

Reaching Net Zero with Cool Data



Achieving energy and CO₂e savings at eight Tesco distribution centres with data-led AI Ethos, Star Data Analytics and StarCare teams.



Case Study: Tesco/Ethos/StarCare

Project: Reaching Net Zero with Cool Data

Ethos and Star Refrigeration Maintenance teams save Tesco 4GWh of energy and 835 tonnes of CO₂ emissions across 8 distribution centres from January 2022 to September 2023

Star Refrigeration's Ethos service and StarCare maintenance team helped Tesco achieve an average 10% energy saving across eight distribution centres between January 2022 and September 2023.

Using insights generated by Ethos, an innovative data-led performance optimisation and smart monitoring system for industrial refrigeration and heating, Star Refrigeration helped the nation's largest supermarket chain to make 4 GWh of energy savings and record an 835 Tonne reduction in CO₂ emissions across eight distribution centres in 21 months.

Tesco and Star Refrigeration have worked collaboratively to develop an ambitious energy and carbon reduction strategy for their refrigeration plant and distribution centres in order to progress towards Net Zero. As part of these efforts, the companies implemented Ethos, a data-led AI service developed by Star's Data Analytics team, across Tesco's nationwide temperature controlled distribution network.

Ethos has since played a key role in guiding Tesco's energy management activities by aiding in unlocking notable energy savings and leveraging opportunities for energy optimisation.

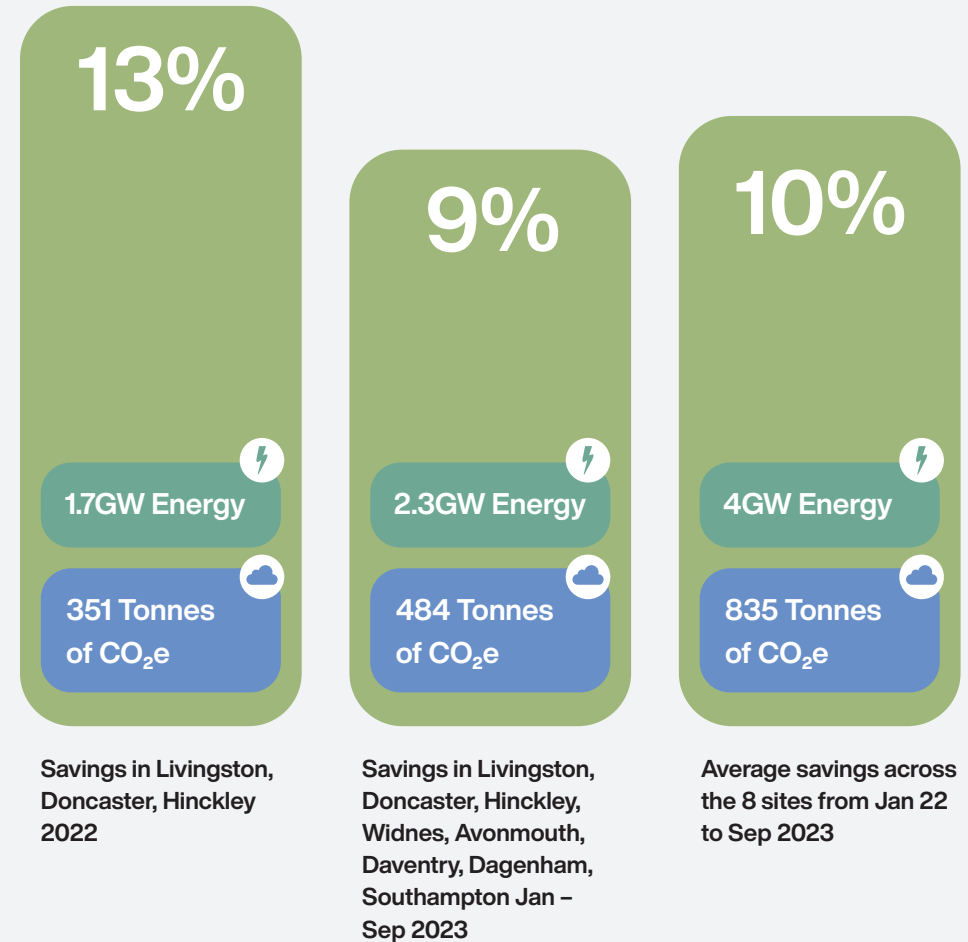
Ethos has been developed to identify hidden inefficiencies in refrigeration plants, optimise energy consumption and lower carbon emissions. Ethos combines the expert knowledge of the Star Data Analytics (SDA) team with modern AI algorithms to identify patterns and trends in refrigeration plant data that might otherwise have been missed.

The installation of Ethos on Tesco's refrigeration plant has enabled daily data collection from key plant components which is then used to provide insights into cooling system operation and efficiency. This generates improvement suggestions through a combination of advanced data analysis via both human and AI algorithms, uncovering insights that might have been overlooked.

The StarCare maintenance team was able to take these insights and make better informed decisions about the plant's operational requirements while reducing energy use across the eight designated distribution sites



Energy and CO₂e Savings across 8 Tesco Distribution Centres



*Emissions based on an emission factor of 0.20496 kg CO₂e per kWh
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>

Tesco and Star Refrigeration

The Star Refrigeration and Tesco partnership has evolved over more than three decades of collaboration. The culmination of this relationship is the ambitious 'Reaching Net Zero with Cool Data' initiative that the companies jointly launched in 2021. This initiative showcases the longstanding dedication of both businesses to sustainability and energy efficiency. Together, the companies have successfully propelled one of the UK's largest distribution networks towards a Net Zero future.

Since 1993, Star has been aiding Tesco in achieving consistent and continuous improvements in energy efficiency. Over that 30-year period, a variety of impactful initiatives to reduce Tesco's energy consumption and carbon emissions have been deployed including:

- The design and installation of future-proof refrigeration systems on site at Tesco's distribution centres. This also included phasing out HCFC refrigerants at four depots (Hinckley, Middleton, Harlow, and Snodland) and replacing with central ammonia/glycol plants that could be retrofitted across the entire distribution estate.
- In 2010, the companies formed the Environmental DC Project Team to reduce the total CO₂ emissions of Tesco's DC portfolio by 50%. This reduction was set against the baseline of a DC installed in 2004.

StarCare team operating out of Star's Derby branch. Star Refrigeration employs a team of more than 100 refrigeration engineers, distributed across nine key locations in the UK, which include Aberdeen, Glasgow, Newcastle, Manchester, Leeds, Derby, Oxford, Bristol, and London.

- The deployment of a nationwide StarCare maintenance contract serviced by Star's team of refrigeration engineers. This service maximises the operational life of Tesco's refrigeration plants via asset management and comprehensive preventative maintenance services by continually monitoring plant performance and undertaking technical adjustments.
- The development of the 'Reaching Net Zero with Cool Data' project, an energy and carbon reduction strategy for Tesco's refrigeration plant and distribution centres. Ethos was implemented in eight out of Tesco's eleven distribution centres as part of this initiative. The remaining three sites are scheduled for a system upgrade.



Star Refrigeration and Tesco have shown a strong dedication to nurturing people and skills as part of a comprehensive CSR initiative, in line with ESG goals. Throughout this project, both companies have placed significant emphasis on the development of their workforce, ensuring that teams receive the necessary training and collaborate effectively to accomplish remarkable energy and carbon savings.

