

SOLSTICE® N40 (R-448A) HELPS ASDA ADVANCE ITS CLIMATE RESILIENCE STRATEGY

“Our focus on sustainability has seen us reduce our environmental impact. It also means we’ve saved money for our business, our suppliers’ businesses and our customers.”

*Brian Churchyard, Senior Manager – Construction Model & Lifecycle
ASDA, United Kingdom*

Solstice® N40





ASDA Supermarkets is one of the best-known brands in the UK and is a subsidiary of Walmart, the world's biggest employer. The company is at the forefront of sustainability within its sector and, having met ambitious energy and carbon footprint goals in 2015, is now committed to a climate resilience strategy. This aims to reduce waste and harm to the environment through the trialling and implementation of new technologies, such as LED lighting and innovations in refrigeration, to help stores operate more sustainably. It was in this context that ASDA embarked upon a trial of Honeywell's low GWP refrigerant Solstice® N40 (R-448A) in partnership with CBES – one of the UK's leading providers of energy reduction solutions in the retail environment.

The Need

- Further reduce ASDA's environmental impact and operating costs for the benefit of customers and wider stakeholders.
- Evaluate the effectiveness of Solstice N40 as a lower GWP solution for the company's refrigeration requirements.
- Prove the performance of Solstice N40 in a store environment using two identical MT systems to enable accurate comparison with R-407A and R-407F.

The Solution

ASDA was introduced to Solstice N40 at the beginning of 2013 and, in keeping with its strategy of continuous evaluation of new lower GWP refrigerants, started a formal test of R-448A in MT (medium temperature) and LT (low temperature) systems at its trial store in Leeds.

Conversion was easy and problem-free, and both systems operated perfectly, with no discharge mitigation required for the EVI Copeland scroll compressor. After 18 months of successful testing, ASDA sought to verify the performance of Solstice N40 at a fully operational store in Hunts Cross, Liverpool.

The Benefits

ASDA uses Resource Data Management controllers and Energy ICT monitoring software in all their stores, enabling precise energy measurement and monitoring of the equipment.

Data covering the year-long operation of Solstice N40 at the Hunts Cross trial demonstrated to ASDA that Solstice N40 is the lowest GWP,

non-flammable, direct replacement for R-404A and R-407A, exhibiting significant benefits in terms of energy efficiency and carbon footprint reduction:

- Easy conversion process – a direct replacement for R-407A and R-404A
- GWP reduction of 65% versus R-404A, 34% versus R-407A and 24% versus R-407F
- 5-10% higher energy efficiency than R-404A
- Outstanding performance metrics linked to temperature, cost of operation and overall Coefficient of Performance

ASDA – Improving Sustainability through Commitment and Innovation

The supermarket sector is a heavy user of refrigeration systems and ASDA has been at the forefront of mitigating the impact of the refrigeration system on the environment over many years. In 2007, the company committed to reducing its leakage rate from 20% to 8% by 2015 – and not only achieved this four years ahead of time, it also cut the leakage rate to 7.6%. Moreover, the stores built by ASDA since 2007 have recorded an average leakage rate of only 3.6%.

The result of this continuous focus on sustainable operation and innovation is a significant reduction in energy consumed to run refrigeration systems and a 50% improvement in carbon emissions vs. a 2005 base.

It has achieved these impressive outcomes in part through the support of specialist partner CBES Constructive Solutions, which constantly evaluates innovations, particularly in the areas of energy savings and carbon reduction, and provides industry-leading refrigeration systems.

Introducing ASDA to Solstice N40 (R-448A)

CBES introduced ASDA to Honeywell's Solstice N40 in 2013 and was followed by a formal test involving Medium (MT) and Low Temperature (LT) systems. After 18 months of positive results, ASDA decided to convert an existing MT system in its Hunts Cross store and compare performance with an identical MT system running R-407A.

To ensure the robustness of the project, a dedicated team was established to oversee the trial. This included ASDA's Head of Refrigeration, its Energy Manager, and representatives from Honeywell, CBES Constructive Solutions, City Holdings and BJA Consulting Engineers.

CBES replaced the MT R-407A refrigerant with 150 kg of Solstice N40 in a configuration comprising:

- Frostpack Rooftop MT system with 8 x ZB45 Copeland scroll compressors
- 77kW identical connected loads
- Identical pipe work design and layout

ASDA ran the field trial over a full year period and evaluation of the data collected by the project team confirmed the impressive results of the direct

“Solstice N40 gave us no real surprises, in that it did pretty much what we expected. It is a good refrigerant with similar performance to R-407F - considered as best in class and specified in all new Asda stores – but with even lower GWP.”

*John Conner, Commissioner Engineer
CBES*



“The successful trial at Hunts Cross proved to us that the new Honeywell HFO based refrigerant Solstice N40 will further reduce energy consumption in our refrigeration systems, when compared to R-404A and, due to its lower GWP, will also help to further minimise ASDA’s carbon footprint. This is another step towards improved sustainability.”

*Brian Churchyard, Senior Manager
– Construction Model & Lifecycle
ASDA*



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replacement refrigerant, including improved energy efficiency, a reduction in direct emissions over R-404A of 65% and 34% lower GWP vs R-407A. It was also established that superheat setting could be widened to 6°C on the trial system.

The Hunts Cross trial demonstrated that Solstice N40 is the lowest GWP, non-flammable direct replacement for R-404A on the market, outperforming all other blends in combined energy efficiency and carbon footprint reduction.

Solstice N40 (R-448A)

Solstice N40 is an HFO blend proven to deliver outstanding results across key metrics linked to energy efficiency, temperature, cost of operation and overall Coefficient of Performance (COP). It can be used for new commercial refrigeration installations and also to retrofit existing R-404A, R-507, R-407A and R-22 systems.

The refrigerant is a next generation innovation offering low levels of GWP and follows on from the development of Honeywell’s Genetron Performax® LT (R-407F), the most successful and industry-accepted replacement for R404A and R407A. Solstice N40 possesses 5-10% higher energy efficiency than R-404A and its GWP of 1273 is 65% lower than R-404A and 34% lower than R-407A.

Simulation Software

Honeywell’s refrigerant free-download modelling software allows to run refrigerants and cycles simulations based on actual data.

Smart phones apps

Download Honeywell PT calculation



applications for iOS and Android free

Literature

Honeywell has a wide range of literature available on Solstice® N40 including case studies, customers references, etc. Visit www.honeywell-refrigerants.com/europe/resources/customer-case-studies

Information and contact

For information and support on new applications, and a list of authorised dealers contact your local Honeywell representative, visit www.honeywell-refrigerants.com/europe or send us an email at fluorines.europe@honeywell.com



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FPR-015-2016-07-EN
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