

September 2019

Calculated Energy Monitoring

Application note

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Calculated Energy Monitoring

- This feature allows a user to see the energy consumption of a group of luminaires per individual zone. It also generates an energy consumption heatmap (generated e.g. daily, weekly, monthly) in the [Silvair web app](#).
- The energy consumption is calculated based on a lighting device's energy consumption model created by manually entering energy consumption measured in Watts for several selected light levels and the record of light levels in time.
- How does it work?

*I have 20 identical luminaires added to my lighting zone. The devices are all of the same type (model). Using Calculated Energy Monitoring, I can know how much energy is used in that Zone within a specified time. By opening the **Energy use** panel in the [Silvair web app](#), I can set a period of energy measurement (e.g. one day, a week, a month) and obtain energy consumption information for that time.*

NOTE: This feature is currently in a beta phase and is intended for early adopters only. We are constantly working to improve this feature, and as a result the Calculated Energy Monitoring interface in the Silvair web app may change.

Items required to use Calculated Energy Monitoring in a project:

1. **Silvair gateway**
2. **Homogenous device deployment in the target zone**
The lighting devices in the zone where you will be using Calculated Energy Monitoring must be exactly of the same type (they must be identical lighting devices / LED drivers).
NOTE: You cannot use more than one energy model in one Zone.
3. [Silvair account](#)
Here you can create an energy model and view calculated energy reports.
4. **Silvair mobile app**
To be able to set light levels for the energy model.
5. **Energy meter**
A device used to measure the energy consumption in Watts for a given light level. More information about measuring power consumption of a lighting device available in: [SN-207: Application note - measuring power consumption](#).

NOTE: Please contact your Silvair business representative for the early adoption program if you wish to start using Calculated Energy Monitoring in your project.

Onboarding instructions

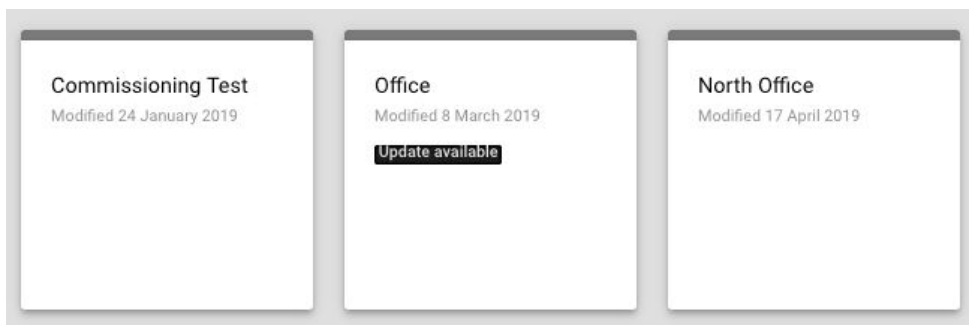


Fig.1 - Commissioning projects

- Open [Silvair web app](#)
- Open an existing project, or create a new one

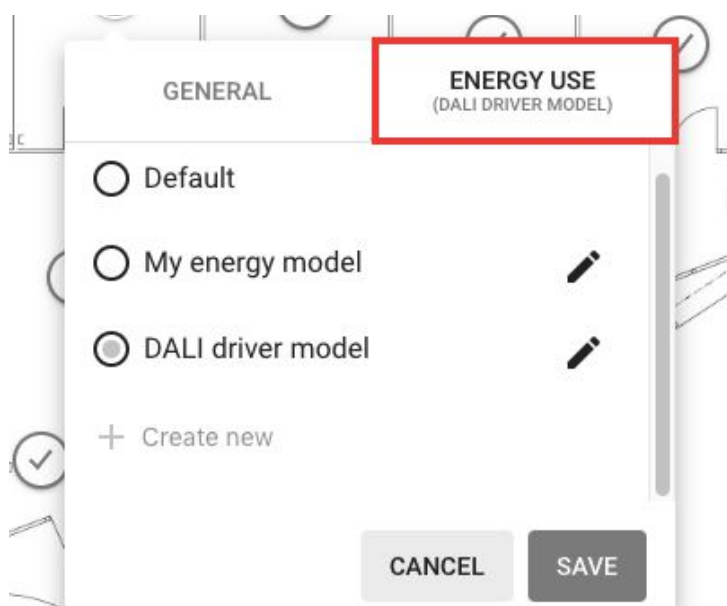


Fig.2 - Energy Use tab

- Click on the area added to the project
- Select one zone
- Right-click on the zone icon and select **EDIT** → “ENERGY USE” tab

