

# Property Director Briefing

Building Performance Optimisation Software



## Changing Property & Facilities Management

Property and Facilities Management is being changed by new technologies and there is significant customer demand for more flexible, agile and better quality spaces. Existing property assets are struggling to meet these changing needs without significant disruption to operations and the need for capital investment. These changes are also revealing that the present delivery models for FM have to be adapted to be more customer focused responding to the needs of the business more quickly and with a greater level of transparency. In particular, an increasing number of Internet of Things connected devices have found their way into the operation of buildings, introducing new sources of data not previously visible to FMs and their customers. The use of cloud-based software for real-time data analytics to improve building performance is a new addition to the property team's toolkit. Most installed Building Management Systems (BMS) are not sufficient to satisfy internal customers and if the property team can make use of the new technologies available at low cost this will put them on the front foot.

Building performance optimisation software can now be retrofitted quickly via a secure gateway to an existing property within a few hours to make better use of existing data from equipment, sensors and meters already installed in the building.

## Challenges for Property Directors and their Contractors

*Changing mindsets: digital awareness.* Data analysis by Building Optimisation Software can be used to drive FM delivery in real-time. For instance, energy meter data has traditionally been used to identify a problem - which building or floor has high consumption - whereas building performance software can analyse a broader data set to tell the FM that there is a clear solution; it can specify in real-time which piece of equipment is causing the high consumption and how to fix it. This live presentation of useful data analytics makes day-to-day management much easier without having to mine mountains of data

points from a BMS and allows for pro-active FM.

*Replacing PPM visits with a prioritised schedule.* By using Building Optimisation Software to monitor the condition of equipment this insight can be used to plan the HVAC and BMS maintenance schedule to make better use of engineering resources to satisfy customers. By amending contract KPIs to suspend non-mandatory Planned Preventative Maintenance (PPM) visits and replacing these with actions prioritised by Building Optimisation Software you should be able to improve comfort, reduce energy costs and focus time on improving customer service. The prioritisation can be based on agreed performance thresholds, such as temperature control, asset condition and energy wastage.

*Culture change: transparent collaboration.* Building Optimisation Software makes building performance transparent which can leave staff and contractors feeling exposed. However this data visibility was not available to these teams before so an amnesty period will help build trust in this new technology and make it easier to demonstrate its usefulness in standard operating procedures. Once this period is complete then Demand Logic can be used for collaboration between members of the property team, including staff and contractors both on- and off-site, within individual buildings and across portfolios.

*SLAs for improved customer service.* New data sets, automated data analysis and visualisation presents an opportunity to monitor building performance in a new, powerful way. Building Optimisation Software makes it possible to collaboratively focus on business outcomes, such as controlling comfort, managing demand and capacity, and maintaining equipment within agreed parameters. This focus on outcomes shifts attention towards customer satisfaction.

*Champions for new technology.* Successful adoption of new technology by the delivery team is key, therefore having expert users as *champions* who can facilitate this change is important - they can be the principal user of the new technology to drive user adoption and action. The *champions* can make it easy for all other general users to get a benefit from Building Optimisation Software and avoid the technology adoption being seen as additional burden.

## **Demand Logic's Approach to Building Performance Optimisation**

Reducing operating costs and improving customer service in existing buildings is often considered to be capital intensive. The reality is that many buildings suffer from a number of common operational problems which means that they are between 2x-10x more inefficient than calculated at the design stage, with the average energy performance being 4x worse than expected. There are common commissioning and operational issues which cause this to occur. In particular this is a result of the complexity of the building's systems, incomplete information being available to the property and FM team and a lack of visible, useful data for managing the building on a day-to-day basis. The common nature of these problems mean that FMs usually start on the back foot.

