Resource
Data Management

Take control of store energy and improve profitability

Whitepaper

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Executive Summary

The food retail market is changing, and poor control of heating, ventilation, cooling, refrigeration and lighting is responsible for excessive energy consumption in many supermarkets.

Because of the scale of many food retailers, there is significant opportunity to reduce energy costs and improve organisations' bottom lines by employing the latest technology and proactive software solutions.

This whitepaper:

- Outlines the scale of the opportunity for UK and indeed some international retailers;
- Introduces the technology that enables you to take control of store energy use;
- Gives examples showing how the system works and what it can deliver.

Food Retail Market Overview

The Carbon Trust identifies saving energy as one of the simplest ways for retailers to increase profits.

Energy costs may represent a small proportion of sales turnover, but reducing energy use immediately increases margins without needing to increase sales. It is said that a **20% cut in energy costs** delivers the same bottom line benefit as a **5% increase in sales revenue**[1].

Food retailing is an energy intensive business. Supermarkets in the UK are estimated to account for more than 3% of national energy consumption[2] and the food chain in the UK is responsible for about 18% of the country's total energy use[4]. Against a background of increasingly sharp competition between retailers, changes in consumption habits, reduced profit margins (in part due to the impact of social and political changes) and rising energy costs (owing to economic pressures like currency value and oil prices), cutting energy use is seen as a key strategy to improve the bottom line performance of retail businesses.

By adopting the proven technological approach outlined in this whitepaper and utilised wholly or in part by many of the UK's leading food retailers, it is estimated that the **industry could save between 10-40%** of current expenditure on energy, equivalent to an **increase in sales of up to 10%**.

In a sector where margins can be very tight, this provides a highly attractive boost to profitability, improved competitiveness and added financial security.

On the environmental front, it also significantly reduces the carbon emissions of your business and enhances your green credentials. In the age of the socially conscious consumer, the importance of this market driver should not be ignored.

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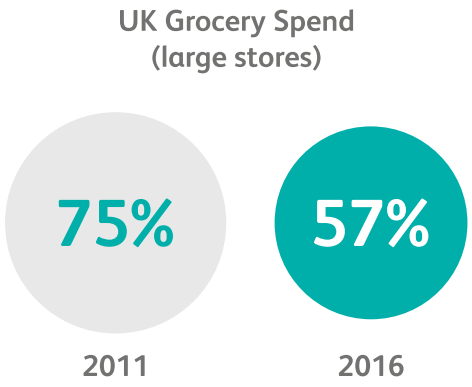
Source: Carbon Trust

The Scale of the Opportunity

There are more than 8000 supermarkets and superstores in the UK and there are estimated to be some 50,000 convenience stores.

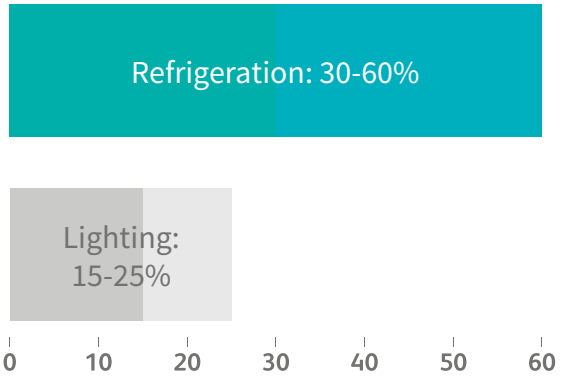
The majority of large stores – around 6,000 – are operated by the 'big four' grocery chains, Tesco, ASDA, Sainsbury's and Morrisons, while the convenience sector is more diversified, being made up of major players and independents.

Tesco is by far the largest supermarket operator overall, with almost a third of the market share, followed by ASDA and Sainsbury's with around 17% each, and Morrisons at around 11%. The smaller operators, such as Co-op, Aldi, Waitrose, M&S, Lidl and the many regional independents, account for the remaining 25%[4].



However, the market share of the so called 'big four' has been falling and is being picked up by discount retailers Aldi and Lidl or convenience store chains like Co-op. The **UK grocery market is expected to be worth almost £180bn in 2016**[5], of which around 57% is expected to be accounted for by larger stores (hypermarkets and supermarkets).