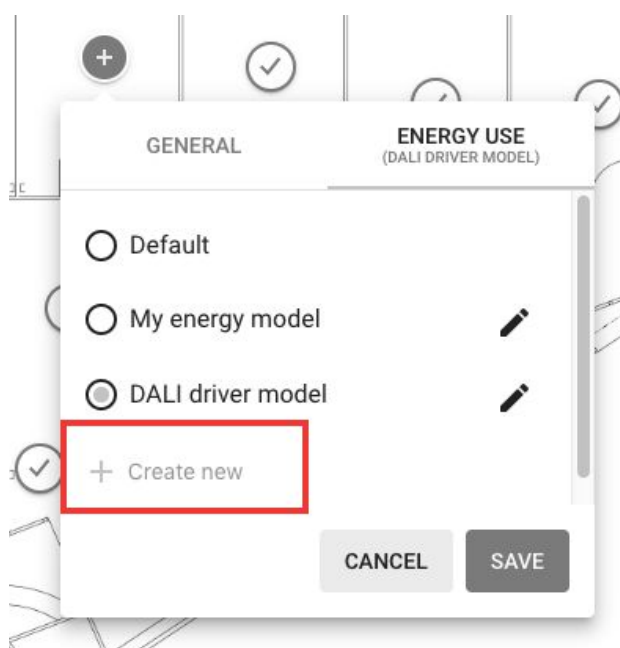


Fig.3 - Create new energy model view

- Click **Create new** to add a customized energy model to the project

NOTE:

One energy model may be assigned to one zone. Lighting devices / LED drivers added to the zone must be the same.