The Demand Logic software service makes it simple for FMs to ensure that the building operations are optimised in terms of occupant comfort, energy performance and the condition of HVAC plant. Demand Logic connects a single Data Acquisition Device (DAD) to the Building Automation/Management System (BAS/BMS) in a non-intrusive installation which typically requires a few hours on-site. The DAD is a powerful and secure, read-only gateway which discovers all of the HVAC, meter, sensors, lighting and other assets connected to the BMS - for medium to large commercial buildings this is usually an holistic view of hundreds of pieces of equipments with 10,000s of data points. The service creates an integrated model of these assets and all of their data points, which are extracted via an encrypted connection creating a profile of building performance with, on average, 15 minute data intervals.

Data analysis is undertaken to detect whether assets are wasting energy, in poor condition requiring maintenance or causing comfort problems for staff. The practical visibility this provides to the FM team goes beyond the energy meter and BMS, and provides a complementary, detailed exception report which specifically identifies the asset which is causing a problem. These issues are presented back to the property and FM team via our collaboration portal allowing issues to be discussed online, and actions to be created and tracked through to completion so that an electronic logbook is created of changes made to the building performance. The impact of the changes can be monitored and measured before and after the work is done by the FM team. This log is used as evidence for corporate reporting on building optimisation to support responses to the CDP and similar frameworks.

The common operational energy problems identified by the Demand Logic service to provide a service which typically provides a ROI of between 10%-30%, include:

- Extended out-of-hours operation of HVAC assets including boilers, chillers, pumps, AHUs and fans.
- Simultaneous heating and cooling.
- Poor temperature control by terminal units (i.e. FCUs, VAVs, chilled beams) due to faults or incorrect control settings, causing high and extended demand for heating and cooling.
- Inefficient sequencing of boilers and chillers.
- Narrow and/or diverse set points causing frequent plant operation and hunting.
- Extended plant operation shortening asset life expectancy and increasing lifecycle replacement cost.

Demand Logic's ability to collect all of the data from the BMS means that the analysis is holistic, and takes into account how a change in one part of the building impacts other sections of the HVAC systems. This allows us to provide a tool to the FMs which prioritises asset maintenance based on condition, in particular where poor conditions are causing occupant comfort problems and/or energy wastage. For example, by changing the FM maintenance regime at the Financial Times (FT) headquarters in London, Demand Logic helped reduce the number of staff hot/cold calls by 50% over the course of a year and also saved £60,000 a year in energy. The Planned Preventative Maintenance (PPM) was replaced by Condition Based Maintenance (CBM) allowing a significant proportion of engineering time to be spent on other aspects of improving internal customer satisfaction. The ability to provide useful information, not just data, in a timely fashion means that the Demand Logic service is very relevant to the changes taking place in property management with the advances of new technology. Demand Logic's software is one that should make life easier for you and your team.

Customers who have already adopted the use of Demand Logic software in their portfolios to improve building performance through optimisation include: Alexandria Real Estate, Barclays, BT, Canary Wharf Group, Capgemini, EY, KPMG, Land Securities, Prudential / M&G, RBS, Santander, Telekom Malaysia, The Crown Estate, TIAA-Henderson (TH) Real Estate, UCL and University of Oxford.

Property managers and FMs using Demand Logic include: BNP Paribas Real Estate, Capita Real Estate, Carillion, CBRE, JLL, ISS, NG Bailey and Optimum Group.

Some of these customers also use Demand Logic software for commissioning validation, dilapidation reviews and due diligence.