The collaboration united stakeholders across government, industry, and expert groups within the organisations to ensure best practices and help Tesco meet climate change agreement targets.



Ethos: Helping Tesco to an average 10% energy saving across eight cold stores

Despite detailed maintenance protocols, the engineering complexity of industrial refrigeration equipment and the ever-evolving operational environment often mask opportunities for energy optimisation. Ethos was created to break through these barriers and enable energy savings using real time operational data. Ethos enables informed decision-making to become the norm, rather than the exception, meaning energy performance gaps can be effectively addressed and plant longevity and reliability improved.

Tesco's efficient operations have consistently earned them a Climate Change Levy discount. It was the first FTSE 100 company to commit to science-based targets in line with the Paris Agreement's 1.5°C target and is on course to achieve the government's 10% energy efficiency improvement target by the end of 2024, aligned with their carbon neutrality goals for 2035 and Net Zero footprint by 2050.

Ethos implementation does more than assure significant energy gains – it also drives a substantial reduction in carbon emissions, marking a significant stride towards a more sustainable future. This made it the perfect solution for Tesco as it sought to unlock further energy savings and CO₂ reductions.

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As the UK's largest retailer, Tesco is committed to operating responsibly and sustainably.

Reducing our energy consumption and CO₂ emissions across our distribution network is just one way we're taking action to transition to Net Zero.

The insights that Ethos and the Star Refrigeration team have delivered have been invaluable and allowed us to make targeted changes at each of the eight distribution sites in a strategic manner, often with no additional spend required. We're very proud to say that we have reduced energy consumption by an average of 10% across those distribution sites in the short period between January 2022 and September 2023, achieving a return on investment in under three months.

Rob Redfern, Tesco Group Energy Manager
(Renewables & LZC)

Data-led AI Ethos is designed to enhance the energy efficiency of refrigeration plants to ensure each penny spent contributes towards a more sustainable, cost-effective operation

More than a monitoring system

Ethos is much more than a monitoring system. It combines AI and real-time data analysis tailored for refrigeration and heating equipment.

Data collection: Ethos gathers essential data using a combination of tools, including data loggers with sensors, network-based data loggers, and web APIs.

Analysis: The data collected is then compared against a dynamic digital twin of the respective cooling or heating system. By measuring the difference between real and ideal conditions, Ethos accurately identifies inefficiencies.

Dashboard Display: The insights and recommendations derived from the analysis are displayed on an interactive online dashboard along with estimated monetary, energy and CO₂ savings. This dashboard shows energy usage statistics and sends out performance alerts for any irregularities. The reports generated are colour-coded for quick understanding and provide a comprehensive view of equipment efficiency and areas of potential improvement.

Actionable Advice: Ethos is proactive, providing real-time guidance to avert unforeseen maintenance issues and to optimise energy usage, ensuring businesses are always a step ahead. The actions range from quick fixes like adjusting control setpoints or repairing malfunctioning components to comprehensive component overhauls and operational shifts to boost efficiency.

Advances in technology and increasing digitalisation have meant that data and AI-enabled systems like Ethos can now be used to provide deeper insight into many cooling issues. Ethos forecasts energy consumption based on current cooling equipment activity,

including day-to-day operations, planned maintenance activity, control changes and unexpected events. By predicting a site's short, medium and long-term energy consumption, rectification and adjustments can be made before it is too late to address increasing energy costs at the end of the year.

This results in lower energy bills, larger profit margins for the company and an enhanced environmental profile.

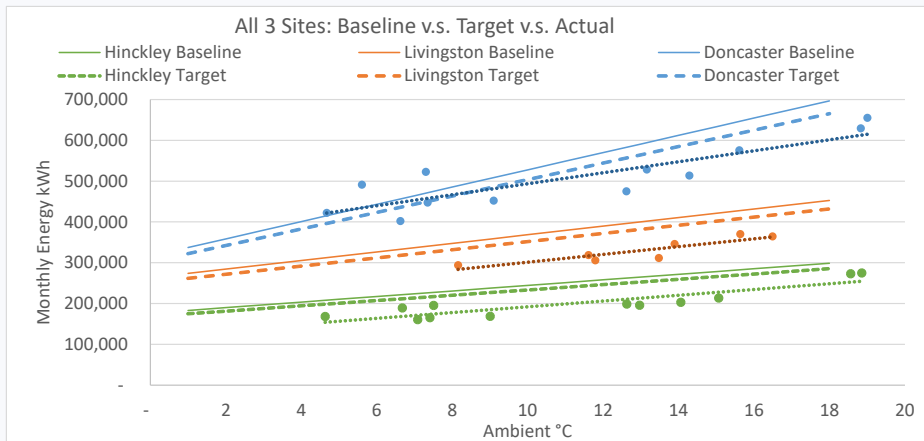
Optimising energy use is crucial to substantially reduce costs, especially considering that energy costs can comprise 9% to 17% of a cold store facility's revenue, with refrigeration systems accounting for over 70% of these costs.

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Tesco, Star Refrigeration and Ethos share a longstanding dedication to sustainability and energy efficiency. Together, we are propelling one of the UK's largest chilled distribution networks towards a Net Zero future. Our combined efforts during the deployment of Ethos has resulted in remarkable and sustained energy savings, CO₂e reductions and as a direct result, cost savings. We're delighted to have partnered with Tesco on this journey and proud of Ethos' proven ability to drive real change across temperature-controlled businesses.”

Anne Flanagan, SDA Business Development Manager

The test sites: Livingston, Hinckley and Doncaster (January 2022 to December 2022)



Background:

In 2021, Tesco decided to trial Ethos to assist in their unrelenting efforts to achieve further energy gains and lower carbon emissions. Tesco agreed to test Ethos in three distribution centres for an initial period of one year to assess progress and gauge the suitability of expanding Ethos deployment across its wider estate.

Star Refrigeration supplied, installed and implemented Ethos in Tesco's Hinckley, Doncaster and Livingston sites. To initiate the process, Star consultants established a baseline (solid line) based on monthly ambient temperatures and energy consumption across each site from the start of the Ethos installation in December 2021 until December 2022. The cold and chill storage facilities' energy consumption were consistently recorded and monitored on a daily basis.

Trial results

Tesco set a target of a 4.5% reduction in energy consumption at each of the three sites (dash line). Ethos significantly surpassed this target.

