

Supermarkets welcome cold-comfort edge of F1 aerofoils

April 25 2015, by Nancy Owano



UK-based Williams Advanced Engineering, the technology and engineering services business of the Williams Group, has collaborated with UK-based Aerofoil Energy to develop an aerodynamic device that can reduce the energy consumed by refrigerators in supermarkets and convenience stores.

For supermarkets, large consumers of power that are biting into operational costs are the stores' [refrigerators](#). Open-fronted multideck refrigerators which line the aisles of supermarkets consume excessive [energy](#). What is more, some of the [cold air](#) used to cool produce spills

out into the aisles. This results in increased energy consumption and "cold aisle syndrome." The latter is unpleasant for shoppers.

An article that appeared in February in *Refrigeration and Air Conditioning*, talking about multidecks, said "they are open-fronted, the cold air falls out, and what doesn't fall out [mixes](#) with warm air." The article said these effects make multidecks power-hungry and expensive to run.

Enter aerofoils, which control the direction of air flow. Aerofoils are employed on aircraft as wings to produce lift or as propeller blades to produce thrust. Williams and Aerofoil Energy are working on a retrofittable aerofoil system. The idea is to attach it onto each refrigerator shelf to keep more of the cool air inside the cabinet.

Williams' role in this is lending its expertise in aerodynamic design and testing. Its Advanced Engineering division is using [computational fluid dynamics](#) to model and simulate designs, testing them at the Williams factory in Oxfordshire.

Refrigeration and Air Conditioning described how the aerofoils work: "When placed in an air stream, the air passing over the top of an aerofoil speeds up and lowers in pressure, while the air passing underneath slows down and the air pressure becomes higher – this is how aeroplanes fly. By placing aerofoils in the air curtain of a multideck fridge, a high pressure/low pressure barrier is created between the outside of the fridge and the inside. This reduces the amount of warm [air](#) entering the fridge, reducing [energy consumption](#)."

So far, said Williams Advanced Engineering, a number of supermarkets have evaluated the technology "with promising results."

The Sainsbury's chain's head of refrigeration, John Skelton, said

"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."

The supermarket chain has been testing the system at a number of its stores. The chain has a sustainability plan, and it has committed to reducing its absolute operational carbon emissions by 30 percent by 2020.

More information: www.williamsf1.com/advanced-engineering/moreenergyefficient

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Citation: Supermarkets welcome cold-comfort edge of F1 aerofoils (2015, April 25) retrieved 28 April 2024 from <https://techxplore.com/news/2015-04-supermarkets-cold-comfort-edge-f1-aerofoils.html>

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