



Newsletter n°5 February 2013 - August 2013

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The FRISBEE expected results

The project will develop new innovative mathematical modelling tools that combine food quality and safety together with energy, environmental and economic aspects to predict and control food quality and safety in the cold chain.

We expect FRISBEE to contribute to reductions in energy consumption in refrigeration processes. Worldwide, refrigeration consumes 8% of all energy and is responsible for 2.5% of greenhouse gas emissions; therefore any reduction in those figures will be a big improvement.

FRISBEE is a Refrigeration Innovation for Food Cold Chain Research European project IP. The four-year, 6 M euro project is funded mainly through the EU's 7th Framework Programme.

We have begun by developing a comprehensive database on the cold chain in Europe, identifying refrigeration needs and available current technologies in the food industry, and investigating consumer needs and expectations with respect to the food cold chain.

FRISBEE Partners

26 partners comprising 13 companies, 11 research institutes or universities, and 2 non-governmental organizations.

Contact

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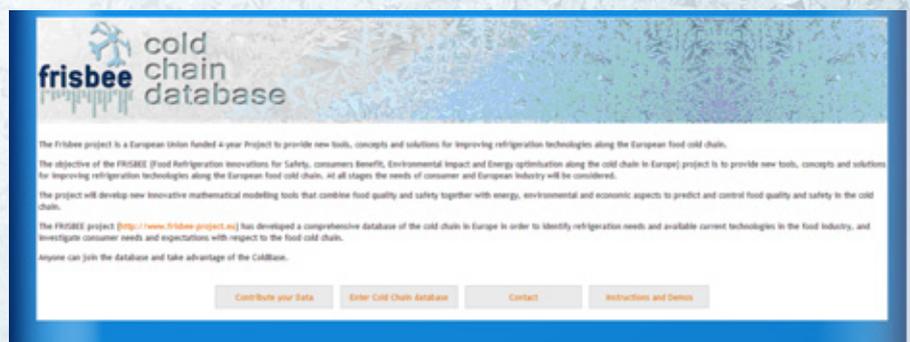
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NEWS

Taking Europe's temperature: Cold chain database

The first European Cold Chain Database built on a web based platform is released and continues to grow. The developed FRISBEE Cold Chain Database offers the potential to identify and consequently manage and improve cold chain weak links. More than 6000 time temperature profiles





contributed by more than 105 data providers cover refrigerated and frozen foods. It is dynamically growing at an average of 500 data files per month due to a continuing active contribution from FRISBEE consortium members and third parties!

In conjunction with Cold Chain Database, the Cold Chain Predictor Software has been developed. The building blocks of the software are (a) the time-temperature records consisting the Cold Chain Database and (b) available quality and shelf life data (from peer reviewed articles in scientific journals).



The Cold Chain Predictor Software has been developed to:

- a. Predict the time temperature profile of specific food products along the cold chain
- b. Predict the product quality status, in terms of shelf life, at different stages of the cold chain.

FRISBEE Cold Chain Database and Cold Chain Predictor Software available at <http://www.frisbee-project.eu/coldchaindb.html>

FRISBEE develops a Virtual Platform application

The Virtual Platform application, developed within the context of dissemination work package, constitutes a ground-breaking development in the FRISBEE project, not only a dissemination facility but actually a powerful tool for exploitation of the project results.

The basic idea is the collection of the results which would be

presented on a unified Web platform, accessible both from researchers and industrials in an interactive and collaborative form. The prototype and proof of concept of the industrial part of the Virtual Platform opened the way to a potential new framework for effective exploitation of the scientific results under progress in the project.

The industrial part of the platform will host all tools, models and software which allows end-users to compare and evaluate their refrigeration technologies against benchmarked data and to identify how to reduce energy whilst maintaining food quality and safety.

FRISBEE dissemination activities

Until now the main effort for dissemination activities has consisted in raising awareness about FRISBEE and starting to communicate the first results mainly to researchers and industry. About 10 scientific publications, 2 workshops targeting scientists,

3 workshops targeting industry, 6 mini-conferences targeting industry, more than 100 events in which information on FRISBEE was available and 4 newsletters are representing the main outcomes of the dissemination effort provided until now.