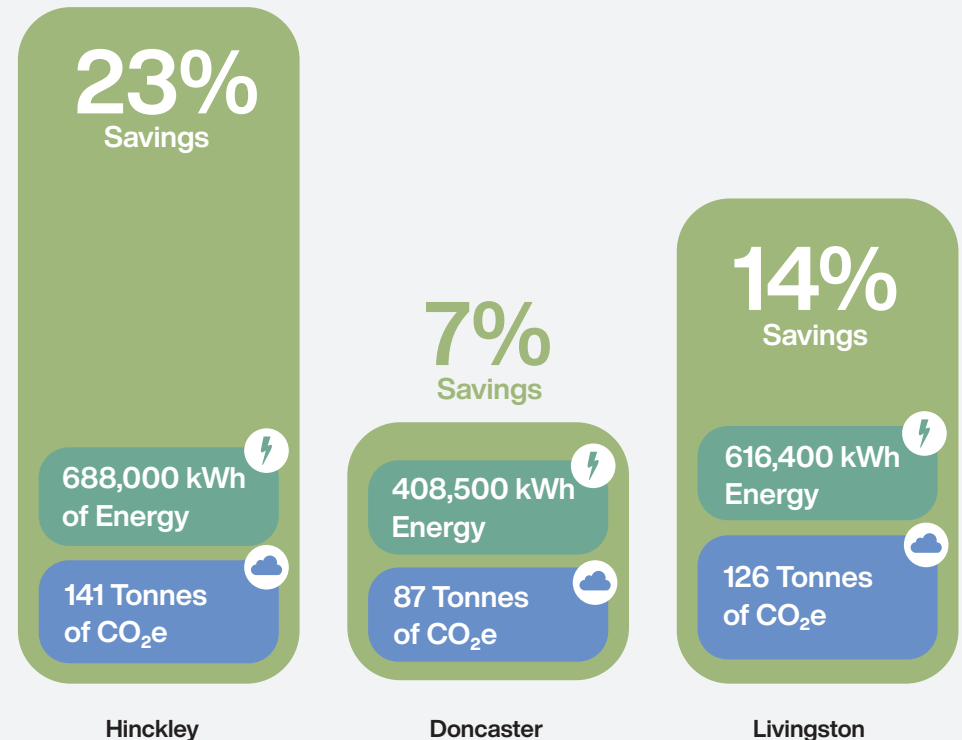
Hinckley reported an annual energy saving of 23%. A 7% energy saving was recorded at Doncaster and 14% at Livingston. This equated to a total saving of up to 1.7 GWh in energy costs and 351 tonnes of CO₂e between January 2022 and December 2022.

These results were achieved thanks to Ethos' ability to pinpoint inefficiencies and propose suitable performance improvements. Rectifying those shortfalls in performance was typically achieved with little to no further financial investment. Tesco and Star were able to find improvements through actions such as changing

set points, purging air from condensers and making repairs. As part of pre-planned capital expenditure initiatives, some equipment (e.g. ageing condenser) was replaced by the maintenance team and opportunities for improving efficiency implemented. By adopting these tactics, energy consumption was optimised year-round.

Ethos also allowed for equipment performance and reliability to be consistently monitored to ensure maximum longevity. The success of the test meant that Tesco was confident in the further deployment of Ethos. It is now in operation at eight distribution sites.

Energy and CO₂e savings across 3 Tesco trial sites (Jan - Dec 2022)



*Emissions based on an emission factor of 0.20496 kg CO₂e per kWh. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>



Implementation:

Tesco and Star worked together to implement the Ethos system, with Star handling the installation of the necessary hardware at the first three trial sites to monitor daily operations. The data collected was then compared against a dynamic digital twin of the respective cooling system. Using machine learning algorithms and programmatic parameters, Ethos measured the difference between actual and ideal conditions to accurately identify inefficiencies, displaying the insights and recommendations derived from the analysis on an interactive online dashboard along with estimated monetary, energy and CO₂ savings.

The integration of AI and real-time data analysis with proactive maintenance has revolutionised the way in which refrigeration energy is managed at Tesco's temperature controlled facilities across the country and shows the significant potential for replication across similar applications and the wider refrigeration sector. Besides energy and CO₂e savings, the project also resulted in substantial cost savings for Tesco as its cost-effectiveness relied on existing infrastructure and strategic upgrades rather than large-scale capital investments, demonstrating the financial viability of sustainable practices.



Results

TESCO set an energy reduction target of 4.5% for each site. Impressively, Ethos actual energy reductions significantly surpassed the target expectations:

- 5** Hinckley's achieved 5 times the target savings
- 1.5** Doncaster achieved 1.5 times the target savings.
- 3** Livingston achieved 3 times the target saving

In terms of tangible benefits, these reductions translated to savings of **1.7 GWh** in energy costs and a substantial decrease of **354 Tonnes in CO₂e emissions.**

Transforming energy use in refrigeration with data-driven insights

Ethos's approach was methodical and data-driven, focusing on identifying inefficiencies and reducing energy consumption. This involved installing sensors with data loggers, and providing actionable insights for energy optimisation.

Every piece of data gathered, including recommendations, financial and energy forecasts, carbon projections, insights, maintenance measures, and performance outcomes, are meticulously documented within the Ethos system.



Setting a new standard in sustainable practices

Star Refrigeration's in-depth understanding of Tesco's distribution centres operations, accumulated during the companies' 30-year relationship, meant that Star were perfectly positioned to tailor plant settings and operational parameters to both complement existing processes and optimise energy use. Examples of the strategic adjustments made include: dynamically changing set points or turning off coolers during entire periods to manage seasonal heating loads and / or ambient temperatures, for enhanced energy conservation and reduced carbon emissions. Additionally, monitoring the condenser bleed lines captures water usage and effluent to claim money back.

One of the most significant recommendations made by the Star team was to raise chill temperatures by 1 degree Celsius across Tesco's estate. This bold move challenged conventional practices in the retail sector and helped Tesco achieve substantial energy savings across its distribution network.

By implementing a seemingly minor but impactful change, Tesco achieved substantial energy savings across its estate.

Historically, Tesco had maintained specific, lower temperatures in its chill areas but following recommendations from StarCare and SDA consultants, it was determined that a slight increase in temperature would still maintain products within a safe temperature range and drive significant energy-saving benefits.

Tesco's decision to adopt that minor change from October 2022 was based on thorough analysis and expert input, with detailed insights provided by Ethos, Tesco and Star's maintenance teams to ensure the safety and quality of products were not compromised.

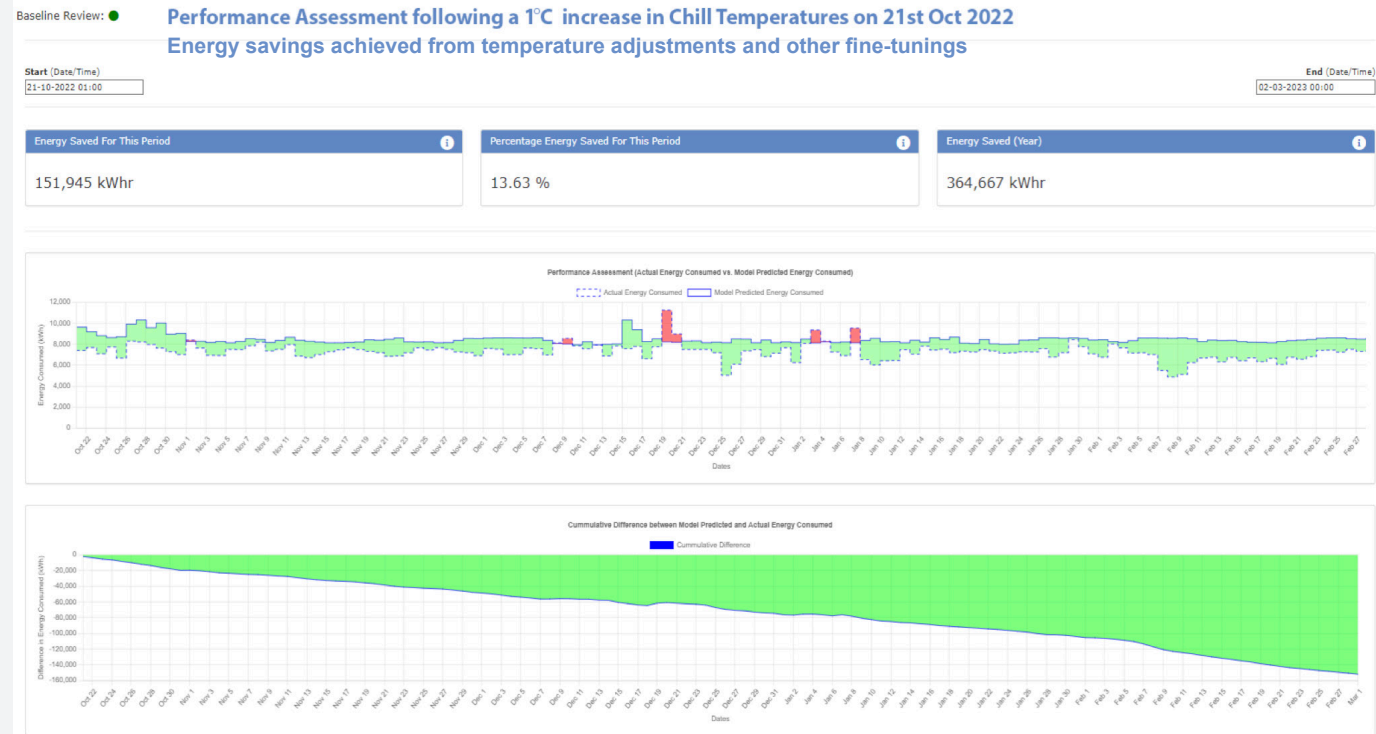
The headline outcome of this initiative has been remarkable. Ethos estimated an impressive annual reduction in energy consumption of approximately 330,000 kWh across the Tesco estate. This

