bandora

bandoraOM

USER'S MANUAL

November 2021

bandorasystems.com

VERSIONS

Date	Version	Description
08/12/2021	1.0	Users Manual for BandoraOM Version 1.0

Index

1. Starting With BandoraOM

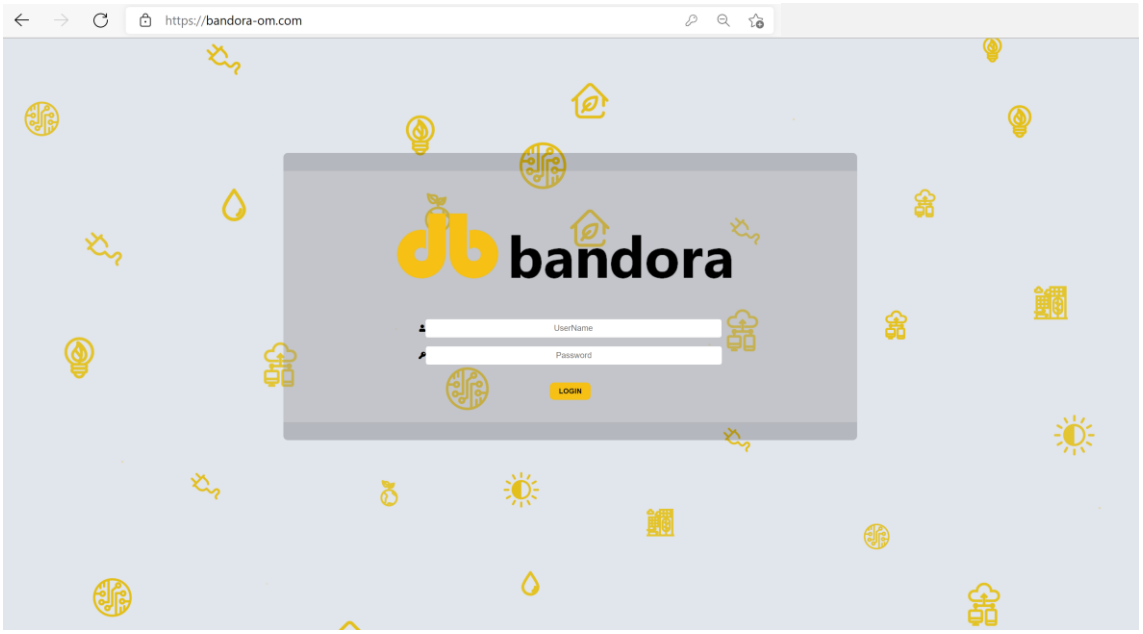
The dashboard is the management tool where Facility Managers can perform monitoring, analysis and actuation actions over BandoraOM solution.

Bandora's dashboard is supported in the following browsers:

- Microsoft Edge (recommended);
- Mozilla Firefox;
- Google Chrome.

Bandora's dashboard can be accessed using the URL: https://bandora-om.com

Dashboard requires Authentication with user and password. User and password are provided directly by Bandora Systems to the customer. If the user don't receive this information please mail support@bandora-om.com. After receiving from Bandora the required credentials, user can login with BandoraOM on Login Portal.

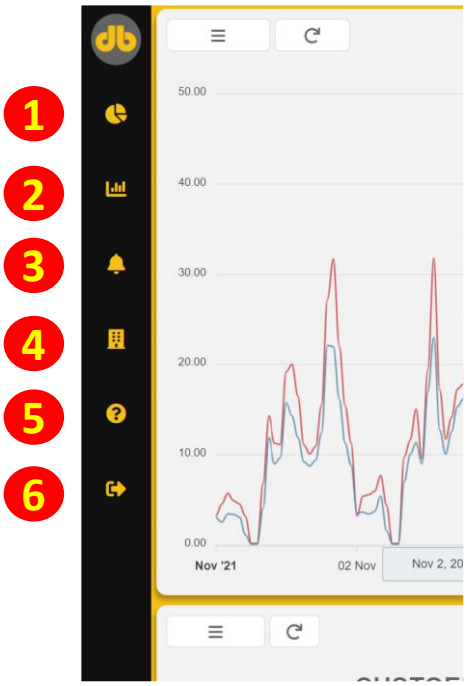


2. Main Menu

Main menu is a vertical bar on the left of the screen. User can access any feature in Bandora's dashboard selecting the correct option:

