

Budgens: Energy Control and Monitoring Project

FOREWORD



A new Budgens convenience store has been equipped with a state-of-the-art RDM total energy control and monitoring system. The system, installed by Ultra Refrigeration Ltd, controls all main energy-using plant at the site, owned by Robinson's of Kimbolton, Cambs, which in addition to the new food store includes a working commercial garage.

Equipment under the overarching intelligent control of the RDM system includes refrigerated display cases, cold stores, air conditioning, LED lighting, and a rolling-road test-rig used by the garage for MOTs on coaches and other commercial vehicles.

THE CHALLENGE

Family-owned company Robinson's, developed an existing forecourt shop and showroom at the garage into a modern convenience store, with a full food offering.

The challenge, mains power was restricted to 100Amps by the local sub-station. Anthony Lomas, operations director at Ultra Refrigeration, says: "A major design requirement was to manage electrical plant on site to ensure the

100Amp limit was not exceeded, as it could blow fuses requiring replacement by the electricity board. This could potentially take several hours, and obviously for a food store, dependent on refrigeration, this was unacceptable."

THE SOLUTION

Using an RDM Intuitive controller, running The Data Builder software, the company designed a control platform to prioritise and actively manage electricity use on-site. This had to take account of a number of variables, including the sensitivity of the refrigeration system to outage and also the need to complete rolling-road MOT test cycles without interruption.

Anthony Lomas said: "The answer was to program the controller with a number of different prioritisation rules, depending on current plant usage. Based on a series of "If, then..." statements, when power use nears the maximum these take account of the need to complete MOT test cycles once started, by switching off or trimming

non-essential equipment, such as air conditioning, until the rolling-road test is complete."

Given the importance of maintaining food temperatures, refrigeration has the next highest priority, and is only sacrificed in extreme situations and only for very short periods – where the thermal inertia of refrigerators and cold stores can comfortably maintain temperatures for the brief period of outage.

Each of the 11 refrigerated cases and cold rooms at the store is equipped with an RDM controller, providing detailed control and monitoring capability via an RDM DMTouch. As part of the total energy concept, a heat recovery

system, also under the control of the RDM system, captures waste heat from refrigeration plant and uses it to heat the store via the air conditioning system. Heat from condensers is recovered and transferred by a chilled / hot water system to three ceiling-mounted Fan Coil Units (FCUs).

The shop faces south and has a large glass frontage, to attract customers. This could potentially have caused problems with solar gain in summer and cold transmission in winter. However, the heat recovery air conditioning system is reported to have delivered rock steady indoor temperatures of 18-19°C, throughout the long hot summer.

THE BENEFITS

Anthony Lomas said: "The RDM platform provides a highly efficient control and monitoring system, maximising energy use on site and ensuring that power limits are not exceeded.

"We have been working with RDM products for around six years, after finding rival systems just too complicated to implement in a reasonable time-frame. RDM systems are easy to use but incredibly powerful, and we can design control strategies that make building refrigeration systems easier, as we can streamline our control-boards."

He added: "Energy efficiency is an obvious benefit, but people should

not overlook the savings that can be achieved in ongoing service and maintenance. Intelligent systems enable you to quickly and accurately diagnose plant faults remotely, so an engineer can go to site armed with the right spare part, and fix it first time.

This can result in huge savings for the end user."

Charles Robinson, owner of the convenience store and garage, is delighted with the result. He said:

"We wanted a green solution, to ensure spiraling energy costs were kept under control. We also needed to ensure the new shop didn't result in overloading the supply limit, asw restoration of power is not in our control and

could result in a number of hours downtime – potentially affecting both businesses."

"The RDM system has done a superb job, and has delivered everything asked of it. I am able to keep an eye on energy use and plant performance remotely via my smart phone, tablet or PC. If there is a fault at night, I get an automatic telephone call to notify me - and can quickly check whether it is something serious or can wait until morning, without even getting out of bed."