# Example Views of the Demand Logic Solution

## Portfolio League Table

Benchmark operational performance live across all properties

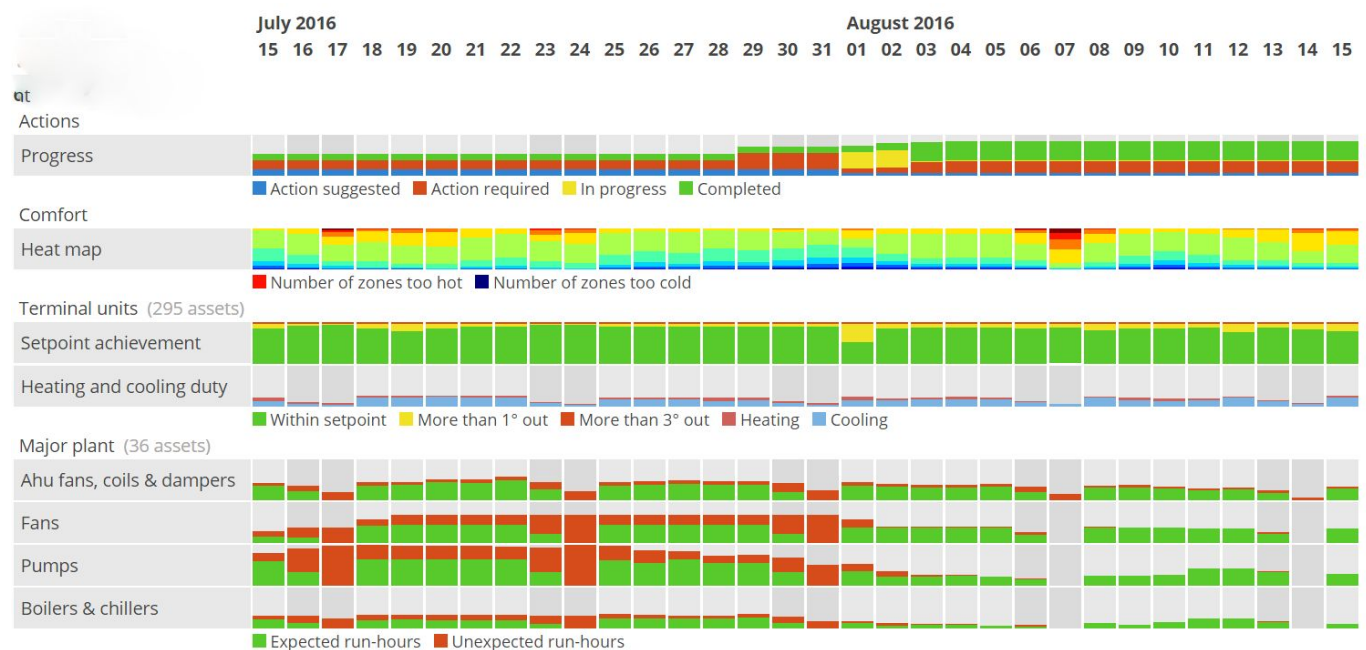
### Portfolio benchmarking table for September 2016

March April May June July August **September**

	Area	Activity	Actions				DL Score	+/-	
1	<b>Building A</b>	9,216	6	18	99.2	98.5	88.7	<b>95.5</b>	↓0.8
2	<b>Building B</b>		0	2	99.9	99.5	85.3	<b>94.9</b>	↓0.4
3	<b>Building C</b>	10,819	0	39	99.8	99.6	80.3	<b>93.2</b>	↑0.7
4	<b>Building D</b>	5,873	0	16	99.2	98.2	82.0	<b>93.1</b>	↑9.9
5	<b>Building E</b>	23,079	11	32	99.6	95.5	83.7	<b>92.9</b>	↑2.1
6	<b>Building F</b>	25,470	3	16	99.8	96.8	81.2	<b>92.6</b>	↑0.5
7	<b>Building G</b>	6,534	0	1	99.7	96.0	81.1	<b>92.3</b>	→
8	<b>Building H</b>	33,369	0	5	99.5	98.5	72.0	<b>90.0</b>	↑14.8
9	<b>Building I</b>		0	0	87.6	97.5	77.1	<b>87.4</b>	↑0.3
10	<b>Building J</b>	15,932	0	8	98.4	91.2	71.4	<b>87.0</b>	↑1.6

