Building insights

with zencontrol Analytics

zencontrol

zencontrol.com

Intro

Owners, architects and installers are increasingly focused on delivering an improved experience for occupants while finding better ways to use, deploy and manage buildings.

To understand how a building operates it is essential to be able to **measure, report** and **analyse** the buildings data. The collection of useful and **meaningful data** allows key stakeholder to understand and plan better ways to use the building.

Through our Cloud suite we at zencontrol provide a range of software and web based solutions to ***increase the effectiveness of your building control and gain building insights.***

Kind regards

Joshua Newell,
Managing Director

Content

Smart buildings

A building that uses the latest **DALI-2** devices and a zencontrol lighting control system can deliver solutions with wired or wireless data acquisition without other independent systems or services based on IEC standards.

The evolution of **smart data** onto a DALI-2 platform increases value to stakeholders while optimising the cost of deployment as the data is made available on a standard DALI-2 installation. DALI-2 provides stakeholders the flexibility to use devices from different manufactures that support the DALI-2 standards.

zencontrol Smart controllers can securely send building data to our **Cloud suite** without the requirement for additional hardware or complication. zencontrol's Cloud services **analyse, store and transform the data** helping stakeholders understand the performance of the building.

This data can be broken down into the following:

→ Power

→ Occupancy

→ Issues

→ Performance analytics

→ Heatmaps

→ Alerts


Gather
Store
Transform
zencontrol

Power

zencontrol Cloud's Power analytics enables per-fitting power monitoring that can be used in existing building without the need for additional hardware or wiring.

zencontrol provides individual power consumption for DALI-2:

- Emergency devices
- Lighting fittings
- Switches
- Sensors

...and other devices connected to
DALI-2 Power metering devices

Maximise savings

When comparing the energy consumption of a building, all contributors require consideration, including control products such as switches and sensors. With zencontrol's Power analytics, the power consumption of all compliant DALI-2 devices is tracked to provide accurate and encompassing data.

The benefits of power analytics:

- → Compare floors and areas easily
- → Adjust control methods and track the results
- → Understand the buildings power consumption
- → **Track payback** on replaced or upgraded devices
- → Understand the buildings use on a per room basis
- → **Target high consuming areas** to save electricity faster
- → Work out your buildings lighting consumption on a per-meter basis
- → See the benefit of features such as **task tuning or daylight harvesting**
- → Deploy different control methods in different areas and compare the results
- → See lighting, which is not turned off, when it should be, and make changes
- → Compare lighting to other power circuits such as computers, air-condition or other accessories
- → See how much power sensors and switches are consuming and **accurately report** their use
- → Compare **emergency lighting consumption** to understand the power consumption

A wide range of data

IEC 62386-252 and IEC62386-352 devices

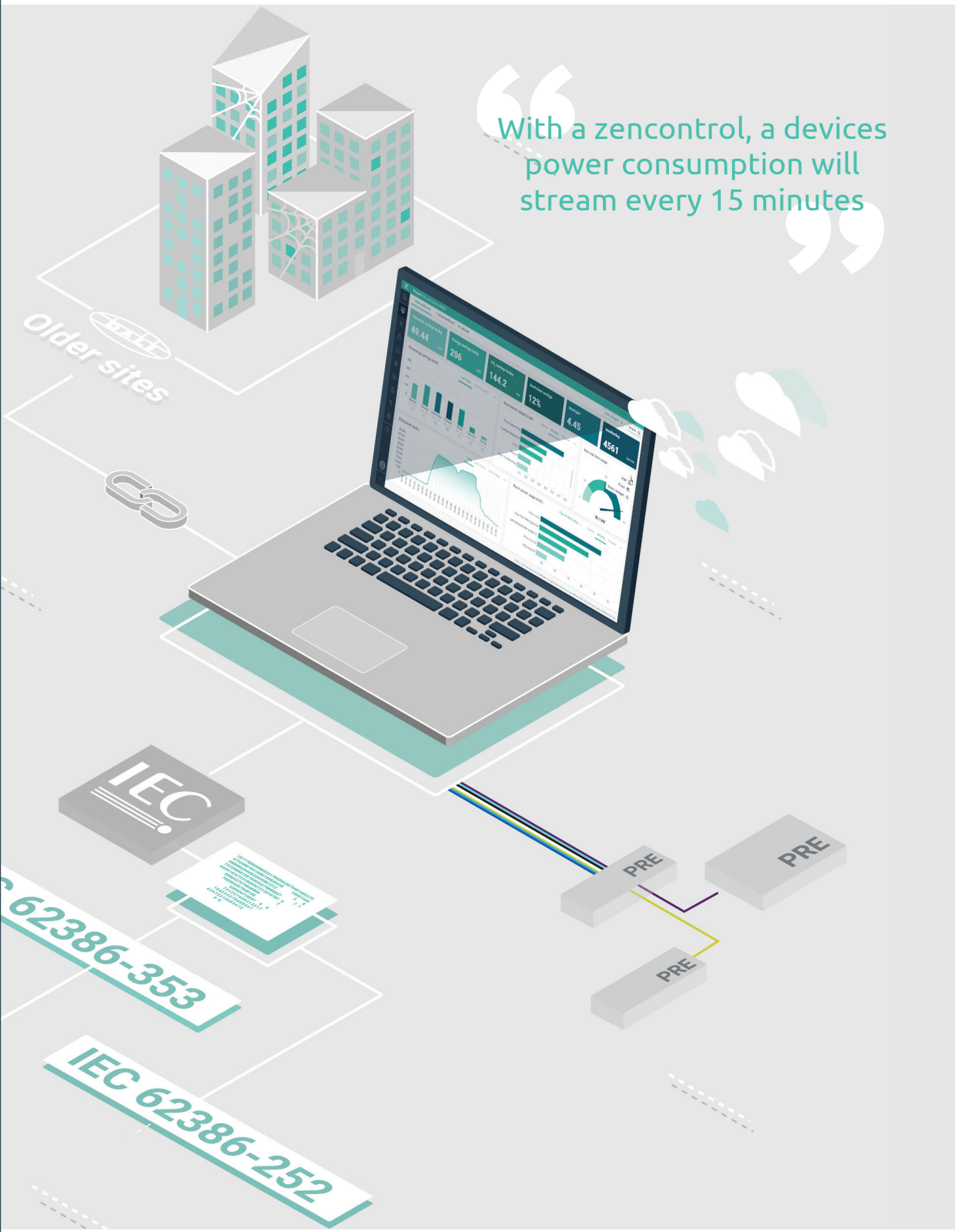
The ***DiiA*** has worked to create a number of new DALI standards wherein devices record and report their own power consumption. This data may be read by compatible DALI-2 application controllers. A zencontrol control system can detect devices supporting power monitoring standards and will stream their power consumption every 15 minutes to zencontrol's analytic servers for processing.