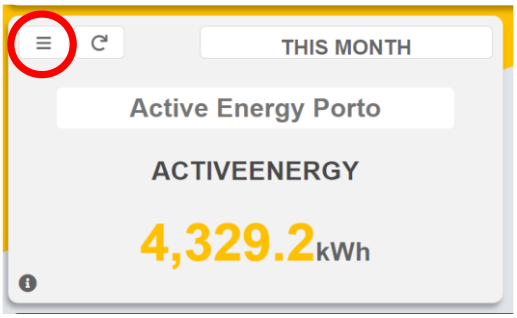
1. Analytics Window (main screen)
2. Anomaly Detection Window
3. Notifications Window (not active)
4. Building Manager Window
5. Help (Access to Documents)
6. Close Session

Main Menu is visible on the left in all dashboard's windows.

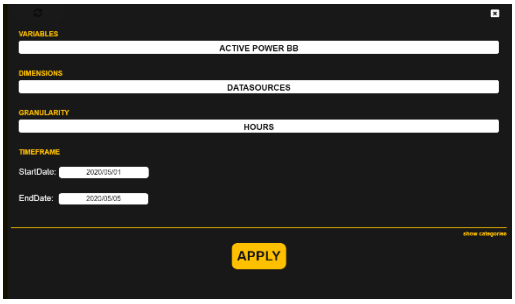


3. Filter Selection

Filter selection is a common component for all widgets in Monitor Window. Filters define what information is visible to user in each widget. This option can be accessed in every Widget throught the icon with the red circle, and selected options applies only to current widget. Selected filters are stored in user's profile and remain active each time the user access the dashboard.



Once user clicks on Filter Icon, a pop-up windows is visible. Depending on the widget, user can select Variables, Dimensions, Granularity and Time Frame:



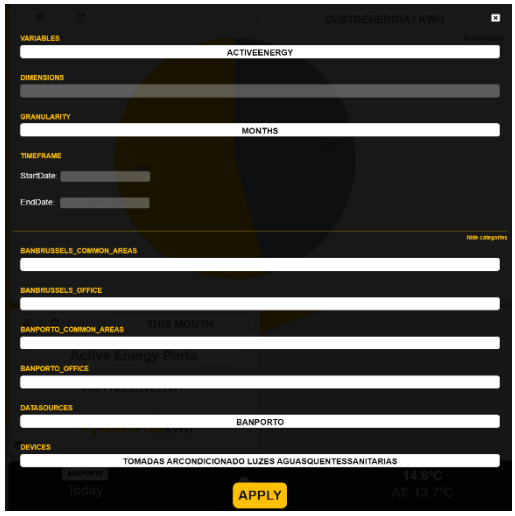
- Variables: are the values available in the data base that defines user's building, like temperature in rooms, power usage of equipments, energy measured in the electric boards, ON/OFF status, etc;
- Dimensions: defines the categories defined by the user: buildings, regions, cities, devices, rooms, etc;
- Granularity: defines the above variable into a time-series by minutes, hours, days and months;
- Time Frame: user can define, when aplicable, Start and End Date of the period of time he wants to visualize .

Once user clicks on show categories option, Filters Windows expands with aditional options. It will be shown each Dimension Category, where user can select from Combo boxes each option to redefine the information he intends to visualize.

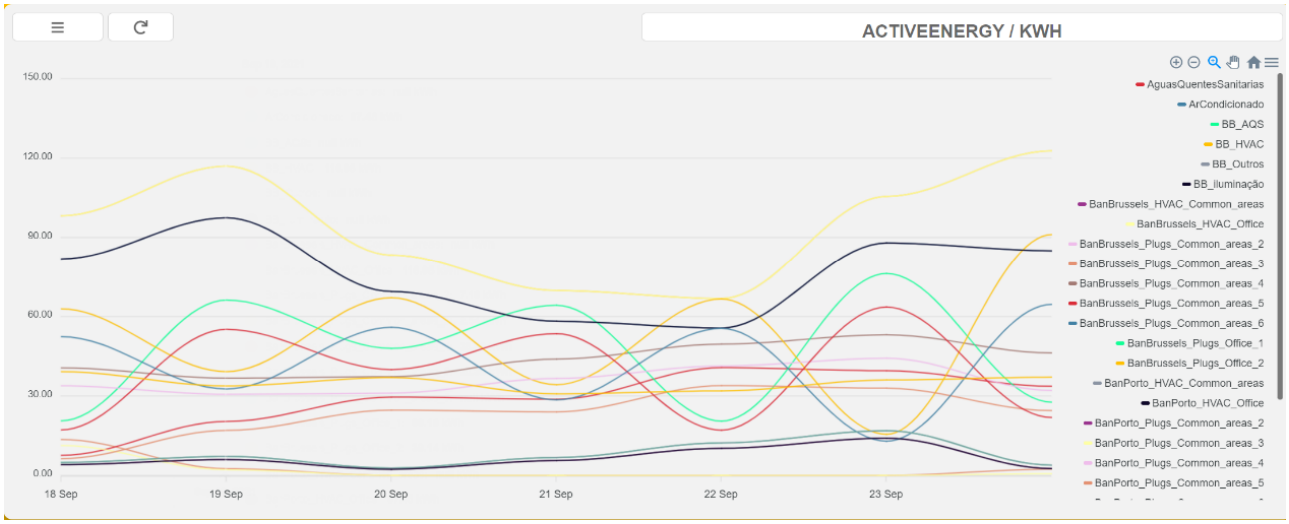
Example:

An user has 2 Buildings with BandoraOM solution instaled and running. In Line Chart widget, User makes a filter selection with:

- Variable Active Energy
- Dimensions Devices
- Granularity Months
- Start Date : 15/09/2021
- End Data : 24/09/2021

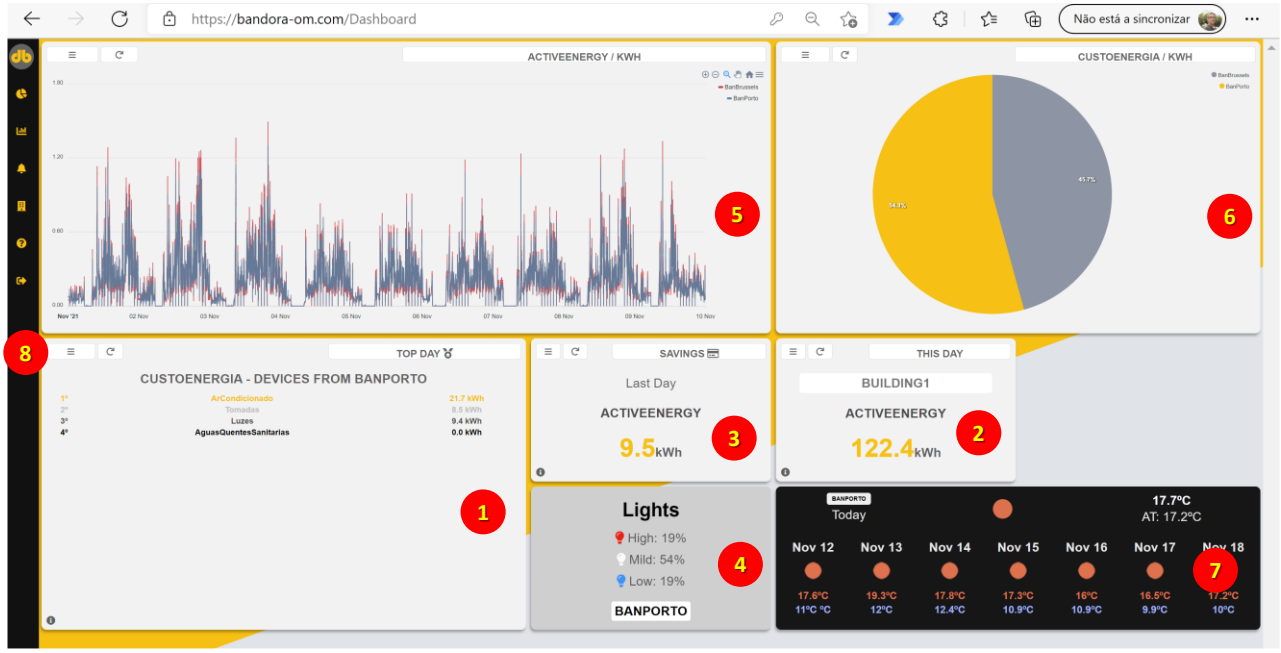


The result is a Line Chart as follows:



4. Analytics Window

After successful login, the site is redirected to dashbord's Analytics Window.

