EMC Renewables

University of Hull

The Lawns Centre

3.2kw Aircon

Cooling Report

Summary of Contents

EMC Renewables is a trading name of

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1. Introduction

As specialists in the field of Critical Power and Cooling, EMC Renewables were invited to conduct a site survey to assess the suitability of Coolnomix being integrated into the existing cooling systems at the University of Hull.

2. Room Overview

The room being surveyed is a Small data room with one Rack cooled by a Wall mounted cartridge Aircon unit, sized at 3Kw with a remote control mounted on the wall nearest the door, it was blowing cold air into the area as positioned above the rack.

3. Coolnomix Readings

All measurements were taken using a hygro-thermometer.

The unit had a set point of 22'C.

The readings taken were as follows

Data Hall	3.2Kw Unit					
Environment	Min	Avg	Min	Avg	Min	Avg
CRAC Set Point	22.0					
Cooled Room Temp		19.0				
Return Air Temp		21.0				
Cold Air Temp	11.7					
Temp Delta	7.3					

The unit looked new and well maintained so it was decided to fit a Coolnomix for testing purposes.

4. Coolnomix Energy Optimisation Systems – The Lawns Centre

The Unit was set up using a 5.2k resistor within the bypass circuit to match the current Thermistor.

The Aircon set point was reduced to 19'c and Coolnomix set at 21'c to match original settings.

The Coolnomix was installed through a fused spur and Bypass configuration and checked for operation with results showing a set temperature between 19.4 and 20.1'c.

kWh consumption was also monitored for a 2-week period to show the difference between On Coolnomix and on Bypass.

These results although small in scale proved that the Coolnomix could give an energy saving of 24% on the system tested.

Calculation results

Using the site units Kw calculation for summary purposes, usage is expected to be:

	Example -Type 0	Type 1
Unit Type▽	DX Units	DX Units
Location or Floor level/s	Levels 1 & 2	Fenner Bld
Age in years (if Known)	5	
Cooling System Rating (kW)	6.0	3.2
Number of Machines		1
Approx. - Hours per day Operation▽		12
Days per week Operation▽		7
Months per year of Operation▽		8
Hours per Year		2883
kWh per year		6458
Annual Costs		£645.77

With Coolnomix Savings on suitable systems it would be expected to see between 20-30% on the kWh usage.

On actual usage seen over a small 2-week period the results provided evidence to support this theory

So, from the Energy graph shown and the known times that Coolnomix was incorporated we can calculate that during the 7 days on cycle the cooling used 12.82 kWh of energy and during the 7-day bypass period it used 17.14 kWh, clearly shown by the upturn within the centre of the graph data line.

Calculated this saving of 4.32 kWh against a baseline of 17 KWh calculates at a **25.2% saving.**

5. Recommendations

By applying this to the Building portfolio it can be calculated that cost savings against a 529Kw Cooling portfolio would create

£19,219.18 in Annual savings.

	Example -Type 0	Type 1
Unit Type▽	DX Units	DX Units
Location or Floor level/s	Levels 1 & 2	Fenner Bld
Age in years (if Known)	5	
Cooling System Rating (kW)	6.0	529.1
Number of Machines		1
Approx. - Hours per day Operation▽		12
Days per week Operation▽		5
Months per year of Operation▽		8
Hours per Year		2059
kWh per year		762666
Annual Costs		£76,266.59

Note some assumptions have been made across the portfolio and savings would significantly increase where the usage is greater i.e. where 24/7 usage is needed against Comfort cooling usage as has been used in above calculation.

For further information and to discuss how we can help your business, please find our contact details at www.emcrenewables.co.uk