Tridonic PRE drivers

zencontrol provides additional power consumption reporting methods for ***Tridonic PRE*** range of led drivers, introduced before the release of IEC62386-251 and IEC62386-351. To support PRE devices zencontrol makes use of the specific Tridonic functionality to read the devices power consumption. This method enables a zencontrol analytic servers to support older installations without additional hardware or wiring.

Support for older sites

Any zencontrol site can take advantage of per-fitting power analytics without the need to add additional hardware or wiring with device profiling. On sites with older DALI compliant devices, zencontrol can report power consumption based on an individual device level. While this method is not as accurate as IEC62386-251 & 351 devices, it does provide a sufficiently high level of accuracy to allow users to understand and react to their power consumption, which, ultimately, leads to power savings in the building.

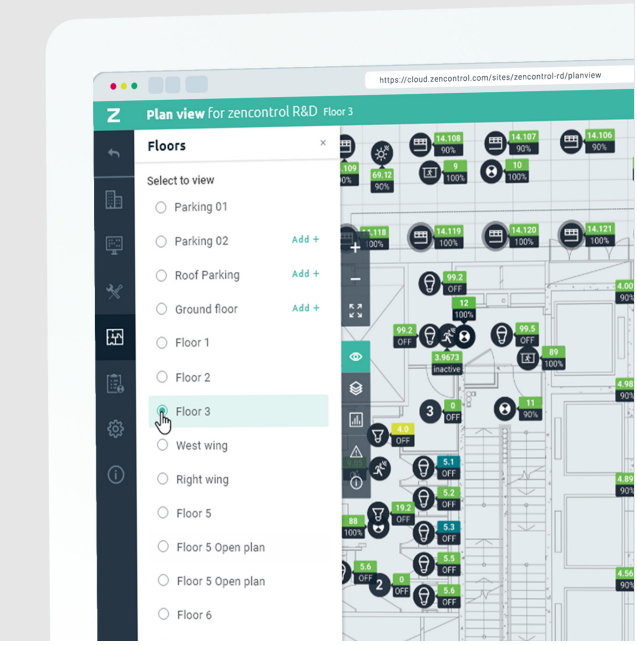

With a zencontrol, a devices power consumption will stream every 15 minutes
Older sites
49.44
206
144.2
12%
4.45
4561
IEC
PRE
PRE
PRE
62386-353
IEC 62386-252

