



## Energy Efficiency

### Background

Energy is a major cost in all parts of the food industry. Recent increases in energy costs and concerns about global warming are encouraging the food industry to optimise their use of energy. While certain energy requirements cannot be avoided, such as heat to be removed from products in chilling or freezing, or added in cooking, the manner in which the process is carried out can make substantial efficiency savings. Energy reduction can best be achieved by understanding the interaction between the energy inputs (refrigeration or cooking plant, heating, lighting etc) and the food. Therefore it is important to initially understand the food processing requirements and how these could be altered whilst still maintaining products at safe temperatures. Audits of energy usage in food plants can be carried out at several levels, from a simple analysis of the energy against equipment usage and ambient conditions, to entire plant surveys to fully optimise systems and machinery. In many cases these will identify areas where energy can be saved that do not require investment in expensive new equipment or machinery.

### How frperc can help

Over the years, staff at FRPERC have directly helped many food related companies improve their energy use through energy audits and advice. Indirect industrial services come from much of our current and past R&D work in developing energy efficient processes and products. Of particular note are:

In September 2006 FRPERC started a 3-year Defra funded reduction of energy in food refrigeration project. With our collaborators, the first stage is an energy mapping exercise to identify the 10 operations (refrigeration process - food combinations) that appear to have the greatest potential for energy reduction in the UK. We would welcome contact from any company or organisation that are interested in saving energy in a food refrigeration process from primary production through to catering.

Air cycle technologies where substantial benefits can be achieved through combined heating and cooling processes with an environmentally benign refrigerant.

Vacuum insulated panels (VIPs) that can offer up to 5 times better insulation effect compared with typical polyurethane panels of the same thickness.

Some energy savings can be made merely by rescheduling of operations. FRPERC have modelling expertise and software tools to allow the energy effects of changing working practices such as chill room loading/unloading patterns and different door protection regimes to be evaluated.

**To discuss energy audits, general aspects of improving energy use or exploiting other emerging energy efficient technologies, please contact us on +44 (0)1472 582400 or email us on [frperc@grimsby.ac.uk](mailto:frperc@grimsby.ac.uk)**