For the future, dissemination effort will be targeting also retailers as well as consumer's awareness. The website is very easy to use for access to the main results and events.

RESEARCH

Developing novel breakthrough technologies



Figure 1 - Magnetic cooling system developed by Camfrigde Ltd (UK)

Within the Frisbee project we are developing new and novel technologies that have the potential to reduce energy and refrigerant emissions and to improve food quality in the cold chain. We are developing seven technologies (superchilling, supercooling, smart packaging, air cycle refrigeration, magnetic refrigeration, vacuum insulated panels and nanoparticles for improved heat transfer in refrigeration systems).

Although work is still ongoing highlights to date include:

- Design of a magnetic domestic refrigerator and all its components
- Development of ‘smart’ thermal packaging which contains nano encapsulated phase change materials
- Comprehensive modelling and a design guide for using air cycle refrigeration in the food cold chain
- Development of the superchilling process for the pork cold chain
- Work to show that pork can be supercooled (i.e. maintained at temperatures below its initial freezing point) without the detrimental effects of freezing
- Information on the applicability of VIPs (vacuum insulated panels) throughout the cold chain and best methods to apply VIPs economically
- A review of the benefits and issues surrounding the application of nanoparticles in refrigeration systems

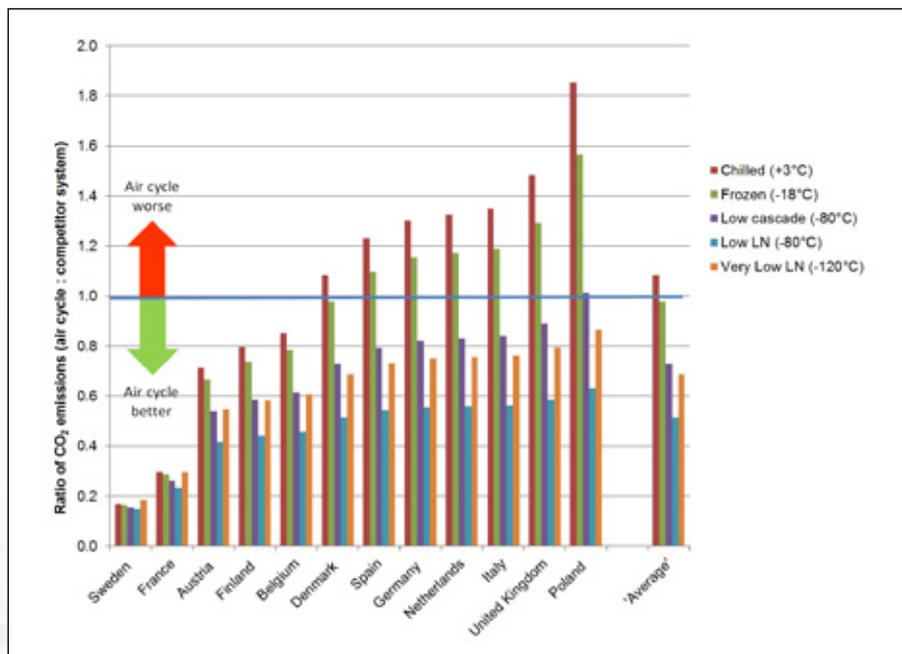


Figure 2 - Benefits of air cycle refrigeration (in terms of CO2 emissions) in various temperature applications in a range of EU countries

UPCOMING FRISBEE EVENTS

Date	Name of the Event	Organised by	Location
6 March 2013	FRISBEE Industrial Workshop “Food cold chain management & food refrigeration innovations”	FEDERALIMENTARE	Roma (Italy)
7 March 2013	Vegetables Work Group Meeting. PTE FFL Spain	FIAB	Madrid (Spain)
11-12 March 2013	Dissemination of projects in which FIAB are involved. Workshop and Brokerage Event	FIAB	Lisboa (Portugal) Badajoz (Spain)
2 April 2013	Industrial Workshop, 2nd IIR International Conference on Sustainability and the Cold Chain	IIR, IRSTEA (ex-Cemagref)	Paris (France)
14-17 April 2013	Alimentaria Lisboa Fair	FIAB	Lisboa (Portugal)
16-17 May 2013	CIBUS Global Forum	FEDERALIMENTARE	Parma (Italy)