CHARTWELL

IN-SITES

Building Operational Intelligence Service

powered by SkySpark

"TURNING BMS DATA INTO ACTIONABLE INSIGHTS & INSIGHTS INTO MEANFUL RESULTS"

AIM

With the Chartwell In-Sites service, we've aimed to meet two specific requirements:

1. Turn your building's BMS & IoT data into ***"Actionable Insights".***
2. Convert those insights into ***"Meaningful"*** results.

OPPORTUNITY

Approaching the Building Operational Intelligence in this manner gives us the opportunity to significantly:

IMPROVE PLANT PERFORMANCE & LIFECYCLE

IMPROVE COMFORT & AIR QUALITY

REDUCE ENERGY CONSUMPTION

REDUCE CARBON EMISSIONS

REDUCE OPERATIONAL COSTS

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HOW?

COMPREHENSIVE DATA COLLECTION

Our turnkey service is developed with SkySpark as its analytics engine, which enables us to interface using multiple communication protocols and as such collect data from various building management platforms with relative ease.
This ensures we can give a more comprehensive view of what's happening with your buildings' subsystems.

BACnet · Modbus · MQTT · SQL · OPC UA · Haystack4 · SNMP · CSV · oBIX · sedona · REST API

This level of integration capabilities allows us to collect and analyse data from various sources such as:

- BMS PLATFORMS & DEVICES
- SITE METERING PLATFORMS & DEVICES
- LIGHTING CONTROL PLATFORMS
- OCCUPANCY MONITORING PLATFORMS

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STEP 1

TRANSLATING DATA INTO ACTIONABLE INSIGHTS

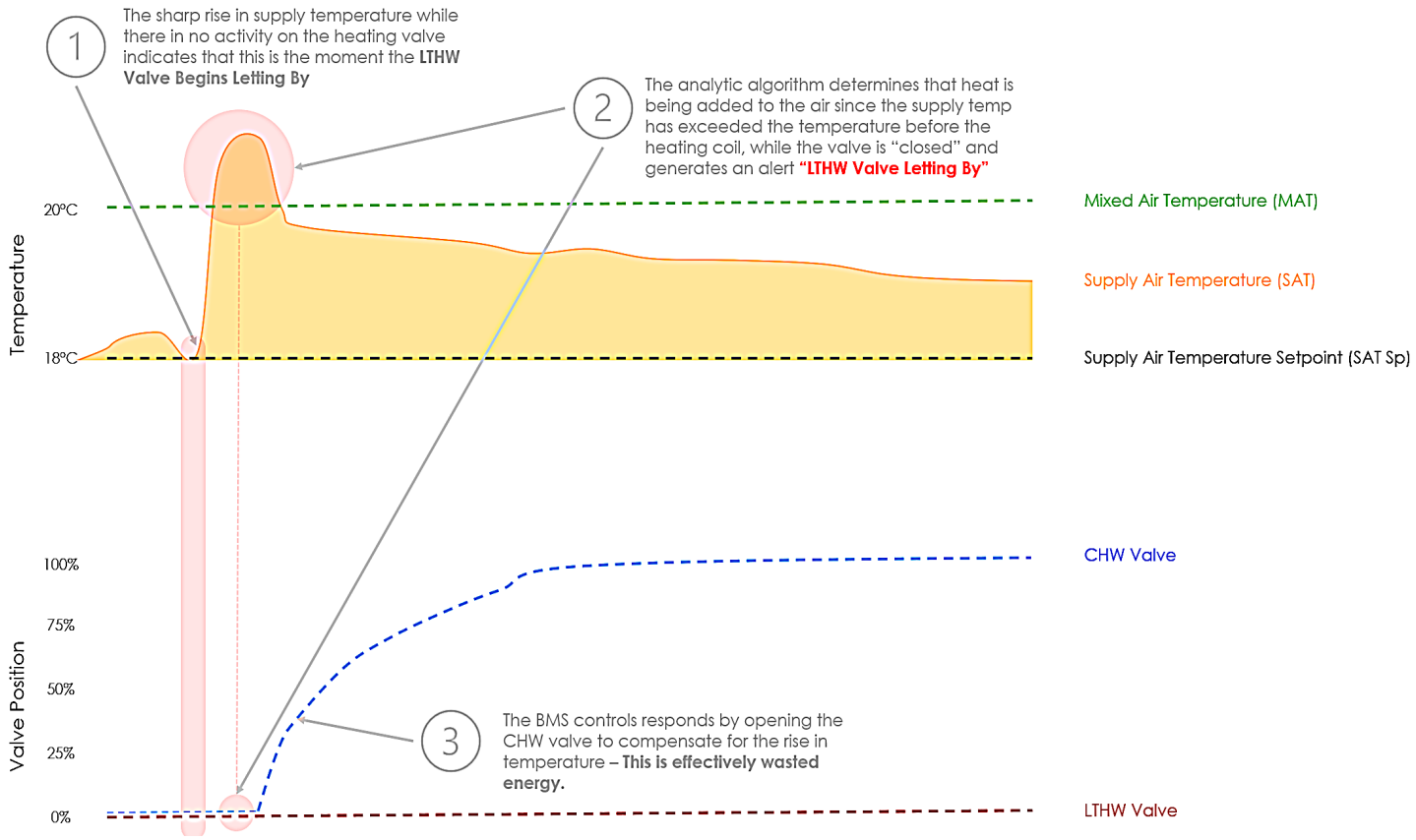
Collecting and amalgamating large amounts of data from disparate sources is only the first step. Carrying out ***autonomous*** analysis of this data, and providing stakeholders with ***real-time*** alerts and reports on what problems and inefficiencies exist on the system is the main focus of our service.

