

Formula One helps supermarket fridges become more energy efficient

Williams Advanced Engineering, the division of Williams that commercialises Formula One-derived technology and know-how, has collaborated with UK start-up Aerofoil Energy to develop a new aerodynamic device that can significantly reduce the energy consumed by refrigerators in supermarkets and convenience stores.



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The Kriel Technology Group, a distributor of 'game changer' technologies, has acquired the exclusive distribution rights to market Aerofoil in the southern Africa region.

For South Africa the impact is huge in terms of decreasing loads on Eskom's electricity generation capabilities.

Energy consumption makes up a significant percentage of a supermarket's operational costs, with energy hungry refrigerators that keep the produce cool being the largest consumers of power. Open-fronted multi-deck refrigerators that line the aisles of supermarkets consume excessive energy, with some of the cold air used to cool produce spilling out into the aisles, resulting in increased energy consumption and 'cold aisle syndrome', which can be unpleasant for shoppers.

Aerofoils are carefully designed and engineered profiles that control the direction of air flow. Aerofoil Energy and Williams are developing a new retrofittable aerofoil system that attaches onto each refrigerator shelf to keep more of the cool air inside the refrigerator cabinet. This innovative technology will result in significant energy savings for supermarkets and

convenience stores, with subsequent benefits for their carbon footprint. Tests by Williams and Aerofoil Energy have shown energy savings of between 20% to 30%. The technology will also make the shopping experience more pleasant for consumers.

Aerofoil Energy is working closely with Williams to refine the aerofoil concept, utilising Williams' expertise in aerodynamic design and testing from four decades of success in Formula One racing. Williams' Advanced Engineering division is using computational fluid dynamics to model and simulate new designs before testing them at the Williams factory in Oxfordshire.

Evaluating aerofoil technology

A number of supermarkets are evaluating the aerofoil technology with promising results. Sainsbury's, the UK's second-largest supermarket chain, has been testing the product at a number of its stores. Sainsbury's operates 1100 stores and uses 1% of the UK's energy in total. As part of its 20x20 Sustainability Plan, Sainsbury's has committed to reducing its absolute operational carbon emissions by 30% by 2020 and this technology can play a key role in achieving this target.

Speaking about the trial John Skelton, Head of Refrigeration of Sainsbury's, said: "We're proud to be giving our fridges a turbo boost with this fantastic aerodynamic technology.

Aerofoils help the airflow around Formula One cars and can improve their performance - and that's exactly how they help the fridges in our stores, by keeping the cold air in. This Formula One-inspired innovation has already shown it can cut carbon produced by major refrigerators."

Craig Wilson, MD of Williams Advanced Engineering, added: "Williams Advanced Engineering's mantra is to take the best of Formula One technology and know-how and work with a range of industries to help improve their products and services. Much of our work focusses on improving energy efficiency and the collaboration with Aerofoil Energy is a perfect example of how Formula One innovations can have a tangible benefit to ordinary people and the environment. This technology has global potential and the savings in operational costs and emissions are extremely promising."

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