Going further

Building wide

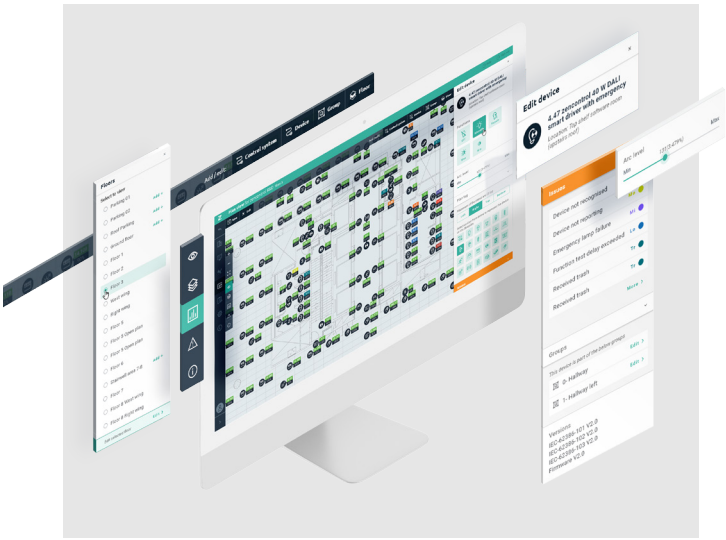
Using the zencontrol ***Application controller Pro*** an installer can connect, through the RS-485 connection, to Modbus RTU power meters.

RTU power meters allow zencontrol to show power data of external circuits like computers, air-conditioning and more side by side with the lighting. Combined power provides users with a better understanding of the power usage in their building.



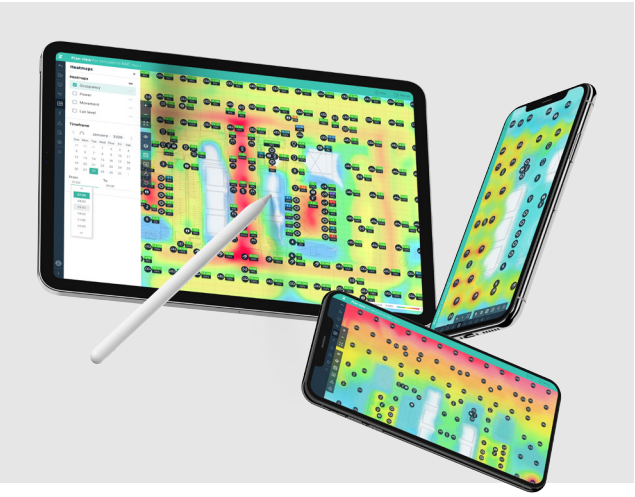
Third-party API

For installations with large scale building management systems (BMS) zencontrol provides a cloud connected API, where the BMS can take advantage of all the power metering data.

