



Electrical Mechanical Cooling

Emissis EMC enPact Cooling & Refrigeration

reducing energy consumption &
CO2 emissions

www.emissis.com



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Emissis deliver a powerful suite of globally patented, innovative energy reduction solutions that save clients money by lowering energy bills whilst reducing carbon emissions.

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enPact Cooling & Refrigeration is our innovative energy-saving solution that reduces the energy consumption of air-conditioning and refrigeration systems without compromising their performance.

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About.

Emissis (Electrical Mechanical & Cooling Limited) are an engineering company who have been in business for over 20 years. We are an expert M&E service provider and independent supplier of critical power and cooling solutions for critical, industrial and commercial operations. Our independent status means that we are always working to find and install the best technology for your specific project and site needs We pride ourselves on our craftsmanship, technical expertise, compliance knowledge and project delivery. We are always working to keep your site protected, optimised and energy efficient.

Emissis deliver a powerful suite of globally patented, innovative energy reduction solutions that save their clients money by lowering energy bills whilst reducing their carbon emissions. One of our core solutions for reducing carbon emissions is enPact Cooling & Refrigeration. Our other solutions include, enPact Chillers, and enPact Voltage Control.

In a world, increasingly dominated by rising energy prices and climate change, Emissis are proud to be working alongside some of the leading UK businesses supporting them on their journey towards net zero saving them millions in energy overspend and waste in the process.



Net Zero is coming...

The UK and EU are legally bound to reach net zero by 2050 and several other major economies are doing the same. More businesses than ever before are now having to report on carbon emissions.

Start your net zero journey today and reap the benefits sooner. We deliver a powerful suite of solutions that reduce your carbon emissions, save you money with lower energy bills and generate revenue from being a more flexible energy user with the help of today's leading technology.



We work with:



Introducing enPact Cooling

enPact Cooling is our innovative energy-saving solution that reduces the energy consumption of your air-conditioning and refrigeration systems without compromising their performance.

Cooling and refrigeration account for 20% of the CO2 emissions produced by most businesses, but with enPact Cooling you can make a significant impact on your carbon footprint. It's a fast-fit, low-cost, device designed for air-conditioning and refrigeration systems that dramatically reduce energy consumption.

The Key Benefits:

- Unrivalled energy saving performance
- Up to 40% reduction in energy use
- Reduced carbon emission
- Fast return on investment (ROI)
- Improved temperature stability
- Improved air quality and comfort assurance
- Reliable high impact technology





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enPact Cooling & Refrigeration

We keep your people, equipment and produce cool, and your energy budget from overheating.

We help businesses to make big energy and carbon savings without changing cooling needs so that your building users are kept comfortable, equipment stays cool and your produce remains at the correct temperature.

enPact Cooling & Refrigeration is British designed technology that is maintenance free and can be easily installed by our qualified engineers with no disruption to your operation.

enPact Cooling is a versatile system. It includes advanced features such as automatic temperature tracking and a remote monitoring control dashboard.

As well as being completely maintenance-free, enPact Cooling is saving our clients up to 40 %.

“

Growing demand for air-conditioners is one of the most critical blind spots in today’s energy debate. **If left unchecked, energy demand from air-conditioners will more than triple by 2050.** The answer lies first and foremost in improving the efficiency of air-conditioners, which can quickly slow down the growth in cooling-related electricity demand. **Indeed, the opportunity for efficient cooling lies in the market’s current inefficiencies: there are huge disparities in the efficiencies of air-conditioners sold today across the globe.**

- Fatih Birol, Executive Director, IEA



enPact Cooling & Refrigeration can save up to 40% of the energy consumption on all types of air-conditioning and refrigeration units. Installed across all commercial settings, enPact Cooling & Refrigeration could save 6.9 TWh in Europe alone.

enPact Cooling & Refrigeration can help any business who uses air-conditioning and refrigeration, to cool environments and keep produce chilled. We have installed enPact Cooling & Refrigeration in many different businesses:



