



Coolnomix Trial Report

Leading UK Petrol Station Operator, Wakefield



Client

A British retailer based in Blackburn which operates petrol stations and fast food outlets in Europe, the United States and Australia.

Their core business activities are divided into two distinct business units, retail and fuel.

Coolnomix Model

6 x AR-01 (Retail)
2 x AC-01 for air-conditioning use (Bakery store)
2 x MID smart meter with GPS capability for remote monitoring

Direct Annual Savings



kWh

17,786 kWh



5,069kg CO2



Saving of £2,490 / £311.26 per device
30% Energy saving Refrigeration (6 devices)
43% Energy saving - Bakery AC (2 devices)
20 months ROI

Coolnomix®

Reduce the energy consumption of your air-conditioning and refrigeration without affecting the output you need. Our technology is maintenance free and can be easily installed by our qualified engineers with no disruption to your operation. You can expect up to 40% energy saving on your air-conditioning and up to 30% on your refrigeration.

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

Client

The forecourt operator comprises of a network of filling station ("PFS") sites, each with its own convenience retail store and Food-to-Go concessions.

Overview

The purpose of the trial was 'proof of concept' and to identify the potential for reducing both carbon emissions and direct energy consumption with the installation of COOLNOMIX - a unique patented intelligent thermostat.

Helix50 carried out an overall 60-day trial on two air-conditioning units, five multideck display units and one walk-in refrigerated storage unit at the Wakefield store.

Trial

To measure the energy consumed by the refrigeration and air-conditioning, MID smart meters, with remote connectivity were connected to measure energy consumption.

REFRIGERATION TRIAL (Retail) | On the 01/03/2020 six AR-01 COOLNOMIX devices were installed, five were connected to five multideck display units located in the main retail area. The sixth device was connected to the internal walk-in refrigerated storage unit located in the stores area at the rear of the building. Data recording commenced on the 01/03/2020. COOLNOMIX (ON) was operational for 602 hours (25.1 days). COOLNOMIX was bypassed (OFF) and the refrigeration units operated as 'normal' for 832 hours (34.7 days) until 29/04/2020.

During the 60-day trial, the metered half-hourly and 4-hourly data was collected and analysed.

AIR-CONDITIONING (Bakery) | On the 01/03/2020 two COOLNOMIX devices were installed and connected to two internal ceiling mounted downflow AC units, located in the food preparation area and the service area. Data recording commenced on the 01/03/2020. COOLNOMIX (ON) was operational for 292 hours (12.2 days). COOLNOMIX was bypassed (OFF) and the air-conditioning operated as 'normal' for 164 hours (6.8 days) until 20/03/2020.

During the 19-day trial, the metered half-hourly and 4-hourly data was collected and analysed.

Results

Daily

Retail's daily refrigeration energy consumption reduced by 30% (see Figure 1 in blue), with COOLNOMIX active (ON), providing a reduction of 37.4kWh per day.

This saving is based on using 2,232kWh over 602 hours with COOLNOMIX active (ON) and 4,384.1kWh over 832 hours with COOLNOMIX inactive (OFF).

Bakery's daily AC energy consumption reduced by 43% (see Figure 1 in green) with COOLNOMIX active (ON), providing a reduction of 11.3kWh per day.

This saving is based on using 184.5kWh over 292 hours with COOLNOMIX active (ON) and 179.8kWh over 164 hours with COOLNOMIX inactive (OFF).