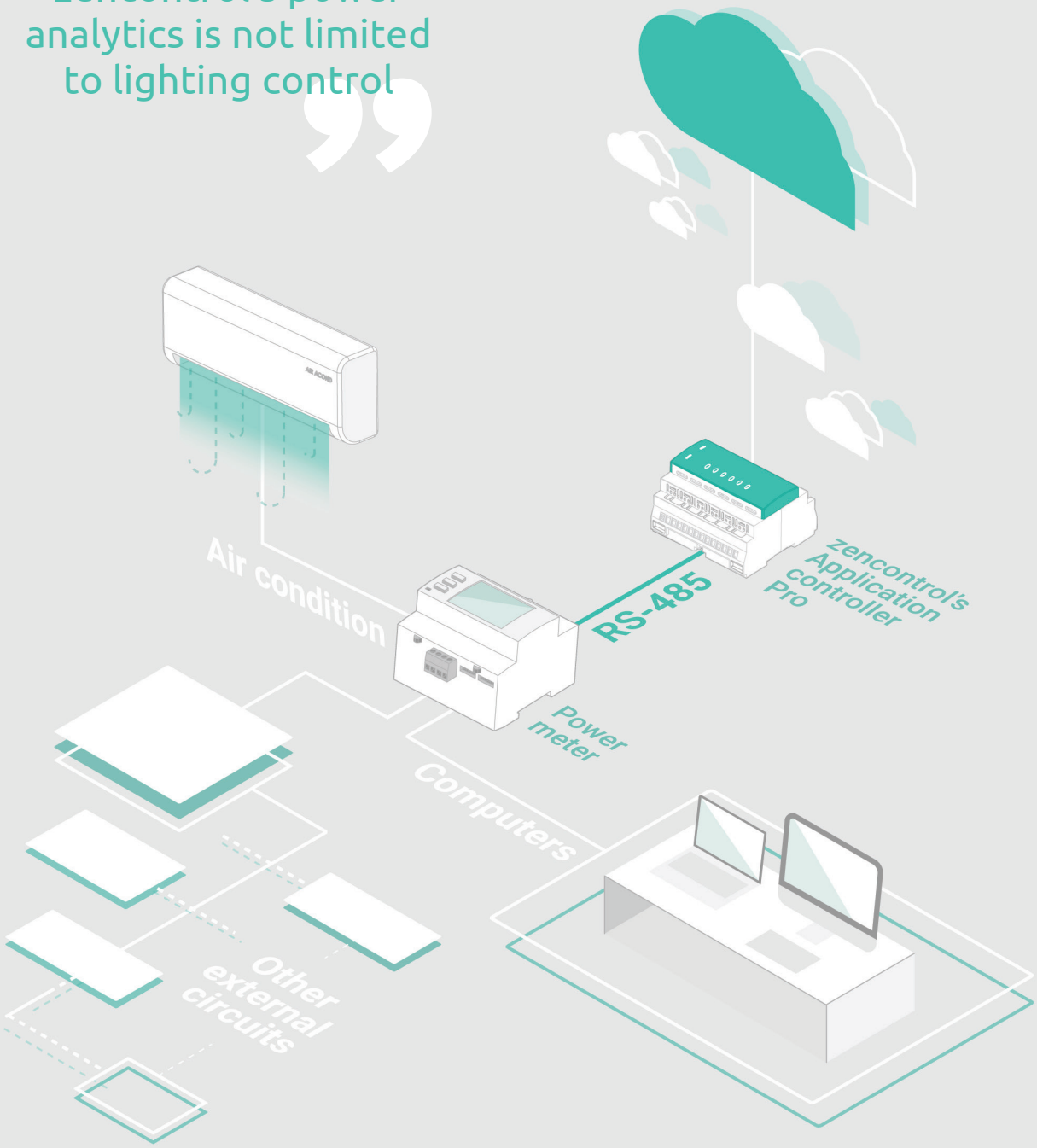


Power to the plan

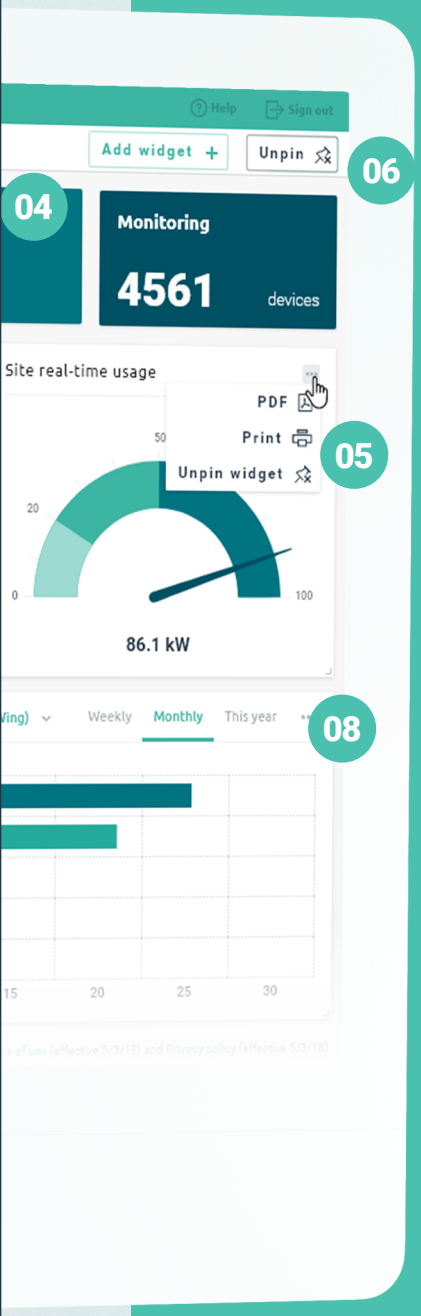
View the buildings power consumption using our *Plan View* visualisation tools. Check and uncheck which layers to see. View the location of lighting, switches and sensors, find faults and inspect different heatmap layers to gain building insights. Read more about heatmaps, power, lux, occupacy, on page 28.



> zencontrol's power analytics is not limited to lighting control



The Power dashboard



01

Daily energy savings based on features such as task tuning, sensors placement, daylight harvesting and other variables.

02

Create your own custom dashboard with specialised widgets and graphs focused on the areas you want to see

03

See the amount of CO_2 saved by energy saving features deployed in the building

04

The dashboard can work out the watts/m² of the building, using your buildings setup

05

Obtain PDFs reports of different measurements

06

Add new or remove power widgets to the dashboard

07

Identify areas of high/low power usage by comparing power consumption of each room

08

Comparing the power usage of each floor **available weekly, monthly or yearly accumulations**

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Issues

The ***Issues dashboard*** allows facilities maintenance teams to quickly and accurately track the system performance with a wide range of reported issue types.

Issues are highlighted and classified based on their type so that the most critical issues can been identified and rectified quickly

Your building health

Building health

The building health metric provides insight into the building is performing. It gathers data from almost every device in the building, including sensors, switches, lighting, emergency devices and controllers. The data is collected near real time with a maximum latency of less than 10 minutes no matter the building size. Fast system response ensures that the data accurately represents the current status of the building.

Issues over time

Understanding how issues occur over time enables maintenance personal to prioritise resources, budget repairs and capital costs. Trends in issues provide insight into product life cycles, enabling maintenance teams to recognise end of life (EOL) failures in lamps and control gear. Good data is the backbone of proactive maintenance.

Records

A full record of all reported issues and issue resolution is automatically stored for future analysis. Issues data is available both for download and use in the creation of custom reports.

