compared to burning gas.

### The Business Need

Star was up against stiff competition for the contract from a company which had previously installed 30 such district heating systems. **This was its first.** Knowing the competition it was up against and the fact that its solution was new presented a significant credibility barrier to winning the contract, despite Star's experience in cooling. Dave Pearson, Star's Innovation Director came along to one of CeeD's 'open to all' monthly meetings to hear award winning designer Mamta Singhal talk about New Product Development and the design process. During that session, Mamta spoke of the need to 'visualise' new products, in order to provide tangible evidence and to convince decision makers that any proposed solution could move beyond the paper concept phase to a real working product. The challenge was how to bring about that 'visualisation'. While Star has its own mechanical engineering designers in house, rendering a 3D image was not something that could be comfortably slotted into the busy development schedule.



### How CeeD helped

Using CeeD's extensive network of senior operations people, Dave started to sanity check the market need for such a system with those who had responsibility for running (and heating) large factories, particularly those which vent hot air to the atmosphere as a part of the production process.

Not surprisingly, Star Refrigeration's focus had always been on cooling, rather than heating (itself a by-product of refrigeration) and Dave's questioning of fellow 'CeeDers', what they spend on gas and the financial pressures the costs of energy place on those businesses suggested that the NEAT pump was worth pursuing. Having confirmed what had previously been only suspected, it was now time to move forward with the product visualisation.

Again, Star's membership of CeeD was to prove the catalyst for solving that problem. Dave was made aware of the vast pool of 3rd and 4th year University students champing at the bit to get real world experience relevant to their degrees, rather than flipping burgers or pulling pints. CeeD put him in touch with some of the Universities within the CeeD community which sent him the CVs of students capable of doing the 3D rendering and also capable of number crunching the thermodynamics involved in the new pump. Two students from Strathclyde University's Dept. of Design, Manufacture & Engineering Management and Mechanical Engineering were taken on over the summer of 2009 to help with bringing the NEAT pump to fruition.

### Results



The concept design for the NEAT pump was developed by a student from Strathclyde University using AutoCAD Inventor. The 3D generated image was then superimposed to scale onto an image of empty floor space and folded into Star Refrigeration's' pitch proposal. Star met with the prospective buyer over several meetings in autumn 2009 and was awarded the contract by the city of Drammen in January 2010. The district heating system will be fully operational in January 2011.

### Why CeeD matters

When asked to comment on CeeD's role, Dave commented, "Without CeeD we would NEVER have won this prestigious and valuable project. I'm so glad I put in the effort to get involved, even though it would have been easier to keep plodding along in the same direction. CeeD inspired our business by letting us 'mingle' with companies outside our normal circle of operation and they backed this up with practical advice and useful contacts".