ADVANCED ALERTS: ROOT CAUSE vs SYMPTOMS

EXAMPLE:

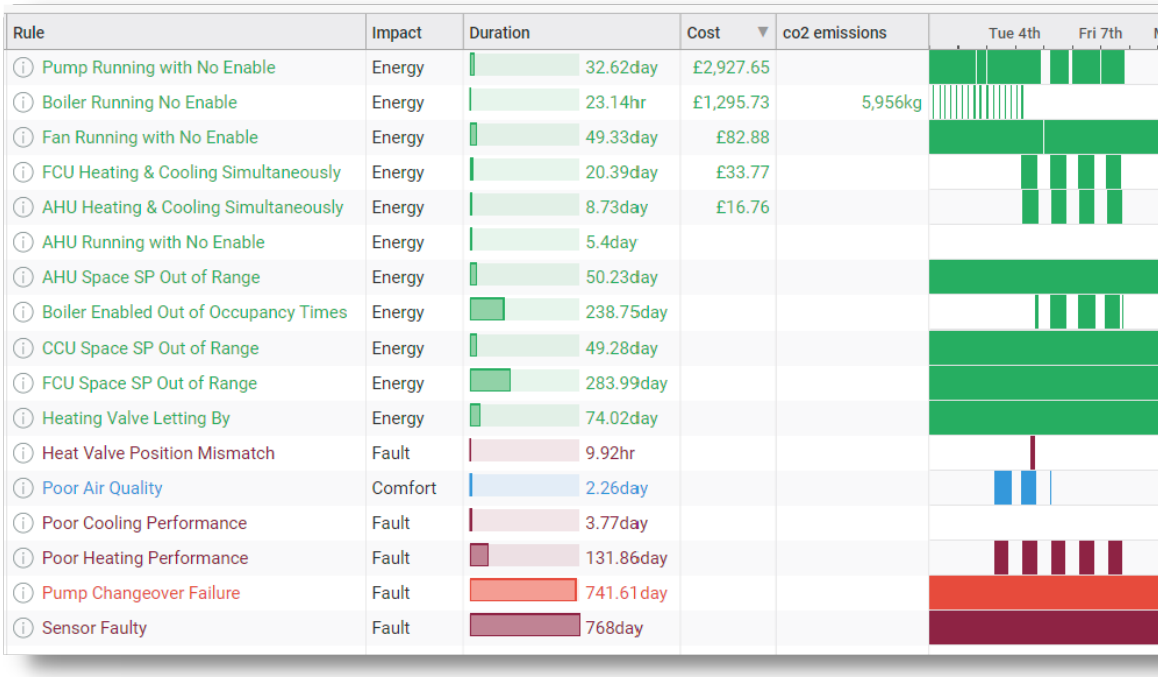
Traditional BMS alerts generally compare two data points to generate alerts. For example, a typical alarm on an AHU would compare the supply temperature against the setpoint and generate a ***"Supply Temp High Alarm"*** when the supply temp exceeds its setpoint (+3°C). An alert such as this one is classified as **Symptom** reporting - as when received, some investigation would still be required to determine the cause of the high temp alarm.

By comparison, our in-Sites Data Analytics would use the same dataset from the AHU to compare multiple data points i.e. the algorithm would look at the temp before the heating coil and compare it against the temp after the coil, while checking the position of the heating valve. If it found that the temp after the coil was higher than the temp before the coil while the heating valve was closed, it would then generate a ***"Heating Valve Letting By"*** alert. This we refer to as **Root Cause** reporting, as it outlines the actual issue which would cause the supply temp of that AHU to go high, effectively eliminating the time and effort required to investigate and discover the issue.



INFORMED DECISION MAKING & ACTION PRIORITISATION

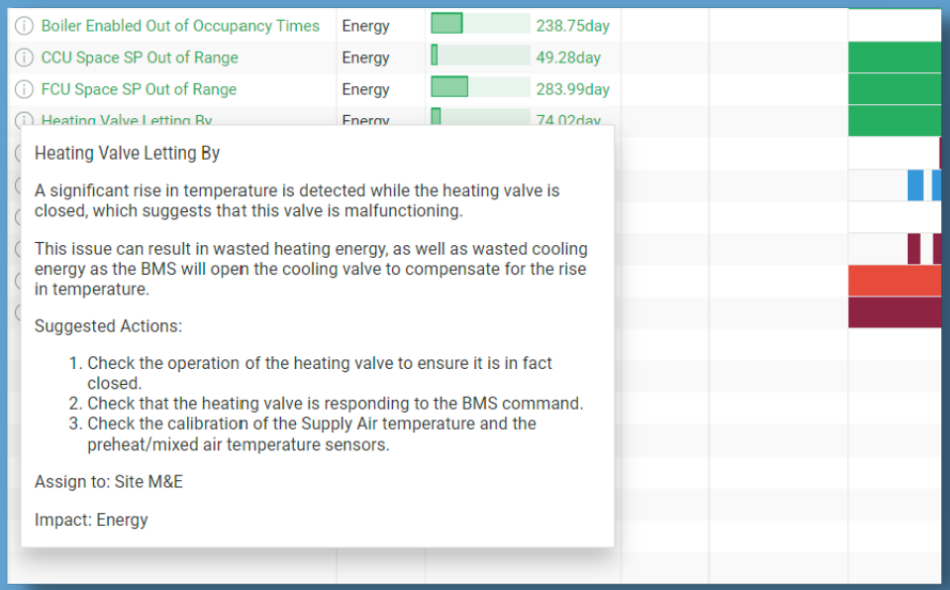
The platform is capable of carrying out multiple simultaneous calculations **(Rules)** in real-time, referencing thousands of points and historic data, reporting on root cause issues.
These are then displayed on a timeline, allowing us to pinpoint when these issues occur, for how long and how frequent.

