

Exploitation manual

stream

**Energy
Management System
HTG5xxH**



:hager

Related documents

Document	Reference
agardio.manager user manual	6LE001606C
stream installation manual	6LE007612B
stream configuration manual	6LE007614C

Used notations



Provides tips, insights, and precisions.



Marks a risk in terms of loss of data or access to it.

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1. Introduction

stream is an Energy Management System (EMS). Its final aim is to be used for the exploitation of energy data in a relevant context, to help to make informed decisions when it comes to load-shedding and energy savings.

To be able to do that, stream has to be configured for said context.




- If you are interested in doing this yourself, refer to the [*stream configuration manual*](#).
- If your stream system has already been properly configured (by yourself or anyone else), and you wish to put all these preparations to good use, this document is the one for you.

In stream, data exploitation offers **indicators** and **dashboards** as well as some tools for a more in-depth analysis of your data, both in **real-time** and **after storage**.



Figure 1 - Data exploitation menu in stream

Indicators and dashboards have been developed for stream to allow for the consultation of **energy consumption**, both **electrical and not electrical** if measured. These consumptions can be visualised for every geographical level of your installation, based on its structure entered in configuration:

-  Overall, with distribution across sites or buildings.
 -  For a single **site**, composed of buildings.
 -  For a single **building**, composed of floors and rooms.

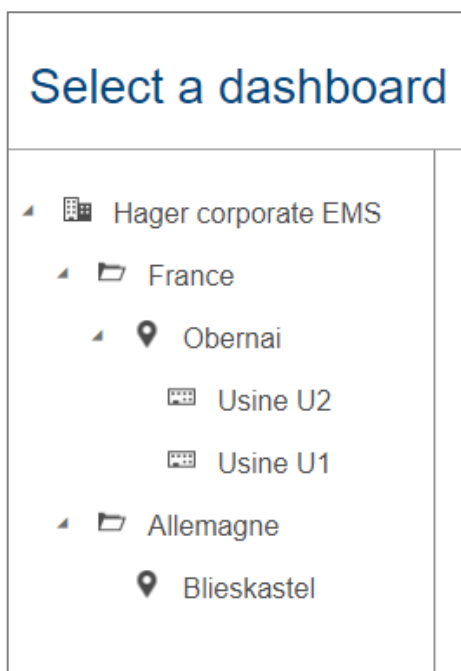


Figure 2 - Example of stream navigation across the installation structure



Directories are purely organisational entities and do not grant access to any type of data exploitation interface.

This funnel organisation of indicators and dashboards allows digging deeper into details after having started with a more global overview.

Indicators are available both before and after user connection. They provide a quick overview of energy and water consumption, as well as carbon footprint, by presenting and quantifying their increase or decrease over pre-determined rolling periods. They also embark the energy efficiency of buildings.

Dashboards allow studying the **total** consumption of energy as well as its **evolution** over specific calendar periods, as exposed in §3.3 and §3.4.

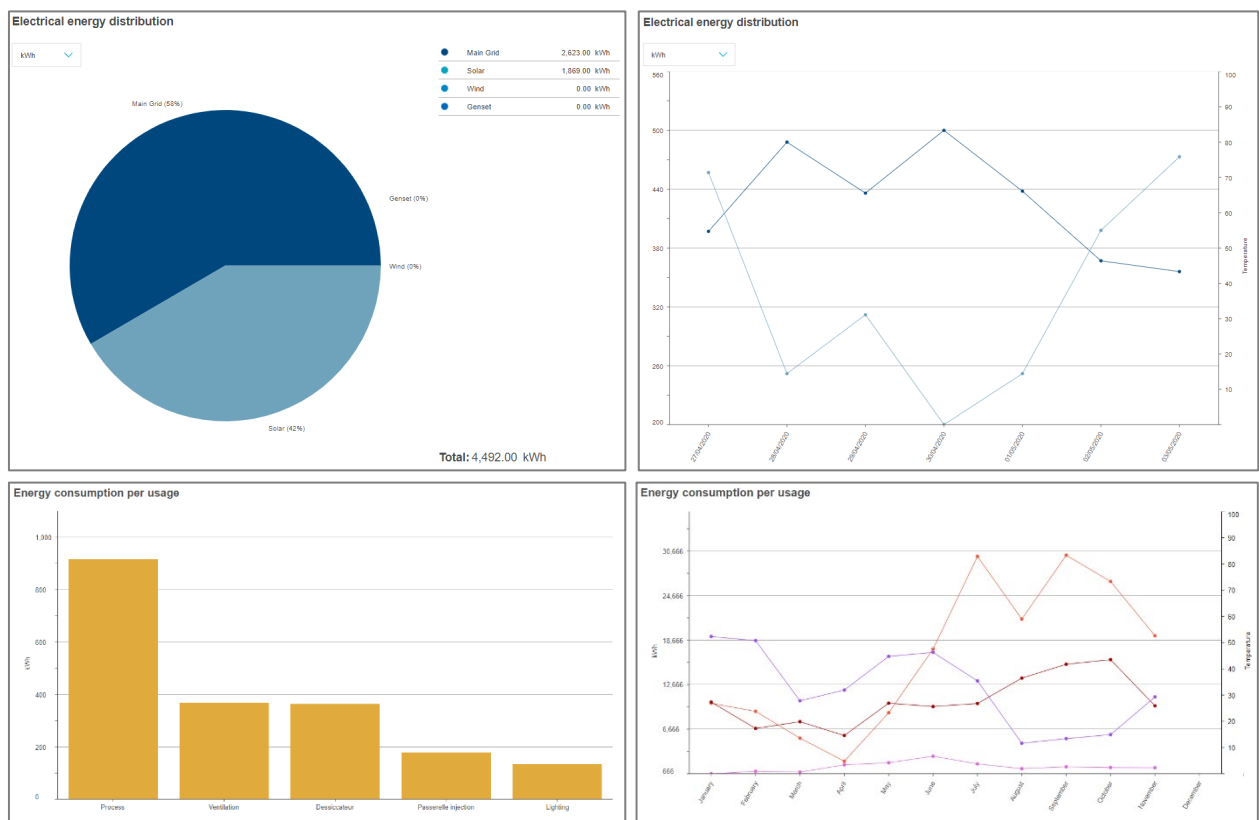


Figure 3 – Totals and evolutions in stream dashboards

And, they show energy through various relevant lenses, as detailed in §3.5, such as:

- Per usage (Lighting, process, motor, etc.).
- Per zone category (Offices, factories, warehouses, etc.).
- Per zone of a building (individual floors and rooms of the building).
- Per sector of activity of a building (industrial, commercial, etc.).
- Per origin (Main Grid, Solar panel, etc.).

When a weather service has been configured (see [stream configuration manual](#)), contextualisation and normalisation of energy based on outside **weather** can be activated (see §3.7).

The **cost** and the **carbon footprint** of your electricity are also available in stream dashboards.

Additionally, you can check:

- Values of measured services in **real-time** ([Chapter 4](#)).
- **Protection** status and configuration ([Chapter 5](#)).
- **Power quality** indicators ([Chapter 6](#)).
- Detailed and compared **history** of stored services ([Chapter 7](#)).
- The **electrical efficiency** of buildings, as defined by the IEC ([Chapter 8](#)).

Finally, stream also handles **event notifications** ([Chapter 9](#)), about:

- **Measurements**, following the custom alarm configuration put in place specifically for the installation.
- Its own potential **malfunctions**, following any failure scenario anticipated during its development.



Figure 4 - Event exploitation menu in stream

Refer to [Chapter 10](#) to change the **password** for your account or the **language** the interface is displayed in.

If you are currently encountering what seems like an issue, refer to [Chapter 11](#).

[Chapter 12](#) is an appendix which contains the list of existing system events and the **computation methods** used by stream for energy consumption and degree days.

2. Indicators

stream offers indicators, which provide a very high-level overview of the energy consumption tendencies of an installation and its sub-perimeters.

2.1. Access and display indicators without logging in

Due to the low level of detail available in stream indicators, they do not require being logged into the system to be consulted. This also makes it easier for a user with an account to tell whether it is worth logging in for further investigation or it does not seem necessary at this point.



Licence connection and runtime points are still being consumed even when consulting indicators without logging in. Refer to the [stream installation manual](#) and the [stream configuration manual](#) for more details about stream licence management.

To reach indicators without logging in, when on the login page, click the "Quick-access dashboards" link.



Figure 5 - Access stream indicators without logging in

Another advantage of accessing indicators without logging in is that they can remain displayed indefinitely. This is not the case when logged in, due to automatic disconnection after 10 minutes of inactivity. This means indicators can be displayed on a static screen for visitors to see, for instance. Refreshing values would only be necessary once a day at most, if not once a month when choosing to display yearly indicators.

Of course, once logged in, stream indicators remain the first thing available when selecting an eligible element in the installation structure.

2.2. Rolling periods

Three distinct rolling periods are available for stream indicators:

- Last 7 days, which compares the last 7 days (from seven days ago (D-7) to yesterday (D-1)), with the 7 days before that (from fourteen days ago (D-14) to eight days ago (D-8)).
- Last 30 days, which compares the last 30 days (from 30 days ago (D-30) to yesterday (D-1)), with the 30 days before that (from 60 days ago (D-60) to thirty-one days ago (D-31)).
- Last 12 months, which compares the last 12 months (same month last year to last month) to the 12 previous months before that (same months a year before).

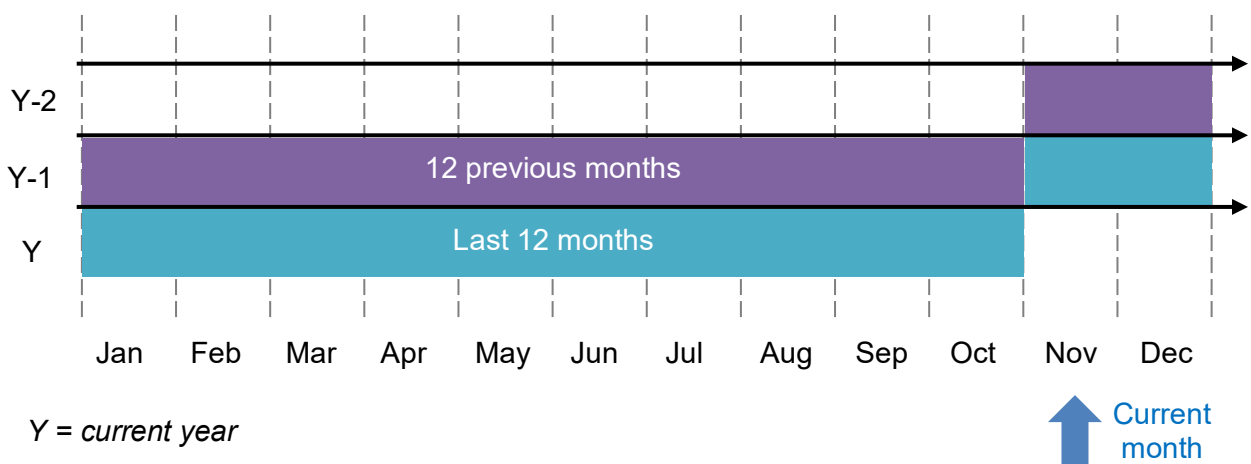


Figure 6 - Illustration of rolling 'Last 12 months' period



The current day or month is never taken into account in indicators. This is done to avoid comparing an incomplete period with a complete one.

2.3. Charts, values, and colour codes

2.3.1. Check on global energy consumption normalised by surface

For every eligible level of the installation, a bar chart shows the energy consumption for each of the two considered periods, normalised by perimeter surface. This provides a visual representation of the decrease or increase.

Normalisation is performed according to perimeter surface.

- Installation surface is the sum of the surfaces of all sites.
- Site surface is the sum of the surfaces of all buildings within the site, even buildings which may not have any agardio.manager declared, yet or anymore.
- Building surface is its configured surface. Floors and rooms surfaces are not taken into account, as they would be redundant with one another.

Refer to the [stream configuration manual](#) for more information about building surface configuration.

Normalisation is performed in order to make several perimeters of same type easier to compare.

Example: as a caricature, let's imagine a 1 200 m² building which consumes around 150 000 kWh per year. Another building, with a surface of 400 m², consumes 50 000 kWh per year. Based on raw energy consumption, the bigger building consumes more energy. Based on normalised energy consumption, however, both building actually have the same consumption.

Actual amounts of normalised energy are mentioned, as well as the relative percentage of increase or decrease, colour-coded.

- An increase in energy consumption is usually seen as a bad thing, and is displayed in red.
- A decrease in energy consumption is typically seen as a good thing, and is displayed in green.

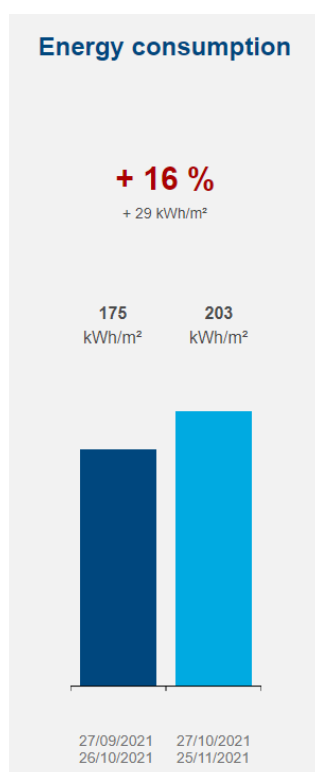


Figure 7 - Example of increasing normalised energy consumption over the last 60 days

2.3.2. Check on the origin of energy

For every eligible level of the installation, a chart shows its energy consumption for each of the two considered periods, for a visual representation of the decrease or increase. The distinction with the previous chart is that it takes initial energy into account, and offers a distribution per source type. This way, if overall consumption has increased, but proportionally a renewable energy source has been favoured, the overall conclusion can still be positive.

- An increase in general energy consumption, or from the Main Grid or a Generator, is usually seen as a bad thing, and is displayed in red.
- A decrease in general energy consumption, or from the Main Grid or a Generator, is typically seen as a good thing, and is displayed in green.

Reversely:

- An increase in energy consumption from a renewable energy source such as Solar, Wind, or Biomass, can be a good thing, and is displayed in green.

- A decrease in energy consumption from a renewable energy source such as Solar, Wind, or Biomass may be considered disappointing, and is displayed in red.