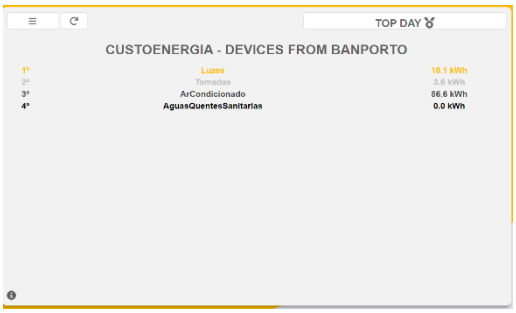


This is Bandora's dashboard main window where user can see how building is operating in real time, has the ability to perform analytics on demand, choose the variables more important, devices, or buildings to close monitor. Beyond all that, can also check out the level of comfort among their occupants too. Analytics Window show information grouped in widgets, as well as the main menu:

1. Ranking Widget
2. Label Widget
3. Savings Widget
4. Comfort Widget
5. Line Char Widget
6. Pie Chart Widget
7. Weather Widget

Dashboard allows user to analyze all buildings managed by BandoraOM solution. User can see information from all his buildings.

4.1. Rank Widget

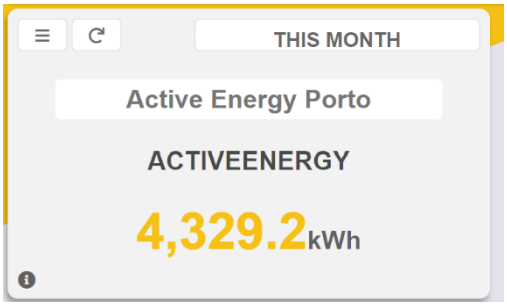


Rank Widget list the results in ascending order, based on a user's selecction. User can select Variables, Dimensions and Granularity. Note that granularity now defines also the Time Frame, for instance, Granularity: Day – means the Top of the current day.

Example: user can select Variable "Active Power", Dimension "Devices" and Granularity "Month". Widget shows which devices used more Active Power in average in the current month.

User can choose different combinations in Filters Option (2.1 Filters)

4.2. Label Widget



In the Label Widget, the user visualize the total amount of a variable (energy or cost) or the mean of a variable (instantaneous variables), for a selection of Variables and Granularities.

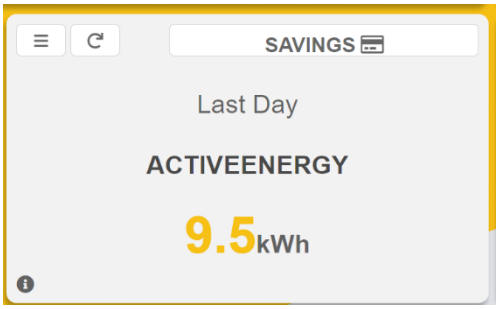
Example : Variable "Active Energy" and Granularity "Month". Widget presents the sum of active energy in the last completed month.

Label Widget includes a free text box suitable to user edit according to his preferences.

Example : user can write "Active Energy Porto" in text box to identify Label Widget information.

User can choose different combinations in Filters Option (2.1 Filters).

4.3. Savings Widget

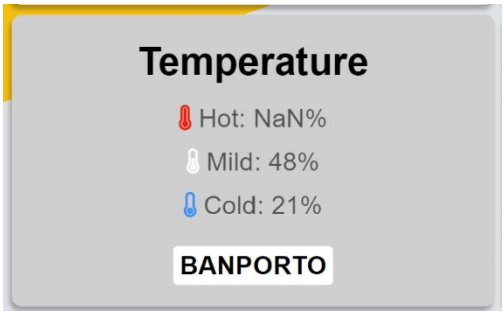


Savings Widget allows user to visualize the difference of variable values, between two equal, complete and consecutive periods of time, defined on Granularity.

Example : Variable "Active Energy" and Granularity "Month". Widget returns the Active Energy consumption savings from the last completed month, compared with the earlier consecutive one.

User can choose different combinations in Filters Option (2.1 Filters).

4.4. Comfort Widget



Comfort Widget allows the user to see the statistics of the feedback collected by the Mobile App, BandoraME. Comfort Widget has a slider with 5 different information groups:

- Temperature: user can visualize results in percentage for each temperature perception in the selected Building;
- Lights: user can visualize results in percentage for each lights perception in the selected Building;
- Comfort: user can visualize results in percentage for each well-being perception in the selected Building;
- Transports: show the percentage of transportation usage by occupants to arrive to the selected building;
- Users: show the total registered users in selected building and the absolute number of votes.

