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Developing innovative, sustainable solutions
for climate control systems.

CASE STUDY

Opteon™ XP40 – First for Convenience Store

Background:

The Lincolnshire Co-Op is an independent Co-Operative Society and has been around for over 150 years (since 1861).

Today they have over 200 outlets (77 of which are food retail outlets) and are owned by more than 231,000 dividend members. There are 19 independent Co-Operative Societies in the UK and over time, many have amalgamated with other local Co-Ops or been taken over by the Co-Operative group.

The Lincolnshire Co-Op are one of the most successful independent societies and are forward thinking in their plans. This is why when Ultra Refrigeration suggested using a new low GWP refrigerant in their new store at Newark. Mindful of F-Gas legislation and how that will affect higher GWP refrigerants, Chris Glover, the project manager, considered it carefully and followed Ultra's advice.

Store: The new convenience store in Bowbridge Road, Newark, was commissioned in April 2015 and was the first store in the UK to use Opteon™ XP40.

Ultra Refrigeration:

Ultra Refrigeration was formed in 2003, they are a commercial refrigeration company who design and implement refrigeration solutions for a varied client base, including the Lincoln Co-Op.

OPTEON™ XP40 in new store plant:

Steve Shipp, Managing Director at Ultra Refrigeration explains how the Co-op's latest new store's plant, is running on Opteon™ XP40.

The Newark site is a new build and there are five more sites set up on an almost identical format close by. The sites are all linked up to a BMS system (via RDM) with energy monitoring, specifically for the refrigeration plant so comparisons can be made.

There are 5KW of LT cabinets (approx 3.75M combi freezer) and 25KW of chilled cases (maybe 12-15M of open multi deck). There is a cold room and freezer room that run off the same pack, with 2 further Zanotti monoblock units as back up, in case of failure to keep the store rooms operational.

The engineering is controlled by a RDM system; the software of which has been designed by Ultra. It can advise any issues remotely so that an engineer can arrive with the correct part to do the job. The compressors are Copeland Digital Scrolls, using Danfoss Electronic valves controlled by the RDM controller. The pack is designed by Ultra and is a triple stage booster pack, operating HT, MT and LT. They use heat recovery in various applications. The cases were Costan with EPTA coils.

Results:

Upon putting Opteon™ XP40 into the system, the evaporator pressure controls were adjusted to take into account the slightly lower operating pressure of Opteon™ XP40 and the expansion valve superheat setting was checked to ensure correct operation as Opteon™ XP40 has a higher glide that R404A. The slight increase in discharge temperature compared to R404A, helped with the heat recovery.

3 months after installation the monitored data was compared to other similar stores running on R-404A and it was concluded that the store was running well and as efficient as those on R-404A. It was also noticed from the data that with some minor adjustments to the operating conditions it should be possible to achieve some energy saving from the store.

Conclusions:

The store is working well using Opteon™ XP40 and after the excellent results at the Bowbridge Road site five further stores in the Lincoln area have since been installed with Opteon™ XP40.