

# SUSTAINABILITY IN PRACTICE CASE STUDY

## Kooltrak/EndoCube system

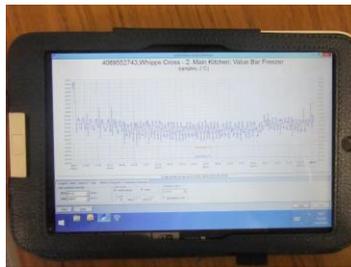
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### BACKGROUND

This refrigeration project entailed the installation of a Kooltrak logger system only at Whipps Cross and the installation of 106 EndoCube across Whipps Cross, St Barts and the Royal London Catering refrigeration.



Kooltrak data logger



Kooltrak software



EndoCube

### BENEFITS

The use of EndoCube and Kooltrak software will reduce energy usage within catering by reducing both wear & tear and prevent failure of refrigeration plant; this is done by monitoring how the plant is performing and the temperatures the stock is stored at. It should when used correctly prevent the spoiling of food due to breakdowns of plant which will reduce waste. The installation of the Kooltrak system, compliant with ISO 14001/22000, transformed the administrative tasks of the catering staff as part of their Food Safety HACCP Policy. Previously they spent 45 minutes recording temperatures, 3 times a day. This process was reduced to 10 minutes downloading the data once a day. The EndoCube fitted over the refrigeration thermostat sensor changes how fridges and freezers work by mimicking food rather than respond to fluctuating air temperature. Reducing the need for the refrigeration compressor to cycle on and reducing the need for the plant to work harder than necessary.

**EndoCube saving                      £6,065.36 / year                      69,525 kWh                      37,545 kg / CO2 per year**

### Kooltrak logger Findings:

#### *Whipps Cross Hospital*

- Walk in Freezer - Set points not set correctly – temperature averaging -14C. Temperature re-adjusted.
- Foster 2 Door Freezer - Operating within a parameter of -6C and -15C within the first week of the installation of the Kooltrak system. This was a clear sign of a fault, in this case a shortage of gas in the system, had data been utilised and acted on the compressor and fan motor would not have broken down – Cost of replacement +£900.00
- Walk in Dairy Chiller - Dairy products was stored at 4.5C-5C, butter/spread soft. Installing the EndoCube brought temperature down 1.5C to an acceptable storage temperature.
- MEC Bench Freezer - Not achieving -19C. Unit set points adjusted and staff advised to defrost to save energy and wear & tear.

#### *Royal London Hospital*

When installing the EndoCube at the Royal London Hospital one two door upright fridge storing baby milk products was found to be operating at +15C; if the Kooltrak monitoring system was in place the fault would be detected and acted upon sooner to lower this temperature.

### SUPPORTING DATA

The EndoCube consists of a microcrystalline wax cube that is easily fitted on to the refrigeration thermostat sensor. It changes how fridges and freezers work by mimicking food. Rather than respond to fluctuating air temperature, i.e. the EndoCube makes refrigeration units read food temperature only. All refrigeration units work in a series of cycles, monitoring air temperature in order to decide when to switch on and off. But air temperature rises faster than the temperature of food, so refrigeration units work harder than necessary.

The Kooltrak Data Logger: Approximately the size of a large button the data logger contains a microchip and lithium battery the data logger is mounted on a stainless steel plate to the inside of the fridge/freezer unit on the `load line`. The data logger is easily read by the use of a sensor on an interface cable. Once connected temperature data results are automatically downloaded in 2-3 seconds and saved in the Kooltrak `Data Display` program within the Tablet computer.