



Newsletter n°4 August 2012 - February 2013

News

1. Frisbee analyses the needs of food producers

Research

1. Frozen products cold chain temperature stabilisation
2. Consumers' behaviours and concerns on cold chain

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.

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NEWS

Frisbee analyses the needs of food producers

As part of the work within the Frisbee project the Frisbee team has been compiling information on the needs of companies within the food cold chain. This will help to ensure that Frisbee partners are able to apply the results of their research successfully.

The work has covered 3 areas:

1. A web based survey.
2. An in depth consultation with end users.

3. A review of published Information on issues of importance to end users.

Although a great deal of useful and interesting information has already been collected, it is still possible to contribute to this work by completing the web-based survey. This can be found at <http://www.surveymonkey.com/s/52XTZGJ>.

Results to date have shown that companies have a number of concerns, particularly around costs of equipment, paybacks and the availability of independent information to help then select refrigeration plant.

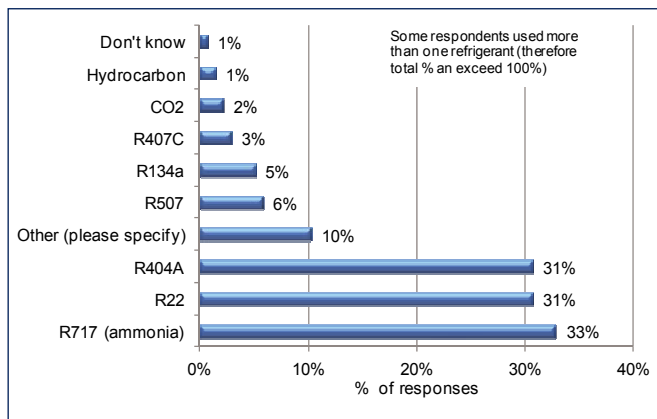
A lot of refrigeration plant is quite old and end users often do not have monitoring equipment to be able to monitor performance.

Many end users also have concerns about new refrigerants and the phase out of HCFCs and their ability to be able to make the right choices when updating or purchasing new

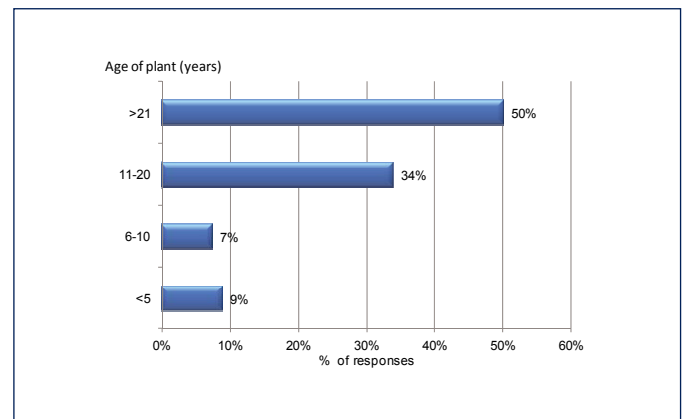
equipment. The issues highlighted in this work will provide vital background information to help Frisbee partners apply the technologies

being investigated within the Frisbee project. The work will also help to make sure that the issues of importance to end users are prioritised within the Frisbee project.

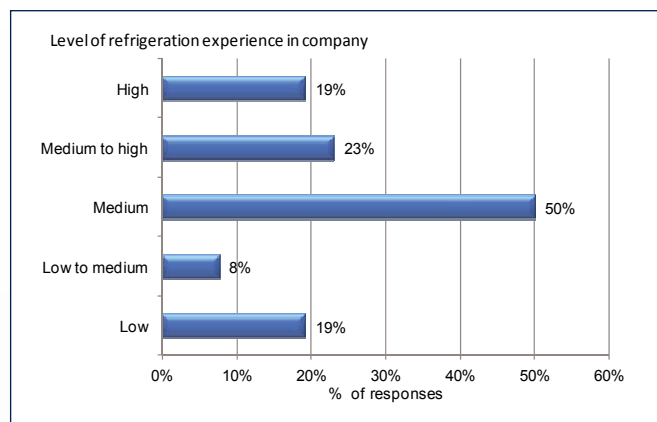
Types of refrigerants at end users' facilities (note that 31% of end users still have R22 on site. Virgin R22 has been banned from 2010 and recycled R22 will be banned in Europe from 2015).