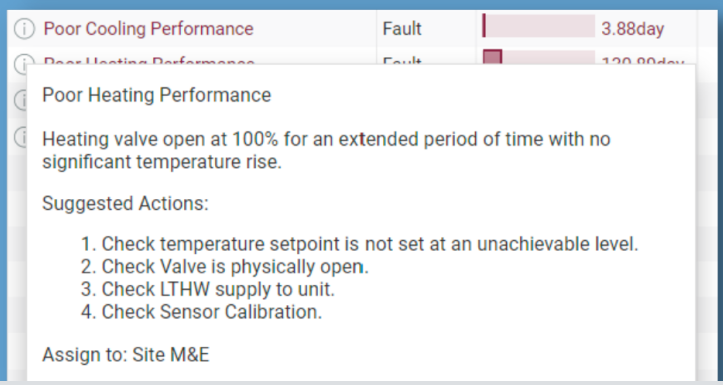


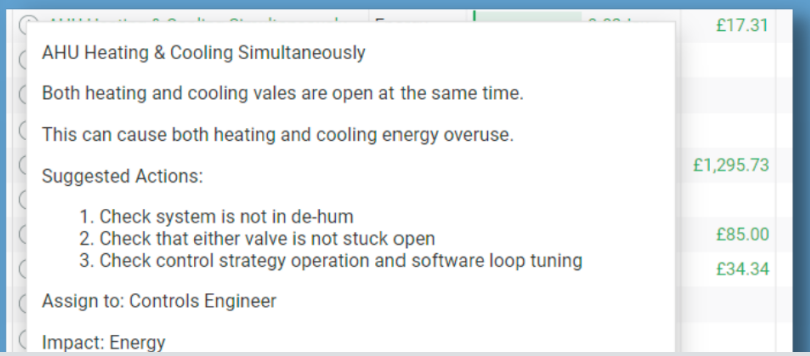
Using the associated O&M information, the platform also calculates the cost of energy impacting faults and inefficiencies as well their carbon emissions, providing all the relevant information to help stakeholders prioritise fault resolution based on these factors.

AUTOMATED GUIDANCE

The in-Sites Analytics also provides info explaining the detected fault and suggests the best course of action for resolving the issue as well as who should be engaged to ensure the right stakeholder looks at the problem.