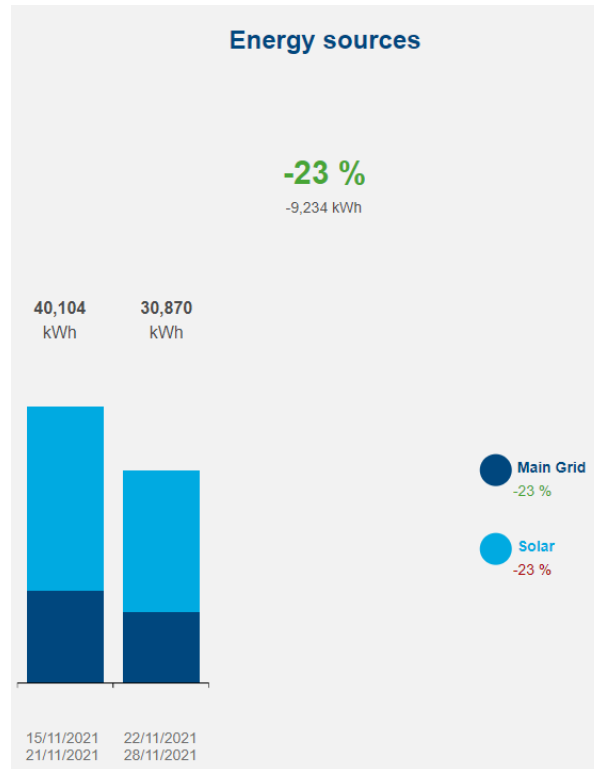


Figure 8 - Example of decreasing energy consumption over the last 14 days, with Main Grid and Solar power being equally less sollicitated

2.3.3. Check on water consumption

If there are products monitoring water consumption in the selected perimeter, a bar chart shows its water consumption for each of the two considered periods, for a visual representation of the decrease or increase. Actual amounts of water are mentioned, as well as the relative percentage of increase or decrease, colour-coded.

- An increase in water consumption is usually seen as a bad thing, and is displayed in red.
- A decrease in water consumption is typically seen as a good thing, and is displayed in green.

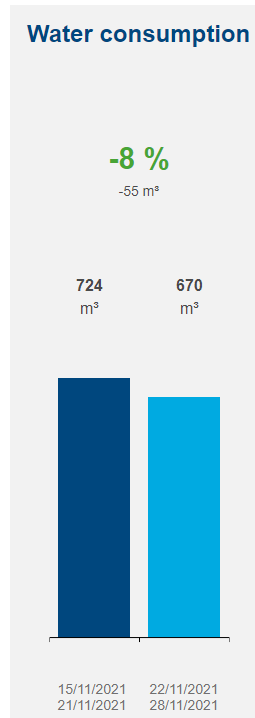


Figure 9 - Example of decreasing water consumption over the last 14 days

2.3.4. Check on carbon emissions

For sites and buildings, a bar chart shows their carbon emission for each of the two considered periods, for a visual representation of the decrease or increase. Actual amounts of carbon are mentioned, as well as the relative percentage of increase or decrease, colour-coded

- An increase in carbon emissions is usually seen as a bad thing, and is displayed in red.
- A decrease in carbon emissions is typically seen as a good thing, and is displayed in green.

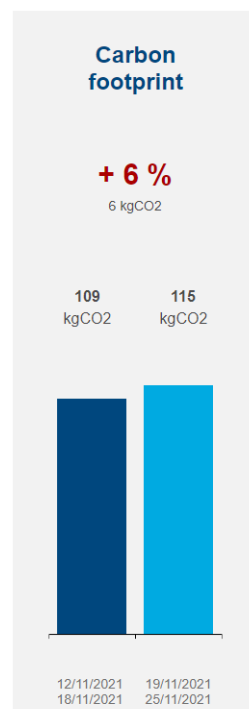


Figure 10 - Example of increasing carbon footprint over the last 14 days



The carbon footprint chart only appears if carbon footprint data exist for the considered perimeter and periods. This is first dependent on the carbon footprint configuration of the sources monitored within the perimeter. Refer to the [stream configuration manual](#) for more information about how to configure the carbon footprint of an energy source.

2.3.5. Check on building efficiency

For buildings, their Electrical Installation Efficiency Class is available, along the score which grants it.

This indicator is the only one independent from rolling-period selection. The electrical efficiency score of a building is instantaneously granted to it and not logged over time.



Figure 11 - EIEC indicator for a class 4 building



The EIEC indicator only appears for buildings for which the corresponding questionnaire has been filled out. Refer to the [stream configuration manual](#) for more information about how to answer the EIEC questionnaire of a building.

3. Dashboards

3.1. Dashboard organisation

Once you have selected an eligible element in the installation structure, the navigation tree is put aside, and you have a whole exploitation interface at your disposal.

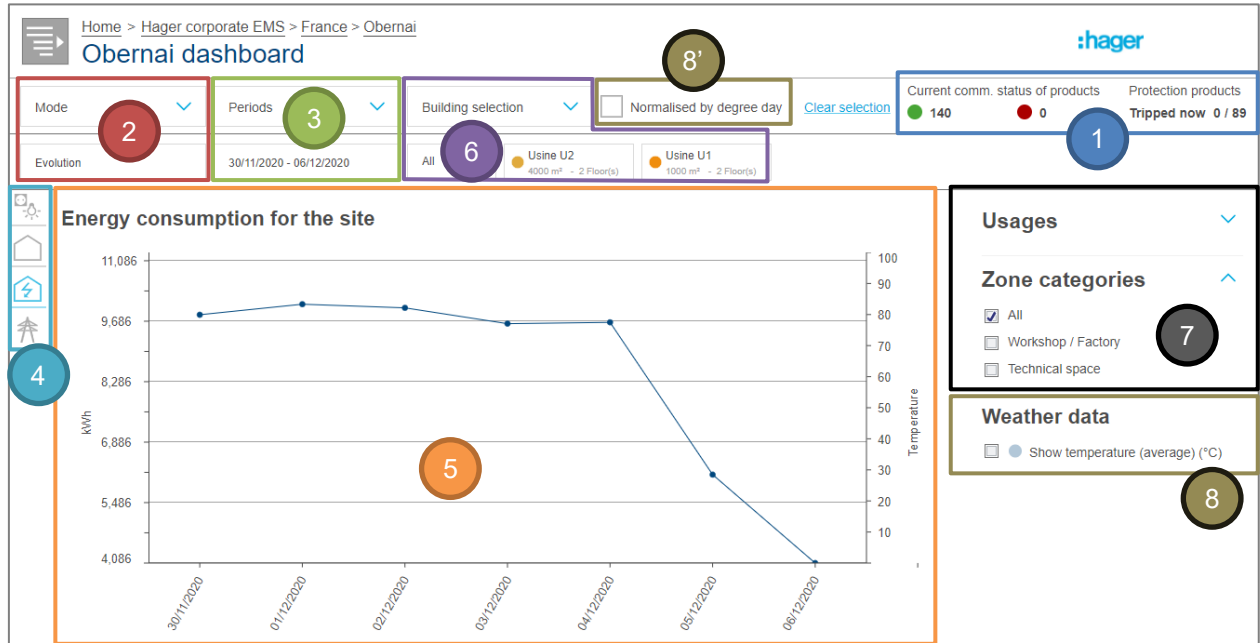


Figure 12 - General organisation of a stream dashboard

#	Element	Description	§
1	Health indicators	Summary of the communication and protection status of products in the selected perimeter.	§3.2
2	Mode selector	To switch from total energy to its evolution.	§3.3
3	Period selector	To select a timeframe and period(s).	§3.4
4	Chart selector	To determine which chart you wish to see.	§3.5
5	Chart area	Where the chart is displayed.	N/A
6	Sub-perimeter selector	To reduce the considered geographical perimeter.	§3.6.1
7	Filter area	To filter the currently displayed chart by additional parameters.	§3.6.2, §3.6.3 & §3.6.4
8	Weather contextualisation	To activate the display of temperature as a backdrop for energy.	§3.7.1
8'	Weather normalisation	To activate the normalisation of energy by degree day.	§3.7.2

Available charts vary depending on the level of dashboard considered, as explained in §3.5.



The logo in the top right corner can be customised in the properties of your installation. Refer to the [stream configuration manual](#) to know how to access installation properties.

3.2. Health indicators

Whichever dashboard you are considering, and whichever geographical sub-perimeter of it, health indicators about the currently selected perimeter are always provided.

3.2.1. Communication status of products

The numbers of communicating and not communicating products are computed based on the communication status of products currently expected to communicate. This means **deactivated products** or **products on deactivated devices** are not taken into account.

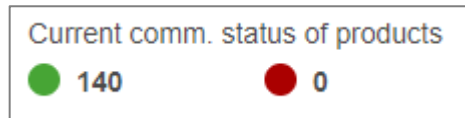


Figure 13 - Health indicator about the current communication status of products

- A product is considered **communicating** when both it and its parent device are properly communicating.
- A product is considered as **not communicating** when it is itself not communicating, or its parent device is the one not communicating; either way, measurements are not being retrieved from this product.



The more not communicating products there are, the less reliable the energy displayed in the dashboard.

When clicking the number of not communicating products, at any dashboard level, you are offered more detailed information on the issue:

- At the installation level, you are offered the number of not communicating products per site or building, depending on your current perimeter selection.
- At the site level, you are offered the number of not communicating products per building.
- At the building level, you are redirected to the overview of all energy-metering products described in §4.2.

3.2.2. Trip status of protection products

In case there are circuit-breakers in your installation, knowing whether they are currently tripped or not is crucial information to have. Every dashboard provides the number of tripped breakers over the total number of configured breakers in the currently selected perimeter.



Figure 14 - Health indicator about currently tripped protection products



A protection product is considered tripped when its trip alarm is ON.

When clicking the number of tripped protection products, at any dashboard level, you are offered more detailed information on the issue:

- At the installation level, you are offered the number of tripped protection products per site or building, depending on your current perimeter selection.
- At the site level, you are offered the number of tripped protection products per building.
- At the building level, you are redirected to the overview of the protection status of the building described in §5.1.

3.3. Visualisation modes

3.3.1. Total

Totals are useful to not only know consumption across certain perimeters but also compare these consumptions among themselves.



To avoid approximations, the current day is never taken into account in dashboards. Only the energy for past days is available. The values stored for the current day are however available in History views.

See §12.2.1 for details about the computation method of energy consumption based on energy indexes.

In stream, **totals** are represented as:

- **Bar charts**, when the number of pieces is unpredictable. This is true for usages, zone categories, and zones, but also sites and buildings. All of these types of elements are open for configuration.
- **Pie charts**, when the number of pieces is limited. This is true for types of sources and sectors of activity, of which there cannot be more than 5 and 3, respectively.

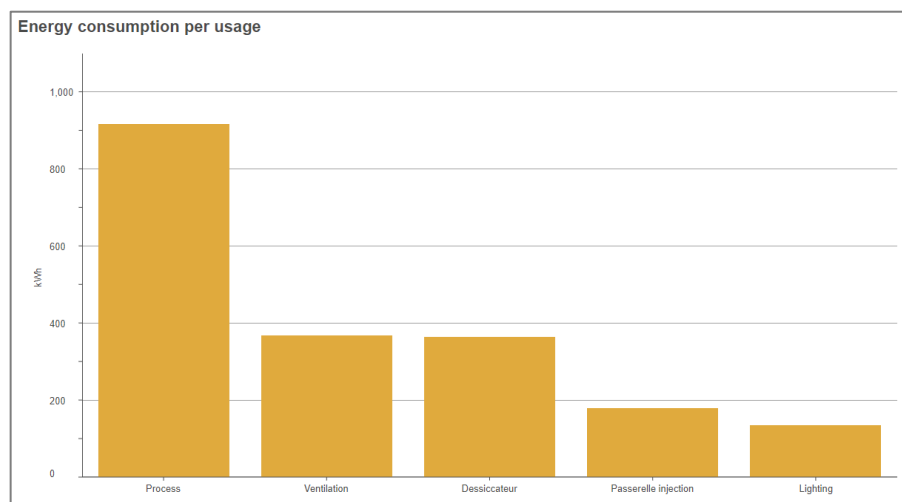


Figure 15 - Total energy consumption per usage as a bar chart

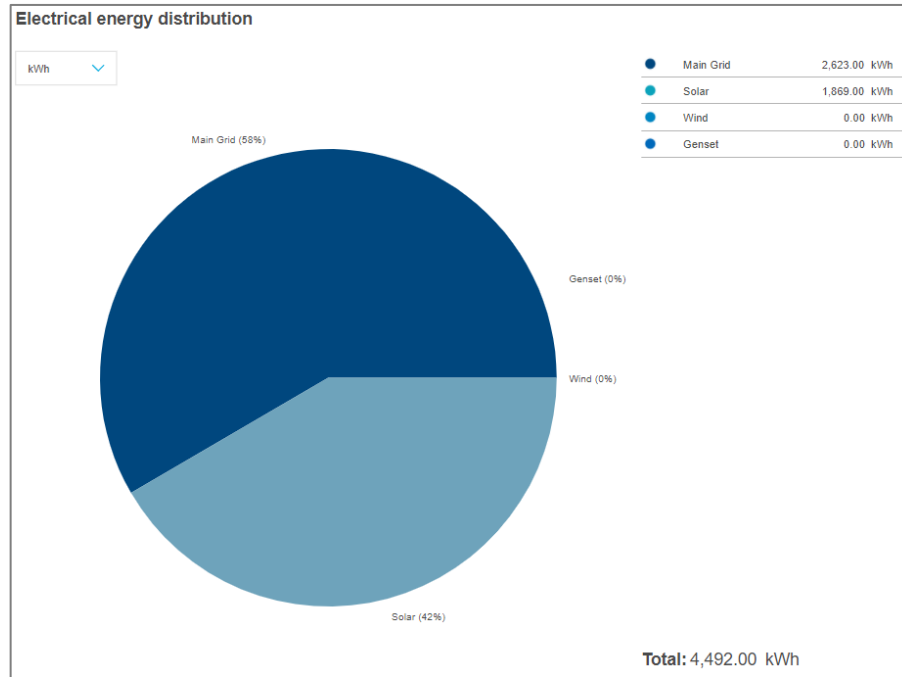


Figure 16 – Total energy distribution per origin

3.3.2. Evolution

Evolutions are useful to extract a trend in energy consumption, make sure no peak has been observed during a certain period. An evolution is essentially the details behind a total.



To avoid approximations, the current day is never taken into account in dashboards. Only the energy for past days is available. The values stored for the current day are however available in History views.