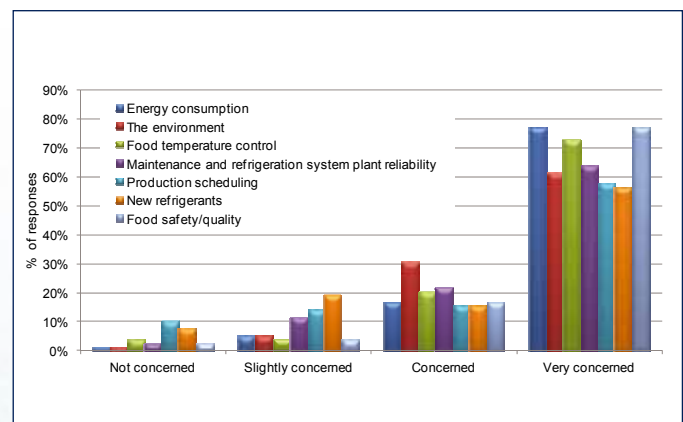
Age of refrigeration plant in end users facilities (note: 84% of refrigeration plant is >11 years old).



Refrigeration knowledge and experience in companies (note: 27% of users considered that they knew little about refrigeration and a further 50% only considered that they had a medium level of knowledge).



Concerns of end users (note that at least 56% of respondents were very concerned about all the issues raised).



RESEARCH

Frozen products cold chain temperature stabilisation

Have you ever tasted ice-cream that was filled with ice very big crystals that you can feel in the mouth? This unwanted characteristic is due to ageing of the ice-cream stored in an environment with unsteady temperature as shown in Figure 1. All the other frozen products such as meat spinach etc suffer from temperature fluctuations. To achieve constant

temperature conditions, systems that can store energy using a special material called phase change material (PCM). In this project, several placements of the PCM have been investigated. Simulations have shown that temperature variations can thus be drastically reduced. In the coming months, large-scale implementations of these solutions will be tested.

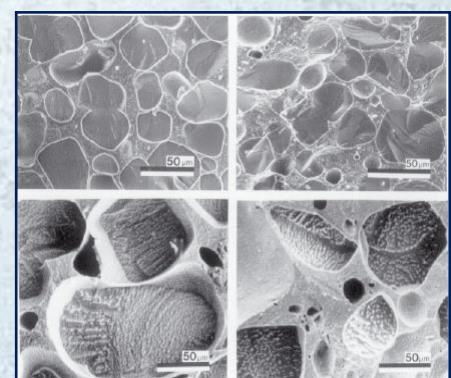


Figure 1. Cryo-scanning electron micrographic images of ice cream after temperature fluctuations. Source : Prof Goof <http://www.foodsci.uoguelph.ca>

Consumers' behaviours and concerns on cold chain

			164) Regarding food you have had to throw away because it spoiled after a long time, which type of food was it? And how often does this happen to you? [Yogurt]				
			Frequently	Never	Rarely	Sometimes	Total
1) COUNTRY	FRANCE	Count	8	204	119	47	378
		% within 1) COUNTRY	2,1%	54,0%	31,5%	12,4%	100,0%
	GERMANY	Count	3	123	225	55	406
		% within 1) COUNTRY	,7%	30,3%	55,4%	13,5%	100,0%
	SPAIN	Count	9	141	206	90	446
		% within 1) COUNTRY	2,0%	31,6%	46,2%	20,2%	100,0%
	UNITED KINGDOM	Count	11	108	113	60	292
		% within 1) COUNTRY	3,8%	37,0%	38,7%	20,5%	100,0%
Total		Count	31	576	663	252	1522
		% within 1) COUNTRY	2,0%	37,8%	43,6%	16,6%	100,0%

