

## Improving the Energy Efficiency of Food Refrigeration Operations

**Project funded by the Department for Environment, Food and Rural Affairs**

The food manufacturing industry uses chilling and freezing processes as a means of preserving foods. Transportation and retail distribution uses further energy to maintain the foods at the desired temperatures. These are important steps in optimising the safety, quality and shelf life of foods for the consumer.

With the rising concern over climate change, global warming and the recent sharp increases in energy costs there is increasing pressure to make significant reductions in carbon emissions.

DEFRA identified the need to develop more sustainable and energy efficient technologies for use throughout the food chain whilst not compromising food safety and quality. Centre for Sustainable Energy Systems (CSES) at LSBU in collaboration with other universities have been working on this project to map out more sustainable use of energy and identify new efficient technologies.

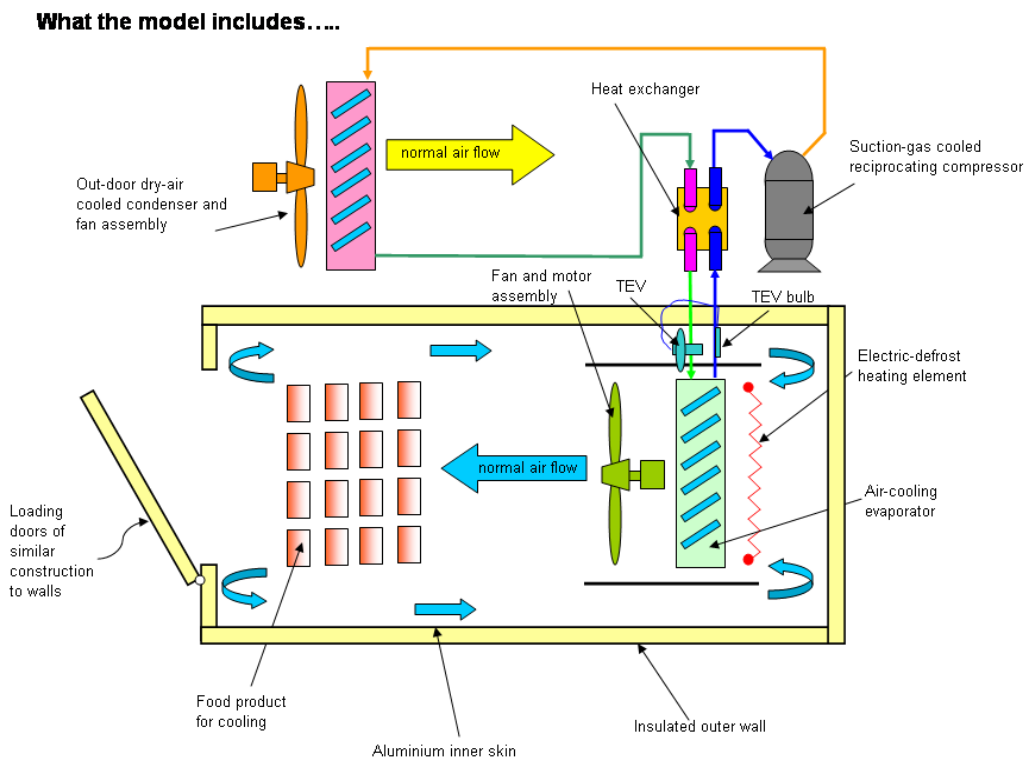
The consortium has achieved the following:

- Identified and ranked the top 10 food refrigeration operations in terms of the potential to achieve the greatest total reduction in energy usage
- identified large energy savings that could be achieved with current knowledge and the barriers to their uptake;
- identified clear gaps in 'real' energy data and in current knowledge in areas of technology, equipment, management, maintenance and overall understanding;
- critically reviewed all the 'new/alternative' refrigeration technologies in terms of their potential to save energy in a food refrigeration operation and their probable development timescale before they are likely to enter commercial use.

CSES has also worked with retailing companies such as Tesco stores on projects investigating sustainable low carbon heating and cooling solutions for retail application.

The projects will help the supermarket to reduce CO<sub>2</sub> emissions, improve the energy efficiency and adopt more sustainable technologies.

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**A schematic view of the refrigerated cold store model**