## Building Performance Overview

See operational progress trend to green over time



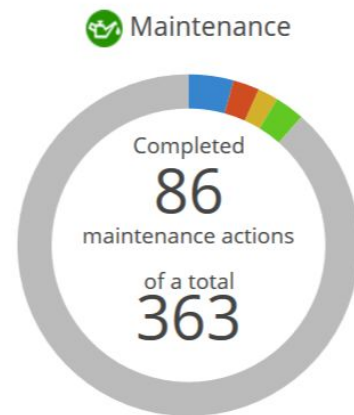
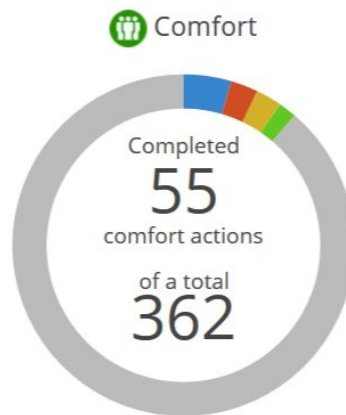
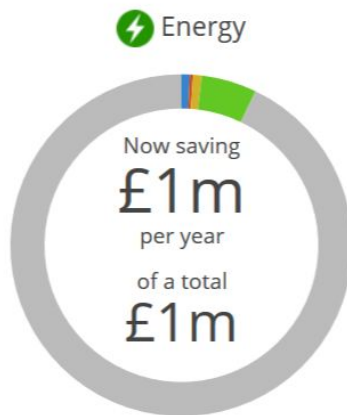
## Actions Progress Report

See benefits for staff comfort, cost savings & maintenance success

### Save £20m in energy costs per annum

**How?** Using information provided by you in your actions, we've calculated your annual (potential) savings. The numbers in this report improve as you add more information, accounting for energy saving value and benefit ratings across energy, comfort and maintenance.

■ Suggested ■ Required ■ Ongoing ■ Completed ■ Saving/rating unestimated



## Collaborate Online

Diagnose & prescribe action with all the team



**Sonny Masero** re: [Priva Comforte CX \(302482\) ATLANTIC First Floor FCUs FCU1-7Rtr \(Plant/Asset\)](#)

Atlantic House

This First Floor FCU appears to be running particularly cold throughout the afternoon. Does this relate to any known cold call from the tenant? The supply air temperature is about 10 degrees higher so this appears to require cooling throughout the afternoon.

08/02/2017 (20/02/2017)



**Sonny Masero** changed status to Action suggested  
changed owner to Joanne Smith

08/02/2017



**Sonny Masero** Also shown as the furthest outlier on the Rogue Finder see 'Terminal Unit' tab.

08/02/2017



**Joanne Smith** changed status to In progress  
JS to interrogate BMS when on site on Tuesday.

10/02/2017 (10/02/2017)



**Joanne Smith** changed owner to Tom Lengthorn  
Task raised Task No. 472644

15/02/2017 (15/02/2017)



**Tom Lengthorn** changed owner to Joanne Smith

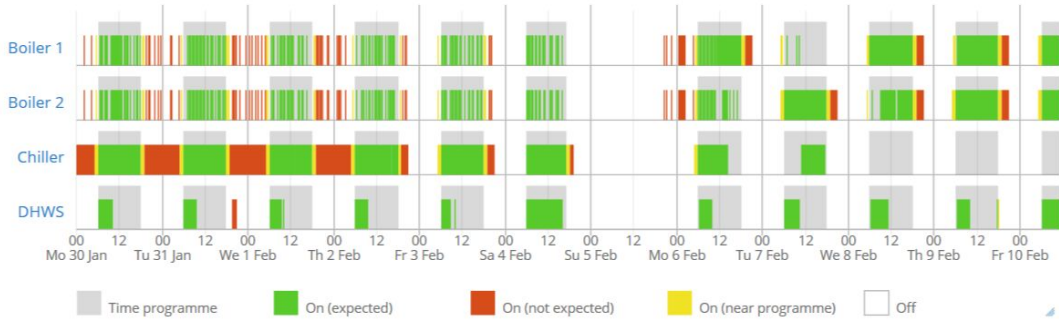
It appears that the supply and return sensors where crossed over because the return air temperature increased dramatically when the heating valve was driven open. This has been amended in the software by the BMS