significant figure highlights the effective balance between operational efficiency and energy conservation and sets a new standard for sustainable practices in the retail sector.

Another estate-wide initiative identified by Ethos involved the adjustment of seasonal set points for the winter and summer periods. In winter, when the ambient temperature is lower, the refrigeration system can operate more efficiently, allowing for a higher set point. Conversely, the set point is lowered in summer to counteract the higher ambient temperatures.

This adjustment ensures that the refrigeration plants are not overworking or underperforming due to seasonal temperature variations. By fine-tuning these set points, Tesco was able to maintain optimal refrigeration performance, reduce energy consumption, and lower their carbon footprint, all while ensuring the integrity and quality of the stored products.

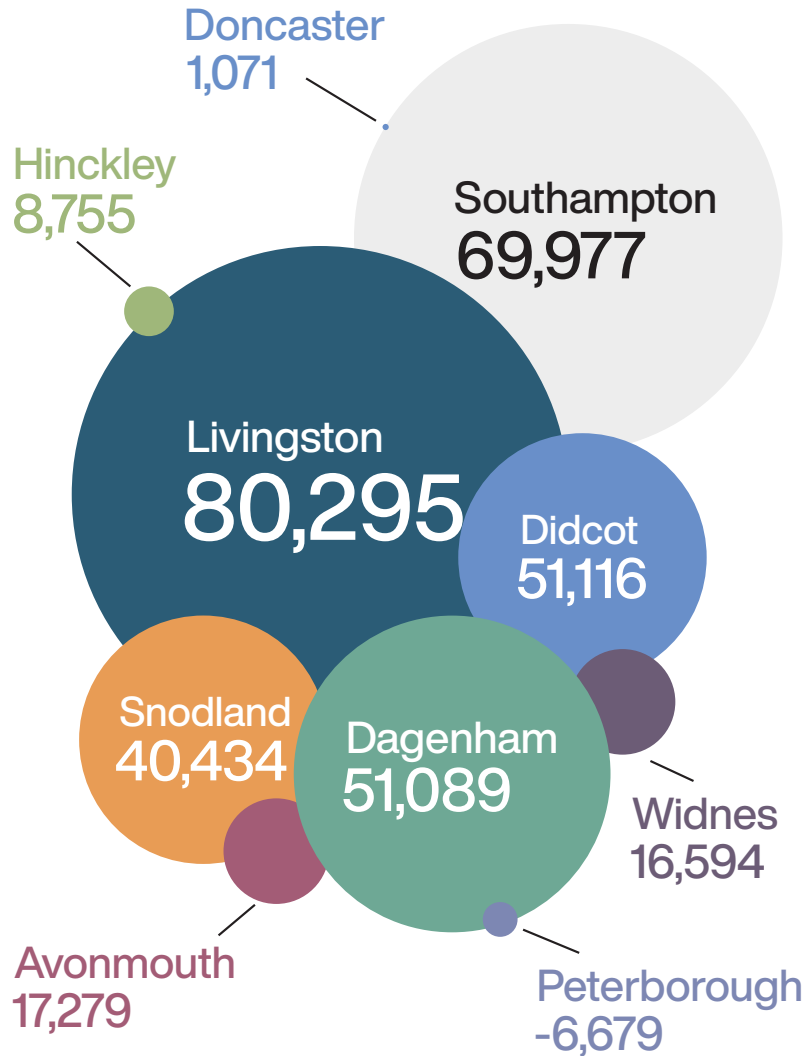
Example energy savings at Tesco's Dagenham



Estimated annual energy consumption reduction from raising chill temperatures by 1°C across Tesco's distribution network

Estimated Annual kWh savings

Total 329,931

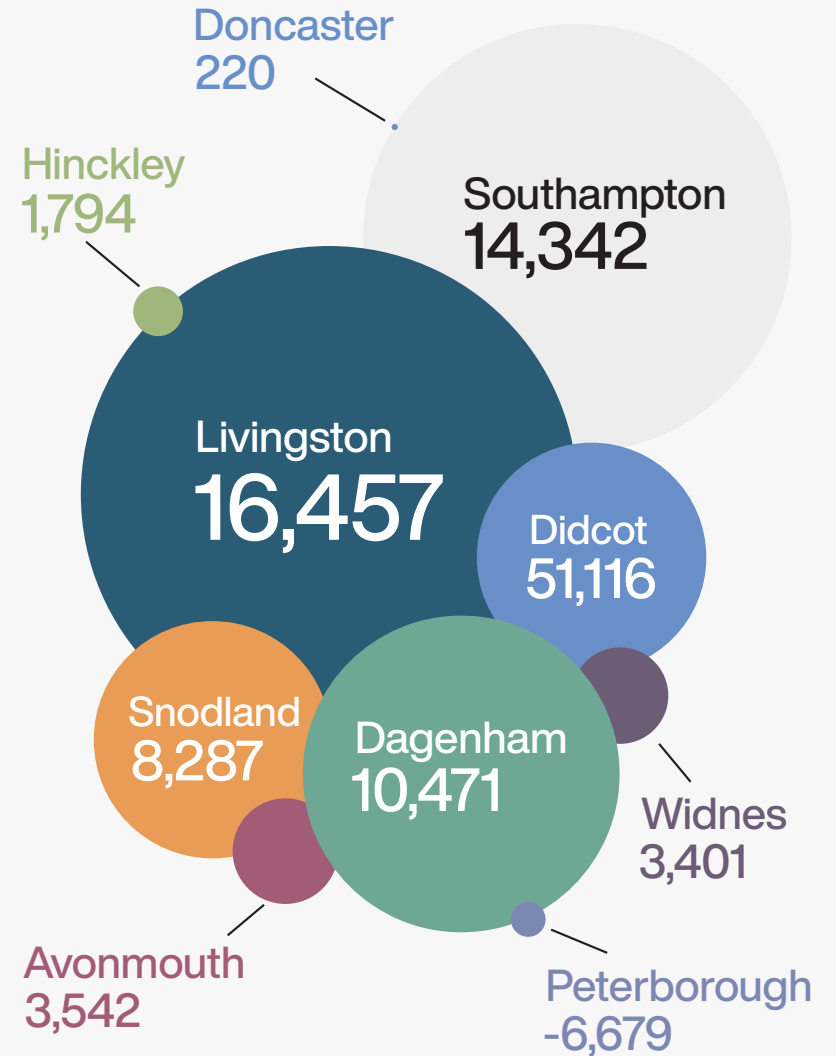


*Davertry Frozen is excluded from this initiative

*Negative results for Peterborough are due to reduced cooler outputs, a consequence of plant failure and robot installation