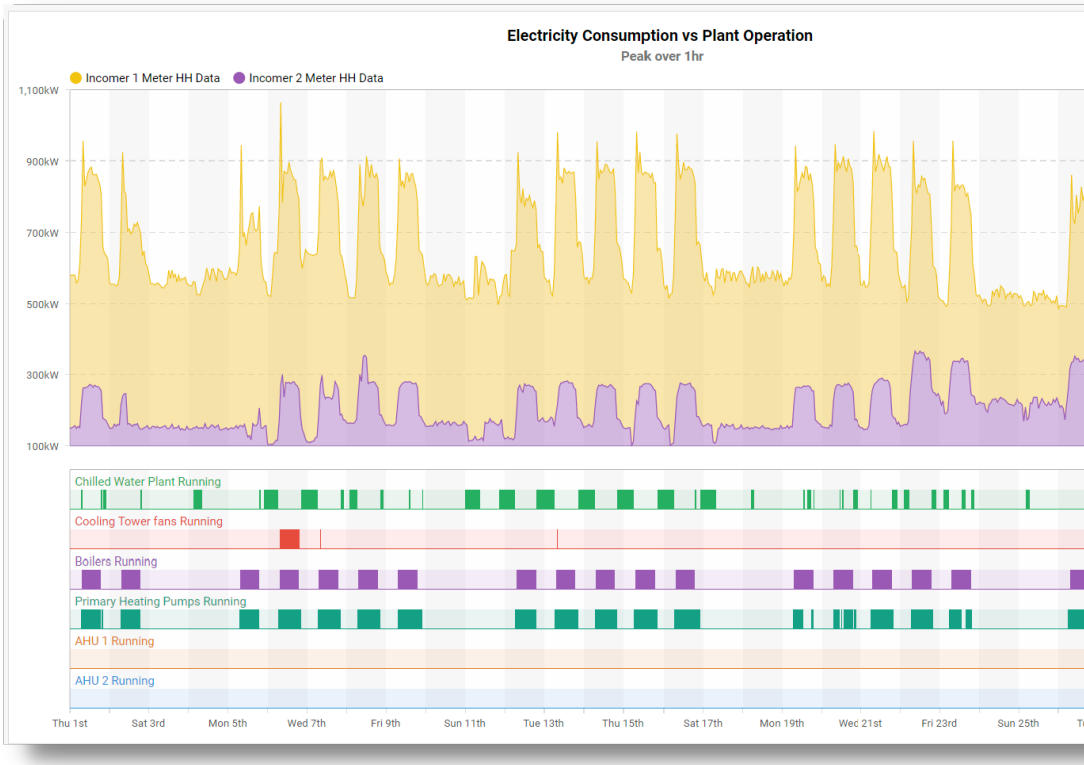




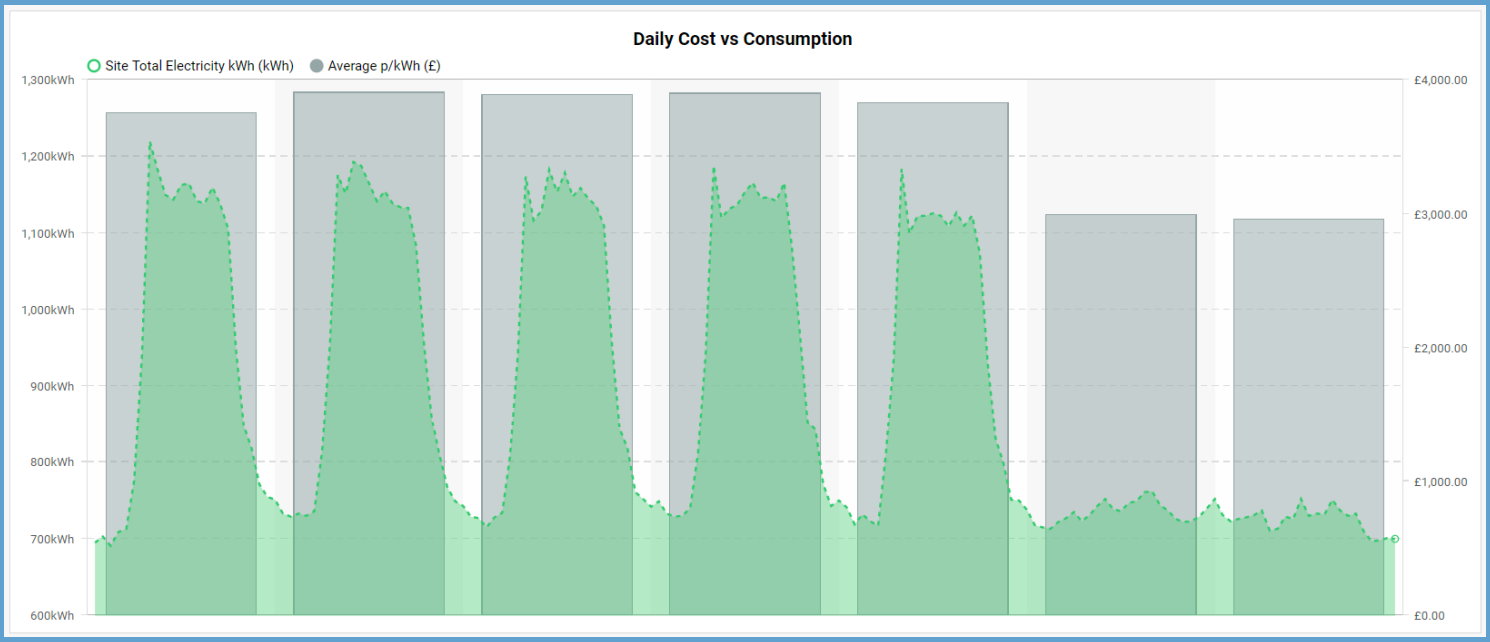
Faults can be set up to be emailed out to the relevant stakeholders immediately upon occurrence , or sent out as a digest of faults at predefined intervals.

INTUITIVE METERING & ENERGY CONSUMPTION ANALYSIS

The in-Sites service allows for the integration of metering data with hvac data, enabling us to correlate utility consumption with plant operation. This means that pinpointing what items of plant contribute to energy overuse/overspend can be done with relative ease. This also means that associated O&M info can be added to the platform to provide virtual submetering and targeted utility cost allocation.