Issues on the plan

View device issues through our ***Plan View*** visualisation tools. Understand the current state of your building devices with a glance at its floorplans.

> Good data is the backbone of proactive maintenance

Issues dashboard

01

Understand the severity of the issues in your building so you can best manage your maintenance priority

02

Easy overview **listing of highest priority issues** with their colour code, name, location, type and date detected

03

Number of issues are shown grouped by the type of issue

04

View log showing all past issues and how they were resolved

05

Easy colour codes to indicate severity of the issue

06

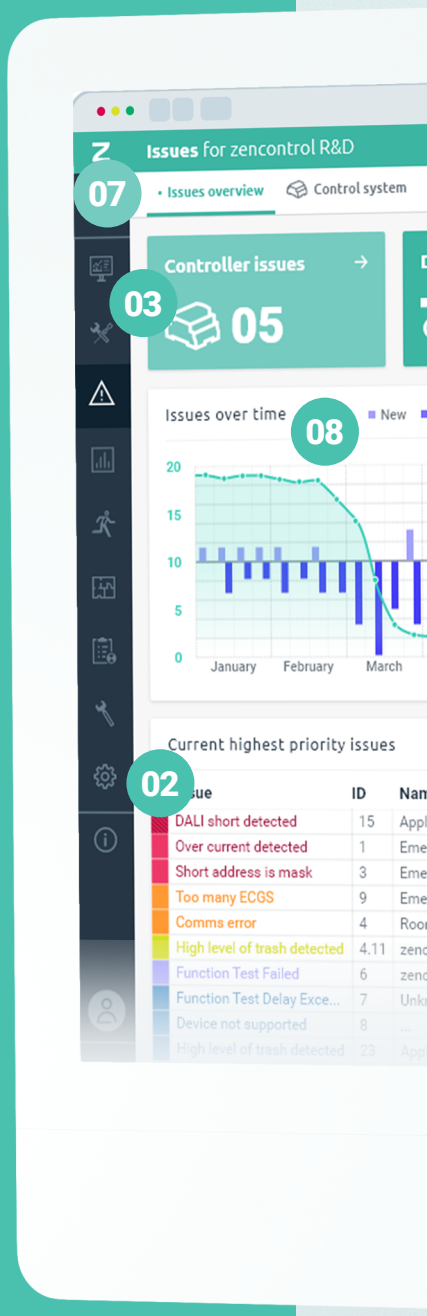
Quickly **view the health and performance** of your building

07

Change tabs to view all **issues based on types**: control system, device or emergency issues

08

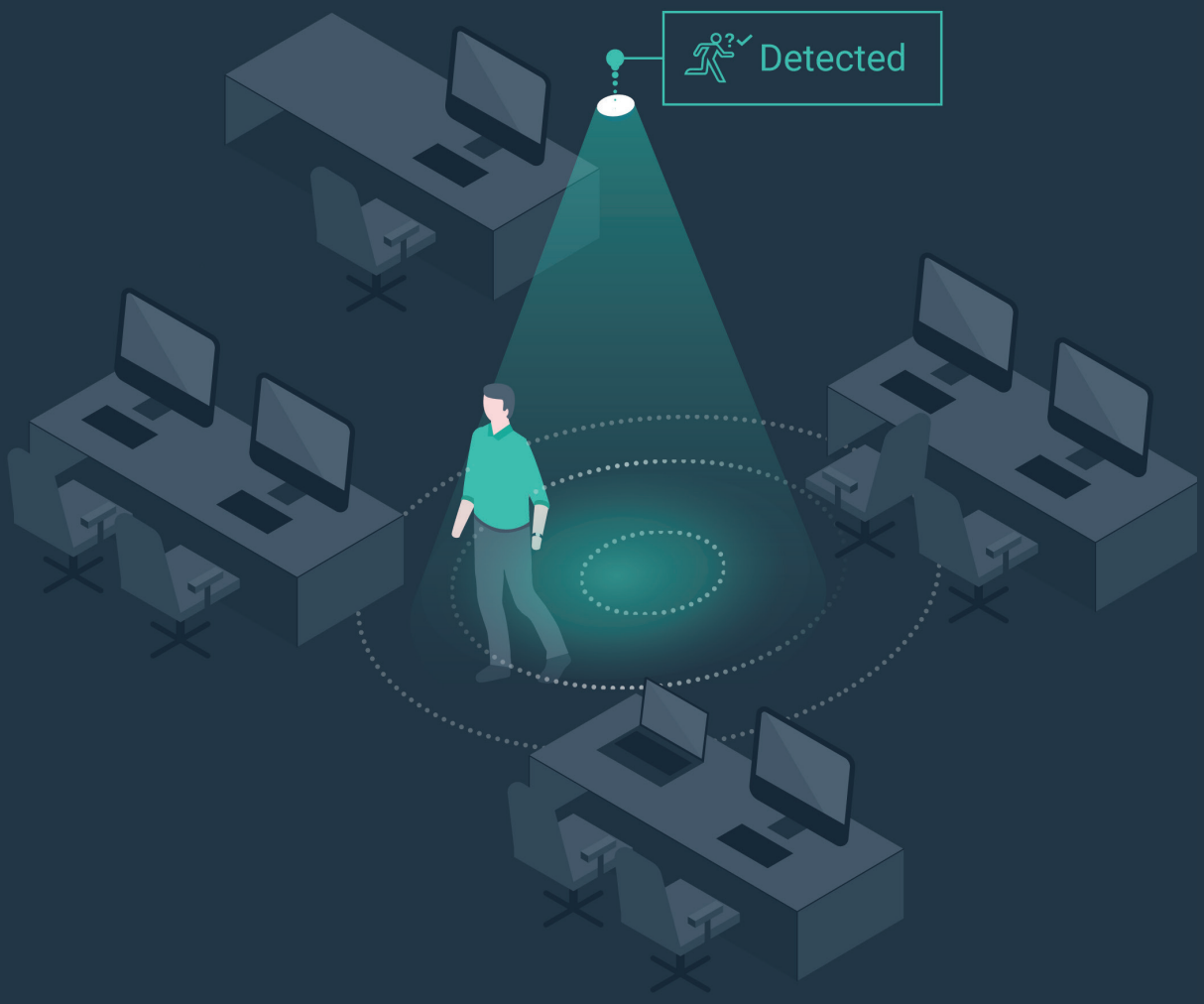
Understand how the building has been performing over time with an easy to understand curve