See §12.2.1 for details about the computation method of energy consumption based on energy indexes.

In stream, **evolutions** are always represented as line charts on a time axis.

- When considering a week or a month, the time axis is divided in days.
- When considering a year, the time axis is divided in months.

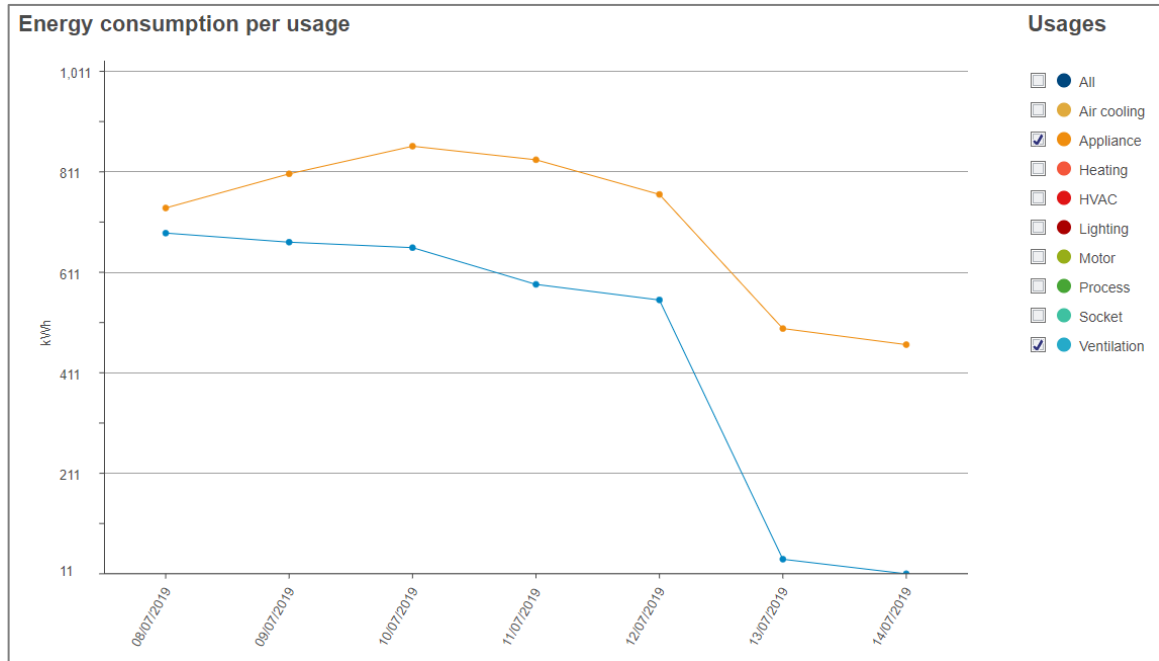


Figure 17 - Evolution over a week

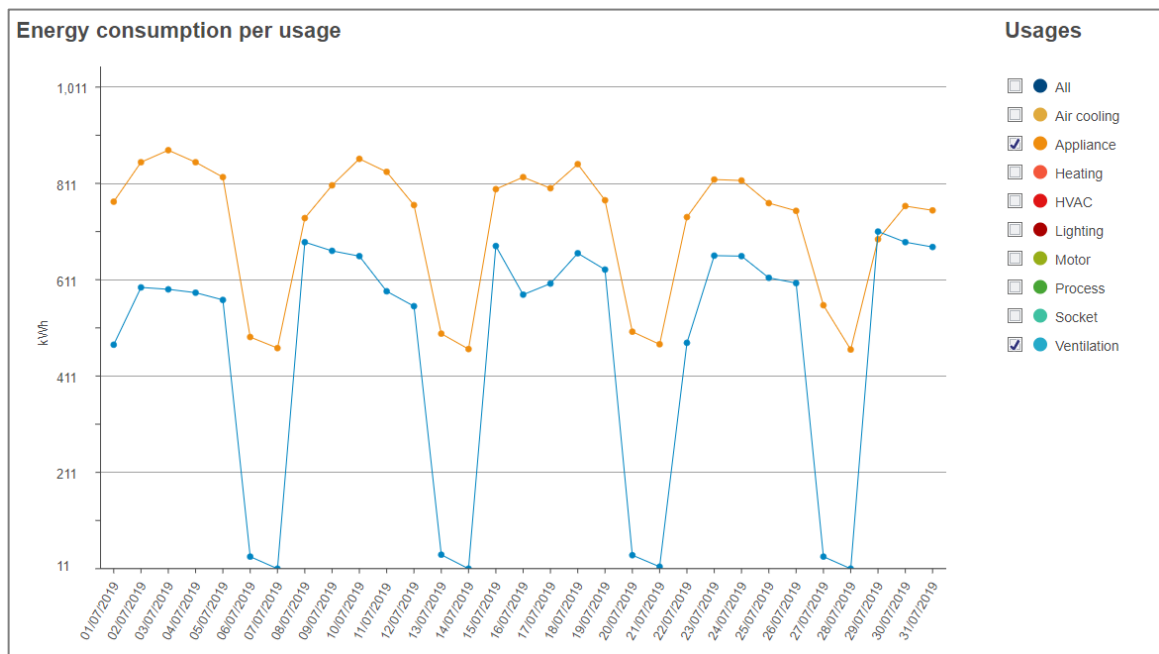


Figure 18 - Evolution over a month

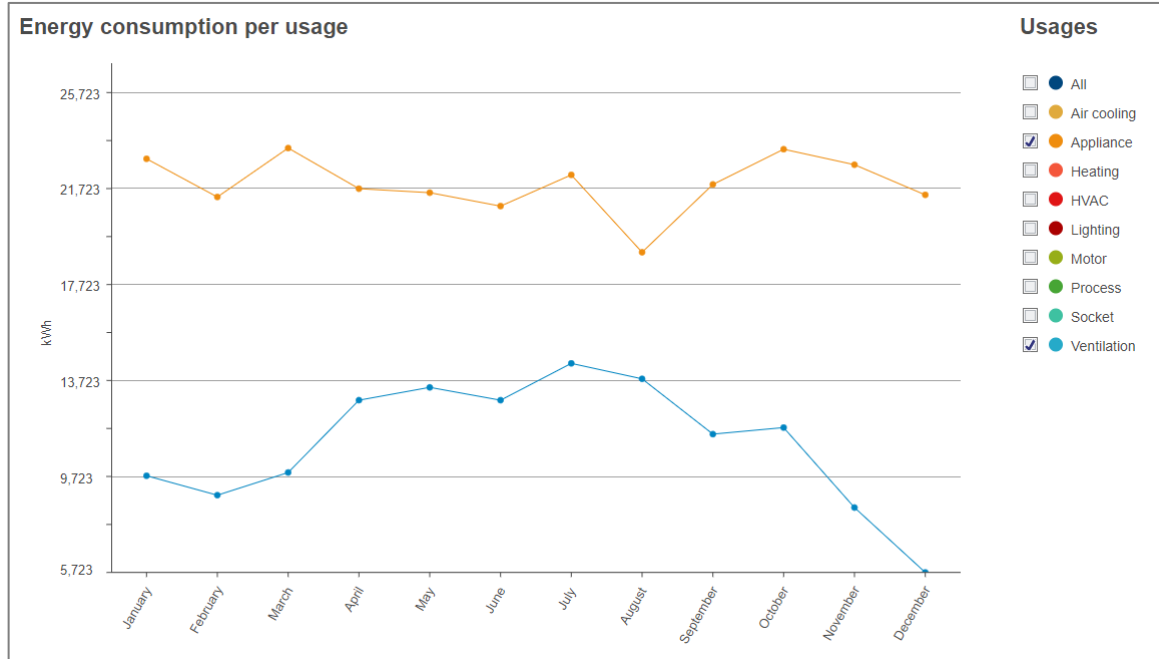


Figure 19 - Evolution over a year

3.3.3. Evolution per building

Site dashboards offer a third mode, to see the evolution of energy per building of the site.



To avoid approximations, the current day is never taken into account in dashboards. Only the energy for past days is available. The values stored for the current day are however available in History views.

See §12.2.1 for details about the computation method of energy consumption based on energy indexes.

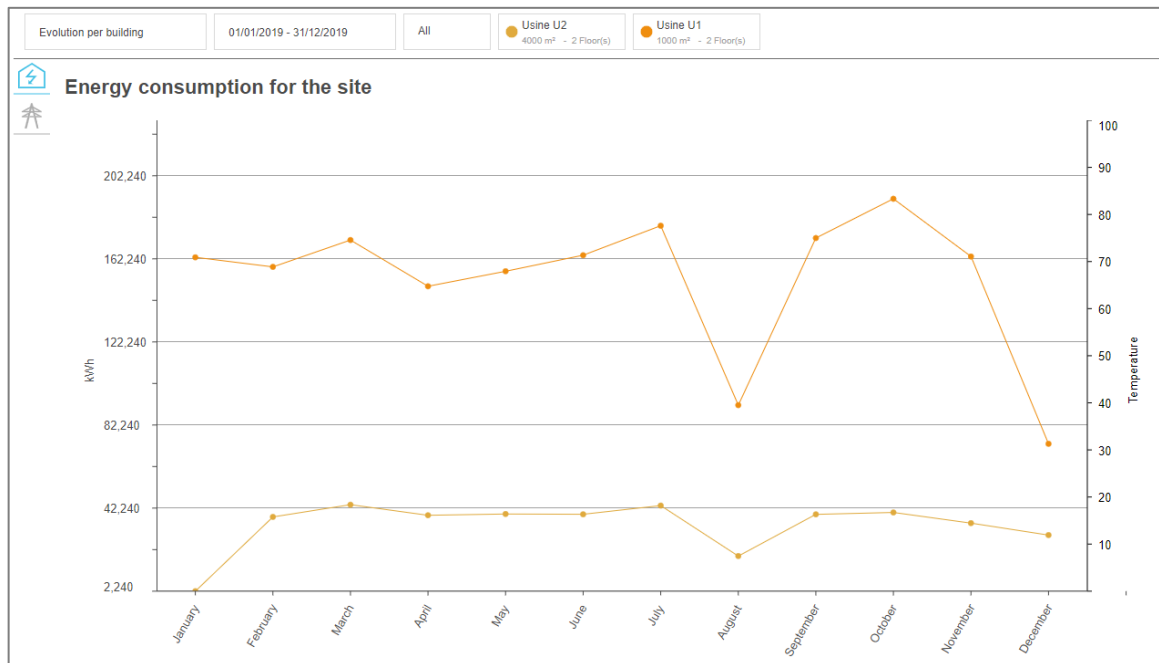


Figure 20 - Evolution per building of a site with 2 buildings, over a year




For readability reasons, when in this mode, only one period can be selected. If a second period was selected before switching to this mode, this selection is cancelled.

3.4. Period(s)

3.4.1. Timeframe and period(s) selection

You can consult your energy consumption over a selected period or over 2 periods, for comparison.



To avoid approximations, the current day is never taken into account in dashboards. Only the energy for past days is available. The values stored for the current day are however available in History views.

See §12.2.1 for details about the computation method of energy consumption based on energy indexes.

The envisioned timeframes in stream are: week, month, or year. They have been deemed the most relevant ones to observe trends and take actions accordingly.

Timeframe

Week
▼

When

Current Week 50 (07/12/2020 - 13/12/2020)
▼

Compare with

X ▼

Figure 21 – Selection of timeframe and periods in stream dashboards

i When opening the **When** or the **Compare with** selector, you are prompted to select a specific date. This allows you to remain centred on that same date while navigating across different timeframes.

Example: when May 4th 2020 is selected, by changing timeframe selection you can switch between the year of 2020, the month of May 2020, and the week from Monday, May 4th 2020 to Sunday, May 10th 2020.

By default, the current week is selected, and no comparison period.

i Periods and their subdivisions in Evolution mode are always considered in local time based on the configured time zone for the concerned site. This way, local days, weeks, months, and years are aggregated, even though their corresponding energy consumption technically has not been observed at the same coordinated universal time (UTC). But it would not make sense to compare 3:00 in France to 10:00 in Japan, for example.

3.4.2. Impact of the selection of 2 periods

Timeframe and **When** are mandatory selections. **Compare with**, on the other hand, is optional.

When a comparison period is selected, all charts display the two periods next to the other.