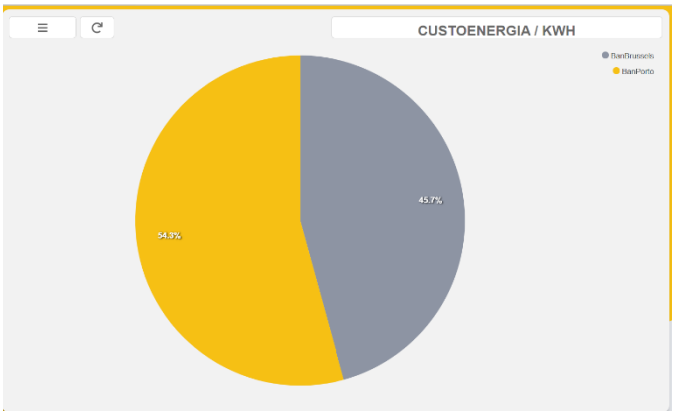
User can select different building cliking over the Building Label and selecting another option in Combo Box.

4.5. Pie Chart Widget

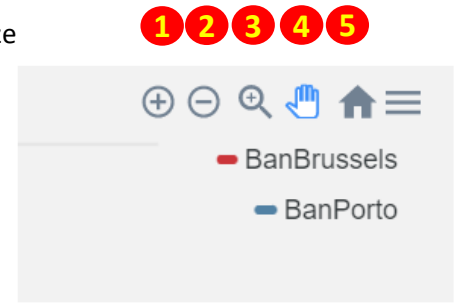
Pie Chart Widget is a single dimension Chart where user can visualize selected information in a graphical view.

User can choose different combinations in Filters Option (2.1 Filters).

Example: user can select Variable “Active Energy”, Dimension “DataSources” and also time frame. The Pie Chart allows user to view Active Energy per buildings between the selected dates. Granularity option is not available in Pie Chart.



4.6. Line Chart Widget

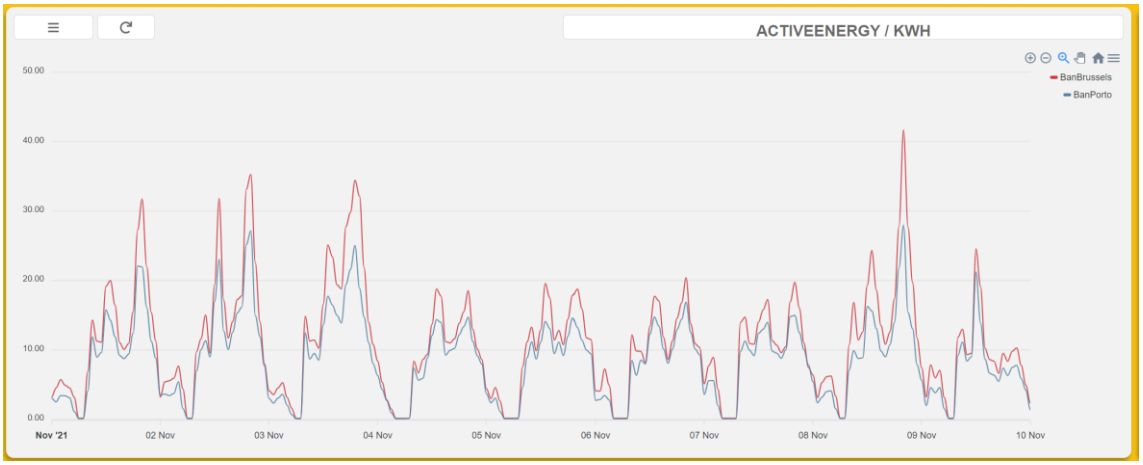


Line Chart Widget is a double dimensions Chart where user can visualize selected information in a graphical view. In the top right corner of Line Chart Widget user has some visualization option available:

1. Zoom In
2. Zoom Out
3. Selection
4. Drag Selection
5. Original View

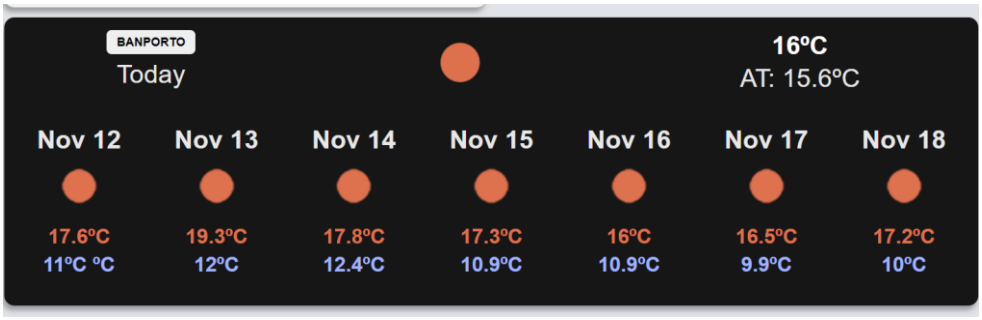
User can choose different combinations in Filters Option (2.1 Filters).