https://cloud.zencontrol.com/sites/zencontrol-rd/planview
Help
Sign out
Device
Emergency
Log
04
evice issues
05
Emergency issues
02
Builing health
99 %
Monitoring for issues
4561
devices
New issues
2
Average per month
Resolved
Total
2019
Local bank
April
May
June
July
August
September
October
November
December
Building health (%)
06
2019
100
99
98
97
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Type
Floor
Location
Date detected
ication controller
Controller
Floor 5 (West Wing)
Electronics room
2019-11-25 14:19:08
rgency Cloud (Virtual controller)
Controller
Ground floor
Hallway left (6)
2019-11-01 22:00:00
rgency Cloud (Virtual controller)
Controller
First floor
Software back
2019-11-10 19:18:37
rgency Cloud (Virtual controller)
Controller
Floor 5 (Carpark)
Shelf 10
2019-11-25 14:19:08
n controller Full
Controller
Floor 1
Shelf 9
2019-11-01 14:12:09
ontrol Ektor Mercury
Device
Floor 5 (Carpark)
Shelf 3
2019-11-10 19:18:37
ontrol 40 W DALI smart driver...
Device
Floor 4
Hallway right D (4)
2019-11-25 14:19:08
own
Device
Floor 4
Hallway Left (2)
2019-11-01 21:05:21
Device
Floor 5 (East Wing)
Shelf 15
2019-11-10 19:18:37
ation controller
Device
Floor 16
Open plan, Middle
2019-11-24 14:15:02
Current issues breakdown
01
5
4
3
2
1
0
Critical
Major
Significant
Moderate
Minor
Low
Trivial
05

Occupancy

zencontrol's ***Occupancy dashboard*** allows users to better understand building utilisation. The occupancy dashboard provides the data to take action to address underutilised areas and informs decisions made when redesigning areas to better suit the user requirements.



Building utilisation

Occupancy detection

zencontrol uses DALI-2 compliant occupancy sensors to track and understand occupancy within each area, with each sensor providing a full set of occupancy data.

Users seeking improved resolution can add up to 63 DALI-2 wired or wireless sensors to each DALI line. High density sensor designs provide extremely high occupancy resolution and enable the integration of a sensor in every light fitting.

The benefits of a sensor per fitting are

→ Improved detection accuracy, allowing shorter time outs and maximum energy savings

→ High resolution heat mapping and people tracking, improving understanding of the buildings use

→ Better occupant detection on entry, reducing on time response

→ Reduced occupancy blind spots

You can learn more about a sensor-per-fitting solution at
zencontrol.com/sensor-per-fitting-solution/

Making informed choices

Maintenance and scheduling

With detailed occupancy data maintenance mangers can establish maintenance priority. With the knowledge of building utilisation, a high priority is put on failures in high occupancy areas, while areas of lower utilisation may be assigned a lower priority. In particular, informed risk management is critical when maintaining emergency and safety critical lighting.

Occupancy reports

A user can purchase and download a preformatted report that highlight and shows the buildings occupancy over a defined period. In comparison, the analytics engine allows a user to compare occupancy in different areas and over different time periods.

Room occupancy rate

The occupancy dashboard visualises both the current building occupancy and the total occupancy per day, which can be compared against the occupancy over a week, month or year.