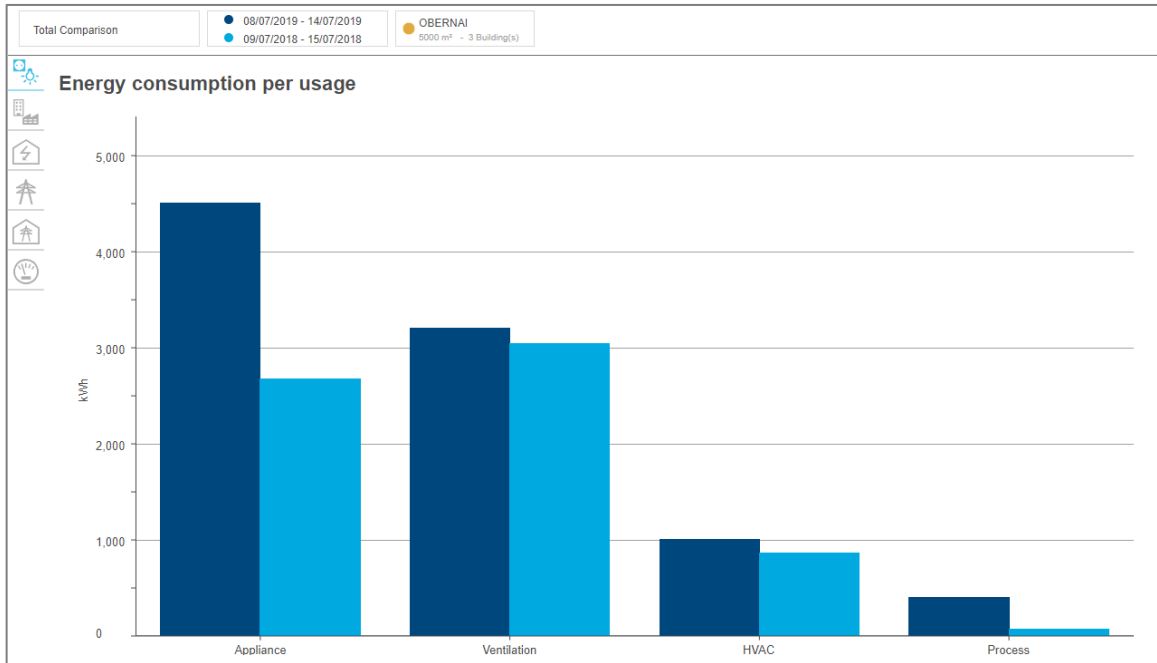


Figure 22 - Impact of the selection of 2 periods on a total

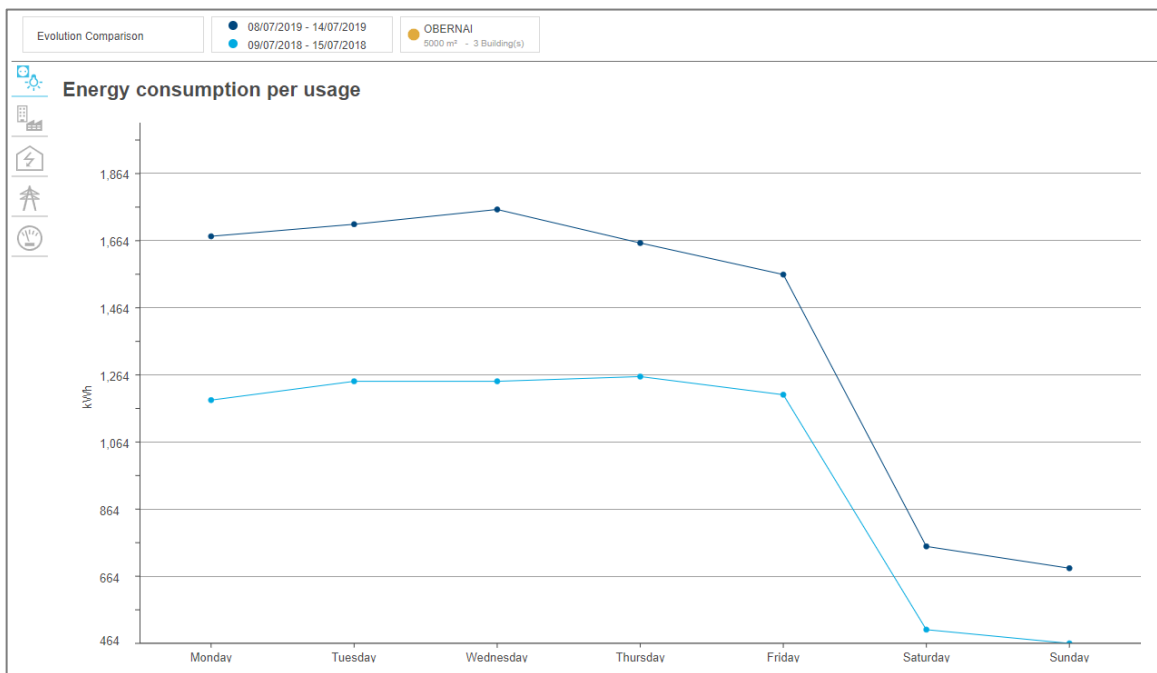


Figure 23 - Impact of the selection of 2 periods on an evolution

i Evolution per building mode does not offer a **Compare with** selector. If a second period was selected before switching to this mode, this selection is cancelled. As explained in §3.3.3, when in this mode, there is a line for every building in the site. If each of these lines were to be split in two – one for each selected period – the chart would become unreadable.

3.5. Available charts

Each level of the installation structure gives access to different charts in the corresponding dashboard(s).













Icon	Chart	Dashboard level		
		Installation 	Site 	Building 
	Energy consumption per usage	X	X	X
	Energy consumption per sector of activity	X		
	Energy consumption per zone category	X	X	X
	Energy consumption per zone			X
	Energy consumption per site / building	X	X	X *
	Energy per mesh ⁽¹⁾		X	X
	Electrical energy distribution per type of source	X	X **	X **
	Electrical energy distribution per site / building	X	X **	
	W.A.G.E.S. ⁽²⁾	X	X	X ⁽³⁾

Table 1 - Chart availability depending on dashboard level

* Only in Evolution mode.

** Cost and carbon footprint of energy also available, although carbon footprint is only available when some carbon footprint data exists for the considered perimeter.

⁽¹⁾ Energy per mesh charts are only available if some meshes have been configured for the site of the concerned perimeter.

⁽²⁾ W.A.G.E.S. charts and tables are only available if some non-electrical resources are being monitored within the concerned perimeter.

⁽³⁾ In building dashboards in Total mode, when available, W.A.G.E.S. data is displayed with the distribution of electrical energy per type of source.

3.6. Filters

3.6.1. Reduce the geographical perimeter

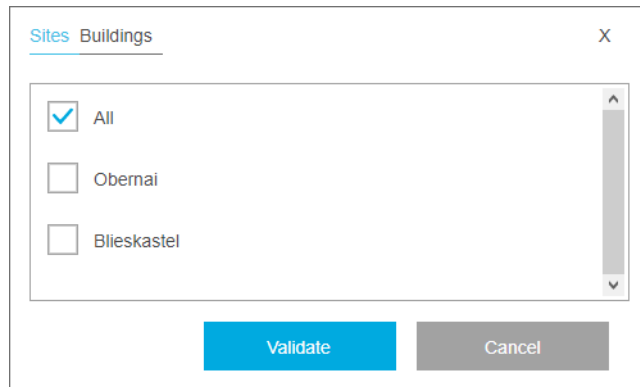


Figure 24 – Site(s) or building(s) selection in stream

For dashboards of higher level, the considered geographical perimeter can be subdivided into the lower ones it is composed of.

- The installation dashboard can be restricted to a selection of sites or a selection of buildings. And depending on whether you are working with sites or buildings, certain charts represent data either per site or per building.
- Site dashboards can be restricted to a selection of buildings.

By default, all sites are selected in the installation dashboard, and all buildings of a site are selected in its dashboard.

3.6.2. Bring parts of a bar chart into focus

The number of bars in a bar chart can be reduced by a filter on its X-axis. This may allow for more readability, or simply help to bring forward categories of interest.



Figure 25 - Impact of a filter on the X-axis of a bar chart

3.6.3. Stack a bar chart

Bar charts can be stacked by a filter on their Y-axis, for a more detailed view of their data.

A filter on the Y-axis of a bar chart is always about another axis of analysis than the main one of the chart, to cross-reference two different points of view.

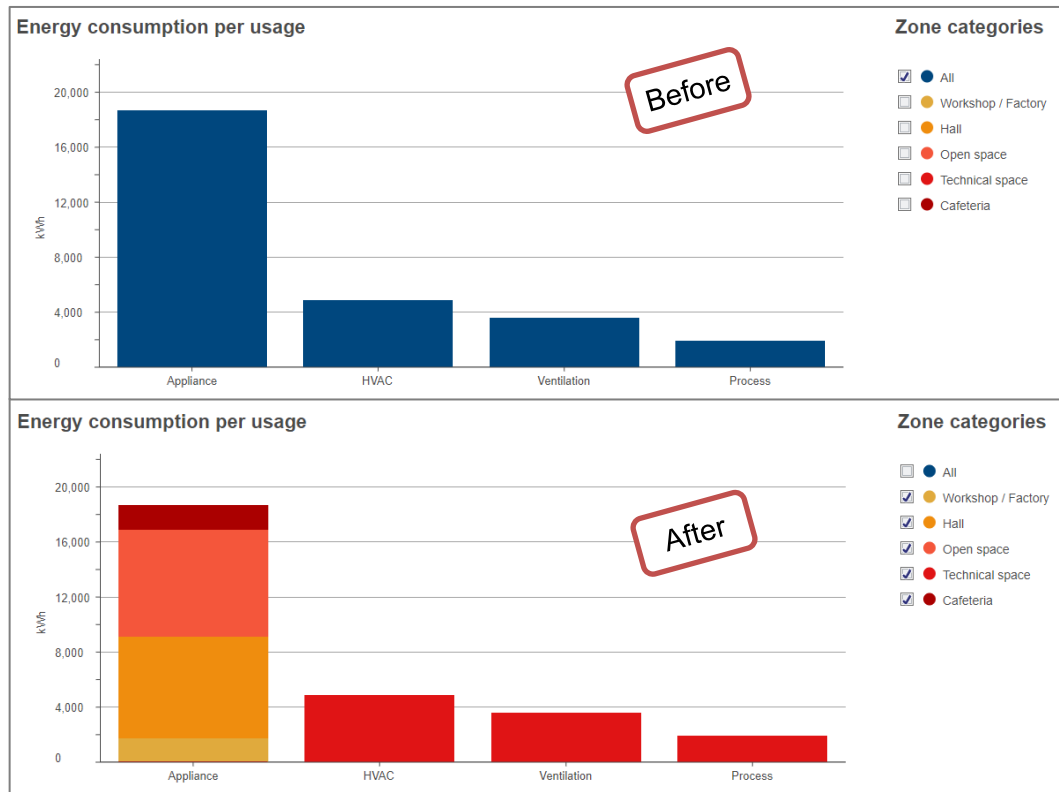


Figure 26 - Impact of a filter on the Y-axis of a bar chart

In the figure above, you can see that appliances have been the main reason for energy consumption in the considered period. After stacking the chart, you can tell that halls and open spaces are responsible for most of this consumption. When wanting to reduce energy consumption, one might therefore want to concentrate their efforts on these types of zones instead of dispersing them across all appliances indifferently.



For readability reasons, bar charts are never stacked when 2 periods are selected.

3.6.4. Display the details of a line chart

Line charts can be split by a filter on their Y-axis, for a more detailed view of their data.

A filter on the Y-axis of a line chart is always about the same main axis of analysis as the chart itself. It is not used for cross-reference but for detailed analysis.

For readability reasons, line charts are never split when 2 periods are selected.

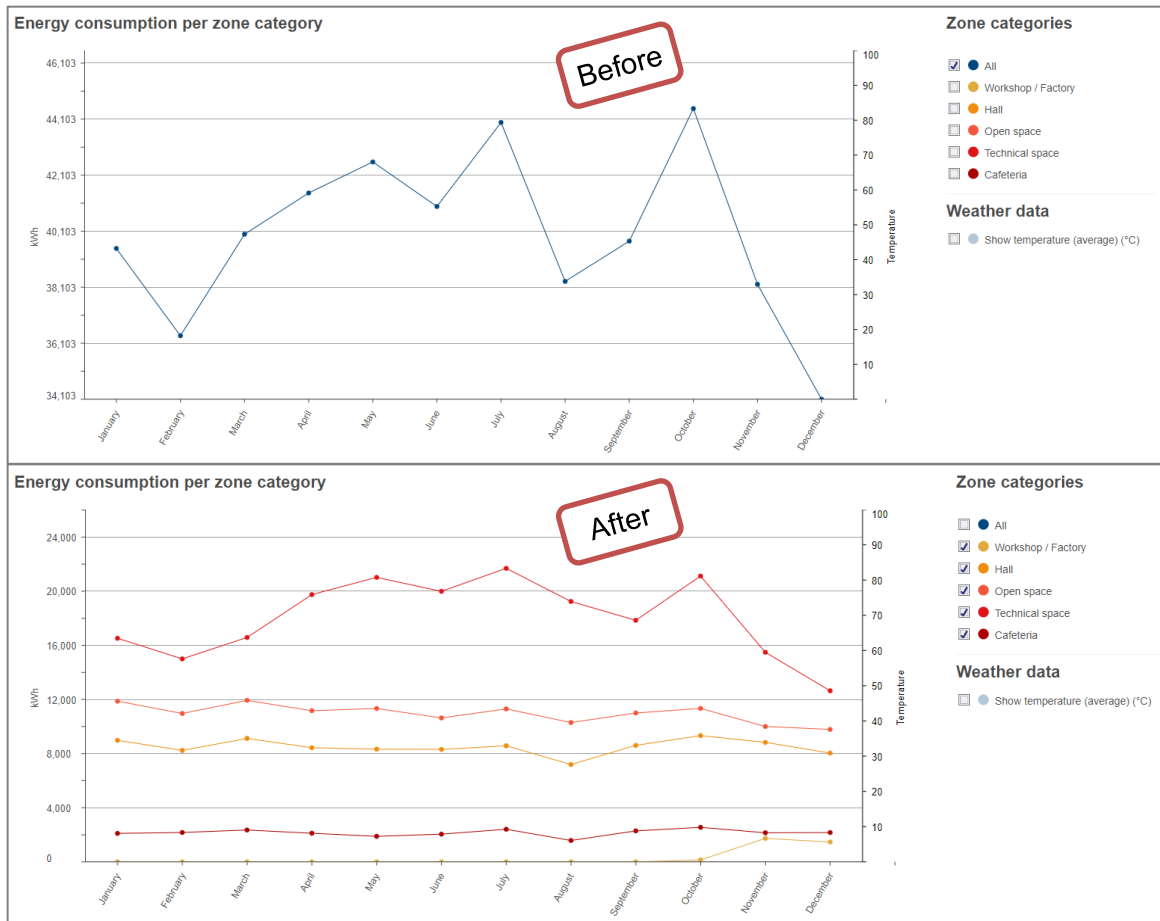


Figure 27 - Impact of a filter on the Y-axis of a line chart

In the figure above, you can see that open spaces have been the biggest consumers all year long, and they are responsible for the overall trend over the year.

3.7. Weather contextualisation and normalisation

3.7.1. Display temperature

If a weather service has been configured for the considered perimeter, then you have the option to display the evolution of energy against the backdrop of average temperature.

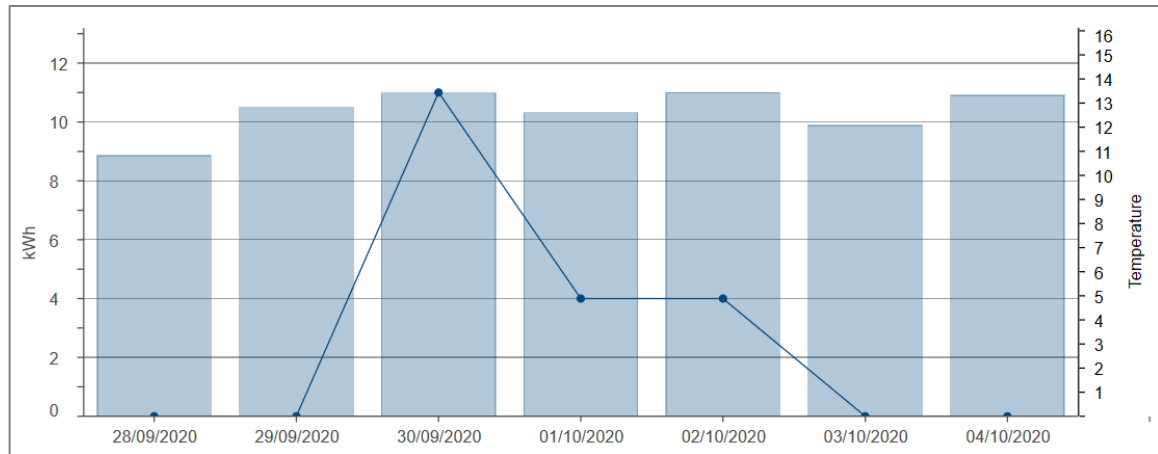


Figure 28 - Example of the evolution of energy consumption with average temperature display

i The average temperature displayed is based on hourly samples, gathered for a site. Because the installation can be composed of several sites, its dashboard does not offer weather contextualisation.

i Temperature samples are preserved for 20 years.

