

Magnetic refrigeration technology set to break through

Magnetic refrigeration is to hit the mainstream with launches planned in domestic and commercial sectors over next two years.

Cooltech set to launch integrated cold counter later this year, while Whirlpool advances field trials on domestic refrigerator for production launch

French company Cooltech is to launch a 500 W cold counter using the principles of magnetic refrigeration later this year. The firm, together with six partners has rapidly advanced development of a commercial product, thanks to the backing of technology investors, including 20 million euros from the French government.

The news comes as UK magnetic refrigeration specialist Camfridge said that domestic fridges developed in association with manufacturing partner Whirlpool were likely to be available to buy by 2015.

Cooltech's R+D director Tim Lorkin told a meeting of the IOR's Sirac technology group that the developments marked the start of a move towards the mainstream for the technology, which by using the temperature change from adding and subtracting a magnetic field provides cooling without the need for refrigerants or expensive compressors.

"Magnetic refrigeration can cover 80 per cent of the vapour compressor market today – it is not niche."

Cooltech had originally focused primarily on cooling electric vehicles until the French government backing. The new cold counter will be twice as energy efficient as comparable conventional counters, the firm said, while not using the HFC refrigerants commonly used in the counters, such as R134a.

One of the key aspects to the development of Whirlpool's domestic fridge is the use of an iron-based alloy to provide the magnetic charge. The alloy brings the price of the technology down considerably over the rare-earth magnets such as gadolinium used initially by the sector's pioneers. The 'magneto-calorific effect' was studied by physicists in the 1920s and 1930s, winning a Nobel prize for magnetic cooling in 1933.

Camfridge's business development director Allesandro Pastore told the Sirac meeting that the potential for replacing traditional fridges was great. "Magnetic solutions are more efficient at lower cooling powers than vapour compressors, and you can redesign the refrigerator – why have a big box if you don't need a big compressor?"

The efficiency is twice that of the conventional domestic fridge's refrigerant butane, he added.

Camfridge is working with Whirlpool and other partners such as Indesit and Hotpoint.