



ICELAND

LED UPGRADE OFFERS INCREASED LIGHT LEVELS AND A 51% ENERGY SAVING ACROSS 725 UK STORES.

OUTLINE OF THE PROJECT

In the summer of 2014 Iceland embarked on a mission to upgrade their entire UK estate to LED in a drive to reduce their operational costs and reinvigorate the store environment for their customers. They scoured the industry speaking to an array of lighting manufacturers searching for a suitable supply partner that had the required resource, experience and products to satisfy their needs.



During a 12month period they conducted trials in 23 store locations across the UK, testing both the capabilities of the manufacturers and the technical performance of their products. They visited every store to review the lit effect and the energy consumption was monitored to ensure the predicted power savings were realised, the results from this formed the basis of the eventual technical specification. In July 2015 Iceland awarded the contract to the Dextra Group plc.

Iceland were looking to replace the existing 1200mm x 600mm luminaires on a "point for point" basis across 725 of their UK locations, this equated to approx. 51,000 luminaires. They insisted that the project could only go ahead if disruption to their stores was absolutely minimal.

Thus, all installation work by their nominated contractors was to be carried out overnight and completed before stores opened at 8am. To this end we were given a 3hr delivery window each night to deliver 12 stores (800+luminaires) across the country and we had to remove all the redundant luminaires by 12noon the following day.

To assist with this we designed bespoke bulk pallets that drastically reduced the amount of cardboard required, once

emptied on site the contractors were able to convert them to carry the redundant fittings. This sustainable solution reduced the storage requirements on site and helped to streamline the whole operation. This target was the most onerous in the company's history but our liveried fleet, equipped with forklifts, enabled us to service the contract.

Energy Consumption

The new LED luminaires not only increased the light levels in store but they also returned a 51% energy saving over the existing installation, please see below a table detailing the savings. Without doubt the Iceland contract was one of the most onerous in our companies history, during the tender negotiations and subsequent planning meetings we were hit with a number of challenges that we had to overcome to get the project off the ground;

Annual Operating Hours: 4212 (7am-7pm for 6 days and 8am-5pm for 1 day) x 52 weeks/year

Pence per kWh: 11.4

Number of luminaires: 51,206

Existing 3x36w T8 HF			New LED Luminaire			Analysis	
Circuit Watts	Total Watts	Running Cost p.a	Circuit Watts	Total Watts	Running Cost p.a	Energy Saving	Running Cost Saving p.a
110	5,632,660	£2,704,623.09	53	2,713,918	£1,303,136.58	51.82%	£1,401,486.51

OUTLINE OF THE PROJECT

Logistics

Once the funding was in place the Iceland delivery team wanted to get the roll out completed as quickly as possible, to get the quickest return on their investment. They set a target to complete 4 projects per night, 5 nights per week in 3 different areas of the country simultaneously. Therefore Dextra had to deliver 12 stores per night, 5 nights per week, for 3 months!!

To add to the challenge we were given just a 3hr window to deliver all 12 stores per night as Iceland did not want to cause any disruption to store trading during the daytime. As if this was not onerous enough we also had to uplift ALL the old lighting for re-cycling before 12noon the following day. At the program peak we had one quarter of the entire Dextra fleet committed to the Iceland roll out!!

Bulk Packing

Before we commenced the main roll out we completed a number of trial stores and during this process it became apparent that the contractors were wasting valuable installation time taking the fittings out the boxes and breaking them down. To assist with this we designed bespoke bulk pallets that drastically reduced the amount of cardboard required, once emptied on site the contractors were able to convert them to carry the redundant fittings. This sustainable solution reduced the storage requirements on site and helped to streamline the whole operation.

Plug & Play

It was essential that the electrical contractors completed each installation on the night as the store had to be open for trading the following morning and the contractors had to move onto the next store. We therefore worked with the appointed electrical contractors to come up with a bespoke plug & play system which drastically reduced their installation time and the product cost.



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Emergency Duration Test

Traditionally most lighting manufacturers do not connect the battery leads on emergency fittings as this can cause damage to the battery cells. The leads are generally connected during installation by the electrical contractor and once connected the batteries will charge, this typically takes around 14hrs. Before any project gets handed over the electrical contractor has to conduct a three hour duration test to ensure compliance with BSEN5266. This created a massive problem for the planning team, on the basis that the fittings were being installed overnight the contractors would not have sufficient time to charge the batteries and conduct the duration test before the store had to re-open to the public the following morning. To overcome this issue we agreed to "pre-charge" the batteries in our factory prior to despatch. We set up a selection of DC rigs which allowed our assembly operatives to charge the batteries before building them into the luminaires.