3.7.2. Normalise energy per degree day

If a weather service has been configured for the considered perimeter, then degree days have been computed for every day since, based on the hourly temperature samples gathered for the site.



The amount of degree days for a day is only computed when at least 22 hourly temperature samples have been gathered for that day. Indeed, with temperature samples for less than 22 hours of the day, the resulting amount of degree days would not be reliable.

Degree days reflect the difference between the outside air temperature and an inside reference temperature, and indirectly the necessary energy consumption for maintaining a building to or around a comfortable set point. They basically measure how much (in degrees) and how long (in days) the outside air temperature has been either:

- higher than a base cooling temperature, for very warm periods requiring air conditioning.
- lower than a base heating temperature, for very cold periods requiring heating.

Essentially, degree days are supposed to quantify what proportion of energy consumption can be attributed to heating or cooling. As such, they allow for the **normalisation of energy** when wanting to compare periods of different weather conditions. This helps to flatten increases in energy that could be due to outside temperature, to make sure differences are significant.

Example: the consumption of an office building in a heatwave cannot be directly compared to its consumption during a more clement summer. Its base consumption may be the same across both periods and the difference only attributed to the heat.

i Weather configuration and therefore degree day computation are site-specific. Because the installation can be composed of several sites, the installation dashboard does not offer weather normalisation.

To compare the energy consumed in a site or building during different seasons without the bias of weather-induced heating or cooling, the energy for each period is divided by the number of degree days computed for it. Normalised energy is therefore expressed in kWh/degree day.

i When the amount of degree days for a day or month is zero (which more or less means that the temperature hasn't gone below base heating temperature or above base cooling temperature), then the energy obviously cannot be normalised by this number. Because you cannot divide by 0.

In consequence, in a normalised chart, when no data point is present for a day or month during which energy was measured and enough temperature samples were gathered, it means no correlation can be established between energy and outside temperature. At least according to the way computation of degree days is configured for the considered site.

i Weather data – temperature samples and degree days - is preserved for 20 years.

4. Real-time data

steam grants access to data in real-time, both for all measurements, in a generic view, and for energy measurements specifically, in dedicated views.

4.1. Generic visualisation

When you wish to consult the values of measurements acquired by one or more products of your installation:

1. In the navigation tree, select the building which contains the product(s) you are interested in.
2. Get to **Product measurements**.
3. Select the product(s) you are interested in.
4. Select the service(s) you are interested in.
5. Click **“Apply”**.

Service	Product	Value	Unit	Timestamp
Σ Active Power +/-: P	Q9	4.30	kW	07/10/2020 10:23:26
Σ Active Power +/-: P	C2Q10 (General measures)	0.09	kW	07/10/2020 10:22:27
Σ Active Power +/-: P	C1	157.20	kW	07/10/2020 10:23:27
Σ Active Power +/-: P	C3	5.06	kW	07/10/2020 10:23:42
Σ Active Power +/-: P	C4	0.02	kW	07/10/2020 10:22:49
Σ Reactive Power +/-: Q	Q9	7.40	kvar	07/10/2020 10:23:26
Σ Reactive Power +/-: Q	C2Q10 (General measures)	0.02	kvar	07/10/2020 10:22:27
Σ Reactive Power +/-: Q	C1	153.60	kvar	07/10/2020 10:23:40
Σ Reactive Power +/-: Q	C3	3.44	kvar	07/10/2020 10:23:42
Σ Reactive Power +/-: Q	C4	-0.04	kvar	07/10/2020 10:22:49
Σ Apparent Power: S	Q9			
	C2Q10 (General measures)			

Figure 29 - Glimpse of real-time consultation of monitored values

4.2. Specific view for electrical energy

When it comes to energy, specialised views have been imagined, to put it in context. For electrical energy, energy-metering products are listed with their main active positive energy index and gathered by place in the hierarchy.

1. In the navigation tree, select the building whose monitoring architecture you are interested in.
2. Get to **Characteristics**.
3. Get to **Products**.

This interface is mostly intended to help to check that the monitoring architecture has been correctly input.

Product's place in the electrical hierarchy	What it means	Charts using its energy index
Initial	The product monitors an entry of the electrical network ; it measures energy consumption at its origin.	Charts per type of source Charts per mesh
Intermediary	The product is redundant with both initial and terminal products; it is in the middle of the electrical network.	Charts per mesh
Terminal	The product monitors energy at the other end of the electrical network; it measures energy consumption at a load .	Charts about energy consumption per usage, zone category, zone, and sector of activity Charts about meshes

Table 2 - Meaning and implications of a product's place in the electrical hierarchy

Initial products									
agardio.manager	Product name	Product type	Energy index (kWh)	Date and time	Source	Usage	Zone	Mesh	
Agrd1_TGBT_01_B22_GT	Elec_B22_0222	ARXXX	*	*	Main Grid	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0200	ARXXX	15,454,729.00	23/03/2023 08:21	Main Grid	No usage	TGBT U2	No mesh	
Intermediary products									
agardio.manager	Product name	Product type	Energy index (kWh)	Date and time	Source	Usage	Zone	Mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0201	ECX30XC	3,660,053.00	23/03/2023 08:22	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0202 (identification)	H3_PLUS_CUSTOM	9,118.68	23/03/2023 08:21	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0203	ECX30XC	2,373.00	23/03/2023 08:21	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0204	ECX30XC	10,064,121.00	23/03/2023 08:22	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0205 (identification)	H3_PLUS_CUSTOM	664,488.83	23/03/2023 08:22	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0206 (identification)	H3_PLUS_CUSTOM	57,444.53	23/03/2023 08:22	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0207 (identification)	H3_PLUS_CUSTOM	53,748.46	23/03/2023 08:22	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0208 (identification)	H3_PLUS_CUSTOM	36,916.31	23/03/2023 08:22	No source	No usage	TGBT U2	No mesh	
Agrd1_TGBT_02_B22_GT	Elec_B22_0209 (identification)	H3_PLUS_CUSTOM	74,439.63	23/03/2023 08:21	No source	No usage	TGBT U2	No mesh	
Terminal products									
agardio.manager	Product name	Product type	Energy index (kWh)	Date and time	Source	Usage	Zone	Mesh	
Agrd1_TD_22_04_B22_RC	EC1 (Channel 1)	EC700	Deactivated product		No source	No usage	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0093	EC37X	5,664,803.00	23/03/2023 08:21	No source	No usage	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0094 (General measures)	SM103E	419,419.00	23/03/2023 08:19	No source	No usage	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0095	EC36X	178,415.00	23/03/2023 08:19	No source	No usage	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0096	EC36X	45,131.00	23/03/2023 08:17	No source	No usage	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0099	H3+	188,136.00	23/03/2023 08:19	No source	Custom usage 1	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0100	H3+	342,086.00	23/03/2023 08:19	No source	Custom usage 1	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0101	H3+	336,311.00	23/03/2023 08:20	No source	Custom usage 1	Injection U2	No mesh	
Agrd1_TD_22_04_B22_RC	Elec_B22_0102	H3+	199,747.00	23/03/2023 08:18	No source	Custom usage 1	Injection U2	No mesh	

Figure 30 - Overview of products monitoring the electrical network of a building



Rows about deactivated products, or products on deactivated device, are greyed out. This provides a reminder that those products have been declared, even though no data is currently being retrieved from them in stream.

4.3. Specific view for non-electrical resources

A dedicated view is also available for products monitoring the consumption of non-electrical resources such as **water**, **air**, **gas**, and **steam**.

1. In the navigation tree, select the building whose non-electrical resources you are interested in.
2. Get to **Characteristics**.
3. Get to **W.A.G.E.S.**

Water						Gas					
SBC	Product name	Product type	Date and time	Water Index	Unit	SBC	Product name	Product type	Date and time	Gas Index	Unit
SBC 100	EC700 (Channel 1)	EC700	07/10/2020 11:13:27	0.00	m3	SBC 100	EC700 (Channel 2)	EC700	07/10/2020 11:13:28	0.00	m3
Steam						Air					
SBC	Product name	Product type	Date and time	Steam Index	Unit	SBC	Product name	Product type	Date and time	Air Index	Unit
SBC 100	EC700 (Channel 3)	EC700	07/10/2020 11:13:44	0.00	J	SBC 100	EC700 (Channel 4)	EC700	07/10/2020 11:13:40	0.00	m3

Figure 31 - Overview of indexes for non-electrical resources



Rows about deactivated products, or products on deactivated device, are greyed out. This allows not forgetting that those products have been declared, even though no data is currently being retrieved from them in stream.

5. Protection information

The protection of your installation relies on protection products. Both their status and their settings are important.

5.1. Protection status

To access a list of all currently activated protection products of a building, along with their pre-trip and trip status:

1. In the navigation tree, select the building whose protection status you are interested in.
2. Get to **Protection**.
3. Get to **Dashboard**.

Name	Type	Frame size	Product's communication status	Pre-trip status	Pre-trip time	Trip status	Trip time
Q3	H3+	P160	✓	Alarm ends		Alarm OFF	
Q4	H3+	P160	✓	Alarm ends		Alarm OFF	
Q5	H3+	P160	✓	Alarm ends		Alarm OFF	
Q6	H3+	P160	✓	Alarm ends		Alarm OFF	
Q7	H3+	P160	✓	Alarm ends		Alarm OFF	
Q8	H3+	P160	✓	Alarm ends		Alarm OFF	
Q9	H3+	P160	✓	Alarm ends		Alarm OFF	
Q10	H3+	P160	✓	Alarm ends		Alarm OFF	
Q11	H3+	P160	✓	Alarm ends		Alarm OFF	
Q12	H3+	P160	✓	Alarm ends		Alarm OFF	
Q13	H3+	P160	✓	Alarm ends		Alarm OFF	
Q14	H3+	P160	✓	Alarm ends		Alarm OFF	
Q15	H3+	P160	✓	Alarm ends		Alarm OFF	

Figure 32 - Building protection status overview

5.2. Protection configuration

To access an overview of all the settings of a protection product:

1. In the navigation tree, select the building whose protection settings you are interested in.
2. Get to **Protection**.
3. Get to **Products**.
4. In the drop-down selector, select the protection product whose protection settings you are interested in.

Label	Current value	Last update date
Short time delay protection status	Protection enabled	02/11/2017 16:01:40
Short time delay, Isd threshold	5 * Ir	02/11/2017 16:01:40
Short time delay, Tsd time delay	100 ms	02/11/2017 16:01:40
Short time delay, I2t setting	I2t disabled	02/11/2017 16:01:40

Label	Current value	Last update date
Instantaneous protection status	Protection enabled	02/11/2017 16:01:40
Instantaneous li threshold	10 * In	02/11/2017 16:01:40

Label	Current value	Last update date
Ground fault protection status	Protection disabled	02/11/2017 16:01:40
Ground fault Ig threshold	0.2 * In	02/11/2017 16:01:40
Ground fault tg time delay	200 ms	02/11/2017 16:01:40
Ground fault I2t setting	I2t disabled	02/11/2017 16:01:40

Neutral

Figure 33 - Protection settings of a protection product

Depending on the product's capabilities and its configuration, certain settings may be unavailable:

- If a product is capable of a certain type of protection but this type of protection is disabled, only the disabled status of the protection type will be available.
- If a product is not capable of a certain type of protection, the corresponding grid will not be available at all.

5.3. Maintenance status of protection products

To access a list of all currently activated advanced protection products of a building, along with their maintenance-related settings:

4. In the navigation tree, select the building whose protection products you are interested in.
5. Get to **Protection**.
6. Get to **Maintenance**.

Name	Commissioning	Last maintenance	Maintenance type	Next maintenance	Cycles since maintenance	Cycles before next maintenance	Maintenance status
hw+_F20	2023-01-23	22/01/2053 11:31	Preventive maintenance	03/02/2024 11:38	1,628	72	Inactive
hw+	----	01/01/2000 01:00	Other	03/02/2023 11:38	6,500	0	Inactive

Figure 34 – Building protection products maintenance overview

This view indicates when every product was last serviced, and when they should be serviced again.

6. Power quality indicators

Some products offer indicators about the quality of the electrical network, and stream has dedicated interfaces for their consultation.

6.1. Basic power quality indicators

Basic power quality is about statistics on **voltages**, **currents**, and **frequency**.

1. In the navigation tree, select the building whose power quality you are interested in.
2. Get to **Power quality**.
3. Get to **Regular**.
4. In the drop-down selector, select the product whose basic power quality indicators you are interested in.

The **instantaneous** value, its **maximum**, and its **average** are available for each measurement of voltage, current, and frequency, as long as the interrogated product provides them and the system has been configured to read them from it.

Example: in the figure below, product Q9 does not provide averages, only maximums and instantaneous values.

		U12			U23		U31	
Inst.		407.30			408.10		408.10	
Avg.		----			----		----	
Max.		428.50			428.00		426.50	

		I1	I2	I3	IN	Ig
Inst.		3.70	2.90	2.70	0.00	0.00
Avg.		----	----	----	----	----
Max.		39.90	36.80	17.20	37.60	0.00

		V1		V2		V3	
Inst.		235.60		235.10		235.70	
Avg.		----		----		----	
Max.		247.00		247.40		246.40	

		F	
Inst.		49.99	
Avg.		----	
Max.		50.16	

Figure 35 - Basic power quality statistics

The information of a **maximum** for a voltage, current, or frequency informs of recent peaks and helps to determine the potential damages they may have had on the electrical network.



Keep in mind that the maximum measured by a product can be locally reset by an electrician so a particularly high peak does not hide subsequent smaller ones, or quite simply a peak which happened a long time ago does not influence you into thinking it occurred recently.