Larger stores are now taking less of the market share than they used to (~75% five years ago), indicating a change in grocery shoppers' habits from scheduled big shopping trips to unscheduled convenience trips and a growth in online shopping.UK retailers consume energy in three main areas: stores, distribution centres, and transportation. The physical retail outlets themselves account for the most significant element of total energy consumption.



power draw (%) in food stores

Energy use by stores varies according to size, product mix, type of HVACR equipment and lighting used. Usage ranges from 700 kWh/m2 in larger stores to over 2000 kWh/m2 in some smaller convenience stores due to their higher ratio of refrigerated space to total sales space[3]. **The biggest power draw in many food stores is refrigeration**, which accounts for between 30% and 60% of consumption. In contrast, lighting accounts for between 15 and 25%. Most of the remainder can be attributed to heating, ventilation, air conditioning and cooking facilities (bakery, rotisserie, etc.).

With energy costs rising, margins under pressure and the rise of the green consumer, it is not surprising that retailers are now seeking to take further control of their energy use.

The Latest Technology

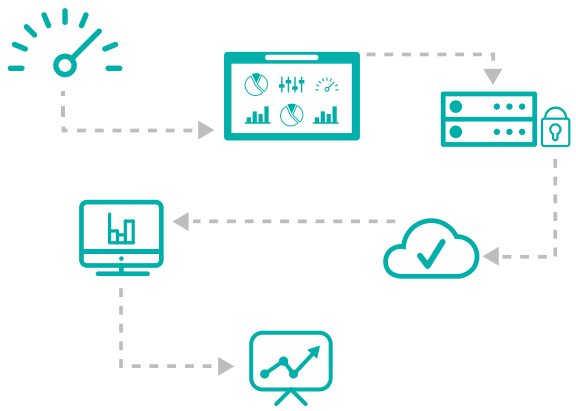
Our proven system uses a standard internet browser to display, monitor and control energy-using equipment in a store, or across a nationwide estate.

It gives you or, if you wish, your HVACR contractor or facilities management company, **an immediate real-time view of everything that is happening in a single store or estate**, from your desktop PC, tablet or smartphone.

Because the system is simple to use and transparent, it gives you complete control of the energy being used by your business. It enables you to remotely monitor and manage all the lighting, heating, ventilating, air conditioning and refrigeration plant in your stores, plus security and other in-store systems, at any time, from any pc, anywhere.

It operates at any scale of resolution – enabling you to monitor and control everything from a single component on an item consuming energy (say, a fan motor on a refrigerated display case), to store-level energy use, up to a national estate that includes thousands of retail locations and distribution facilities across the country.

The simplicity and power comes from our ActiveFM™ and Kw^{h}eb systems, developed by Resource Data Management (RDM) as internet-based (cloud) platforms.



ActiveFM™ enables all makes, models and types of control and monitoring equipment to be linked up in a single system, overcoming the different electronic communications protocols that have been an obstacle to high level, integrated control and monitoring for many years. The software can also talk to and integrate with any existing building management systems a customer may have in stores, providing seamless connectivity and unmatched control.

Kw^{h}eb, our energy monitoring dashboard software, takes a fresh approach to energy and building management, enabling you to track your consumption to an even finer level of detail than ever before and utilise the in-built analytics to quickly build a picture of your energy consumption. With Kw^{h}eb, you have the power to manage to reduce energy consumption, increase profit and meet sustainability objectives.

Our central intelligence unit, the DMTouch, gathers and processes millions of items of data and presents it in real time from across energy estates.

The RDM network of products utilised at site level is typically based upon on a Data Manager (DMTouch - PR0510) that links up individual control and monitoring components on items of store refrigeration and HVAC/building control. This central intelligence unit gathers and processes **millions of items of data** and presents it – in real time – in an accessible and user-friendly form on the chosen device. This information can then be passed to our software tools for processing.

DMTouch is itself available with a host of Energy Saving Features as software add-ons:

Pack Optimisation

The pack optimisation feature enables the target pressure of a pack controller to be adjusted in response to the average valve openings of all the evaporators using that pack. This ensures that all the evaporators are being used at optimum efficiency and the resultant energy usage of the pack compressors is reduced.

