

ADV: Nano-Cooling (Looking for investors & copartners)

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Nano-Cooling Project Overview

This project is targeted at the development of cooling devices such as refrigerators and air-conditioners with in-built nanochips in order to provide robust refrigerating equipment, being twice as power saving as any units based on conventional (Non-nano") technology and refrigerant-free.

Additionally, respective cooling/refrigerating units (air conditioners) would ensure stable around-the-clock power supply, even in overcast and misty conditions.

Products

The main arguments for the products to be developed – refrigerating equipment (Nano-Fridge") and air-conditioners – are:

- Energy Efficiency: significant decrease of electric energy demand (approx. down to 50% in comparison to conventional technology)

- Environmentally friendly refrigeration due to take-over freons and observance of all international standards (free of chlorofluorocarbons – CFC)

 - Noiseless operation

 - Reliability and low operating costs due to replacement of mechanical units

 - Protected by patents

Market

The world-wide refrigerator market – roughly estimated as a 20 Billion

Market, still growing – is currently dominated by the race in the development of CFC-Free Energy-Efficient Refrigerators. A number of initiatives, such as the Super-Efficient Refrigerator Program (SERP), launched by the US Consortium for Energy Efficiency, or the 5-years CFC-Free Energy-Efficient Refrigerator Project in China, underline the relevance of such developments seen by commercial and political institutions in the struggle for increasing energy efficiency. In particular China, being the largest market for refrigerators, will play an important role here. Recently, other Asian countries have been set up similar initiatives, such as India, Japan, Thailand and South Korea.

A number of leading manufacturers of refrigerator equipment have been presenting prototypes of energy efficient refrigerators recently. However, most of these prototypes are based on efficient use of conventional technology. An considerable exception though is the work undertaken by the Gibraltar-based company Cool Chips. However, a significant breakthrough has not been reached yet. By using state-of-the-art nanotechnology it is expected to achieve this breakthrough.

Background

The alternative way to achieve environmentally friendly refrigeration consists in providing new energy-efficient solid-state cooling technologies for households, industrial and cryogenic engineering. More specific, this is a unique way to avoid the transition of intermediate HCFC freons in refrigerating, and consequently to save huge financial and material resources (International Institute of Refrigeration <http://www.iifir.org>). Technologically, this can be achieved by using thermoelectric converters, which allow the conversion of electric energy into coolness. On the basis of nanostructured materials it is possible to create solid-state refrigerators using an effect which is similar to the Peltier effect.

Timescale

Two phases in this project are envisaged:

 Prototype Development (2 years)

 Conversion of prototypes into end-user products (refrigerators and air-conditioners) – 2 years

Therefore, products to be sold on a large scale would be available in 2008. However, it is envisaged to seek cooperation with a major manufacturer at the end of the prototype development phase.

Investment

6,5 Mio. USD for both phases.

More detailed information on request.

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