Coldstores



Supermarkets / Retail



Data Centres



Manufacturing



Hotels / Restaurants



Offices / Commercial



Airports / Transport



Universities / Education



Hospitals / Health Centres



Venues / Museums

Applications:



Air-Conditioning

- Commercial split type air-conditioners e.g. wall-mounted and cassette based package based and double expansion DX units up to the largest sizes
- Ducted air-conditioners with AHUs • Inverter based VRV and VRF air-conditioners

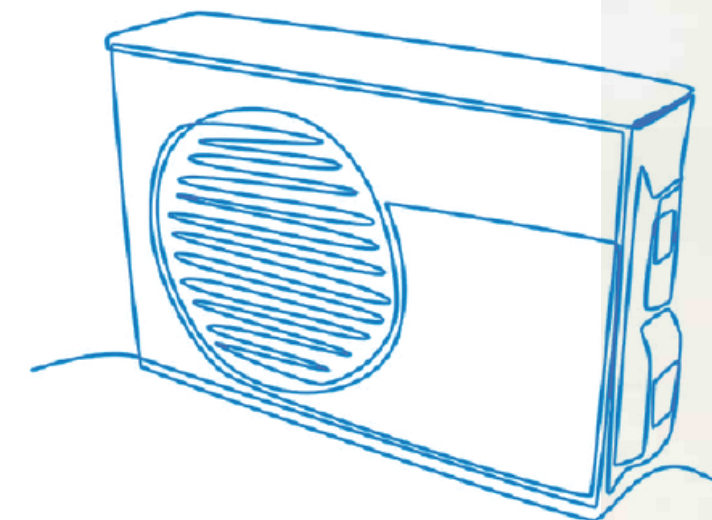


Refrigeration

- Industrial refrigerators used in the manufacturing sector e.g. food processing and pharmaceuticals
- Walk-in refrigerators used in the food and beverage sector
- Retail sector refrigerators e.g. vegetable and dairy display units, cold drink cabinets, multi - pallet warehousing refrigeration

Main features

- Dramatically reduces energy consumption whilst maintaining temperature
- 3 models, AC/H, Refrigeration, 4 sensors / 8 sensors
- Non-intrusive, 2-hour installation for AC, 8-12 hours large cold rooms
- Payback between 6-24 months
- Ideal for larger AC systems, food production, cold storage, F+B and hospitality

