



Coolnomix Trial Report

Leading UK Bakery Retailer

Report compiled by Shaun Nugent, Director, Emissis.

reducing carbon emissions locally and globally

Client

Leading UK bakery retailer.

Coolnomix Model

2 x AC-01 for air-conditioning use
+
1 x MID smart meter with GPS
capability for remote monitoring

Direct Annual Savings



4,124.5 kWh



1,175.5kg CO2



Saving of £577.43 per store
43% energy saving
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

They operate under the Environmental Management System ISO 14001: 2015 standard. This certification means they have the right systems and processes in place to support their commitment to reducing their impact on the environment, which is a key part of their social responsibility strategy. They have made excellent carbon and energy reductions in recent years and are currently scoping out longer-term targets and Climate Scenario Planning as part of their future sustainability strategy.

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.

Emissis carried out a 19-day trial on two air-conditioning units at the store located in Wakefield.

Trial

On the 01/03/2020 two COOLNOMIX units were installed and connected to two internal ceiling mounted downflow AC units, located in the food preparation area and the service area.

To measure the energy consumed by the air-conditioning a MID smart meter, with remote connectivity, was connected to the external condenser.

Data recording commenced at 00:01 on 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

COOLNOMIX active (ON) reduced daily energy consumption by 43% (see Figure 1), 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

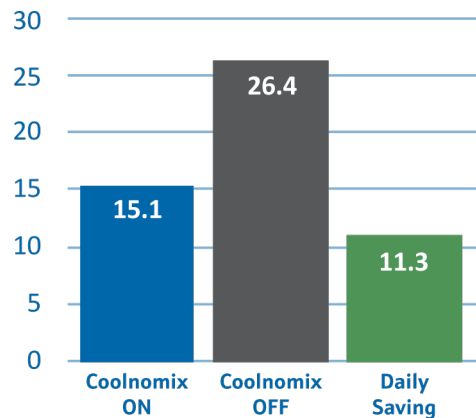


Figure 1: Daily energy consumption and saving

Annual energy consumption (kWh) and annual saving with COOLNOMIX

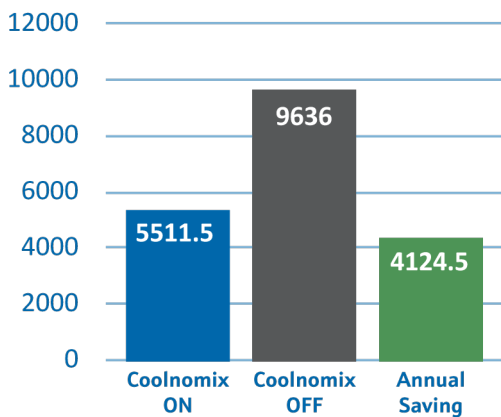


Figure 2: Annual energy consumption and savings

Annual

The calculated 11.3kWh daily saving with COOLNOMIX equates to annual energy savings of 4,124.5kWh (see Figure 2) which is equivalent to a carbon emissions reduction of 1,175.5kg of CO₂.

The annual savings were calculated on average daily consumption showing:

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

COOLNOMIX will reduce your carbon emissions by 1,175.5kg 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 43% energy reduction in electricity consumption; annualised this equates to a reduction, per site:

- **4,124.5kWh**
- **1,175.5kg of CO₂**
- **Cost Savings of £577.43**





Recommendations

Full rollout across the 104 known UK stores would reduce carbon emissions by 122.25tn CO2 and reduce energy consumption by 428.9MWh; equating to a cash saving of £60,053 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
1,222tn

Electricity reduction
4.29GWh

Bearing in mind that we only ran COOLNOMIX on air-conditioning units in the trial. We also highly recommend using COOLNOMIX on all appropriate refrigeration systems too. This can deliver even more reductions in carbon emissions and offer an even stronger business case based on energy & cost savings - ROI.

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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