



Environmental Sustainability
team
Estates Services

Optimising Building Management Systems using Demand Logic

Background

Estates Services have two Building Management System (BMS) experts in-house that look to maintain and optimise the BMS systems of over 100 buildings. The team manages a range of BMS contractors who carry out maintenance on the systems and John Matthews and John Atkins regularly come in to trouble shoot and fix issues when things go wrong. To support their work the [BMS optimisation programme](#) was launched. This looks to take a 6 month snapshot of how the system is working and then optimise it with fixes which should, unless modified, last at least the year. However, this is not always the case. Systems tend to get modified, altered and stray from their original design and set up meaning that optimisation is an iterative and repetitive process.



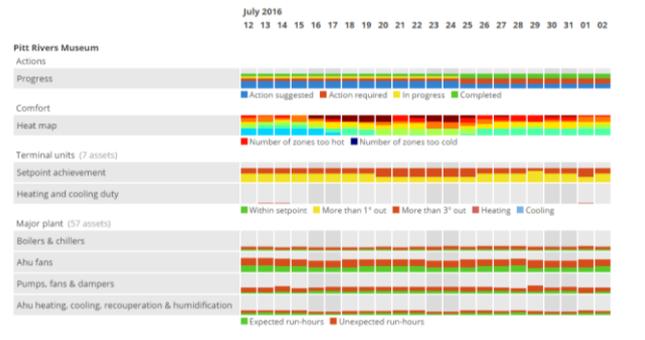
John Matthews said: “We decided to trial Demand Logic to assess the value of the services they provide. Their system constantly retrieves data from the BMS; it then independently analyses the data and produces reports on any abnormalities in

real time, i.e. plant running outside occupation, plant not reaching set point, zones being too hot or too cold, loss of outstation communications etc. In so doing it allows us to focus on the problem areas. I must say I have been very impressed; the only thing to bear to mind is, that to get the maximum benefit, you do need to have the resource to carry out the investigations.

Project Delivered

To combat the degradation of optimisation efforts the system Demand Logic was installed on three buildings; Tinsley, Weston Library and Pitt Rivers Museum. The system provides a user friendly interface with the BMS and provides a detailed analysis of where the building system is straying from set points and time

clocks. This allows John to investigate how the system is operating and modify the set up to correct it.



The system was opened up to the contractors so that comments could be made on the performance, these comments and relevant discussion are then turned into actions, allowing John to manage it all from the comfort of his desk. A useful thing when there are 100 systems to manage.

Subject	Description	Account	Action Status	Last Activity	Owner	Annual Saving (£)
Pitt Rivers - comfort tracker (Comfort Tracker Lab View)	Multiple problematic temperature sensors	Pitt Rivers Museum	Action required	2016-07-25	University of Oxford Kendra engineers (University of Oxford)	--
Pitt Rivers - AHU heating, cooling, recuperation & humidification (MHW)	Are the AHU OS1 & 2 points the same AHU?	Pitt Rivers Museum	Completed	2016-06-28	Demand Logic Technical Support (DemandLogic)	--
Weston Library - pumps & VT (MHW)	Chilled Beam VT is enabled 24/7.	Weston Library	Completed	2016-07-25	John Matthews (University of Oxford)	--
Tinsley Building - terminal units (Rogue Finder)	RFI The Wet Lab FCUs appear to be in a master/slave arrangements.	Tinsley Building	Completed	2016-08-03	--	--
Pitt Rivers Museum - performance summary (Lab View Object)	Confirm expected hours of operation for different plant	Pitt Rivers Museum	Action suggested	2016-06-28	John Atkins (University of Oxford)	--
Tinsley Building - performance summary (Lab View Object)	Confirm expected hours of operation for different plant	Tinsley Building	Action suggested	2016-06-28	John Atkins (University of Oxford)	--
Tinsley Building - terminal units (Rogue Finder)	RFI The Write Up FCUs appear to be in a master/slave arrangements.	Tinsley Building	Completed	2016-08-03	--	--

Outcomes

The Demand Logic portal has been running for several months now and has already identified areas where we can save energy. The necessary changes have been made and annual savings in excess of £13,000 are predicted, just under 65 tonnes of carbon. Some of the modifications included:

- Reducing the run hours of the Fan Cool Unit (FCU)
- Reducing the speed of the Air Handling Unit (AHU) Fans
- Reducing the run hours of the Chilled Water Service (ChWS) from 24 hours

Conclusions

The trial of the system will continue for a year at which point the savings and benefits will be analysed to see if other buildings would benefit from the installation of the software.

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