The information of the **average** of a value, on the other hand, is a good reference to determine whether an anomalous increase is happening right now.

6.2. Advanced power quality indicators

Advanced power quality is about **power factors**, **harmonics** of ranks 3, 5, 7, 9, and 11, and the associated **Total Harmonic Distortions**.

1. In the navigation tree, select the building whose power quality you are interested in.
2. Get to **Power Quality**.
3. Get to **Advanced**.
5. In the drop-down selector, select the product whose advanced power quality indicators you are interested in.



Elec_B22_0094 (General measures)

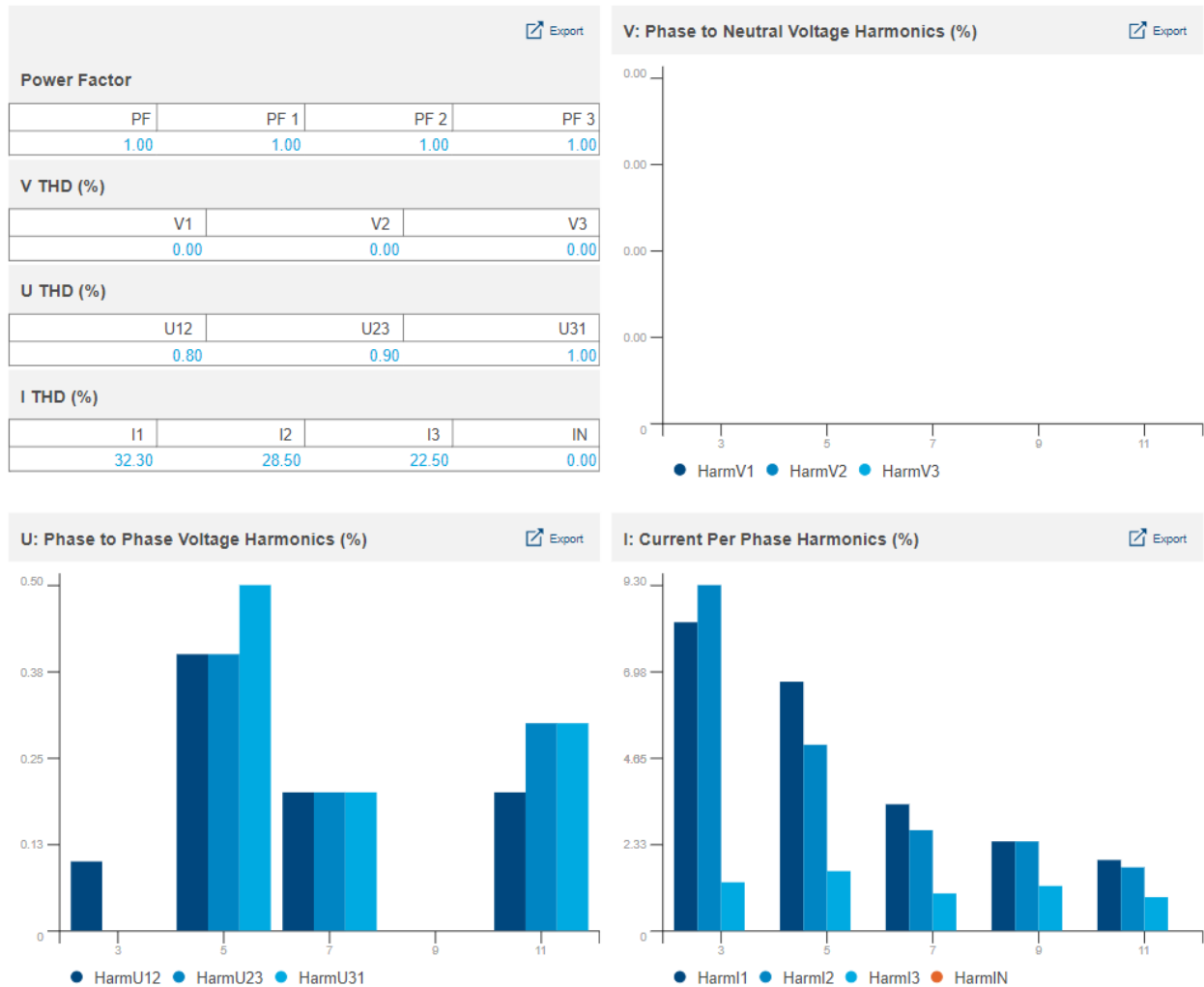


Figure 36 - Advanced power quality metrics (for a product without neutral phase)

Power Factor PF is the ratio between active and apparent power. It indicates how much of the total power being supplied is spent in active power consumption.

- When Power Factor is **positive**, it is said to be **leading**, which means the corresponding load is **capacitive**; it **consumes** energy from the network.
- When Power Factor is **negative**, it is said to be **lagging**, which means the corresponding load is **inductive**; it **provides** energy to the network.

In an industrial context, PF should be as close to 0 as possible because energy providers request monetary compensation for noise added to their signal.



Metering products have 2 methods for power factor PF calculation:

- IEC (for International Electrotechnical Commission)
- IEEE (for Institute of Electrical and Electronics Engineers).

agardio.manager devices retrieve power factor as computed with IEC method.

Total Harmonic Distortion is the ratio of total harmonics to the value at fundamental frequency times 100%. It can be computed for voltages and currents.

$$THD(X) = \frac{\sqrt{\sum_{n=2}^{\infty} X_{n\,RMS}^2}}{X_{1\,RMS}}$$

Where:

- X is either phase to phase voltage U, phase to neutral voltage V, or current I.
- THD(X) is the Total Harmonic Distortion for X.
- $X_{n\,RMS}$ is the RMS of X for the nth harmonic.
- $X_{1\,RMS}$ is the RMS of X for the fundamental harmonic.

A high THD means distortions due to nonlinear loads (electrical ballasts or computer power supplies, for example) and should be avoided.

7. Historical data

Storing the values of the services monitored by products allows for a detailed analysis of their evolution. It creates a record which can be studied for anomalies or to confirm the impact of any action which has been taken.

7.1. Stored history

To display the stored history of a service for one or more product(s):

1. In the navigation tree, select the building whose stored history you are interested in.
2. Get to **Product measurements**.
3. Get to **History**.
4. Select one or more products.
5. Select a service.
6. Select an aggregation function. (See §7.3 for more information.)
7. Select one or more of the channels available for the selected product(s).



To be available for selection, a channel needs to be storing the selected service, or have stored it at one point in the past. Service storage is explained in the [stream configuration manual](#).

8. Select a period of up to 3 months. By default, the last seven days are selected.
9. **Apply** that period.



Stored history of measurements is preserved for 20 years.

7.2. Stored history comparison in time

To display a compared history of a service of a single product:

1. In the navigation tree, select the building whose stored history you are interested in comparing to itself.
2. Get to **Product measurements**.
3. Get to **Compare**.
4. Select a product. You can only select one in this interface.
5. Select a service.
6. Select an aggregation function. (See §7.3 for more information.)
7. As a first period, select one of up to 3 months. By default, the last seven days are selected.
8. For the second period, select a start date. By default, the date for fourteen days ago is selected. The end date of the second period is automatically selected so both periods have the same number of days.
9. **Apply** the periods.



Stored history of measurements is preserved for 20 years.

7.3. Aggregation functions

As mentioned earlier, when consulting stored measurements, aggregation functions are available.

7.3.1. Average

The **average** function is available for all non-cumulative analogue services, meaning all services except indexes and binary services, for which it would not make sense.

This function returns the average of all stored measurements for each day of the selected period, and the average of all measurements stored for each hour of the selected day.



The average for a day is placed at 00:00 that day.
The average for an hour is placed on that hour, at HH:00.

7.3.2. Last value

Last value is available for all types of services.

This function returns the last value stored for each day of the selected period, and the last value stored for every hour of the selected day.



stream history takes time of day into account when displaying the last value for a day or an hour.

Depending on the configured storage frequency for the type of service you are interested in, the last stored value for a day in the past might have been stored between 23:00 and 23:55, and the last stored value for an hour in the past between HH:00 and HH:55. This is why, when using Last value as an aggregation function, the data point for a day may appear closer to the next day than the one it is about, and the data point for an hour closer to the next hour than the one it is about.

7.4. Drilling down charts

When consulting a history or compared history chart, the selected period(s) contain(s) at least one whole day.

- When first displayed, representation is done **day by day**. The value of the data point for a day is the aggregation of all the measurements stored for that day, following the selected aggregation function.
- At this point, a day can be selected (by clicking the corresponding data point on the chart) to be displayed **hour by hour**. The value of the data point for an hour is, again, the aggregation of all measurements stored for that hour, following the selected aggregation function.
When viewing a specific day, coming back to seeing the full period day by day is available by clicking the period reminder, at the top of the chart.
- Finally, an hour can be selected (by clicking the corresponding data point on the chart) to display **every measurement stored** for it. At this stage, the selected aggregation function is no longer taken into consideration.
When viewing a specific hour, coming back to seeing its full day hour by hour, or the full period day by day, is available by clicking the corresponding reminder, at the top of the chart.

i The storage frequency of a service can be configured for every 5, 10, 15, 20, 30, or 60 minutes, depending on the appreciation of the importance of the considered physical quantity by the configuring user. This has an impact on how many measurements may be available for a single hour (12, 6, 4, 2, or 1, respectively).

You can refer to the [stream configuration manual](#) for more details about the management of data storage frequencies.

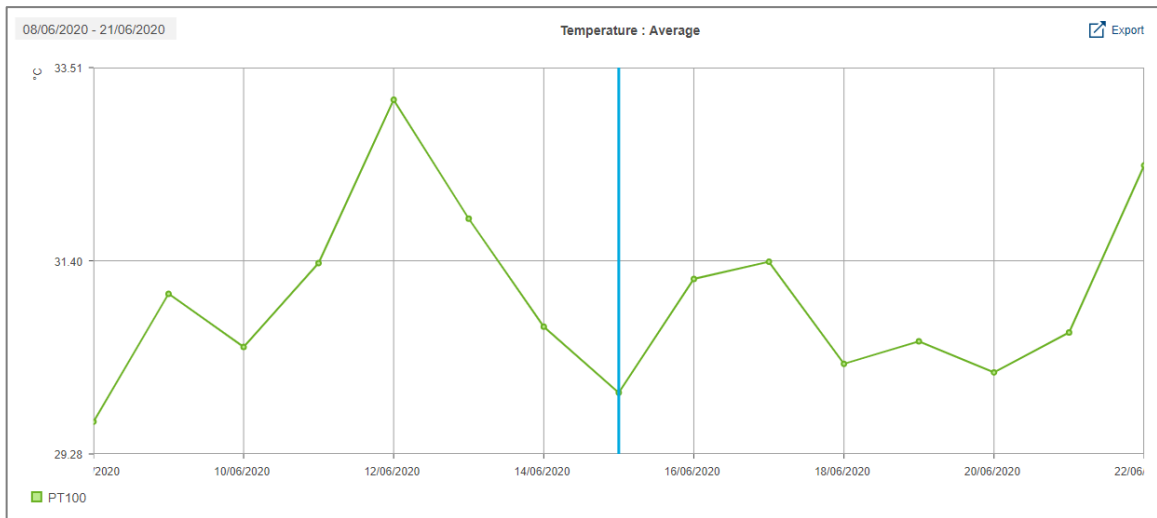


Figure 37 - History over two weeks

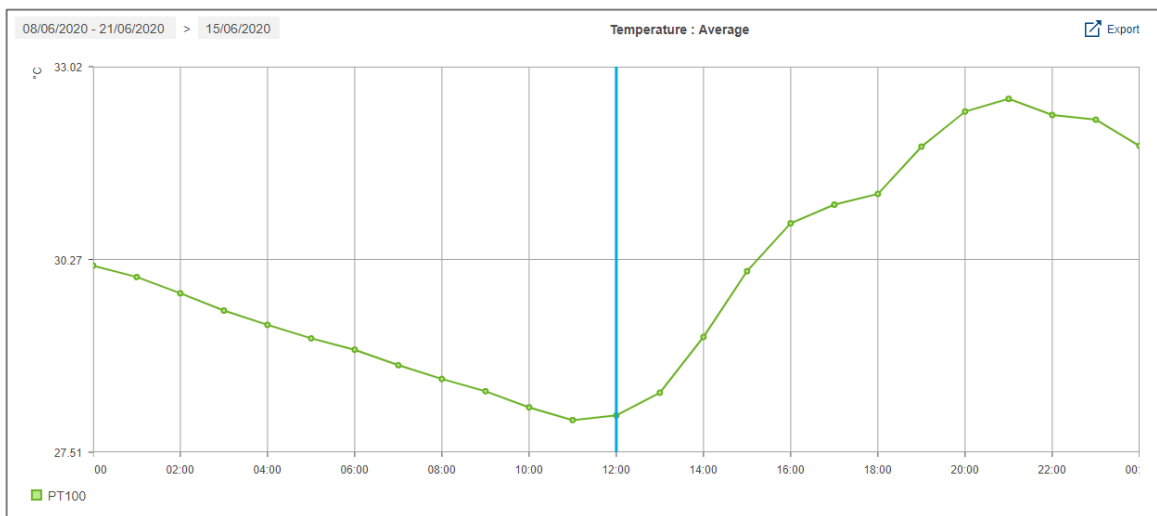


Figure 38 - History for a selected day of the selected period

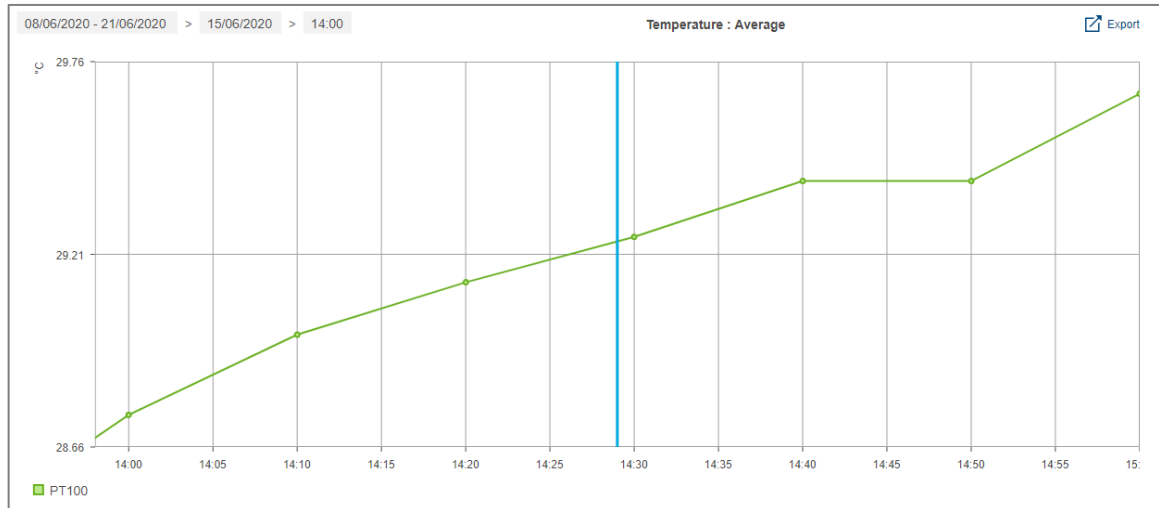


Figure 39 - History for an hour of a selected day of the selected period, for a measurements stored every 10 minutes

8. Electrical efficiency

The Electrical Installation Efficiency Class of a building is determined by a list of criteria elaborated by the International Electrotechnical Commission. Depending on a building's sector of activity and how well this building fits each of these criteria, it is granted more or fewer points, based on its sector of activity. It is the total of all these points which grants the building an efficiency class, from EE0 (the lowest and least favorable) to EE5 (the highest and best).