Estimated Annual kg CO₂e per kWh

Total 67,623



Avonmouth

Ethos implementation date **Jan 2023 – Sep 2023**

Store Volume **266,011m³**

CO₂e Savings **7.2 Tonnes of CO₂e**

kWh Savings: **35,500 kWh**

Energy Reduction **2%**

Ethos identified a number of areas for optimisation at Avonmouth, resulting in a 2% reduction in energy consumption. This was achieved through energy monitoring to enable prompt action in response to any spikes in energy consumption.

- It was identified that the lorry air curtains were not working correctly, leading to increased energy usage as the refrigeration plant had to deliver more refrigeration duty to keep the area cool.

- An ageing condenser was not performing appropriately according to Ethos data analysis. A capital sanction order was placed to replace it.
- Compressors' VSD were reset and calibrated to enhance efficiency.
- Faulty cold store cooler ammonia valve actuators were replaced.
- Temperature sensors were calibrated to align with a third party monitoring system.



Tesco/Ethos Case Study

Dagenham

Ethos installation date **Jan 2023 – Sep 2023**

Store Volume **288,864m³**

CO₂e Savings **87.9 Tonnes of CO₂e**

kWh Savings: **428,700kWh**

Energy Reduction **16%**

List of actions undertaken:

Several remedial actions were taken as a result of Ethos' data examination to help Dagenham reduce energy consumption by 16%. These included:

- Upon Ethos data analysis, SDA consultants advised the Tesco team to sanction a small capital investment to repair the site's economiser and get it back into service.

The capital was released to action this recommendation. Projected savings for the coming year stand at 250,000kWh.

- Joint venture with the Tesco site team to implement the 'Shut that door' campaign.
- A complete overhaul of all fans was conducted. The valve station actuators and seized valves were replaced.

Economiser readings in green:



Daventry Frozen

Ethos implementation date **Jan 2023 – Sep 2023**

Store Volume **413,249m³**

CO₂e Savings **120.5 Tonnes of CO₂e**

kWh Savings: **587,800 kWh**

Energy Reduction **10%**

Ethos identified a series of low-cost and quick-to-implement actions to reduce energy consumption by 10%. These included:

- Condenser set points were changed on 5th July 2023 to allow the head pressure to float lower, reducing the energy used by the compressor.
- Air was purged from the condenser to reduce condensing pressure.
- Adjustments to the compressor/condenser sequencing were made.
- The forced running of daily defrost cycles was reduced.



Ethos graph displaying energy savings achieved after purging air from the condenser



Doncaster

Ethos implementation date **Jan 2022 – Sep 2023**

Store Volume **402,569m³**

CO₂e Savings **167.1 Tonnes of CO₂e**

kWh Savings: **815,400 kWh**

Energy Reduction **7%**

In Doncaster, Ethos helped the Tesco team to reduce energy usage by 13% from January 2022 to September 2023 with remedial actions, which included:

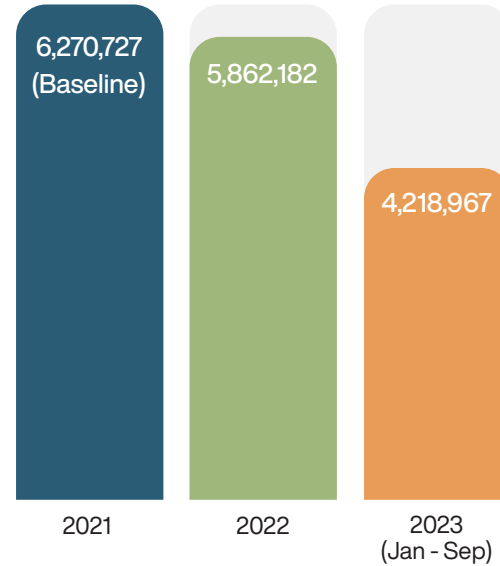
- A reduction in condenser subcooling.
- Cold store compressor volumetric efficiency was optimised through the identification of the most energy efficient Vi position on the adjustable Vi ratio compressor.
- Condenser set points were also set to a lower value after they were previously raised to help with defrosting. Cooler health was subsequently monitored to ensure there were no detrimental consequences.



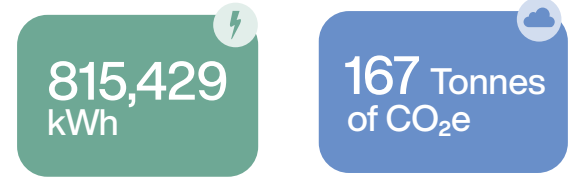
Tesco/Ethos Case Study



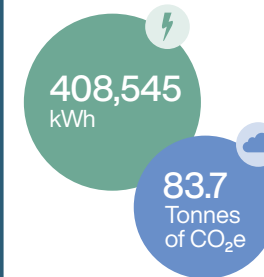
Total energy use (kWh)



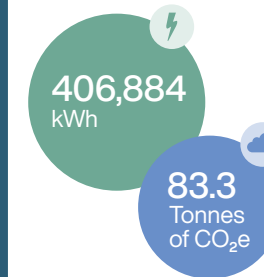
Total savings



2022

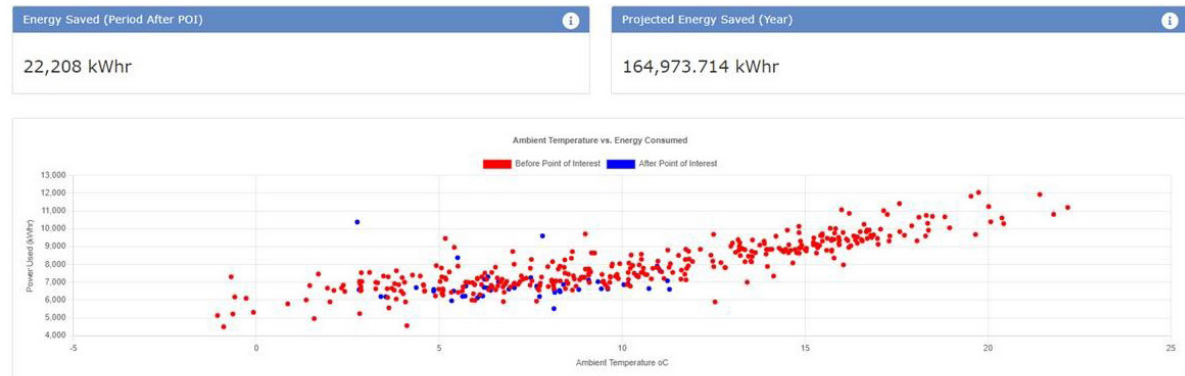


Jan-Sep 2023



*Emissions based on an emission factor of 0.20496 kg CO₂e per kWh. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>

