

## **Best Practice - Calorex DH30 dehumidifier units in drying rooms**

### **A46/A5630 Anstey Lane Junction Improvement Works**



The A46/A53630 Growth and Housing Fund scheme involves improvements of a major connection between the strategic A46, the Leicester local highway network and an area of significant housing growth in North Leicester. The proposed improvements are to provide gyratory and signalisation improvements to the A46 Anstey Lane Junction; duelling of the single carriageway section of Anstey Lane (A5630) between the A46 interchange and Bennion Road roundabout; and improvements to Bennion Road junction.

The local constraints of the scheme meant that the site accommodation area could not be provided with a permanent mains power supply. As part of energy reduction initiatives Galliford Try took the decision to use low power output dehumidifier units to make the site more efficient in terms of power usage, and also help towards Carbon emissions resulting from the site. This would help towards our vision of constructing the new works with minimal impact on the local area.

The site utilised two Calorex DH30 dehumidifier units in the drying room of the site. These were selected while working with our delivery partners Elliott UK and DAQS Environmental Solutions to find the optimum solution.



## How a dehumidifier works

The high-performance dehumidifiers recirculate the air and physically remove moisture from it. This alleviates the need to continuously reheat incoming air. Not only that, the units convert energy taken out of the room as moisture to provide useful heat to warm the room, accelerating the drying process.

## Cost savings

The DH30 dehumidifiers provide an efficient and cost effective alternative to drying using heat alone. The potential energy savings are huge as every unit of energy that our dehumidifiers consumes, it will convert 2.5 times this amount to usable heat. In fact, compared to traditional heat and ventilation energy, cost savings of 75% are not unusual.

But the easiest way to explain this is that using a dehumidified drying room, there is zero (deliberate) energy exchange with the outside air.

In a traditionally heated room, energy is used to heat the room, make the air full of moisture, then all this air is moved outside, and the process goes on. With the dehumidified drying room, all the energy put into the space remains within the space

## Installation

Any room can be turned into a drying room just by using a dehumidifier. Installations can be straightforward, as it only requires positioning, connecting a power supply and drain. The units have combined heating and drying so there is no need for separate heaters, fans and extraction systems.

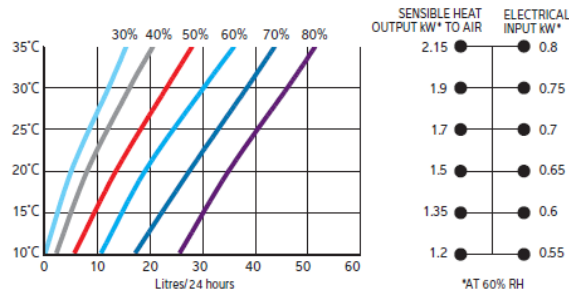
## Site Application

Site experiments into energy savings for the site have resulted in the following power efficiency savings for one Dehumidifier. The site at Anstey operates two units in the drying room.

A baseline test with no heating on in the building resulted in background usage readings of 624W. The site running with one dehumidifier on resulted in a power reading of 1307W. A test run with no dehumidifier on and one traditional fan heater running resulted in a power reading of 3644W.

These tests showed the dehumidifier alone uses 683W, and the traditional fan heater uses 3020W of energy. We estimate this to be a 78% reduction in energy usage, and estimated 28kg of CO<sub>2</sub> per day, or 10,236kg of CO<sub>2</sub> per year, based on a conversion of 0.250kg CO<sub>2</sub> per kWh for two units.

**Performance data**



**Performance Data**

At A46/A5630 Anstey Lane Junction Improvement Works, dehumidifiers are operated at 25°C and 50% humidity. This allows dehumidification 18litres per 24H. The units can achieve higher levels of dehumidification to meet site requirements.

**Improvement**

We improved our system on the project by adding additional hanging units to the site. This allowed the workforce to spread their clothing further throughout the drying room area and gain greater efficiency and consistent drying quality from the product.

**Product Specification**

Specifications	Units	DH 30AX	DH 30AXP
Operating temperature range	°C	0-35	0-35
Dehumidification @ 30°C/60% RH	l/24h	30	30
Heat recovered to air @ 30°C/60% RH	kW	1.9	1.9
Air flow	m <sup>3</sup> /h	700	700
External static pressure	Pa	0	0
Sound pressure level @ 3m	dB(A)	52	52
Refrigerant		R407c	R407c
Power supply	V/Hz	230/1ph/50	230/1ph/50
Dehumidifier power input	kW	0.75	0.75
FLA	A	4.4	12.7
Maximum supply fuse	A	10	20
LRA (compressor start)	A	15.8	15.8
Heater type		Optional LPHW	Standard Electric
Heat output	kW	3.0	2.0
Flow rate	l/min	5.0	-
Product size (w x d x h)	mm	782 x 270 x 648	782 x 270 x 648
Weight	kg	40	40
Condensate drain size (flexible plastic hose)	mm ID	16	16