ACIS™

Case Study | BMS

Telecoms Cabin Monitoring

Case Study

Overview

The availability of telecoms infrastructure underpins much of the economic and social activity in the UK. There is hardly a sector in the UK that will not rely in some shape or form on the connectivity provided by telecoms, the services it enables, and the activities it supports.

The existing and future telecoms network of the UK is supported by a vast physical infrastructure in the form of 40-50,000 telecommunications masts and cabins. The power and cooling requirements of these cabins generate significant energy bills for their operators, a typical cabin costing thousands of pounds per annum.

The Airedale smart energy trial involves one the UK's largest Telecoms providers who are considered to be at the forefront of the telecommunications industry in the UK. They manage thousands of telecoms masts nationwide and so energy usage is a topic of great interest.

Airedale was approached in 2018 with the aim of the two companies working together to look at ways to increase the energy efficiency of their cabins. The result of this collaboration was the trial of an innovative controls platform, coupled with Airedale's newest iteration of the Ecotel™ cabin cooling unit.

ACIS Building Management Systems from Airedale International have been helping facility managers optimise their on-site HVAC and power systems for many years.

The ACIS cabin monitoring system (CMS) has been specially developed for smaller enclosures where thermal management is key to effective and un-interrupted operation of critical equipment such as telecoms and battery systems.

Airedale Solution

- 12 month monitoring trial
- Alarm Notifications
- Set Point Optimisation
- Power monitoring
- Temperature, humidity and pressure monitoring
- CCTV management
- Easy management via intuitive dashboard
- Lighting management
- Remote 4G connection to cloud

In more detail…

The Project

A live telecoms cabin based in the south of the UK was selected for the trial. Airedale installed the new Ecotel™ unit and the ACIS controls system and collected results over a 12 month period. The combination of the Ecotel™ Mk IV and the smart controls system enabled the temperature in the cabin to be intelligently controlled.

Hardware

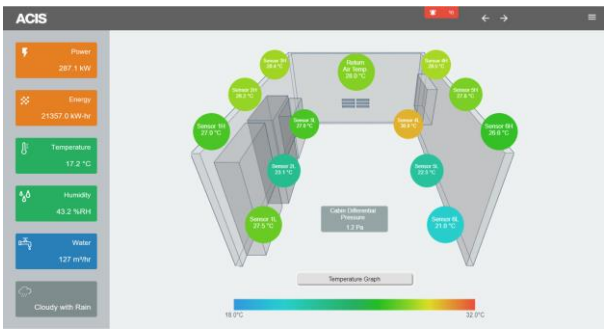
- ACIS control panel c/w power supply, IoT controller and server platform, comms.
- Wireless energy sensors fitted to the cabin's various power feeds to measure consumption by the various sub-systems.
- Split-core earth leakage CT
- Two UPS systems connected to control panel via SNMP allowing charge and temperature to be monitored.
- Airedale Ecotel™ Mk IV connected to control panel via BACNet allowing alarms, status reports and temperature set points to be remotely monitored and adjusted.
- 6 x wall mounted high level temperature sensors connected to control panel via Modbus.
- PIR sensor
- HD security camera inside and outside connected via ethernet.
- Remote connection to ACIS cloud server via 4G.

Findings

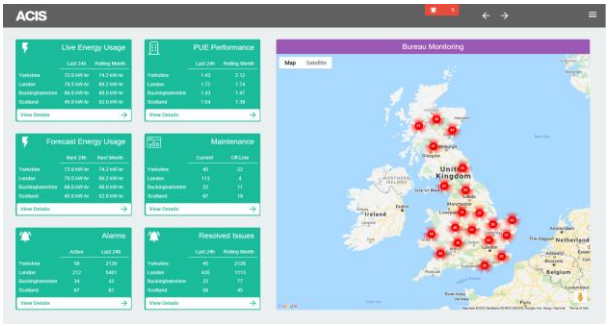
Intelligent control logic was added to the system, which allowed the cooling unit to reschedule its return air set-point based on the actual battery temperatures. The system pushed the cooling set-point automatically up to 28°C, which maintained the battery temperature at the optimum 25°C. Should the battery temperature increase, the system was configured to automatically reschedule the return air set-point down to compensate.

The Ecotel™ cooling unit operated for 91.9% of the trial in free cooling mode. This was much more than would normally be achieved as a result of the ACIS controls platform being able to dynamically adjust the set point of the cabin and operate at a higher temperature.

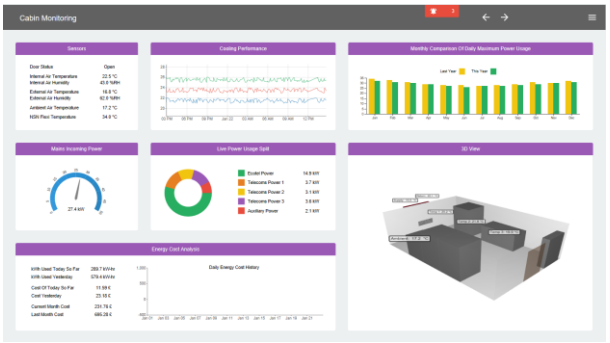
The monitoring capabilities of the ACIS system also allowed the operator to schedule predictive, rather than periodical, maintenance. This meant they were only attending site when they were required, saving on labour. Typical maintenance issues such as overheating equipment, blocked filters, routine checks on physical infrastructure etc. can be scheduled only when required and before failures occur. Previous experience shows that site visits can be reduced by approximately 33% with this approach.



Detailed cabin view



Bureau Monitoring



Cabin Dashboard

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