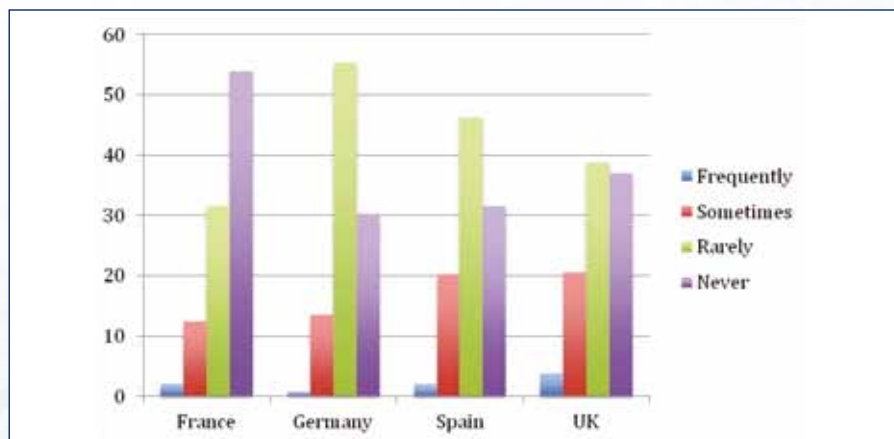
Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	84,879 ^a	9	,000
Likelihood Ratio	83,224	9	,000
Linear-by-Linear Association	18,488	1	,000
N of Valid Cases	1522		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5,95.

The CERTOP a sociological laboratory of CNRS in France has performed in FRISBEE a sociological survey on consumer's behaviors and concerns on cold chain involving five countries: France, Germany, Romania, Spain, and UK. On one hand we focused on the consumers' behaviors regarding the ways they choose, handle, transport and store their fresh, cold and frozen food. On the other hand we have been interested by the ways ordinary people manage their fridges and deep-freezers. It is generally accepted that the consumers' behaviors are a kind of black box. As the consumer is the final link of the cold chain, and as he is not under any control process, he is suspected to have a risky attitude considering the management of his fresh products. The preliminary results of the study show that most of the consumers do worry about their food, pay

attention to its management and follow the recommendations of the cold chain. Of course we observe clear differential behaviors according to the age, incomes, or structure of the households (having at least one child deeply affects the practices related to food). We highlighted differential national and cultural behaviors; especially considering the case of Romania, a country that recently and violently met the Western European standards. Most of the consumers

(but not all of them) are cautious with their food. The problem is not the consumers' safety, but the food waste resulting of frequently excessive cautious attitudes. Conversely, the consumers don't pay attention to their fridges or deep-freezers; they don't seem to be interested in their technological aspects nor in the refrigeration technologies. The fridges appear to be considered as a kind of "magical" cold cupboard and not as a domestic electrical appliance.



UPCOMING FRISBEE EVENTS

Date	Name of the Event	Organised by	Location
September 7 th , 2012	Presentation of FRISBEE Project at the “Food For Life Turkey” meeting	SETBIR	Izmir (Turkey)
September 26 th , 2012	FIAB’s Innovation Plan Meeting	FIAB & PTE FFL Spain	Madrid (Spain)
October 4 th , 2012	Delivery of Frisbee leaflets on the Mini Conference on Allergens	CCIS CAFE (SPES)	Ljubljana (Slovenia)
October 24 th , 2012	Research and Innovation Forum of the “Salon International du Process Alimentaire” (IPA fair)	ANIA (SPES)	Paris (France)
October 21 st -25 th , 2012	SIAL Food Fair (Dissemination to the food companies)	ANIA (SPES)	Paris (France)
October 30 th , 2012	Technology Platform Food for Life Spain. (Quality, Production and Environmental Sustainability Work Group Meeting)	FIAB (SPES)	Madrid (Spain)
November 22 nd , 2012	Food Conference (short insert of the progress of Frisbee project)	CCIS CAFE (SPES)	Ljubljana (Slovenia)