In stream, each parameter defined by the second edition of norm **IEC 60364-8-1 (Ed 2)** is listed, along with its current score for the building and a target score. The difference between the two illustrates a margin of progression for each parameter so as to be able to better the overall score of the building.

1. In the navigation tree, select the building whose electrical efficiency you are interested in.
2. Get to **Characteristics**.
3. Get to **EIEC**.

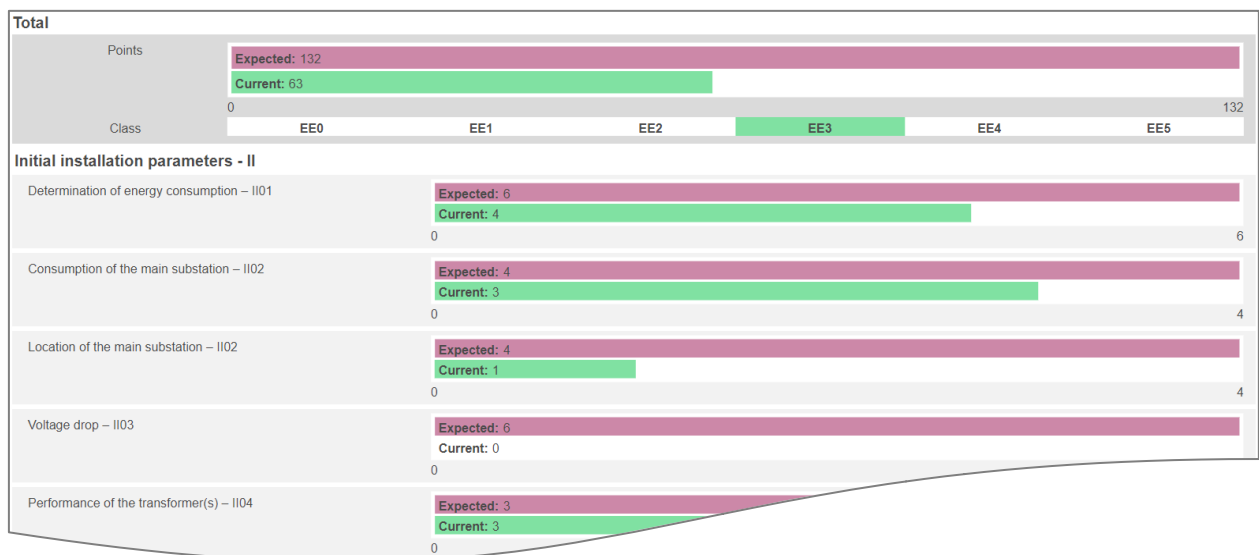


Figure 40 - First rows of EIEC visualisation in stream

As explained in the *stream configuration manual*, how a building fits each EIEC criteria is entered in stream configuration based on the answers to a multiple choice questionnaire.

9. Event exploitation



Figure 41 - Event exploitation menu in stream

9.1. Organisation of events

9.1.1. Scopes of events

In stream, event instances are organised into 2 groups:

- **Process** events are specific to your installation and concern the data you are monitoring. They have been configured by users with configuration permission, as explained in the [stream configuration manual](#).
- **System** events are generic to any installation. They are mainly about losses of communication (with an agardio.manager device, with a product, with a FTP server, with the SMTP server, or with the weather service), among other technical issues. See §12.1 for the detailed list of available system events.



Depending on the permission(s) granted to your account, you may only be able to see one of the event interfaces.

9.1.2. Statuses of event instances

Instances have 1 of 3 possible statuses, which provide information about what is happening in regards to the definition of the concerned alarm.

Event status	Meaning
Warning	Warning conditions are currently applicable but not main triggering conditions.
ON / Active	Triggering conditions are currently applicable.
DOWN / Inactive	Triggering conditions are no longer applicable, although they previously were.

Table 3 – Meaning of each instance status

Example: a high threshold alarm is ON when its high threshold is reached, and DOWN when the monitored value goes under its hysteresis threshold.



Only threshold and differential alarms can have warning conditions.


Also, some system alarms do not have DOWN / Inactive conditions, for they notify a punctual occurrence whose end cannot be determined.

9.1.3. Distribution of events

Both process and system events are distributed in 2 lists: **Active alarms** and **Event history**.

List	Content
Active alarms	All ON / Active and/or unacknowledged alarm instances, as well as warning instances.
Event history	All event instances.


Table 4 – Lists of events and associated content

 Event history is preserved for 5 years.

9.1.4. Alarm instance consultation and acknowledgement

To remove an alarm instance from the list of Active alarms, it has to be acknowledged.


1. Select the alarm instance you are interested in acknowledging.
2. Click the acknowledgement button.
3. Enter an acknowledgement message.
4. Confirm.

 Warnings do not require acknowledgement. They disappear from the list of Active alarms as soon as they go DOWN.

Acknowledging an alarm means having taken note of what it is alerting to, and having taken actions so the notified anomalous behaviour should no longer be observed.

For alarms with a DOWN status, acknowledgement is not enough to remove an instance from the list of Active alarms; the stream system also has to register that its triggering conditions are no longer applicable.

Acknowledgement of an alarm instance of `agardio.manager` origin is propagated to the corresponding device.

 Reversely, acknowledgement of an alarm instance in the local web interface of an `agardio.manager` device is propagated to stream. Refer to [*agardio.manager user manual*](#) for more information about alarm acknowledgement from its local web interface.

9.2. Event priority

Notified occurrences may require more or less urgency in dealing with them. This is quantified by their priority.

Priority	Meaning
Critical	Immediate danger which requires immediate action.
Major	High impact but no immediate danger.
Minor	Limited impact.
Warning	Incitation to continued vigilance.

Table 5 – Accepted meaning of each alarm priority



Alarms of critical priority are the only ones which can be notified immediately via email. Refer to the [stream configuration manual](#) for more information about report content and publication configuration.

10. Personal interface

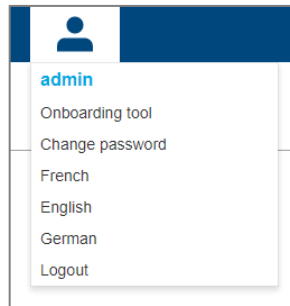


Figure 42 - Personal menu

10.1. Change the language of your interface

To change the language of the interface, open your personal menu, in the top right corner, and select your preferred language.

10.2. Change your password

To change the password to your account, open your personal menu, in the top right corner, and select the corresponding option. Your current password is required to perform this action.

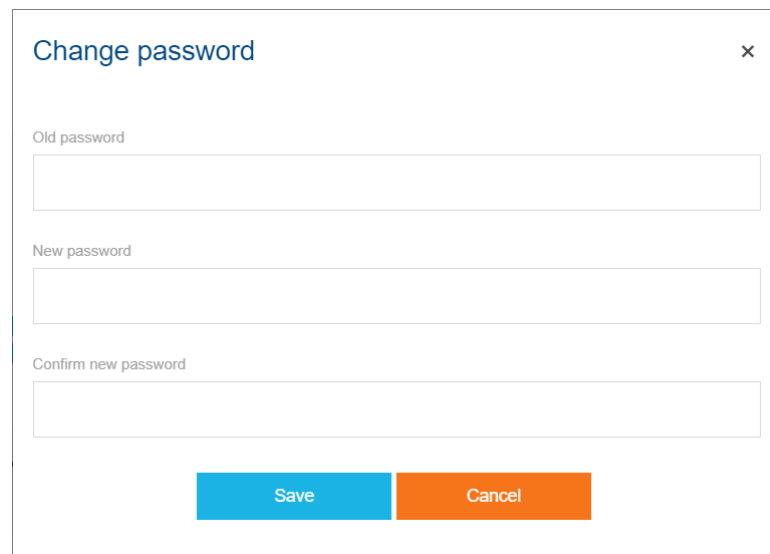
A screenshot of a 'Change password' dialog box. The title bar says 'Change password' with a close button 'x' on the right. There are three input fields: 'Old password', 'New password', and 'Confirm new password'. At the bottom, there are two buttons: a blue 'Save' button and an orange 'Cancel' button.

Figure 43 - Password update interface

11. Troubleshooting

11.1. “You have selected more service than your licence allows”

Figure 44 - Licence limit reached during data exploitation

Symptom

A message about having selected more service than your licence allows appears while navigating through stream data exploitation.

Cause

As explained in the *stream installation manual* and the *stream configuration manual*, stream licences are dimensioned based on the amplitude of your energy-monitoring installation. A simplification is to consider that the more services you intend on storing, the bigger the licence you need. A small proportion of your licence is however also consumed when you navigate through your exploitation and consult data in real-time. This banner appearing means the unavailability of data is not necessarily due to communication issues.

Workarounds

Depending on how close you are to having reached your licence with your data storage, the message might only be temporary. In this case, wait a few minutes for it to subside, and the values you asked to see should appear shortly.

If the message remains after several minutes, it means the limits of your licence have been reached through data storage, and navigation through runtime has become impossible. In this case, you either need a licence extension or for someone with Configurator permission to reduce your data storage demands.

11.2. Missing data in indicators and dashboards

11.2.1. Most charts empty

Symptom

Even though you have connected agardio.manager devices, with activated energy-metering products, and despite data being otherwise properly stored for the positive active energy services of these products, most indicators and dashboards charts remain empty.

Possible cause

This most likely comes from the fact that your energy-metering products have not been properly configured for contextualisation.

Workaround

- For charts per source type, make sure all head products are configured as associated with the source type they are connected to.
- For charts per zone category, zone, or usage, make sure all products directly monitoring loads are configured as associated with the zone and usage they monitor. They also need to be Terminal. Indeed, the energy metered by Intermediary products only ever appears in charts per mesh, and of course, only if these products are associated with a mesh.

Refer to the *[stream configuration manual](#)* for more details about the configuration of the monitoring perimeter of energy-metering products.

See also §4.2 for easy access to an overview of the configuration of energy-metering products within a building.

11.2.2. Incomplete or inconsistent energy consumption

Symptom

Despite proper energy-metering product configuration, the energy consumption found in indicators and dashboards appears below expectations. The energy monitored by some products appears not to be taken into account.

Possible causes

- The main positive active energy service of some your energy-metering products has not be set for storage.
- The main positive active energy service of some of your energy-metering products has been locally reset.

Workaround

- Make sure the not resettable positive active energy index is set for storage for all products which provide it. For products which do not provide that service, make sure the resettable positive active energy index is set for storage.

Refer to the *[stream configuration manual](#)* for more information about the configuration of data storage.

- Check whether the resettable positive active energy index of products which do not provide the not resettable equivalent has been reset. There is no fix for this, but it offers an explanation for a sudden dip in energy consumption, and even a negative consumption.

11.3. Missing chart in indicators

11.3.1. Missing water consumption chart

Symptom

Information about water consumption is not available among indicators of a perimeter. Or, it is only present for some timeframes but not all.

Possible cause

There is no stored WaterMeter data available for the considered perimeter and periods.

- There was no product with a stored WaterMeter service within the considered perimeter during the considered periods.
- All products within the considered perimeter with a stored WaterMeter service were deactivated or did not communicate during the considered periods. Or, their device was deactivated.

Workaround

The water consumption of a perimeter only becomes available when there is stored data for the WaterMeter service for that perimeter and the currently considered periods.

11.3.2. Missing carbon footprint chart for a site or building

Symptom

Information about carbon footprint is not available among the indicators for a site or building. Or, it is only present for some timeframes but not all.

Possible cause

There is no carbon footprint data available for the considered perimeter and periods.

- No carbon footprint was configured for the source types associated with activated communicating energy-metering products within the perimeter during the considered periods.
- There was no activated communicating energy-metering product associated with a source type with a configured carbon footprint within the perimeter during the considered periods.

Workaround

The carbon footprint of a perimeter only becomes available when there is stored carbon footprint data for that perimeter and the currently considered periods.

Refer to the [*stream configuration manual*](#) for more information on the configuration of sources and products.

11.3.3. Missing EIEC for a building

Symptom

Information about electrical efficiency is not available among indicators of a building.

Possible cause

The EIEC questionnaire of the considered building has never been filled out.

Workaround

The electrical efficiency of a building only becomes available once the EIEC questionnaire has been filled out at least once for that building. Refer to the [*stream configuration manual*](#) for more information about that questionnaire.

11.4. Missing data points in dashboards

11.4.1. No average temperature

Symptom

Even though a weather service has been configured for a site, evolution charts for it and its buildings do not display average temperature when the option is activated.

An alarm about the weather service may have been triggered.

Possible causes

- There hasn't been enough temperature samples gathered for the period to be able to compute an average.
- The geographical information for the site is incorrect.
- The geographical information for the site yields no result through the weather service.
- The weather service is unreachable.

- The weather service is malfunctioning.

Workarounds

In stream, there is no direct way to catch up on missed temperature and degree day samples. All that can be done is fix the issue to ensure future gathering and computation.

11.4.2. No normalised energy consumption

Symptom

Even though an energy consumption and an average temperature are available for a specific day / month in Evolution mode, when normalising by degree day, there is no data point on the chart for that day / month.

Possible causes

- The amount of degree days for the considered day / month is 0, making normalisation impossible as well as irrelevant.
- There hasn't been enough temperature samples gathered for any day of the period to be able to reliably compute a number of degree days for it.