Example: user can select Variable “Active Energy”, Dimension “DataSources”, Granularity “Hours” and also start 01/11/2021 and end date 10/11/2021. Line Chart allows user to view Active Energy in all buildings available with hourly granularity in the selected dates, as seen in the picture below.



4.7. Weather Widget

Weather widget is an informative widget where user can visualize weather forecast for selected building's location.



User can select any building just click over building name and selecting option in Combo Box.

5. Anomaly Detection Window

The current windows give information to Facility Managers about potential anomalies on building's equipments, from the analysis of the energy consumption pattern. This feature is important to detect potential malfunctions ahead they actual happen, or wrong equipments usage, like behavioral anomalies.

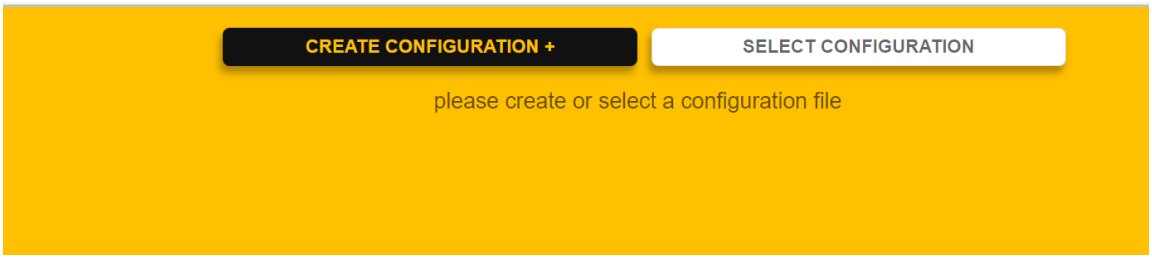
Currently is available the feature of create an energy consumption profile, where at each day will be assigned an energy profile. Most of the times, this profile has a seasonality behaviour, as summer, Winter, or Fall. Whenever there's a day with a different profile, the user will be notified with a message on Notifications icon.

This feature is completely unsupervised and helps the user to better understands his buildings energy profile, what are the most consuming devices. The user can create its own configuration and have an analysis "a la carte"!

Analytics Window is available through the highlighted icon on main menu.

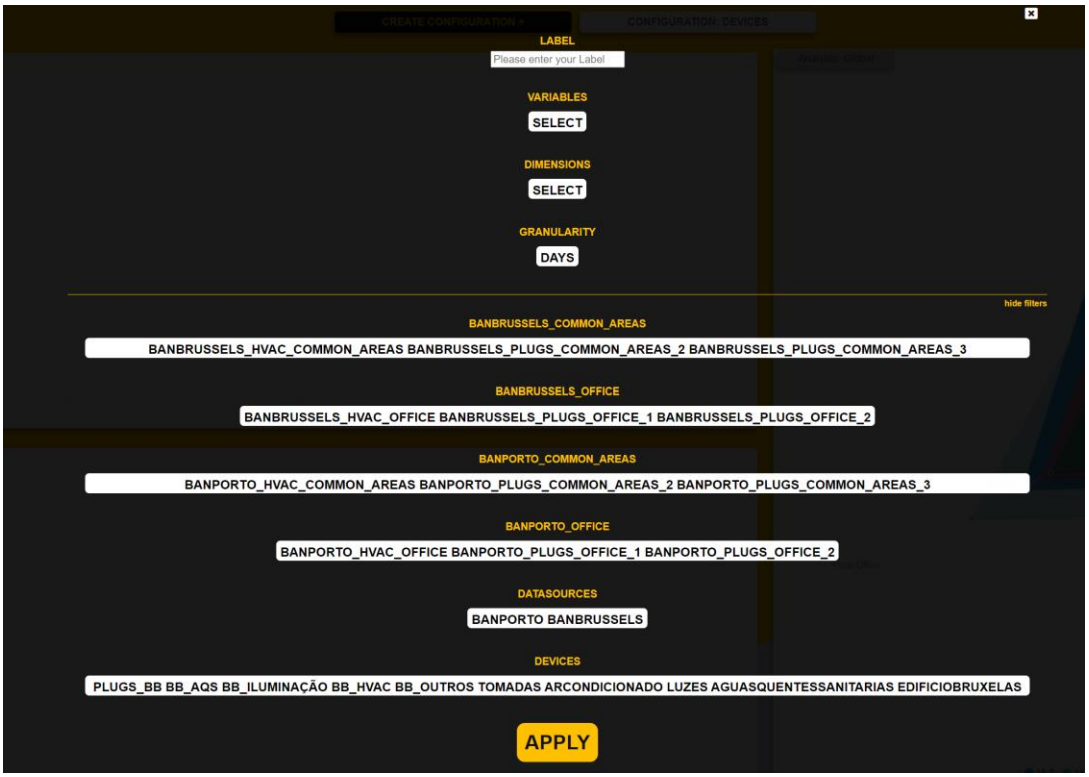
Once users select this option, a new screen is visible with two options:

1. Create Configuration
2. Select configuration



5.1. Create Configuration

After user selects **CREATE CONFIGURATION** option, a new screen is available where a new configuration can be defined. In the following section will be described which information is required.



- Label: Free text description where use can define the configuration name;
- Variables: Which variable user wish to analyze. Note: only Energy available;
- Dimensions: Chose the categories that the user intends to assess Energy Consumption: ex. Profiles per building, per devices, per spaces, etc. The categories available are already defined previously in Settings (available shortly);
- Granularity: Allows the user to select the granularity for the analysis. Note: only daily granularity is available.

Additional options can be select using show filters option, as already described in Filters section.

After user creates configuration, it will available after 24 hours with the name defined in Label option.

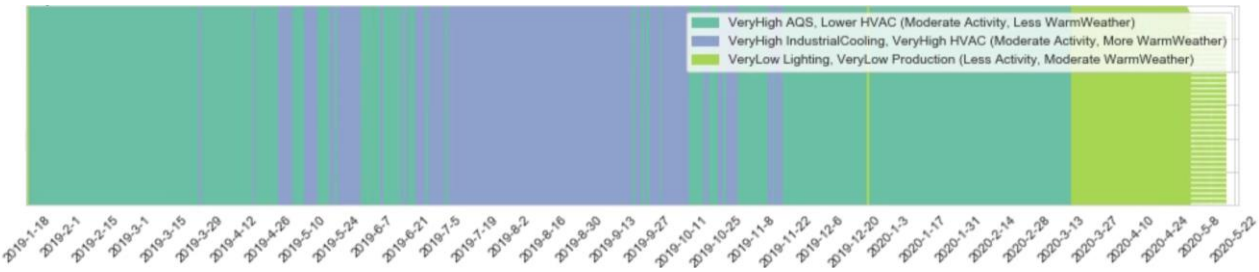
5.2. Select Configuration

The Option Select Configuration opens a combo box where user can select previously created configurations, available 24 hours after creation.

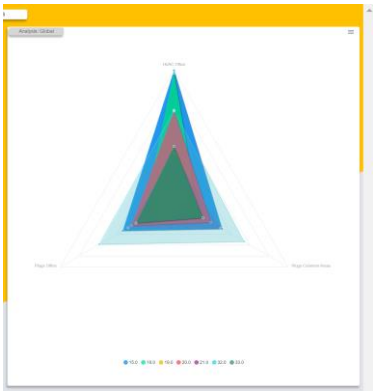
Three different charts are available, where user can visualize and identify energy consumption profiles in a color map and in a radar chart: these two charts show the same information with different layouts. The categories are generated automatic, accordingly with the relative weight.

The time series graph with the disaggregated energy consumption per the categories of the chosen dimension, help us to understand the daily weight of each category on the energy consumption.

- Color Map



- Radar Chart

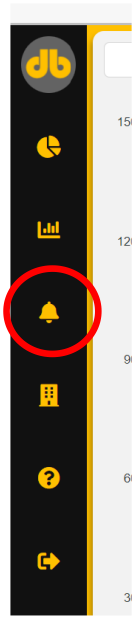


- Energy Consumption Daily Time-Series

By clicking in chart legend category, user can select or unselect different profiles, that can be displayed in the graphs.