The timing was critical as the batteries would only last for approx. 72hrs and therefore we had to build and bond each stores requirements at the last minute, to ensure they had sufficient charge by the time they got delivered to the stores the following evening.

Bespoke Colour

On completion of the first trial store it was noted by the Iceland team that the white paint finish on the new luminaire was different to the existing white ceiling tiles. Although only a minor detail it was something that Iceland wanted to rectify and therefore we tracked down the original RAL colour from the ceiling tile manufacturer and agreed to spray all their luminaires in that colour for the roll out.



DESIGNERS WHO WORKED ON THE PROJECT

Following a number of unsuccessful trials with standard "off the shelf" products it became clear that we needed something bespoke. Iceland sketched out their vision and the Dextra Group luminaire design team turned this into reality, creating a brand new product range from scratch specifically for Iceland.

Following a rigorous tender process Iceland decided to employ three principle contractors to carry out the installation works for the roll out; AT Green Ltd, Coleman Electrical Services Ltd and Weblight Ltd. These contractors had a good working knowledge of the estate having worked with both Iceland and Dextra previously.



LIGHTING EQUIPMENT EMPLOYED

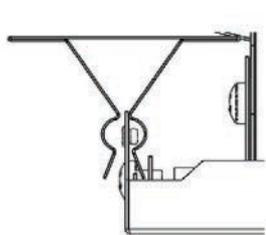
The luminaire supplied (Dual) was completely bespoke and something that we created especially for Iceland to their own specification and preferred aesthetic. Although from underneath it may look like a standard 1200mm x 600mm recessed modular that you could buy from anyone, we had to build in a range of design features to aid installation and enhance performance.

LED Cards

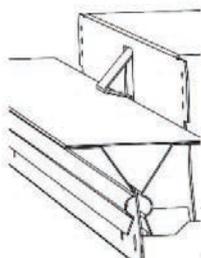
Our in-house electronics division (LEDex Light Engines) designed a brand new LED card from scratch to service the Iceland contract. One of the major costs in an LED fitting is the LED cards and the actual card substrate can account for up to 40% of the finished LED card cost. Our design team therefore developed a new card that was just 24mm wide which reduced the substrate costs by 20%. This cost saving enabled us to increase the density of LED chips on the card meaning that we could use a lower drive current, thus increasing both the efficiency of the finished product and the lifetime of the LED chips.

Installation Mechanism

Prior to the roll out it was noted during surveying that roughly 65% of the stores in the Iceland estate had SAS120 ceiling systems, this was a concern for the installing contractors as they are inherently more difficult to work with than a standard exposed tee bar system. Due to the time constraints on the installation Iceland challenged us to come up with a solution to enable the contractors to simply install the fittings from underneath without the need to remove any of the adjacent ceiling tiles. Our design team subsequently updated the metalwork programs, adding "nipples" along the edge of the front frame of the luminaire to act as a temporary fix, replicating those found on SAS120 ceiling tiles. In addition they developed a simple "leaf spring" mechanism to act as a permanent fix once the frame was engaged into the grid. These measures drastically reduced the predicted installation times on site, ensuring that even the largest format stores could be completed in a single night.



NIPPLE ENGAGED INTO GRID



RESTRICTIVE LOCKING LEAF SPRING



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LIGHTING EQUIPMENT EMPLOYED

Plug & Play Wiring

It was essential that the electrical contractors completed each installation on the night as the store had to be open for trading the following morning, Iceland were therefore looking for a simple "plug & play" system that would reduce both the installation costs and the installation time. We started with an industry standard system using a socket with separate tee connector and interlink lead, this worked well but Iceland felt it could be improved and they were keen to drive out any unnecessary costs.

We ended up removing the tee connector and opting instead to have a socket and pre-wired flying lead on each luminaire which we fitted during assembly in our factory. This simple solution reduced the overall project costs by £127K which in turn enhanced the payback.



Standard "hard-wired" installation



Traditional "plug & play" system using socket with separate tee connector and interlink leads



Iceland "plug & play" system using socket with pre-wired flying lead with plug that connects into the adjacent fittings socket

FEATURED PRODUCTS



DUAL