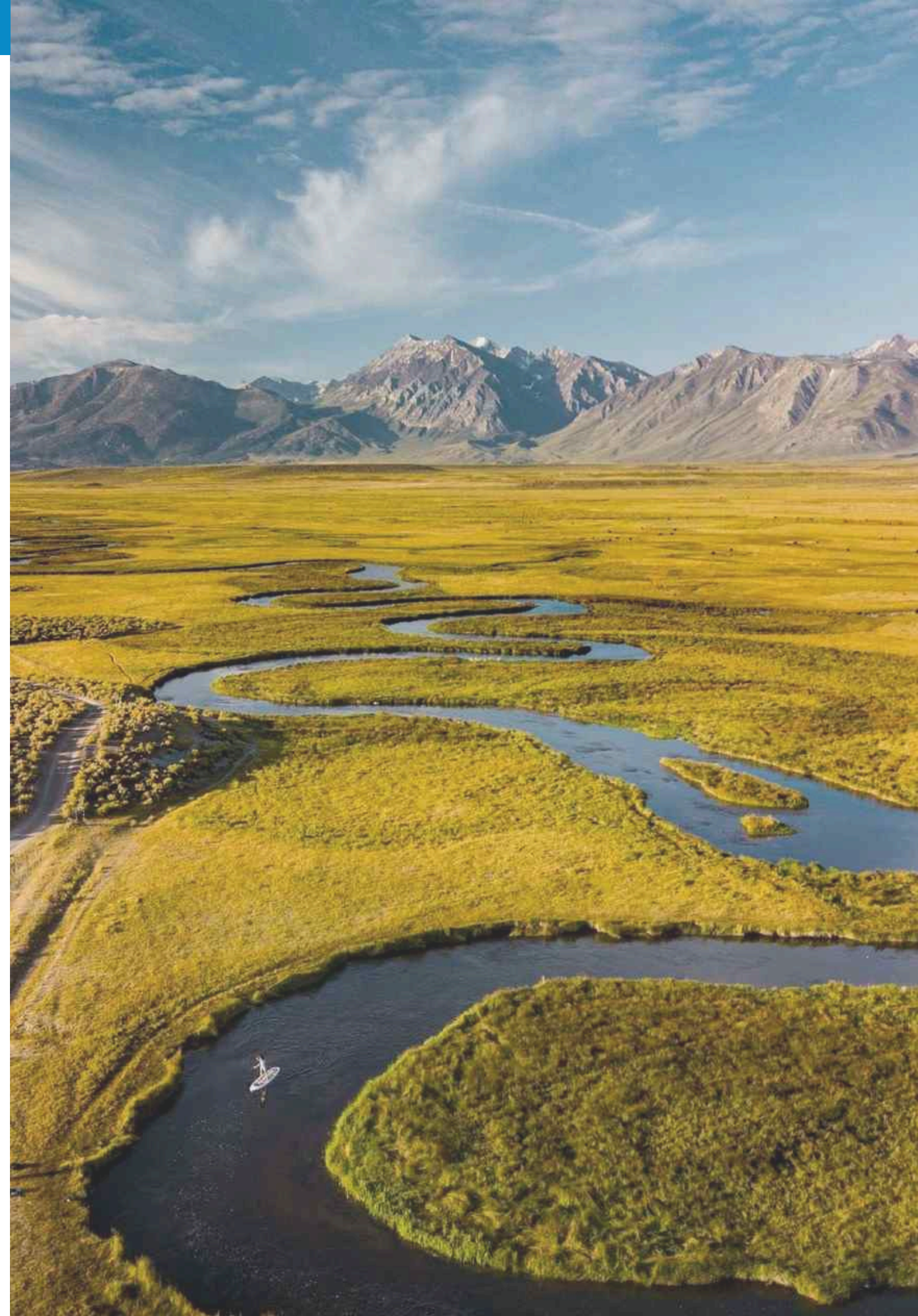


Technical

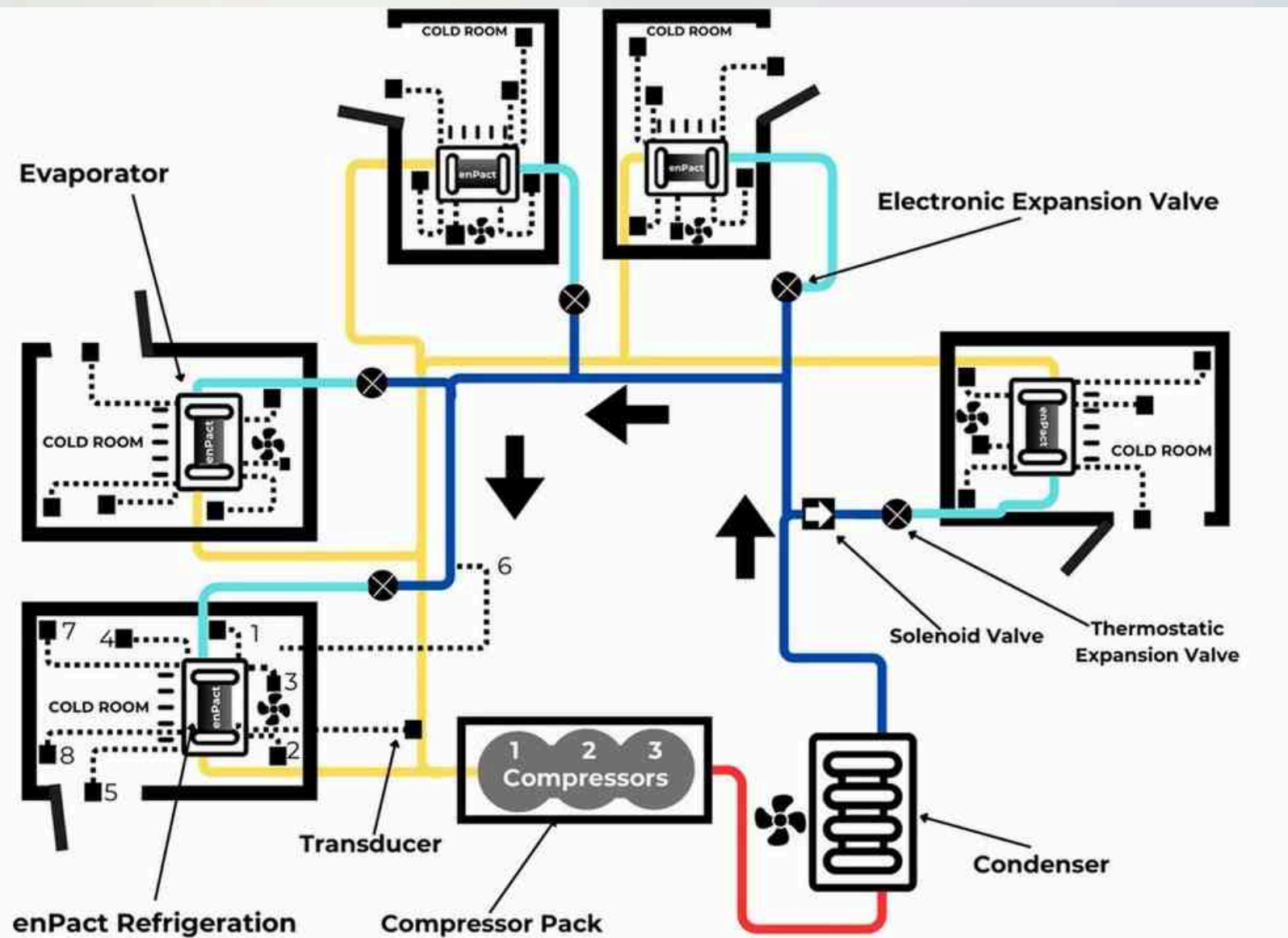
enPact retrofit technologies are easy to fit and installed on the indoor (evaporator) component of any refrigerant based direct expansion (DX) AC units and refrigeration units.

The energy saving magic is delivered using an energy trading platform model with three temperature sensors which work together to optimise the performance of the condensing unit/pack system , which is the main energy consuming (80-90%) component of refrigeration systems.