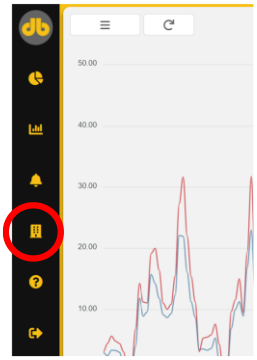
6. Notifications Window

Notifications Window will be available next release of BandoraOM solution.



7. Building Manager Window

Building Manager Window is the Dashboard's component where facility managers can control all building devices. This control could be in the form of a simple status, if system is being automatized by BandoraOM, or manually controlled if the service is interrupted by user's choice.



Building Manager can be accessed through the main menu, by selecting the highlighted icon.

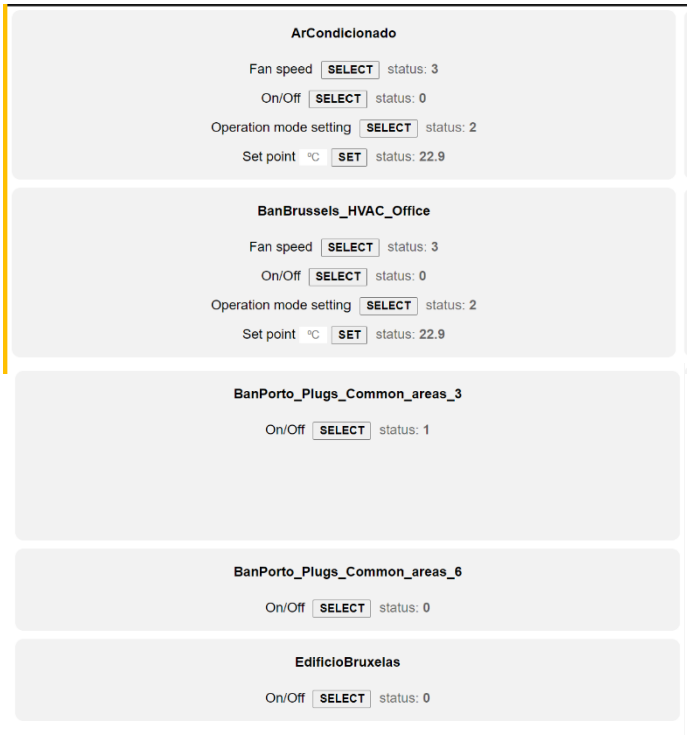
Once user selects building manager icon, a separate window gives access to all device groups.

On the top right corner of the dashboard user can select which group of devices he wants to visualize. The devices can be organized by buildings, spaces, or other aggregation that makes sense for its reality.

Once user selects the device group, a screen with selected devices is visible. Each box represents a device where user can visualize the status, perform actions, depending on which type of capability is available.

In the picture on right side, two HVAC devices are represented with each control capabilities:

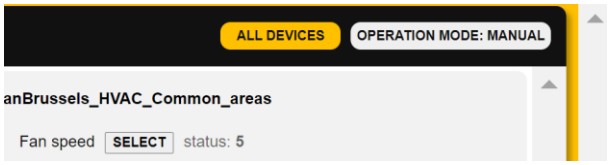
- Fan Speed: user can configure manually the fan speed for the selected HVAC device;
- On/Off: User can select if HVAC device is turned on (0) or off (1);
- Operating Mode setting: the user can chose the operation modes available. Generally they are: Heating, Cooling, Fan, Dry, Ventilation or Auto;
- Set point: user can select the temperature for the HVAC device.



Some devices offer less capabilities, as you can figured on the next picture. For instance, the device EdificioBruxelas only allows the user to select the on/off status.

7.1. Toggle Auto/Manual

User can select the operation mode for each Building, or group of devices.

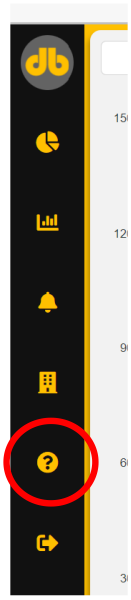


By default Operation Mode is Automatic: BandoraOM Artificial Intelligence Engine defines the best setup for all devices in order to improve energy efficiency, while keep users comfortable.

User can choose Operation Mode Manual if he wants to manually define device's setup, due maintenance operation, malfunctions or unexpected closing of the facility.

8. Help

Help option redirects user to site www.bandorasystems.com/documents, where user manual and other documentation are available.



9. Close Session

Close session option is available on main menu. By clicking icon, the user logs out and goes to the beginning page.

All Widget configurations and Filter selections are stored in user's profile.