Trim Heater Control

Used in conjunction with networked RDM case controllers with trim heater (anti-condensate) control. Using a humidity and ambient temperature sensor reading from anywhere on the network and based upon time of day and occupancy, controllers are instructed to adjust their trim heater output levels to prevent condensation forming

Night Blinds Check

When fitted, night-blinds can reduce the power requirement of a refrigeration case that is not in use by up to 40%. Comparing different temperature sensors enables the DMTouch to generate alarms and produce usage reports.

Condenser Temperature Differential

The condenser TD feature provides monitoring of the efficiency of up to 50 condenser units to report three levels of alarm: pre-warning, warning and alarm, thus giving early notification if a condenser is not operating efficiently.

Temperature Performance Indicator

This feature monitors the performance of the case, using a combination of readings, to allocate a score. The score provides easy identification of poorly performing equipment and faults, before they become a costly issue.

Defrost Warning

Provides a warning when consecutive defrost cycles have terminated due to time, rather than temperature. Consecutive cycles have been known to indicate that an evaporator has not successfully cleared all of the ice and may be using more power than necessary.

Take Control of Energy Use

The Carbon Trust identifies five key areas for attention by retailers wishing to take control of energy use: Energy Management, Refrigeration, HVAC, Lighting, and Building Fabric.

Our technology puts you back in control of the key areas of energy use. It pinpoints where energy is being used, and enables you to manage it without impacting food quality or reducing customer and staff comfort. In fact, use of our systems can improve food quality and enhance people's comfort in stores, while simultaneously cutting energy costs significantly.

We have been working since the start of the millennium to help retailers reduce their energy bills and improve the management of their businesses.

The use of RDM controls provides real business benefits, proven and documented, including:

- ✓ Reduced energy costs
- ✓ Reduced refrigeration plant failures
- ✓ Lower maintenance and servicing costs
- ✓ Improved food hygiene and safety
- ✓ Reduced stock loss
- ✓ Better managed, more productive stores

Case Study: UK Retailer

In the UK, we have worked closely with Marks & Spencer for many years, helping the company to achieve year-on-year energy savings.

RDM is a key partner in the company's Plan A program, which has the ultimate goal of becoming the world's most sustainable major retailer. As a result of efficiency savings and carbon offsetting measures, **the retailer became carbon neutral in 2012**[6].

Marks & Spencer's head of refrigeration said: "RDM's system is an excellent tool for managing the equipment and the people who look after it. Remote monitoring can be harnessed to improve the maintenance and performance of stores on a number of levels – and deliver quite dramatic improvements in cost and store efficiency." He added: "It gives us at M&S a tremendous overview and control of the energy usage in stores, and is helping us to deliver the commitments on the environment set out in the company's Plan A."

Retail Refrigeration Savings

Using RDM control systems to optimise suction pressure on the many hundreds of refrigeration packs operating in stores across the United Kingdom, Marks & Spencer have been able to make annual savings of **4-5%** on refrigeration packs alone, equating to over **1000 tonnes CO_2 equivalent**.

With software updates that the RDM team was able to deploy remotely, and re-commissioning refrigeration plant across their whole estate, M&S were able to more closely align the performance of the refrigeration system to actual demand. This improved efficiency without sacrificing the performance of the store systems.

In addition, the ActiveFM™ monitoring tools from RDM were able to identify sites and specific systems that were underperforming and using bespoke reports could notify contractors to optimise equipment on their next visitation to that particular store or site.

Changing Shopping Habits

As shoppers' habits in the UK move from large scheduled shops at super/hypermarket stores to convenience shopping and online spending, retailers are utilising alternative building and store types to better serve their customers.

The supermarket retailer Iceland, for example, opened a picking store purely for satisfying website orders.

The 18,000 sq ft building has its own unique energy requirements and challenges, and with the help of highly customisable RDM products, Iceland and other retailers are optimising their retail space based upon the needs of their customers.

Other Retail Success Stories

Full versions of our case studies/success stories are available on the Resource Data Management website (www.resourcedm.com).

Bespoke Solution for SeeWoo

A completely custom installation for SeeWoo Group that utilised RDM controls and plc software TDB.

Energy Control for Budgens

State-of-the-art energy monitoring and control from RDM for refrigeration, air confitioning, lighting and more.

Award-winning CO_2 System

New World supermarket in Auckland, New Zealand, benefits from the first transcritical CO_2 system in the country.

Massive Energy Savings

An incredible reduction in energy usage via a partnership with a specialist contractor and Resource Data Management.

Sources

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