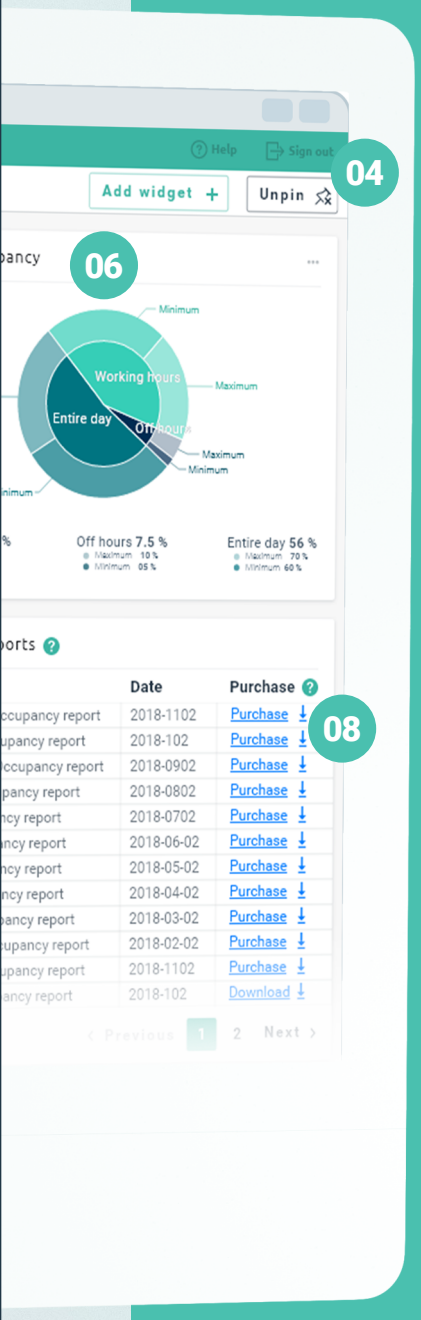
Understanding how areas are used is of utmost importance to any building owner seeking the highest ROIs and to companies deploying hot desk environments. In many cases, once a building is designed, metrics on how it is used are difficult to obtain or understand. With occupancy analytics available a user, owner or consultant is provided with detailed insights into how a building is being used enabling them to develop informed modifications to better suit the occupants.

An example

... Consider an organisation seeking to improve the efficiency of its meeting spaces. zencontrol's Occupancy dashboard informs them that their site has very high occupancy rates on 8-person meeting rooms and significantly lower rates on 4-person rooms. **Knowing the occupancy rate of different rooms helps inform the redesign the redesign of spaces to better cater for their use**.


Reports
Compare
Maintenance

The Occupancy dashboard



01

View the highest and lowest occupied rooms in the building to understand your buildings utilisation

02

Shows the occupancy of the primary and secondary profile in a multi-day graph, weekly, monthly or by year.

03

Displays the average occupancy percentage of the primary profile (typically working hours)

04

Add new and remove widgets to **customise your dashboard**, pin new combinations

05

View occupancy and other useful data on heatmaps

06

Graph of average occupancy of the entire building

07

Shows total number of rooms occupied and how many are being monitored

08

Purchase and download pre-formatted detailed occupancy reports

Performance analytics

zencontrol's ***Analytics dashboard*** allow customers to compare and analyse their buildings operation, understand the details, make changes and then validate the results.

Payback tracking

Wide range of datasets

With a wide range of datasets, analysing how a building performs becomes much easier. Understanding the data and how it affects users or building operation helps to better manage how a building should perform.

- Compare occupancy and arc level in a room or area to evaluate the effectiveness of a sensor or sequence. Optimise sequences to reduce power consumption and nuisance dimming.
- Compare lux level and arc level to monitor the performance of daylight harvesting.
- Compare maximum power consumption to actual power consumption to visualise savings from daylight harvesting or task tuning.

Validate

Comparing and analysing datasets often leads to an updated building configuration, but many systems don't show the user the actual difference a change has made. By saving the analytics, and revisiting after a change a user can compare the previous data to the current actuals. Evaluate the difference and see actual savings.

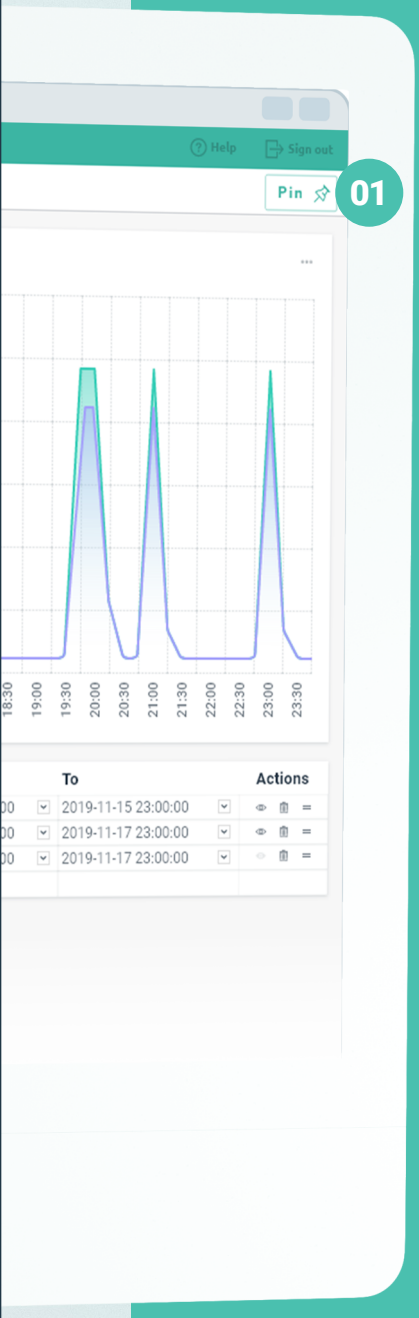
- Evaluate consumption before and after applying task tuning or daylight harvesting
- Compare consumption before and after upgrading light fittings
- Validate that nuisance time outs have been eliminated.