## Major Plant Condition

See extended operational hours wasting energy & shortening plant life

The date range for this view is limited to 14 days

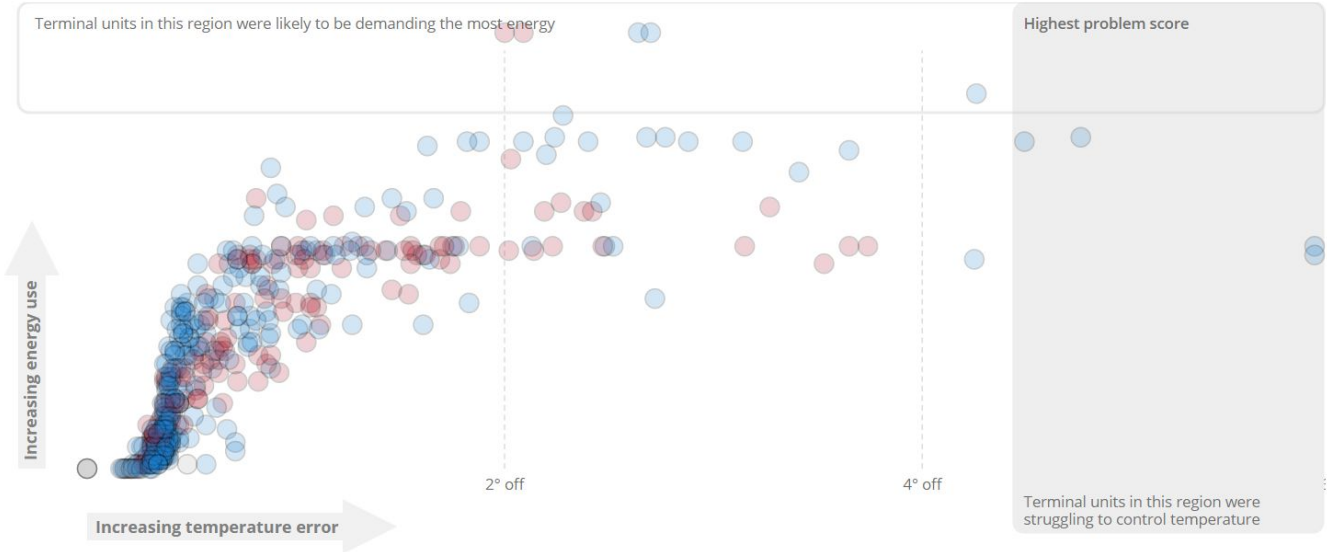
Start  End  [Change](#) [Live](#)



Write a new message ...

## Minor Plant

Exception reporting for prioritised maintenance to improve comfort & energy use



[Export](#) [Deselect all](#) Show  entries Search:

Label (Reference)	Temperature Error	Average Power	Onness (cooling)	Onness (heating)	Saturation (cooling)	Saturation (heating)	Hunting
device2410710	32.49	1.00	0.00	1.00	0.00	1.00	0.68
device2420207	31.00	1.00	0.00	1.00	0.00	1.00	0.92
device2410227	29.87	1.00	0.00	1.00	0.00	1.00	0.30
device2410230	26.13	1.00	0.00	1.00	0.00	1.00	0.46
device2410715	19.34	1.00	0.00	1.00	0.00	1.00	1.04
device2410716	12.13	1.00	0.00	1.00	0.00	1.00	0.91
device2410402	4.02	1.00	0.00	1.00	0.00	1.00	0.01
device2410537	3.38	1.00	0.00	1.00	0.00	1.00	0.02
device2420220	28.80	1.00	0.00	1.00	0.00	0.98	1.03
device2420112	17.92	1.00	0.00	1.00	0.00	0.96	1.25

Showing 1 to 10 of 68 entries (filtered from 177 total entries) 1 row selected

First Previous 1 2 3 4 5 6 7 Next Last

## Monitor Comfort & Productivity

### Ensure that FM efforts deliver customer satisfaction

How many spaces are comfortable at the moment?