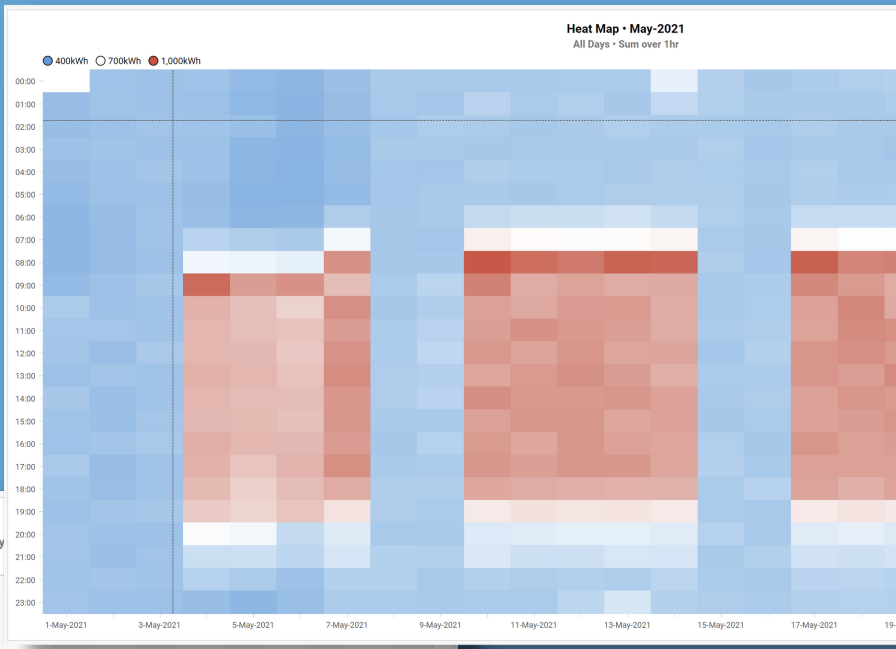
TRANSPARENT UTILITY COSTS

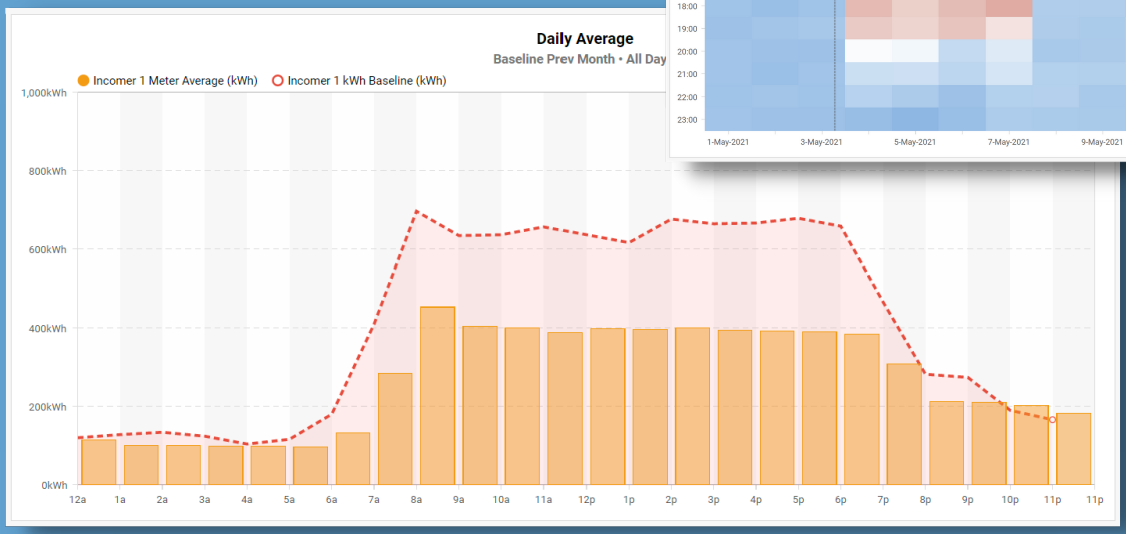


With the ability to input complex tariff information i.e. peak/off-peak and standing charge etc. We're able to provide accurate costs for utility consumption.
This can also be applied to submeters, making the platform perfect for bill validation and re-billing on multi-tenancy buildings etc.

FIND WHAT MATTERS:
INFORMATIVE UTILITIES CONSUMPTION VISUALISATION

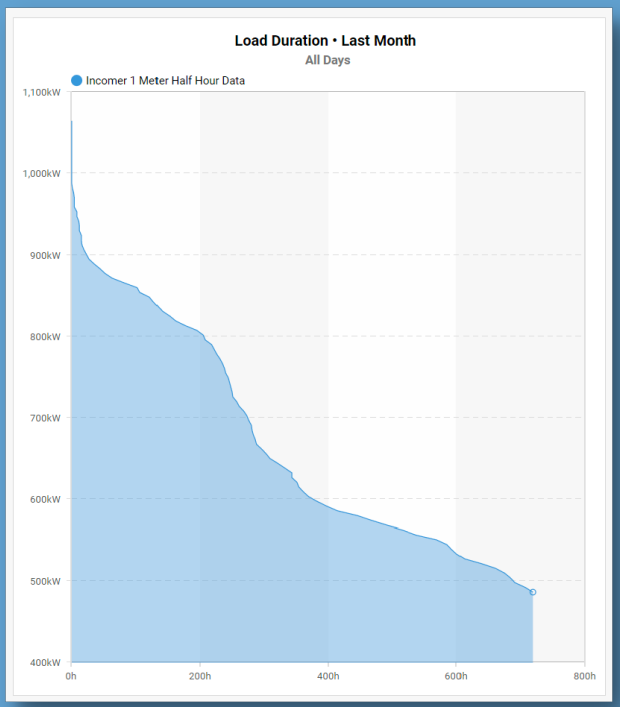
Heat Map views ensure we can pinpoint peak consumption with relative ease.



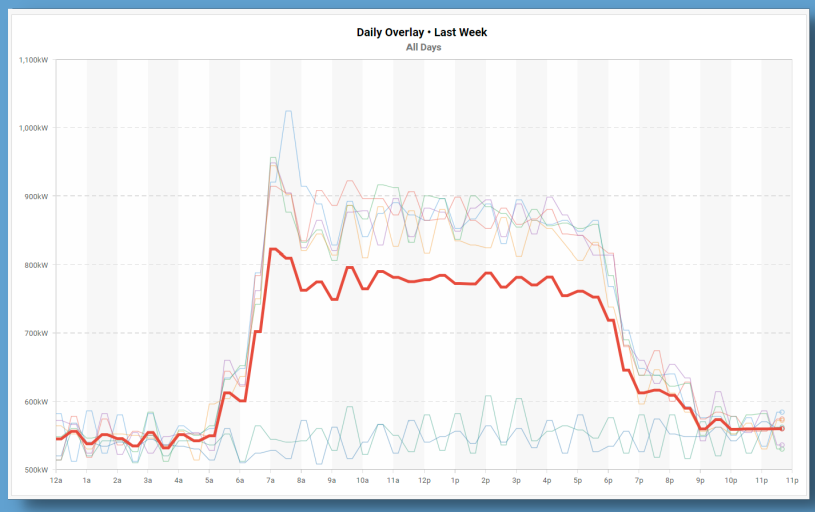


Baseline views help us to measure improvements over time.