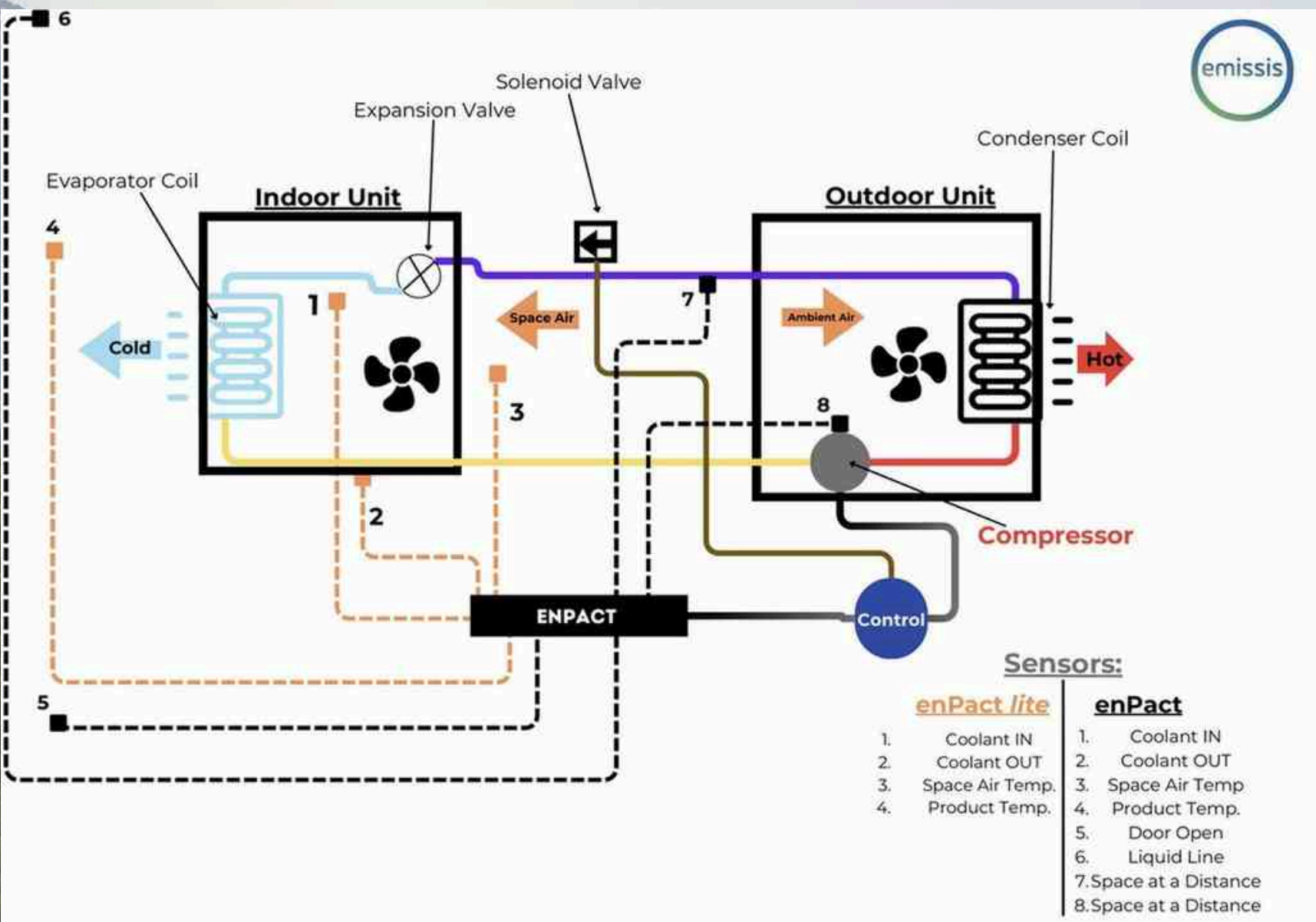
The enPact sensors monitor the room temperature, supply air temperatures and superheat to calculate the amount of refrigerant required to maintain the set temperature, thereby reducing the compressor use. In all cases maintaining the required set temperature is the primary objective.



Multi Pack Systems



- enPact refrigeration maximises the latent cooling energy to reduce the load on the compressor without affecting the temperature.
- enpact sets and controls the superheat and automatically controls the valve whilst monitoring space and product temperature
- enPact offers superb savings with both thermostat expansion valves and electronic expansion valves
- Savings range from 20% to above 40%
- Suitable for supermarket display fridges, food production, large multipack refrigeration & CO2 systems.



1.enpact assesses the super heat by measuring the refrigeration temperature at sensor 1 and 2 which tells when the evaporator is at maximum cooling capacity.

2.enpact interrupts the electrical supply to the solenoid valve and closes it which in turn stops the compressor

3.enpact keeps the solenoid valve closed until the refrigerant is used out of the evaporator and the superheat drops to a predetermined setting.