Energy savings resulting from changes to compressor volume index (Vi) settings at Tesco's Doncaster DC



Hinckley

Ethos implementation date **Jan 2022 – Sep 2023**

Store Volume **205,855m³**

CO₂e Savings **124 Tonnes of CO₂e**

kWh Savings: **602,900 kWh**

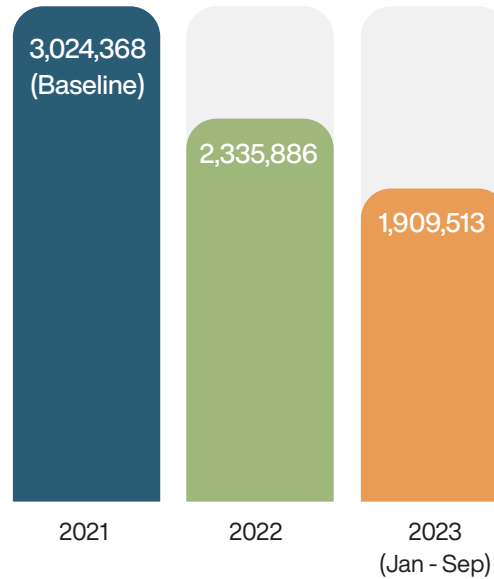
Energy Reduction **12%**

Tesco's Hinckley site has made enormous strides forward in its energy efficiency, with a 12% reduction in electrical energy consumption after Ethos installation. The measures for correction included:

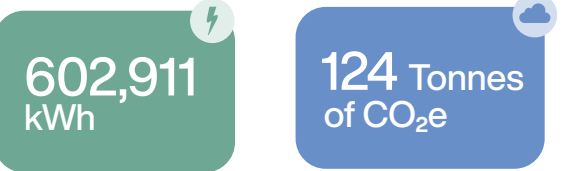
- Enhancements in suction pressure to positively impact the health of the evaporator.
- Improvements to the glycol plate evaporators to increase performance.
- Upgrades and real-time tracking of glycol levels and temperatures of the storage vessel for the warm glycol.
- Boiler adjustment.
- Condenser Variable Speed Drives (VSDs) were reset and calibrated to enhance efficiency.
- A project was undertaken to upgrade 50% of the coolers, which involved overhauling glycol coolers. This included replacing valve actuators, repairing seized valves, replacing fans, and performing a deep clean of each cooler.
- Temperature sensors were calibrated to align with third party monitoring system sensors.
- Collaboration with the Tesco Hinckley team on the successful implementation of the "Shut That Door" campaign, which proved highly effective at this site and demonstrated excellent results.



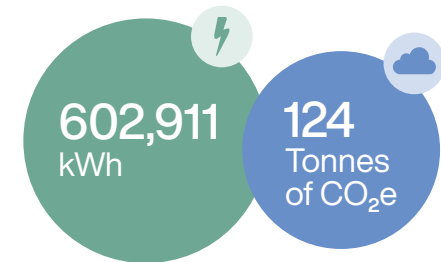
Total energy use (kWh)



Total savings



Jan 2022 to Sep 2023



*Emissions based on an emission factor of 0.20496 kg CO₂e per kWh. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>



Livingston

Ethos implementation date **Jan 2022 – Sep 2023**

Store Volume **324,176m³**

CO₂e Savings **180.5 Tonnes of CO₂e**

kWh Savings: **880,600 kWh**

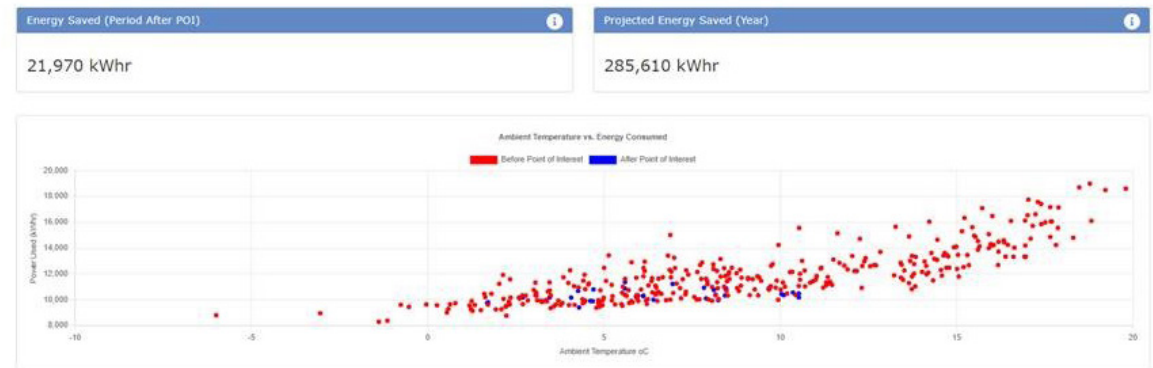
Energy Reduction **12%**

A 12% reduction in energy usage has been recorded at Livingston, following the December 2021 Ethos installation. Actions taken from Ethos data to drive that reduction include:

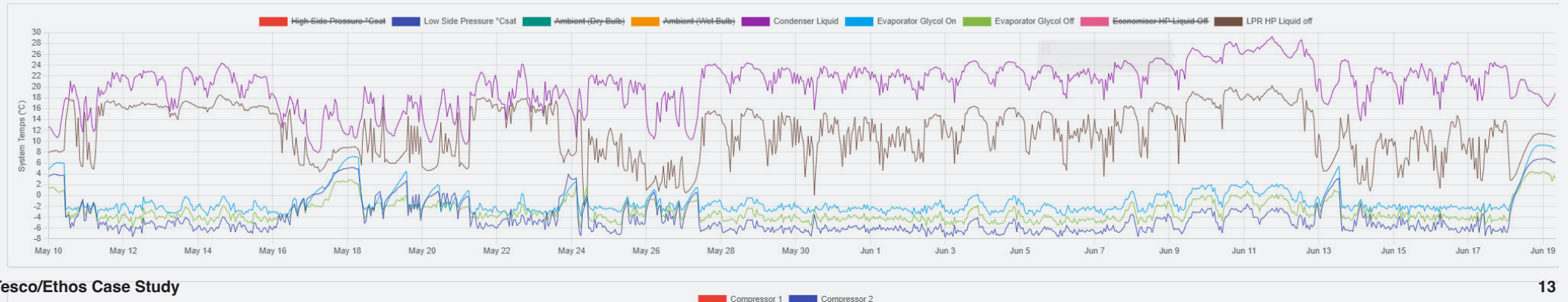
- A control issue affecting the sequencing of compressor operation was rectified. Fixed-speed machines are intended to run in lag, but they were not consistently stopping when the load decreased. This issue was identified and communicated to Tesco's maintenance team, StarCare, who successfully addressed and resolved it.
- Condenser purging was carried out.
- Door control measures were deployed.
- Optimisation of VSD compressor controls was undertaken.
- A low voltage issue was identified and addressed with the site's energy supplier.
- The freezer cooler was readjusted to its original design specification.
- Ethos identified that the high-pressure (HP) liquid subcooling was ineffective. SDA analysts indicated that oil contamination was impeding the heat transfer. Subsequently, oil was removed from the vessel to increase subcooling efficiency and improve the availability of liquid refrigerant at the cooler. The graph below shows this improvement, as indicated by the increased gap between the brown and purple lines.