Load Duration views help us to understand and mange energy use consistency.

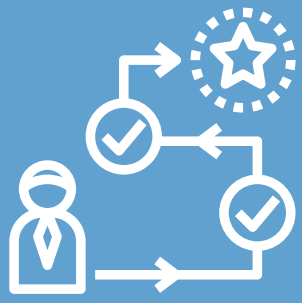


Daily Overlay views help us to quickly identify consumption irregularities.



STEP 2

TURNING INSIGHTS INTO MEANINGFUL RESULTS



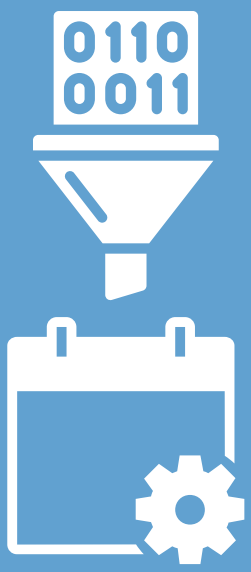
The beauty of using these advanced tools to monitor and report on operational and consumption irregularities is that they generate ***actions*** that allow us to repair faults and optimise our buildings' performance.
The other key feature of the in-Sites service is the inclusion of tools designed to direct engineering activity on-site to ensure these action yield results and provide savings.

WORKFLOW MANGEMENT

To yield the best results from the output of the data analytics, we provide tools on the platform to help effectively mange the process of fault resolution and operational optimisation. This is a tailored solution that allows us to generate work orders linked to each item of plant or smart building subsystem and assign them to the relevant stakeholders while giving us the facilities required to manage both the engineering and administrative aspects of such tasks.
Designed to encourage collaboration, this solution allows for comments/contributions from all relevant stakeholders and ensures that all parties are always well informed of the progress/status of the work orders.

Display	Type	State	Labels	Priority	Arc On	Assigned To
AHU Heating & Cooling Simultaneously	CAFM Work Order	bureau	Energy	Medium	Exec Suite AHU2	Bureau
AHU Running Outside of Occupancy	CAFM Work Order	generateQuote	Energy	High	AHU-FA3	BMS Engineer
Boiler Running No Enable	CAFM Work Order	siteME	Energy	Medium	AHUMF1	Site M&E Engineer
Heating Valve Letting By	CAFM Work Order	generateQuote	Energy	High	ENT-AHU	Bureau
Heating Valve Letting By	CAFM Work Order	siteVisit	Energy	High	Exec Suite AHU1	BMS Engineer
Poor Air Quality Detected - Abnormal CO2 Levels	CAFM Work Order	siteME	Comfort	Medium	1stFloor_East	Site M&E Engineer
Poor Air Quality Detected - High Space Temp	CAFM Work Order	Resolved	Comfort	Low	AHU-FA1	Site M&E Engineer
Poor Cooling Performance	CAFM Work Order	siteVisit	Comfort	Medium	Exec Suite AHU1	Site M&E Engineer
Pump Changeover Failure	CAFM Work Order	siteME	Fault	Critical	24hrChilledWaterCircuitB	Site M&E Engineer
Sensor faulty	CAFM Work Order	thirdParty	Fault	Medium	Exec Suite AHU1	BMS Engineer
Sensor Faulty	CAFM Work Order	awaitingPO	Fault	Medium	fcuG37	BMS Engineer
Sensor faulty	CAFM Work Order	New	Comfort	Low	TX1&3 AC7A	BMS Engineer
Supply Damper Position Mismatch	CAFM Work Order	siteME	Fault	Medium	CCU AC8B_3	Site M&E Engineer

Work Orders can be set up to be emailed out to the relevant stakeholders immediately upon assignment, or sent out as a digest of jobs at predefined intervals.