4.When the refrigerant has been used and the superheat has reached its lower threshold setting enpact allows the electrical supply to the solenoid valve which opens and allows the compressor to start.



About

Lidl is a global supermarket chain originating from Germany, known for its affordable pricing and a wide range of private-label products. It operates in numerous countries, offering a variety of groceries, household items, and seasonal goods at competitive prices.

As of 2024, Lidl operates over 12,350 stores worldwide across 31 countries. The company continues to expand its presence, with plans for more store openings, particularly in markets like the UK, where it is adding hundreds of new locations.

Annual Savings based on this pilot consisting of one freezer:



23.75%
4,507.75 kWh



Carbon Saving of
933.44 kg



Financial Saving of
€ 1,126.94



Overview

1 enPact unit was installed and connected to a freezer at Lidl, Ireland. In order to accurately measure the kWh consumption of the unit, a smart meter was connected to the system compressors of the freezer unit. The unit was activated on August 4th 2024 and set to run for 1 week of enPact ON, followed by 1 week of enPact OFF. The data from the metered unit has been downloaded and analysed and is available to be viewed upon request.

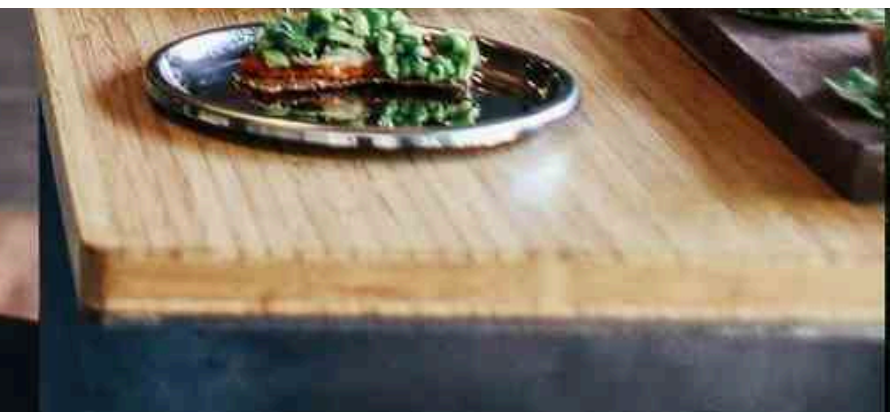


Energy Reduction & Savings Forecast for 173 LIDL stores in Ireland

1 Year Savings
779,840.75k Wh
€ 194,960.19

5 Year Savings
3.8 million+ kWh
€ 974,000+

10 years Savings
7.7 million+ kWh
€1.9 million+



Large supermarket chain in the UK

A leading British multinational grocery and general merchandise retailer, founded in 1919, England. It operates thousands of stores worldwide, offering a wide range of products including food, clothing, electronics, and financial services. Known for its customer-centric approach, it is one of the largest and most well-established supermarket chains in the UK.

This supermarket chain is a prominent advocate for environmental sustainability. The brand has undertaken several sustainable initiatives to reduce its environmental impact.



18.79%
19,976.45 kWh



Carbon Saving of
4,136 .60 kg



Financial Saving of
€ 4,794.35

Overview

14 enPact units were installed and connected in Dublin, Ireland, a medium sized supermarket. 3x display freezers, 6x display fridges, 4x fruit + veg display chillers, 1x walk in freezer. In order to accurately measure the kWh consumption of the unit, a smart meter was connected to the external condensing unit which supplies all 14 internal units. The unit was activated on November 15th 2024 and set to run for 7 days of enPact OFF and 4 days of enPact ON. The data from the metered unit has been downloaded and analysed and is available to be viewed upon request.



Large supermarket chain in the UK

A leading British multinational grocery and general merchandise retailer, founded in 1919, England. It operates thousands of stores worldwide, offering a wide range of products including food, clothing, electronics, and financial services. Known for its customer-centric approach, it is one of the largest and most well-established supermarket chains in the UK.

