

# Award Winning Multi-Discipline Collaboration Project Sets New Standards in Sustainable Carbon Reduction



## Overview

Waitrose, as part of the John Lewis Partnership, have set stringent energy and carbon targets for their business. The Partnership is working to reduce absolute operational CO<sub>2</sub>e emissions by 15 per cent by 2020/21 against the 2010/11 baseline.

Within a Responsible Development Framework, that stipulates that all development works must be carried out in a sustainable and responsible manner, energy consumption and carbon emission reductions were targeted across the Partnerships operations.

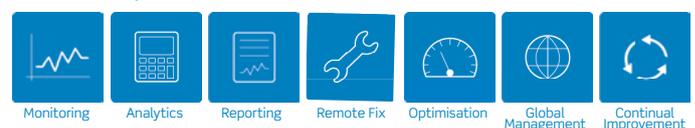
Waitrose Engineering realised that this required a cross-discipline approach and selected project partners\*, including Next Control Systems, with a clear brief that everything was open to challenge in order to maximize all opportunities

to reduce energy consumption and carbon emission.

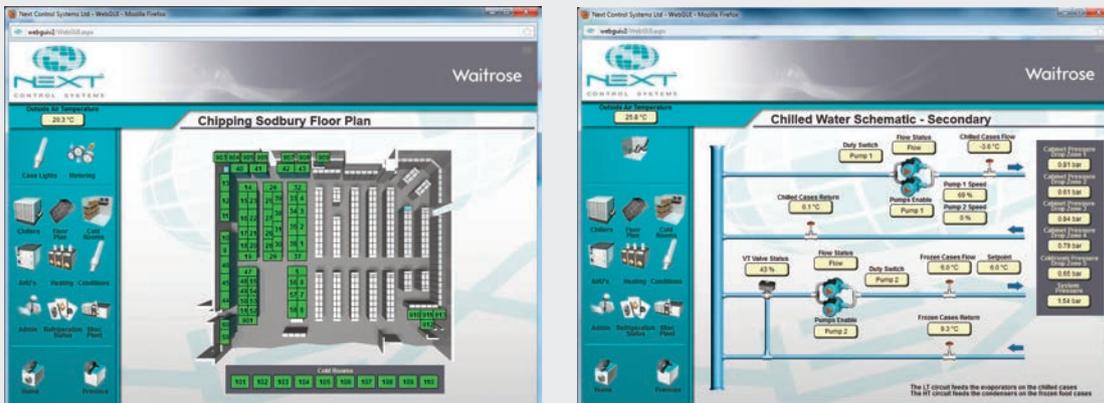
The project objectives were to research and quantify a detailed set of parameters within which the stores need to operate. However, as Waitrose is a leading fresh-food retailer, commercial refrigeration is business critical and needed to continue to perform to the highest level to ensure that food hygiene and safety were not compromised.

The Chipping Sodbury branch was selected to pilot the project

### iBOS Components Delivered



# Key Project Parameters



As with all the key partners on the project team, Next Control Systems were selected as they have historically demonstrated the expertise to deliver innovative solutions.

The energy management solutions delivered primarily impacted the refrigeration, store heating, ventilation, and water systems but all energy use was analysed and proposals for reduction identified.

The solutions that enhanced the estate wide plan and would not compromise the customary high level of customer experience were implemented. These solutions were designed to 'fit' across the estate from core stores to convenience stores, for new builds, extensions and refurbishments.

## Innovation through Collaborative Models

As integration and delivery experts, Next Control Systems undertook load profiling to evaluate the practicalities of the various iterations of design, advising where design adaptation would improve the controllability, stability and efficiency of the plant. The levels of risk had to be mitigated, as the refrigeration system resilience is a major requirement. System testing had to be taken to real operation parameters to monitor how the system would respond in all conditions.

## Continuous Monitoring for Enhanced Performance

Throughout the implementation the carbon and energy benefits were monitored continuously using Next Control Systems technology, to validate the modeled energy reductions and to support further adaptation of the equipment for improvement.

As a byproduct of the monitoring and modelling process, service call outs have been reduced as compared against a comparable direct expansion system.

In addition, the monitoring data gathered enabled the original water cooled solution to be adapted to generate further energy improvements over the first iteration and further adaptations are being planned and introduced. Linking the water cooled system to the heating circuit, via heat recovery and the use of cold air retrieval, has negated any requirement for sales area cooling. These systems are continuously monitored by Next Control Systems technologies against the modeled and validated set-points to maintain energy performance at the expected levels.

This has enabled full life cycle assessment of the project, both in terms of capital and operational outlay, to be assessed. For example, the additional cost incurred on the chillers was offset

# Continuous Monitoring for Sustainable Savings



by the reduction in the refrigerated case costs. Maintenance teams already understood the system and therefore the requirement for re-training reduced.

Other benefits accruing from the project were the ability to run the system at part loads easing pressure on commissioning, one of the traditional pinch points of any construction project.

## Sustainability Through Stakeholder and Employee Engagement

Regular 'engineering bulletins' are a further communication mechanism to ensure any enhancements or specification alterations are communicated, including advanced notification of pending changes to specifications or clarification of existing requirements of the system. This collaborative approach has been shown here to be most effective in companies where such communication is shared and where constant ambition to improve is embedded in the culture.

## Summary and Conclusion

In today's economic and social climate it is expected that all employed in the HVACR industry strive to deliver innovative solutions to reduce energy consumption and carbon emissions. Much of the time this is carried out in isolation and the outcome is often compromised

by not ensuring all parties involved, from concept to maintenance are consulted.

The collaborative approach of this Waitrose water cooled refrigeration project has ensured that not only are all the participants informed, but they are empowered to influence the final solutions. This process has stimulated new ways of thinking resulting in a technically clever, simple, elegant solution. The solution is monitored and measured by Next Control Systems at every level and this rich data and management information actively demonstrates a sustainable reduction in capital costs, operating expenditure and energy and carbon emissions whilst exceeding the reliability of the current solution with reduced requirements for engineer call outs.

Delivered by a cross party team of engineers including consultants, manufacturers, installers, commissioning specialists, the outcome has demonstrated that, through technical excellence and collaboration, current technology boundaries could be crossed and true innovation delivered. The project won the H&V "Collaboration of the Year 2014" award as a direct result of the achievements gained through this process.

## \*Collaboration Project Partners

- Waitrose • Next Controls Systems • Synergy
- Carters • Weatherite • TCS • Emerson
- JA Sylvester • T.Clarke