Compare

With zencontrols analytics engine a user can compare different building parameters to add context to the buildings data.

- Compare datasets like power, occupancy, light levels, temperature etc on the same graph
- Choose the period of each dataset to compare historic and present data
- Compare rooms, floors and devices easily
- Save your graphs so you can compare later.

The Analytics page



The data you need

01

Previously saved/pinned comparisons allow user to **keep track of data** for specific areas / rooms / sites

02

Compare power usages with and without **task tuning,** or power usage with and without **daylight harvesting**

03

Choose your data-type and compare on the same graph to better understand the data

04

Select the interval the data is calculated at to best suit your requirements

05

Select multiple areas to compare on the same graph

06

Chose the way that the data is shown with **different chart types**

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Heatmaps

A new way to visualise and interact with your devices on a modern Plan view interface. Quickly and easily identify faults, power usage and high/low occupancy.

Heatmaps and occupancy

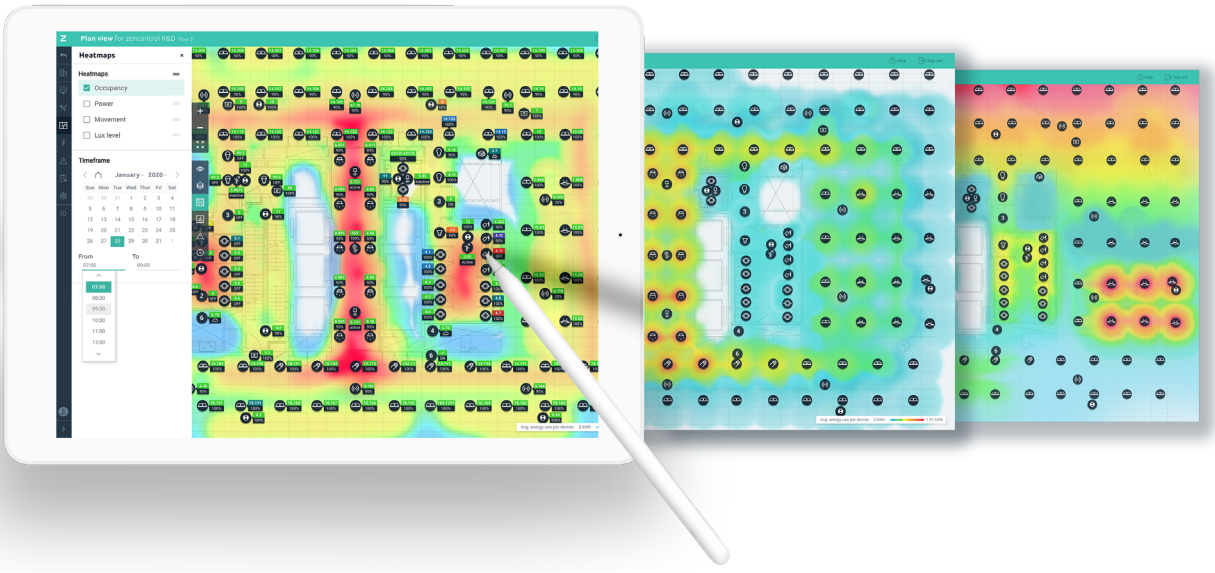
An occupancy heatmap overlay over the zencontrol ***Plan view*** provides an easy way to understand the most utilised areas and the flow of people throughout the day. A user can select and compare different time periods to understand periods of the day which may need to be addressed.

Heatmaps and power

Viewing a power heatmap over ***Plan view*** allow users to see where the power is being consumed and take appropriate steps in reducing the power usage.

Heatmaps and lux levels

Identify areas which can be fine-tuned to provide greater savings with lux level and use-case mapping



Wired or wireless

zencontrol supports wired and wireless DALI buildings, with full wireless support of IEC62386-104 devices over UDP and Thread®. Customers get to experience the same features and benefits independently of their choice of connection technology.

visit us at
zencontrol.com

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