This supermarket chain is a prominent advocate for environmental sustainability. The brand has undertaken several sustainable initiatives to reduce its environmental impact.



28.19%
2,876.20 kWh



Carbon Saving of
595.59 kg



Financial Saving of
€ 862.86

Overview

1 enPact unit was installed and connected to a freezer in Dublin, Ireland. In order to accurately measure the kWh consumption of the unit, a smart meter was connected to the system compressors of the freezer unit. The unit was activated on September 5th 2024 and set to run for 7 days of the enPact ON, followed by 6 days of enPact OFF.



Report for McDonalds Dublin



McDonalds is one of the largest and most recognizable fast food chains in the world, founded in 1940 by Richard and Maurice McDonald in California. Known for its iconic BigMac, fries and speedy service, McDonalds has grown to operate over 40,000 locations in more than 100 countries. McDonalds is a prominent advocate for environmental sustainability. The brand has undertaken several sustainable initiatives to reduce its environmental impact.

Annual Savings Based On This Pilot Consisting of one freezer:



45.57%
1,825 kWh



Carbon Saving of
€547.50



Financial Saving of
€51,465.00

Overview

1 enPact unit was installed and connected to a chiller at McDonald's - The Mill Shopping Centre, Clondalkin, Dublin, Ireland. In Order to accurately on August 28th 2024 and set to run for 1 week of enPact OFF, followed by 1 week of enPact ON. The data from the metered unit has been downloaded and analysed and is available to be viewed upon request.



enPact Cooling & Refrigeration client process

Enquiry - Desktop - Site Survey- Installation

Step 1. Discovery and Assessment

In the preliminary discovery and desk assessment, we will assess whether and how enPact Cooling & Refrigeration can aid your business in accomplishing its energy and carbon emissions reduction strategy. We will gather relevant data from you to gain a thorough understanding of your operation/site(s). This will allow us to promptly verify potential and the immediate benefits that align with your objectives.

Step 2. Proposal/Desktop Survey

Based on the information collected from the Discovery and Assessment phase, we will create a desktop proposal that demonstrates the direct advantages of enPact Cooling and how it can help you fulfil your energy and carbon emissions reduction objectives. The business case will provide a detailed projection of the Return-on-Investment and payback.

Step 3. Site Evaluation

We offer a 'no charge - no obligation' assessment programme to examine whether enPact Cooling is suitable for your operation/site(s). We can arrange to visit your site(s) and perform a physical and engineering evaluation.

Step 4. Installation

Efficient and timely delivery of projects requires professional project management procedures. You can have confidence that our team of project managers and qualified engineers will complete the project as agreed and planned. We will oversee all aspects of your project, emphasising expert workmanship carried out safely and to the highest standards.



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Quality Policy

We continually aim to provide excellent services to our customers and deliver solutions & projects both on time and within budget. We operate under a Quality Management System that has attained ISO9001:2008 certification.

We are committed to

- Consistently achieving and improving the Quality Management System
- Continually improving the effectiveness of the Quality Management System

We have a continuing commitment to

- Consistently achieving and improving the Quality Management System
- Continually improving the effectiveness of the Quality Management System
- Ensure that customer needs and expectations are determined and fulfilled with the aim of achieving excellence in customer satisfaction
- Communicating throughout the organisation the importance of meeting customer needs and legal requirements
- Establish the Quality Policy and its objectives
- Conduct management reviews of the effectiveness of the implementation of the Quality Management System
- Ensure the availability of resources

All personnel understand the requirements of the quality policy and abide with the contents of the quality manual. In addition to all UK and EU legislation and regulations, Emissis complies with all legislation specifically related to its business activities. We constantly monitor the quality performance and implement improvements where appropriate to ensure our quality policy's continuing suitability.

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