Screenshot from Ethos displaying energy savings after rectifying control issue

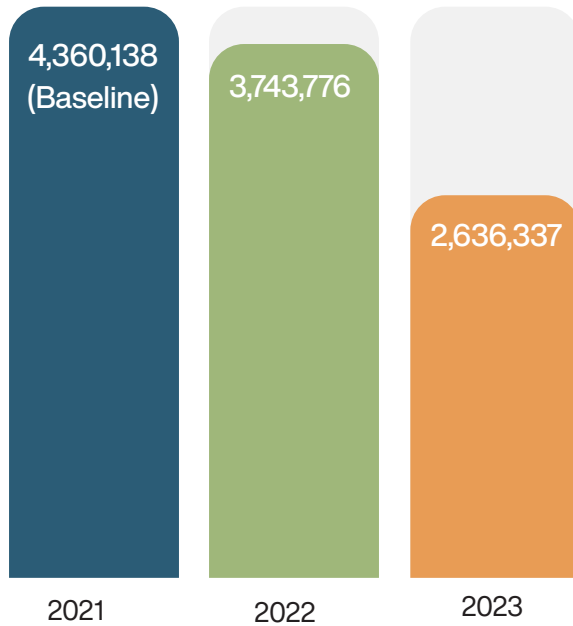


Ethos graph showing the trend in HP liquid subcooling readings after issues were resolved

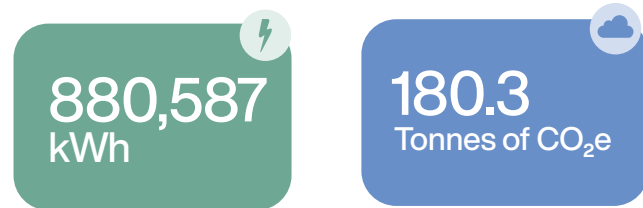




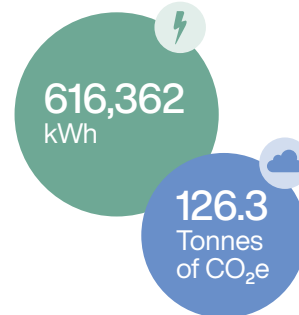
Total energy use (kWh)



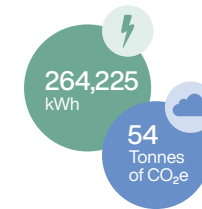
Total savings



2022



Jan-Sep 2023



Southampton

Ethos implementation date	Jan 2023 – Sep 2023
Store Volume	218,040m ³
CO ₂ e Savings	56.5 tonnes of CO ₂ e
kWh Savings:	275,500 kWh
Energy Reduction	9%

In Tesco Southampton, Ethos achieved a 9% energy reduction by pinpointing and advising on a number of rectifications, which included:

- Condenser set points adjustment.
- Ethos advised the re-commission of chill plants to address issues with non-operational economisers.
- Economisers were upgraded with new valve control.



Tesco/Ethos Case Study



Total energy use (kWh)



Total savings

275,513 kWh

56.5 Tonnes of CO₂e

2023 (YTD P1-9)

275,513 kWh

56.5 Tonnes of CO₂e

*Emissions based on an emission factor of 0.20496 kg CO₂e per kWh. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>



Widnes

Ethos implementation date

Jan 2023 – Sep 2023

Store Volume

280,336m³

CO₂e Savings

91.5 tonnes of CO₂e

kWh Savings:

447,100 kWh

Energy Reduction

17%

Ethos proposed a range of measures to drastically cut energy usage at Tesco Widness by 17% within 9 months. The suggestions included:

- Setpoint adjustments:

1. Temperature adjustment for Freezer, Chill, and Produce:

- Increase in the target temperature to -20°C, subject to validation against average data from control systems.
- Time out of limits (TOL) set at -17°C.

2. TOL and temperature trend analysis:

- Set all TOLs at 5°C with continual review of trend comparisons.
- Adjust temperatures to achieve an average of 2°C using a 2K differential.

3. Cooling temperature compliance:

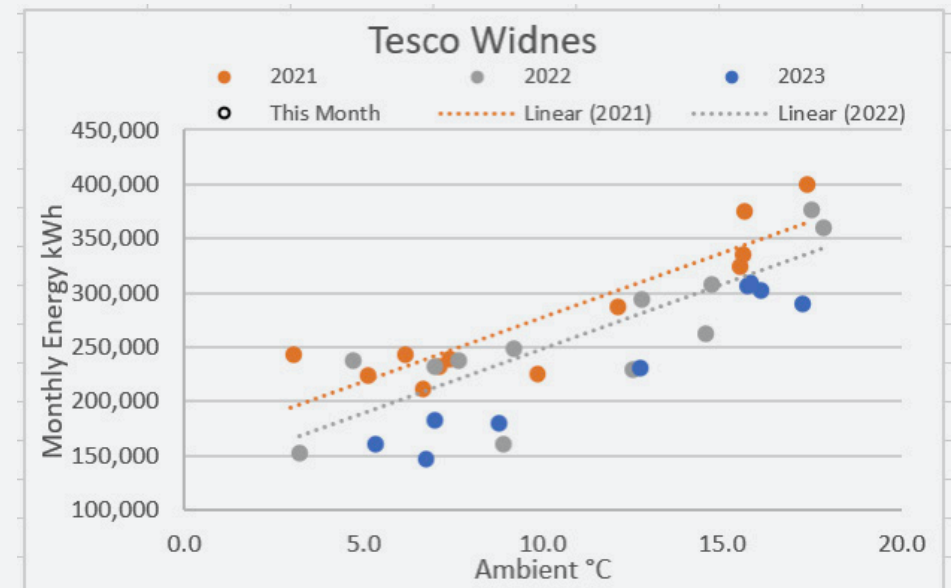
- Maintain an average cooling temperature of +13°C, activating cooling at 14°C and deactivating at 12°C.
- Set cooling temperature to +12°C with a 2K differential, and realign booster fans.

4. Heating control adjustments:

- Prevent heating activation until the chamber reaches 10°C, setting heating to 10°C with a 1K differential.
- Explore the possibility of delaying heating activation until 8°C, in consultation with Tesco food technologists.

5. Data recording and instrument calibration:

- Analyse and record discrepancies between control systems.
- Recalibrate control systems to address any potential drift.
- Repair fan shaft.
- Reconfigure VSD compressors as lead to match the cooling load demand and to trim when more than one compressor is running.



Cool Data: The path to Net Zero

The collaborative effort between Star Refrigeration and Tesco marks a significant milestone in Tesco's journey towards Net Zero. The 'Reaching Net Zero with Cool Data' initiative has achieved remarkable progress in a relatively short period of 21 months.

