

ENERGY DEMANDS ON COMPRESSORS REFRIGERATORS, FREEZERS & CHILLERS CAN BE REDUCED BY UP TO 18% IMMEDIATELY WITH HFE.

Reducing energy costs and corporate carbon emissions in the food industry can be accomplished easily and cost effectively, with fast ROI, using Fairford's HFE single- phase power-optimising soft starter. Simply by fitting HFE soft starters (in about 15 minutes) to the electric motors used on refrigerators, freezers, chillers, and compressors, energy demand can reduce immediately by 10-18% per unit: figures backed-up in an independent report by EA Technology Ltd.⁺⁺

HFE is the ideal product response to a multi-disciplinary project that is being undertaken as part of the Carbon Vision research programme - one of the biggest investigations ever undertaken into the understanding of how to achieve changes in carbon emissions. The project is focused, in particular, on food industries where low temperature cycles are common. Since refrigeration or chilling systems are a major energy consumer in food industries, the potential for energy saving is considerable.

In the UK, two-thirds of all electricity used by industry is consumed by electric motors; many of which are used in refrigerators, freezers, chillers and compressors. By reducing the energy consumed by this equipment, money is saved and a measurable reduction in carbon footprint is achieved (generating source carbon emissions are reduced by 430g for every kW hour saved[†]). These savings are achieved quite easily using a Fairford HFE unit, as evidenced by independent report, by EA Technology Ltd⁺⁺, on the effect of fitting just one freezer with the optimising soft starter.

“The Fairford HFE device performed well, demonstrating that similar freezer temperatures were maintained when the device was installed, and that savings of between 10 and 18% were obtained...”.

The automatic energy optimising technology that enables HFE to provide these savings is Fairford's own, and is based the well-known Fairford System Patent. With optimising selected, the HFE soft starter continuously adjusts the motor terminal voltage so that the input energy corresponds to the mechanical output required. This reduces wasted power, improves motor power factor, improves efficiency and reduces motor heating. These results are particularly beneficial in applications such



as refrigerators and air compressors, which run at varying loads for extended periods of time.

In addition, refrigeration systems that employ hermetic or semi-hermetic compressors enjoy an additional benefit from the reduction in motor heating. Because the motor runs colder, the cooling medium - in this case the refrigerant gas, does not become as hot after it has passed over the motor windings, enabling the compressor to run for shorter periods, giving additional savings. This benefit can be significant in applications such as beer coolers, supermarket refrigerated display cabinets, chillers, bakery oven fans and conveyors.

As a complement to its energy saving benefits, the HFE soft starter reduces or eliminates mechanical and electrical stresses on motor start-ups (hence soft starter). This feature protects refrigerator compressors from damage every time they switch on or off. As a result, businesses suffer fewer stoppages, which means less downtime and reduced operating costs.

[†] **Source;** www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/13216_282_05.pdf

^{††} **EA Technology** is Europe's leading consultancy for impartial engineering reliability & failure investigation. www.era.co.uk