Daily energy consumption (kWh) and saving with COOLNOMIX

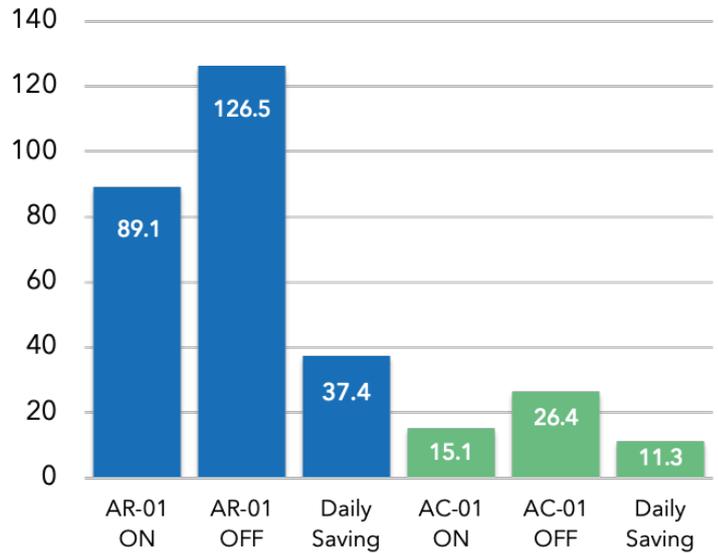


Figure 1: Daily energy consumption and saving

Annual energy consumption (kWh) and annual saving with COOLNOMIX

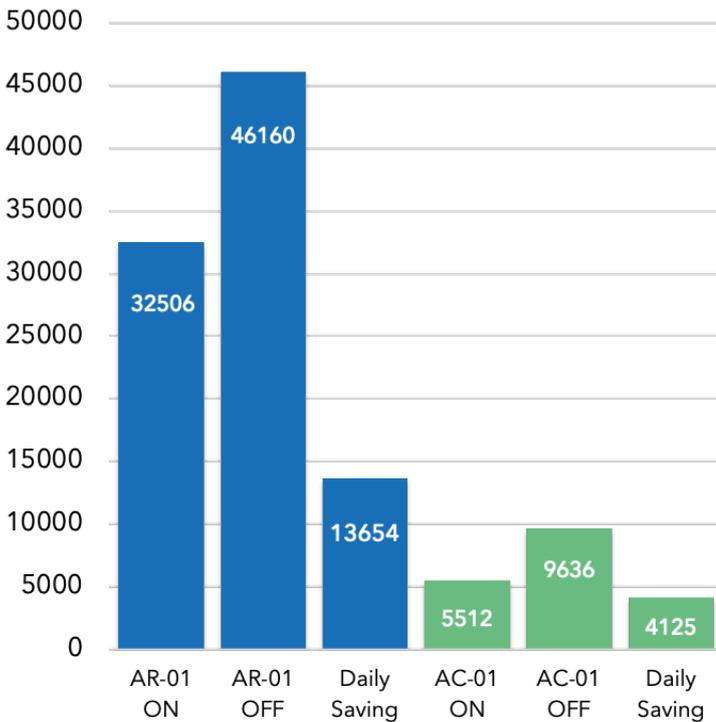


Figure 2: Annual energy consumption and savings

Annual

The combined calculated savings of 37.4kWh and 11.3kWh daily saving with COOLNOMIX installed on Retail Refrigeration and Bakery AC, respectively, equates to annual energy savings of 17,786kWh (see Figure 2) which is equivalent to a carbon emissions reduction of 5,069kg of CO₂.

The annual savings were calculated on average daily consumption showing:

Retail Refrigeration

COOLNOMIX (ON) consumption averages 89.1kWh COOLNOMIX (OFF) consumption averages 126.5kWh

Bakery Air-Conditioning

COOLNOMIX (ON) consumption averages 15.1kWh COOLNOMIX (OFF) consumption averages 26.4kWh

COOLNOMIX carbon emissions saving of 5,069kg of CO₂ per annum

Conclusions

The trial test accurately proves the daily energy savings with COOLNOMIX, allowing us to predict the annual carbon emissions reduction and the energy savings plus the financial benefit. We have based cost savings on the trial site's electricity supply cost of £0.14 per kWh including any CCL.

The COOLNOMIX trial delivered a 30% and 43% energy reduction in electricity consumption on the retail refrigeration and the air-conditioning (respectively); annualised this equates to a reduction, per forecourt site based on 8 COOLNOMIX devices installed (6 x AR-01 + 2 x AC-01).

- 17,786kWh
- 5,069kg of CO2



Recommendations

Full rollout across the 360 client UK sites would reduce carbon emissions by 1,824tn CO2 and reduce energy consumption by 6,402,960kWh; equating to a cash saving of £896,414 at today's electricity supply price with a payback of 20 months (all figures per annum).

Over 10 years our client would achieve:

CO2 reduction	Electricity reduction
18,248.4tn	64,029,600 kWh

Rental Option

Off balance sheet - zero deposit

Monthly figures:

Saving £25.94 per device
Rental from £11 per device
Net benefit £14.94 per device

Rollout across 360 sites:

Monthly benefit £43,027.20
Annual net benefit £516,326.40

Notes

1. The COOLNOMIX device's ROI is dependent on the following criteria:

- kW rating of the refrigeration or cooling system
- Operational run hours
- Electricity cost per kWh + CCL



We're ahead of the game

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.

See our COOLNOMIX brochure and videos

See our other solutions

COOLNOMIX

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