A temperature sample for at least 22 hours of a day is required for the amount of degree days for that day to be computed.

Workarounds

In stream, there is no direct way to check temperature and degree day samples. If you are convinced you have enough samples for each day of the period and that the resulting number of degree days should not be null, then you may contact support.

11.5. Data unavailability in real-time

11.5.1. No data for some services of a product

Possible causes

- Product type mismatch.
- Missing hardware module.
- Service acquisition has been locally deactivated and no arbitration has been given in stream yet.

Workarounds

- Check product type. Some product types are somewhat compatible and mismatching them can lead to intermittent communication issues only.
- Check product settings. Some product types only provide certain services when in a certain configuration.

Example: SM103E can accommodate additional temperature modules, and H3+ require a specific module to properly handle AX and AL contacts.

- Check that no local change is awaiting arbitration for the product.

11.5.2. No data for some products of an agardio.manager device

Possible causes

- The product is no longer communicating.
- The product has been locally removed and no arbitration has been given in stream yet.

Workarounds

Check product status, both in terms of communication and deployment.

- If the product is not communicating, check its connection settings, and make sure it is physically available in the electrical cabinet.
- If there are still local changes on the product awaiting arbitration, arbitrate them.

11.5.3. No data for any product of an agardio.manager device

Possible causes

- The device is no longer communicating.
- No product of the device is currently communicating with it.
- All of its products have been locally removed.
- There has been an issue with the deployment of the device.

Workarounds

Check device status, both in terms of communication and connection.

- If the device is not communicating, check its connection settings, and make sure it is physically available and turned on in its electrical cabinet.
- If the device is communicating but none of its products are, check their connection settings, the Modbus RTU communication settings, and their availability in the electrical cabinet.
- If all its products have local changes awaiting arbitration, arbitrate them.

11.6. Missing data in history

11.6.1. Missing history for all products of an agardio.manager device

- Check Security Audit trail and system event history, looking for any loss of communication with the device.
- Check Data import to confirm there are data retrieval tasks being processed.
- Check History of the agardio.manager device, looking for traces of deactivation.

11.6.2. Missing history for all services of a product

- Check system event history, looking for any loss of communication with the product.
- Check product history for any trace of deactivation.
- Check Modbus RTU communication settings.
- Check product connection settings, including with identification if it is available.

Workaround

In the case of a temporary loss of communication with a product, or a temporary deactivation, there is no way to retrieve the measurements which should have been stored during that time. They were never actually gathered. Products have no local history of the values they monitor.

11.7. Product unavailability

11.7.1. In real-time

- If the product is available in history but not in real-time, then it or its agardio.manager device has been deactivated.
- If the product is not available in history either, then it or its agardio.manager device has been removed.

11.7.2. In history

If a product is unavailable in history, then it or its agardio.manager device has been removed.

For certain very specific types of products, it is also possible for none of their services to have ever been configured for storage.

11.7.3. Some energy-metering products missing from the corresponding overview

Symptom

Some products expected to be listed in the Characteristics > Products or Characteristics > W.A.G.E.S. views of a building are not present.

Possible cause

For the Products view, which concerns electrical energy, this most likely comes from the fact that the main positive active energy service of the missing products has not be set for storage.

For the W.A.G.E.S. view, which concerns non-electrical energy, this most likely comes from the fact that the non-electrical energy index of the missing products has not been set for storage.

Workaround

Make sure the not resettable positive active energy index is set for storage for all products which provide it. For products which do not provide that service, make sure the resettable positive active energy index is set for storage.

Make sure the non-electrical energy index of all products whose type provides it is set for storage.

Refer to the [*stream configuration manual*](#) for more information about the configuration of data storage.

11.8. Service unavailability

11.8.1. In real-time

- If a service of a product is available in history but not real-time, then its product or its agardio.manager device has been deactivated.
- If a service of a product is not available in either view, even though its product is still present, then it has been removed from acquisition.

11.8.2. In history

- If a service of a product is unavailable in history even though it is available in real-time, it means it has never been configured for storage, or its stored history has been purged and it was never set for storage again after that.
- If a service of a product is not available in either view, even though its product is still present, then it has been removed from acquisition.

12. Appendix

12.1. List of system events

Description	Origin
Firmware update failure for agardio.manager device	EMS
Communication timeout with agardio.manager device	EMS
agardio.manager certificate rejection	EMS
agardio.manager login rejection	EMS
agardio.manager permission rejection	EMS
agardio.manager serial number mismatch	EMS
End of data import from agardio.manager device	EMS
agardio.manager CPU usage	agardio.manager
agardio.manager memory usage	agardio.manager
Free available space on agardio.manager eMMC	agardio.manager
Free available space on agardio.manager µSD	agardio.manager
Unavailable µSD for agardio.manager device	agardio.manager
agardio.manager CPU temperature	agardio.manager
agardio.manager power on	agardio.manager
agardio.manager power fail	agardio.manager
Unreachable agardio.manager services	agardio.manager
Unavailable NTP server for agardio.manager device	agardio.manager
Modbus communication error	agardio.manager
Communication timeout with Modbus product	agardio.manager
Tariff synchronisation command rejection	agardio.manager
Unreachable RDBM server	EMS
Unreachable FTP server	EMS
Wrong login for FTP server	EMS
FTP server certificate rejection	EMS
Lack of writing permission on FTP server	EMS
Unreachable SMTP server	EMS
Wrong login for SMTP server	EMS
SMTP certificate rejection	EMS
Weather service unavailability	EMS
Weather service token invalidity	EMS
Site settings incompatibility with weather service	EMS

12.2. Energy

12.2.1. Computation method

In dashboards of every level, the energy for a period (day, week, month, year) is the difference between the sum of all active positive energy indexes first measured right after the end of the considered period, and the sum of all the active positive energy indexes first measured during the considered period.

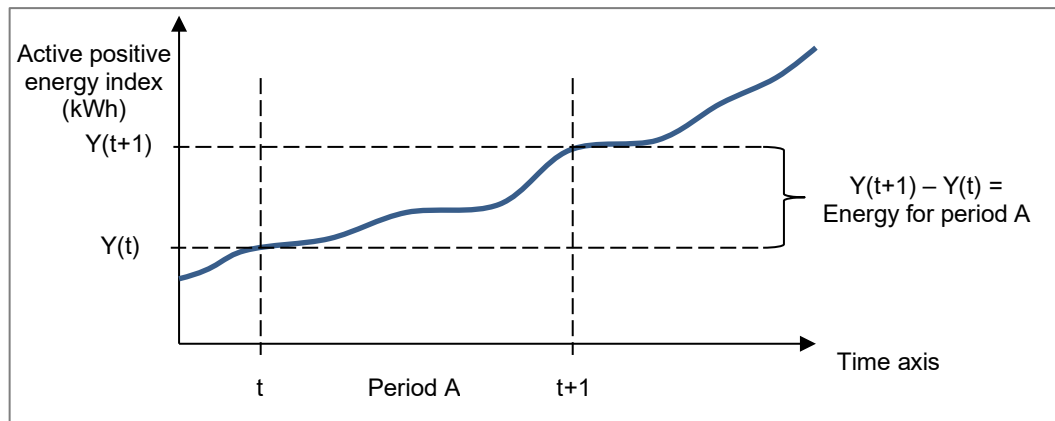


Figure 45 - Computation of energy based on energy index

i To avoid approximations, the current day is never taken into account in dashboards. Only the energy for past days is available. The values stored for the current day are however available in History views.

12.2.2. Considered energy indexes

Depending on their type, for a single point of measure (which correspond to a metering channel), energy-metering products may provide more than one positive active energy index. When this happens, the one of the two indexes which cannot be reset is used by stream for energy computation for that channel. This is done in order to avoid redundancies and attempt to guarantee index continuity as much as possible.

When a product channel only has a single positive active energy index, it is the one used by stream for energy computation, whether it can be reset or not. With a resettable index, the result is mostly the same as with a not resettable one. The only drawback is that it exposes the system to inconsistencies, for instance when the index is locally reset.



For energy-metering channels of products of a custom type providing both positive active energy services (Ea+NotReset and Ea+Reset), if only the resettable index is set for storage, then the product channel may not be properly taken into account in exploitation views. Refer to [stream configuration manual](#) for details on the subject.

12.2.3. Impact of the configuration of energy-metering products

To avoid redundancies – meaning the same quantity of energy being taken into account more than once - the index of which products is used to compute energy is based on the configuration of your monitoring architecture.

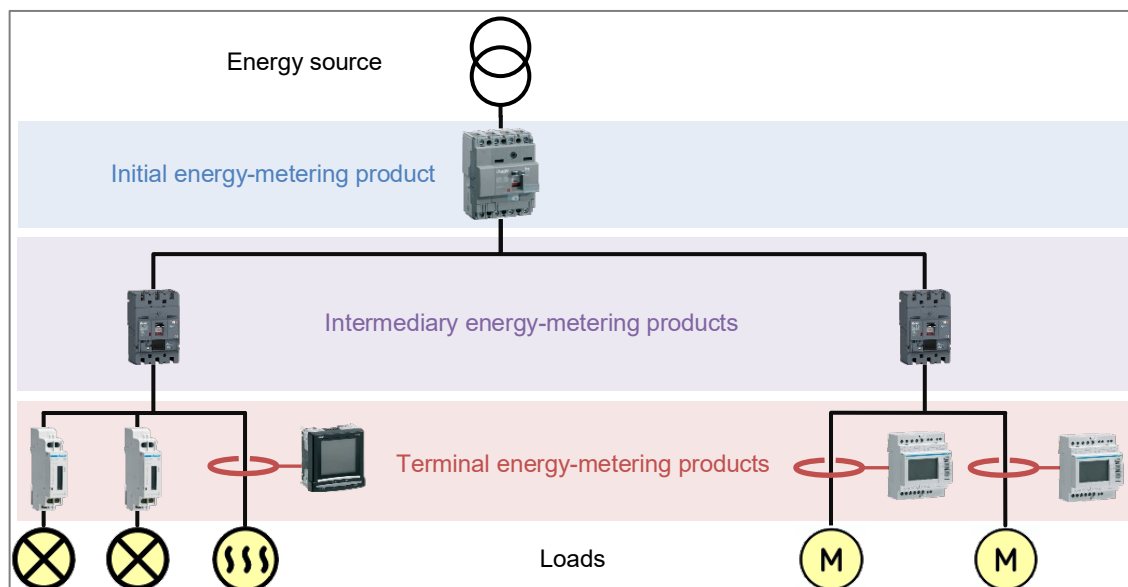


Figure 46 – Representation of a monitoring architecture

- In charts about sources, the energy metered at the origin of your electrical network is used, meaning the energy metered by Initial products.
- In charts about any other association besides mesh and source, the energy metered at the ends of your electrical network is used, meaning the energy metered by Terminal products.
- In charts about meshes, the energy metered at all ends of the network can be accumulated, meaning metered by Initial, Intermediary, or Terminal products. Indeed, meshes are custom groups of metering points, and if so configured can gather inputs and outputs of your electrical system. This is entirely up to the configuring users.

Relying on the structure of your monitoring architecture also allows for determination of the proportion of energy is not equally monitored at both ends of the network. This proportion is computed as the ratio of the difference between the energy measured by all Initial products and the energy measured by all Terminal products, over the energy measured by all Initial products.



Ideally, the difference is close to zero and the monitoring architecture is balanced.

A negative difference means your architecture is lacking in products monitoring inputs.

A positive difference means your architecture is lacking in products monitoring outputs.

12.3. Degree days computation methods

There are several ways to calculate degree day depending on the country and depending on the organisation that processes it.

i In order for normalisation by degree day to be used for comparison purposes, degree days must have been computed using the same method and temperature samples in the same unit.

This is why stream gathers temperature samples from a single weather service, and computes degree days using a single method.

Refer to the [stream configuration manual](#) to know where weather service and degree day computation method are configured.

12.3.1. Mean degree-hours

The mean of **heating degree hours** consists in computing the mean of the difference between the base heating temperature and the outside air temperature for every hour of the day.

For hours when outside air temperature was **above** base heating temperature, the difference is considered null and never negative.

The mean of **cooling degree hours** consists in computing the mean of the difference between the outside air temperature and the base cooling temperature for every hour of the day.

For hours when outside air temperature was **below** base cooling temperature, the difference is considered null and never negative.

$$HDD_d = \frac{\sum_{j=1}^{24} (T_{HB} - T_{O,j})_{((T_{HB}-T_{O,j})>0)}}{24}$$

$$CDD_d = \frac{\sum_{j=1}^{24} (T_{O,j} - T_{CB})_{((T_{O,j}-T_{CB})>0)}}{24}$$

Where:

- HDD_d is the heating degree day of one day
- CDD_d is the cooling degree day of one day
- T_{HB} is the heating base temperature, meaning the outside temperature below which a building requires heating
- T_{CB} is the cooling base temperature, meaning the outside temperature above which a building requires cooling
- $T_{O,j}$ is the outside air temperature for the hour j

12.3.2. Costic method

In France, energy management professionals have adopted the Costic (*Comité Scientifique et Technique des Industries Climatiques*) formula.

$$\left\{ \begin{array}{l} T_{min} > T_{HB} \Rightarrow HDD_d = 0 \\ T_{min} < T_{HB} < T_{max} \Rightarrow HDD_d = (T_{HB} - T_{min}) \times \left(0.08 + 0.42 \times \frac{T_{HB} - T_{min}}{T_{max} - T_{min}} \right) \\ T_{max} < T_{HB} \Rightarrow HDD_d = T_{HB} - \frac{T_{min} + T_{max}}{2} \end{array} \right.$$

$$\left\{ \begin{array}{l} T_{min} > T_{CB} \Rightarrow CDD_d = \frac{T_{min} + T_{max}}{2} - T_{CB} \\ T_{min} < T_{CB} < T_{max} \Rightarrow CDD_d = (T_{max} - T_{CB}) \times \left(0.08 + 0.42 \times \frac{T_{max} - T_{CB}}{T_{max} - T_{min}} \right) \\ T_{max} < T_{CB} \Rightarrow CDD_d = 0 \end{array} \right.$$

Where:

- HDD_d is the heating degree day of one day
- CDD_d is the cooling degree day of one day
- T_{HB} is the heating base temperature
- T_{CB} is the cooling base temperature
- T_{min} is the minimal outside air temperature of the day
- T_{max} is the maximal outside air temperature of the day



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