Energy-saving, retail-friendly technology
The Aerofoil product was developed in collaboration with one of the UK’s most advanced engineering and design companies.

- The Aerofoil is an aerodynamically-profiled blade attached to the shelves of open-fronted multi-deck fridges. The aerofoil incorporates a profiled, waterproof ticket strip and takes the place of the existing price ticket rail.

- The Aerofoil product was originally conceived by Aerofoil Energy and is based on the principles of aerodynamics in aircraft. In 2015 we partnered with Williams Advanced Engineering, the technology and engineering services business of the Williams Group.

- Williams used computational fluid dynamic modelling to create detailed simulations of supermarket fridges to help refine the Aerofoil design and performance. The result of the collaboration is quite simply one of the most advanced aerofoil profiles to be designed and proven in the market.
Aerofoils address one of the most energy-intensive features of grocery retail.

All open-fronted multi-deck fridges employ a curtain of refrigerated air blown down across the open front of the shelves to help maintain the contents at a consistent target temperature. However, much of this cold-air ‘curtain’ spills out of the front of the cabinet and into the store aisles. Not only is this wasteful from an energy perspective, but it also causes ‘cold-aisle syndrome’ with consequent negative impact on the shopping experience.

Deployment of Aerofoils in the cabinet draws the cold-air curtain back into the fridge, largely eliminating cold air spill. Consequently, Aerofoils are shown to reduce energy consumption in the fridge by up to 25%, representing significant cost savings to retailers and a major reduction in their carbon footprint.

“We’re committed to becoming a Net Zero business by 2040 and have already begun to make headway by investing substantial time, research and money into different areas that can help us achieve this goal – including the fitting of the pioneering Aerofoil technology.”

Dave Merefield, Carbon, Utilities and Engineering Manager
Aerofoils deliver a wide range of benefits

- Reduced energy consumption by up to 40% according to lab tests (25% in store)
- Consequent cost savings as well as a major reduction in carbon footprint
- Reduced product shrinkage due to the stabilising effect on product temperatures
- Warmer shopping aisles and shopper comfort due to the reduced cold-air spill
- Made from 100% recycled aluminium, which requires only 5% of the energy required to produce new aluminium
- All system components fully recyclable
Aerofoils help mitigate climate change in several ways

• As well as reducing energy consumption, Aerofoils have a stabilising effect on product temperatures within the cabinet, both lowering the temperature and retaining it within a narrower band. This helps maintain product quality over a longer period and therefore reduces waste.

• Aside from increased revenue generation for the retailer, the improvement in product longevity and reduced waste has beneficial climate-change impacts such as relieving pressure on the supply chain and mitigating emissions from biodegradation.

• Eliminating cold-air spill from cabinets also alleviates the need for supermarkets to re-heat the aisles in order to maintain a comfortable environment for customers, representing a further saving in energy consumption.

“...The technology also brings improvements to product temperatures, which will help us reduce shrinkage and food waste, another key component of our environmental strategy.”  

Sukh Tiwana, Group Commercial Director, SSP
Aerofoils have been widely adopted by major retailers

- Due to their positive impact on energy and related cost savings, Aerofoils have consistently met retailers’ return-on-investment criteria, and hence have been widely adopted throughout the industry in the UK.

- The roll-out of Aerofoil technology to nearly 1,400 Sainsbury’s stores commenced in February 2018, and completed successfully in March 2019. Other substantial orders followed including from Asda, several Cooperative societies, Boots, SSP and WH Smiths. In 2019, M&S and its franchisors installed the technology in some 800 stores. Tesco then adopted the technology for its estate, which has been fully rolled out in 2020. We are also in advanced trials with Walmart USA.

- In total, 1.3 million Aerofoils are now installed in over 4,000 stores globally.
The Aerofoil product is produced in a sustainable way and built to last.

The Aerofoil kit is a high-performance system, built to withstand the challenging operating conditions in a busy supermarket and is very likely to outlast the lifetime of the cabinet. In fact, of the one million plus Aerofoils installed so far, we have not heard of a single failure.

The Aerofoils themselves are made in the UK from 100% recycled aluminium, which therefore requires only 5% of the energy needed to produce them by sourcing new metal. Moreover, aluminium itself is 100% recyclable. We have, therefore, further enhanced the technology's energy-saving credentials by reducing our upstream manufacturing footprint as well as the environmental externalities that would otherwise arise from overseas production and shipment.

“Fitting Aerofoils across our retail estate will make a major contribution to our corporate responsibility programme, most importantly by lowering our energy consumption and related emissions...”

Clare Meehan, Head of Stores and Supply Chain Finance

WHSmith
The success of Aerofoils has catalysed further innovation to improve multi-deck cabinet performance

- In 2017, Aerofoil Energy assembled a team of highly-skilled practitioners with over 150 years of combined expertise in the refrigeration industry and engineering sector. This team has been working on our Vortex technology programme in conjunction with our technical partner Williams Advanced Engineering.

- Using advanced computational fluid dynamic modelling of a virtual fridge, our Vortex programme has developed several new technical innovations that complement the Aerofoil product and enhance the energy and thermodynamic performance of multi-deck cabinets.

“We selected Aerofoil Energy following our independent laboratory trials, which demonstrated that Aerofoils significantly outperformed alternative shelf-edge technology.”

Ian Moore, Head of Store Development at Marks and Spencer
Our credentials

• **Award-winning technology**
  • Joint finalist for the 2018 MacRobert award
  • Winner, 2016 IET Innovation Awards
  • One of IET’s ‘100 engineering ideas that have changed the world’
  • Winner 2019 RAC Refrigeration Product of the Year

• **Delivery capability**
  • In-house project management and logistics teams
  • Long-standing supplier relationships with significant production capacity
  • Wide-ranging OEM relationships for new-build and replacement cabinets

• **Numbers that speak for themselves**
  • 1.3 million Aerofoils installed in over 4,000 stores to date with zero failures
  • Helping grocers avoid over 150m kg CO₂ emissions per annum
  • Already widely adopted, including by six of the leading grocers in the UK
BBC One Show
Out of the Cold: Showcasing Aerofoil technology and benefits for Sainsbury’s

CFD Model
Visualisation of Computational Fluid Dynamic model used for technology development

MacRobert Awards
Finalist video about Aerofoil Energy partnership with Williams Advanced Engineering

Smoke Test
Demonstrating the effect of Aerofoils by smoking a cabinet
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