DATA DRIVEN MAINTENANCE MANAGEMENT

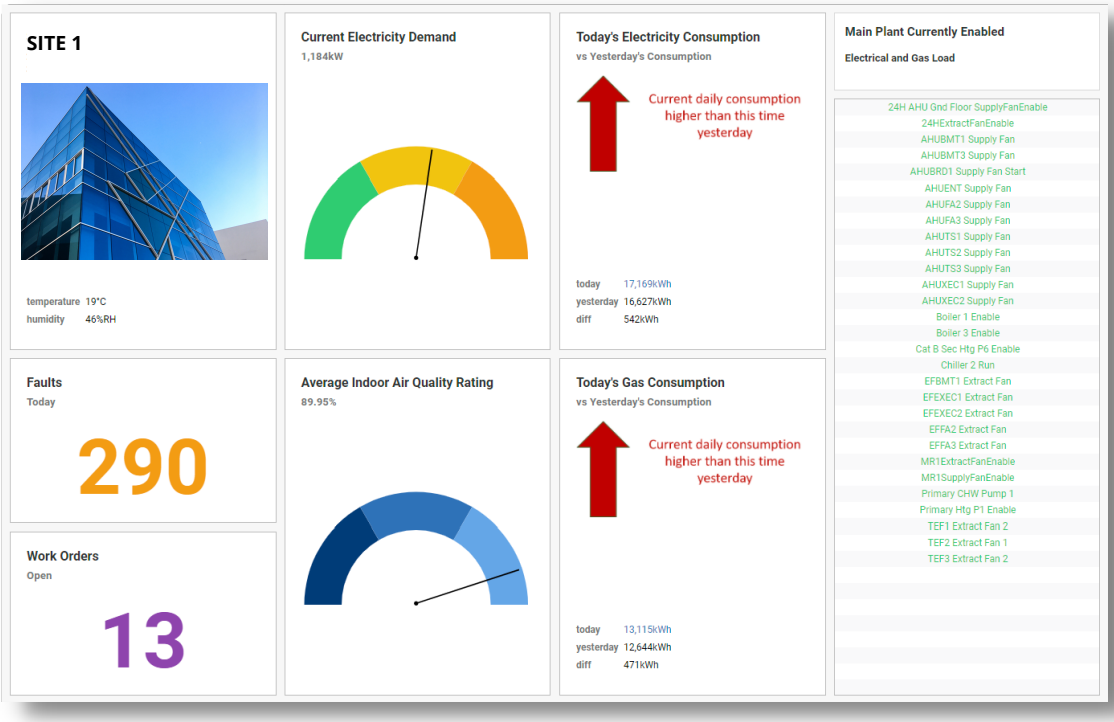
As part of our in-Sites service, the Chartwell Bureau is also capable of triaging the faults and work orders generated by the platform and carry out remote adjustments, modifications and repairs. Once completed, only site-specific tasks are assigned to on-site operatives. What's more, we can manage maintenance schedules to allow the majority of these tasks to be addressed as part of routine servicing.
Thus ensuring that labour is directed at plant and systems that require attention and subsequently reducing the time and money spent on reactive tasks.

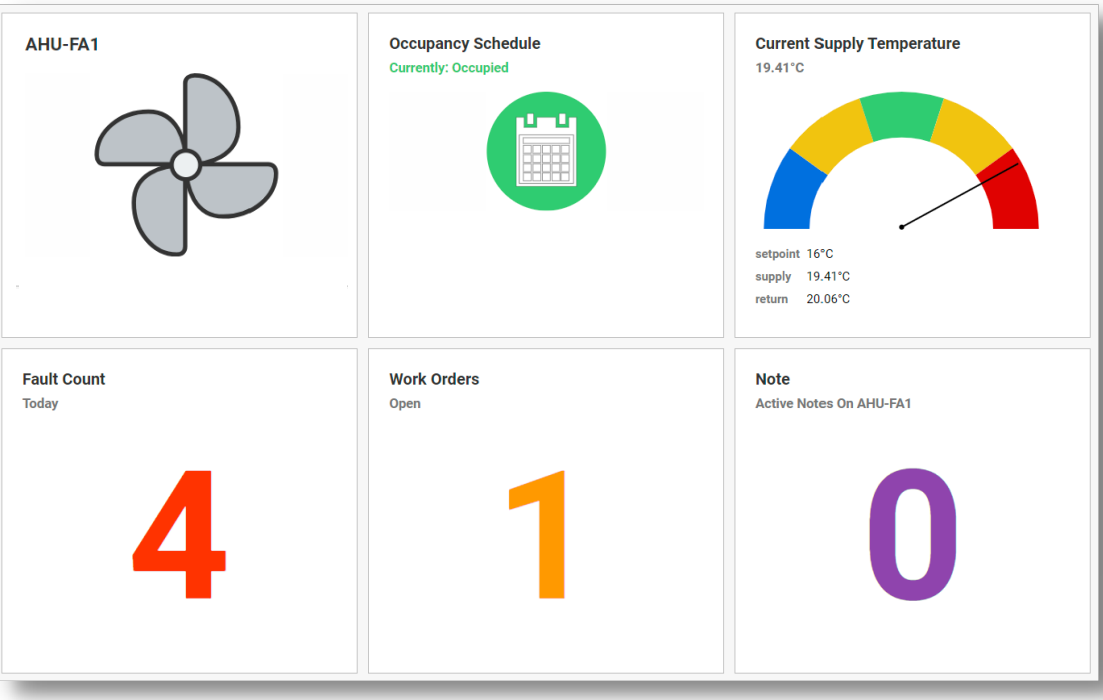
DASHBOARDS: YOUR BMS DATA SIMPLIFIED

Typical BMS and Data Analytics platforms are often very "information-dense", requiring stakeholders to trawl through pages of data to gain any operational insight.
The in-Sites dashboards have been designed with simplicity at its core, carrying out all the complex analysis and calculations in the background in order to provide us with the most pertinent information on energy, operation and inefficiencies in a readily digestible manner, to ensure we have a complete overview of how your HVAC plant and building subsystems are performing.

SITE OVERVIEW DASHBOARD

The site overview gives building managers and operators a complete view of how their building is operating.
Providing a high level view of - utility consumption (along with a dynamic list of all plant that contribute to the gas and electric demand), operational issues, indoor air quality and open work orders.





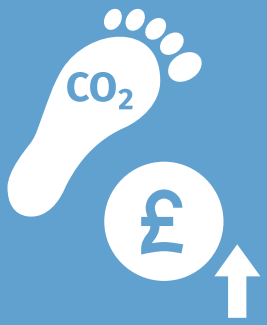
EQUIPMENT OVERVIEW CARD

The equipment overview provides us with a view of the most important information on each item of plant, so you can quickly and easily assess performance by:
Reporting on run status, primary function performance, number of faults detected, open work orders related to said plant and any notes of issues on the equipment.