Too hot  
**173**  
spaces

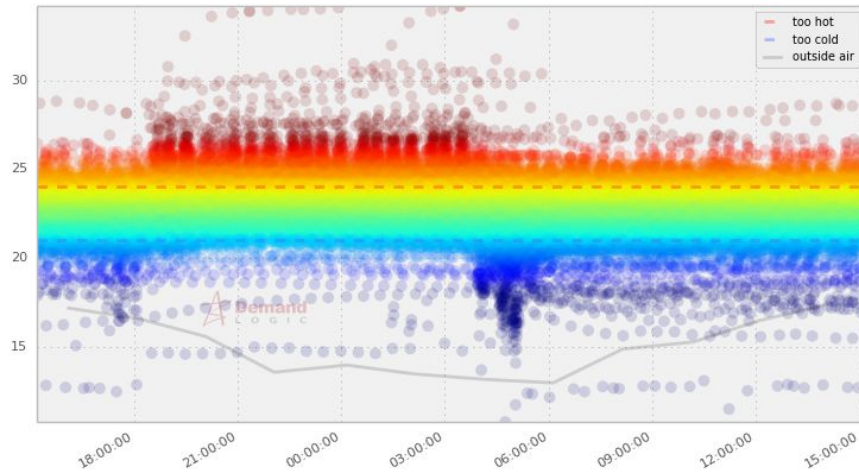
Too cold  
**104**  
spaces

Comfortable  
**717**  
spaces

Snapshot taken at 2015-07-28 15:10:02+00:00

### Thermal profile over time

Look for excessive dark red or blue areas above or below the dotted lines. These indicate times when many spaces were at an uncomfortable temperature. Each temperature sample is shown as a pale circle in a hot or cold colour, depending on the temperature.

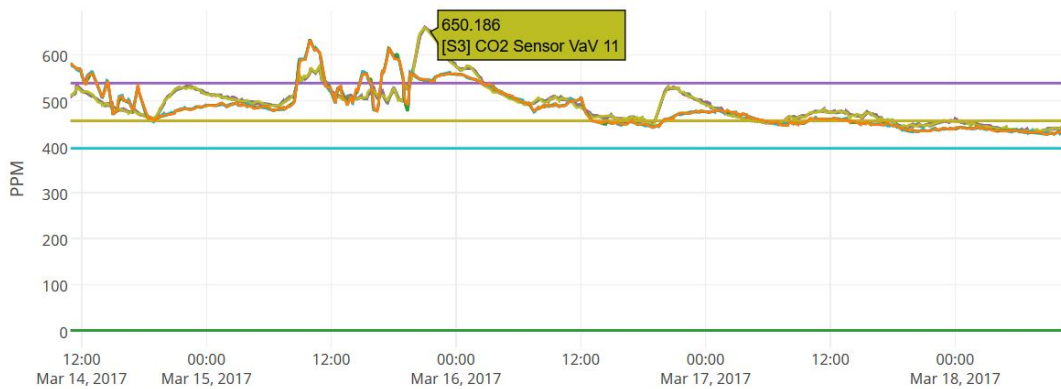


## Monitor Air Quality for Wellness

### Demonstrate best practice for customer service

The date range for this view is limited to 14 days

Start  End  [Change](#) [Load last 24 hours](#)



[Export](#) Show  entries

Search:

Data point	Device	Min	Max	Mean	Profile
[S8] CO2 Sensor	VAV0908	432.485	660.0	492.02	