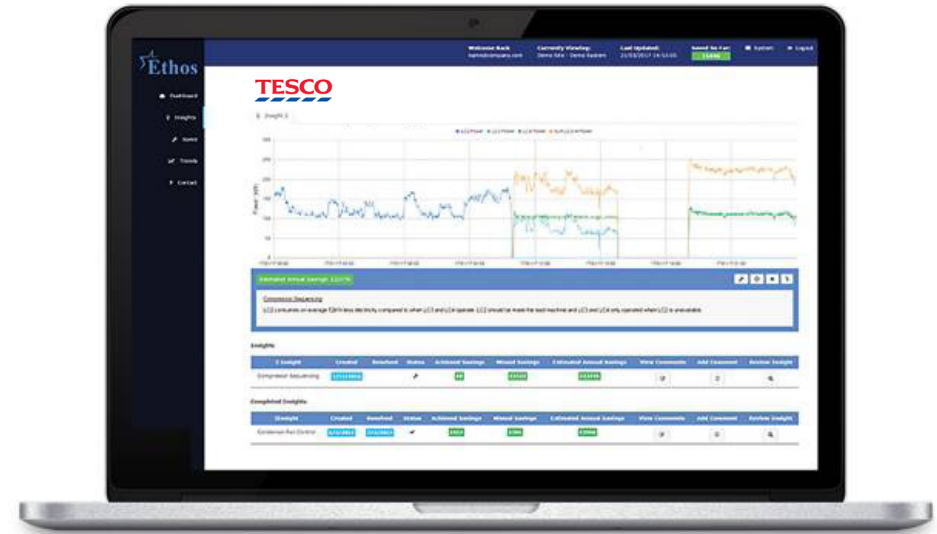
The innovative element of integrating AI-driven Ethos monitoring technology with proactive maintenance at Tesco's temperature controlled facilities across the country demonstrates the significant potential for replication across various sites and sectors.

The cost-effectiveness of this approach is clearly demonstrated by the substantial decrease in Tesco's operational costs and its contribution to the company's financial and environmental goals.

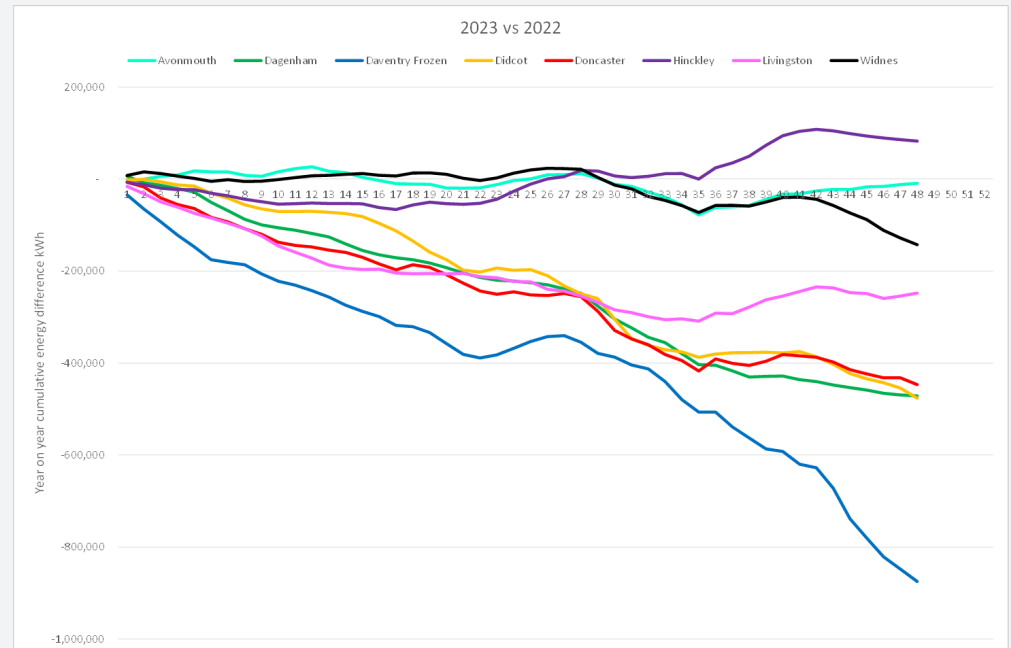
Ethos has successfully identified hidden inefficiencies and highlighted patterns and trends that have allowed the retailer to make changes that otherwise may have been missed. With its help, the Tesco team is making informed decisions based on strategic insight data collected daily from the refrigeration systems to optimise energy usage and lower carbon emissions.

Ethos is committed to sustaining the current improvements and achieving further energy and carbon emissions reductions. The StarCare maintenance team plays a key role in this process, executing a cost avoidance plan to keep up the positive progress. While this project is still in progress, the data regarding energy and carbon savings includes information up to September 2023.

The environmental impact of this initiative is significant and promotes sustainable practices. The project serves as a blueprint for environmental responsibility and illustrates how innovative approaches can lead to a greener future.

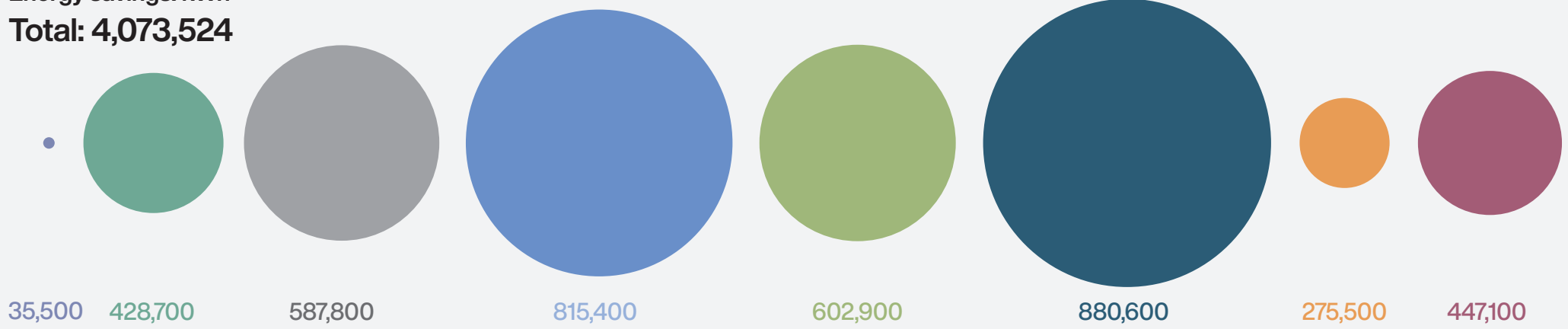


Power consumption - Tesco's sites 2023 vs 2022



Total Savings

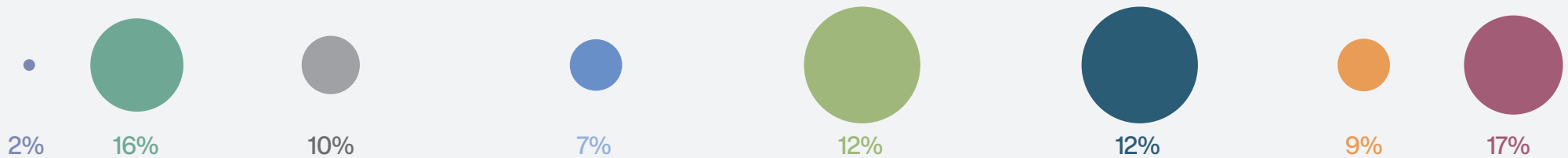
Energy savings: kWh
Total: 4,073,524



CO₂e savings: Tonnes
Total: 835



%reduction
Total: 10%



Avonmouth Jan-Sep 2023
Dagenham Jan-Sep 2023
Daventry Frozen Jan-Sep 2023
Doncaster Jan 2022 - Sep 2023
Hinckley Jan 2022 - Sep 2023
Livingston Jan 2022 - Sep 2023
Southampton Jan-Sep 2023
Widnes Jan-Sep 2023