VALUE PROPOSITION: YOUR IDEAL NET ZERO PARTNER

Deploying the in-Sites platform and service on your site is akin to having a BMS Engineer observe all of your HVAC plant 24/7 and report on faults, irregularities and inefficiencies while advising on the best course of action for maintenance, repair and optimisation. In fact, it would be impossible to employ enough humans to undertake such a mammoth task.

This makes the in-Sites service ideal for assisting with your ***net zero*** ambitions, as it enables constant ongoing commissioning of plant controls while helping to reduce enery impact and operational costs.

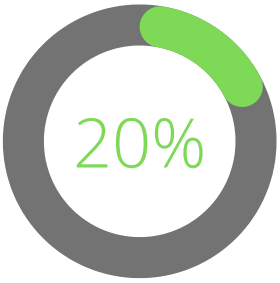


100% of your buildings' HVAC subsystems under active observation 24/7.

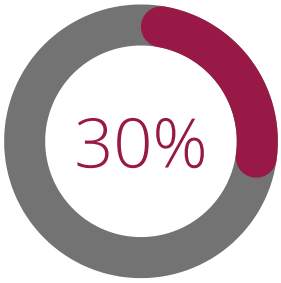
- Efficient use of Engineering Time
- Improved System Performance
- Prolonged Equipment Lifecycle
- Advanced Fault Detection & Diagnostics
- Intuitive & Informative Reporting
- Improved Comfort, Safety & Wellbeing
- Improved Energy Efficiency
- Reduced Operating Costs
- Improved Productivity
- Better Informed Responses to Complaints

IT PAYS FOR ITSELF

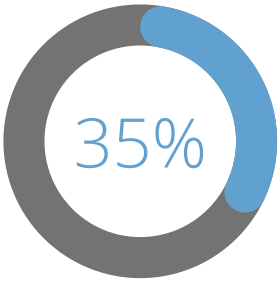
Using conservative estimates, based on previously conducted cases studies we anticipate that in-Sites service will demonstrate ***Payback in 6-12 months***



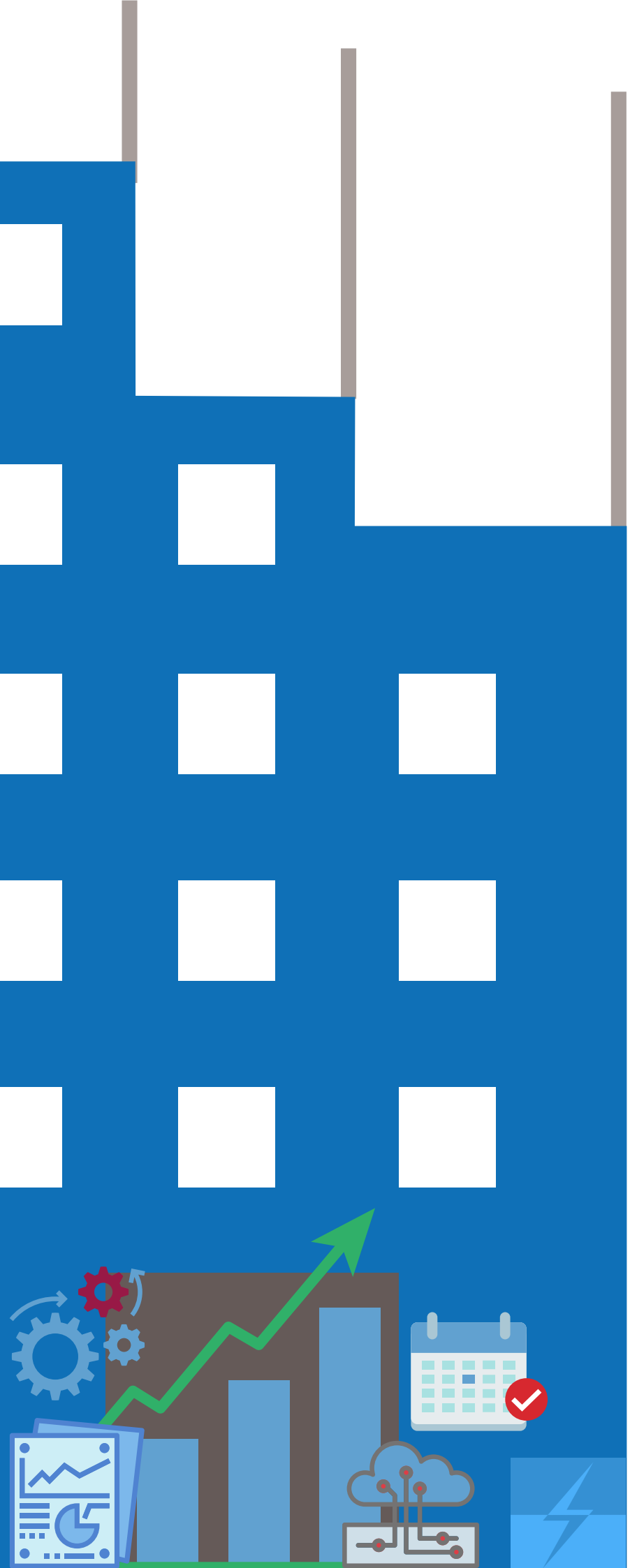
Reduction in Energy Consumption



Reduction in Reactive Breakdowns



Reduction in Comfort Calls



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Your Chartwell Contact

Horace Cyrus

Head of Connected Systems & Data Driven Services

h.cyrus@chartwell-limited.com

+44 (0) 7585920251

www.chartwell-limited.com

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