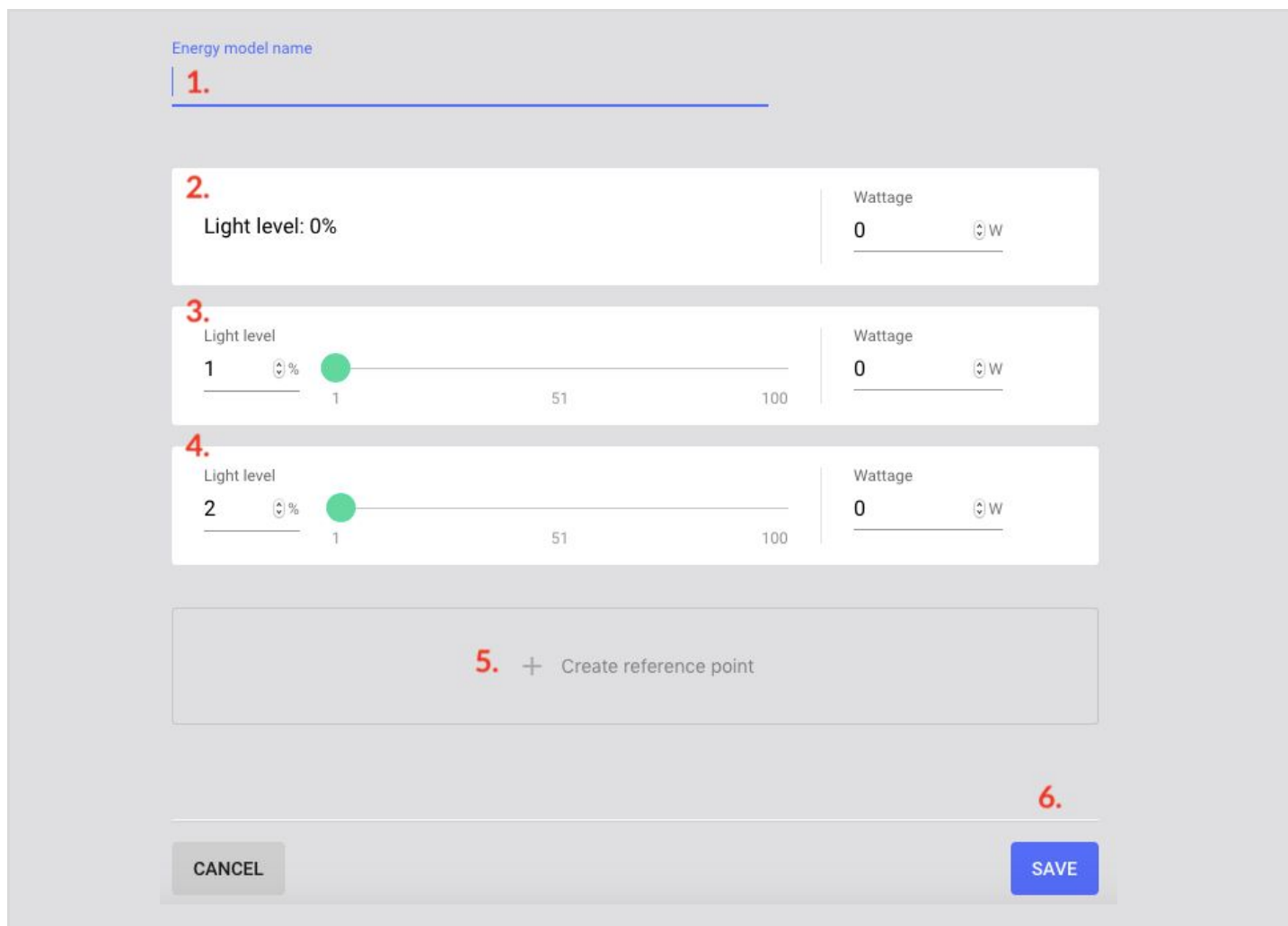
HINT:

If you have e.g. two device types in one space, we recommend creating **two** energy models (each for one device type), add them to **two** separate zones operating in one physical space, and then link the two zones together. To read more about creating zones, and linking them - check our Silvair Commissioning User Manual in the [Silvair Knowledge Base](#).



Fig.4 - Energy model name

- Create an energy model ([read more here](#))



Energy model name

1.

2. Light level: 0% Wattage 0 W

3. Light level 1 % 1 51 100 Wattage 0 W

4. Light level 2 % 1 51 100 Wattage 0 W

5. + Create reference point

6. CANCEL SAVE

Creating an energy model

1. **Energy model name** - click to add your energy model name, e.g light fixture product name.

2. **Light level: 0%** - measure power consumption for the 0% light level on a device in that zone and enter it in the **Wattage** field. Read how to set a light level and measure power consumption of a lighting device in document [SN-207: Application note - measuring power consumption available](#) available in Silvair Knowledge Base.

3, 4. **Light level __%**

- enter the light level percentage value (e.g. 20 % and 50 %, and 100 %),
- measure the power consumption for each reference point on a device in that zone,
- input the measured power consumption for each reference point into the **Wattage** field on the right side of each entry.
- Read how to set a light level and measure power consumption of a lighting device in document [SN-207: Application note - measuring power consumption](#)

NOTE: To create energy model, you must add at least 3 reference points.

RECOMMENDATION: The more reference points you add to the energy model, the more accurate energy calculation will be. For example, we recommend to set 10 reference points, one for every 10 seconds.

5. Creating additional reference points - click to add more than 3 reference points. You can modify or delete them later.

6. Save - press the button to save your energy model. The energy model is automatically added to the selected zone. The energy model can be edited or removed later.

NOTE: Energy consumption feature is **not** retroactive. Energy is always calculated based on the currently assigned model. When a user edits energy model (e.g. adds reference points, or changes Wattage field), the new parameters will **only** change the energy calculations reported after pressing the **SAVE** button.

Energy Use Report

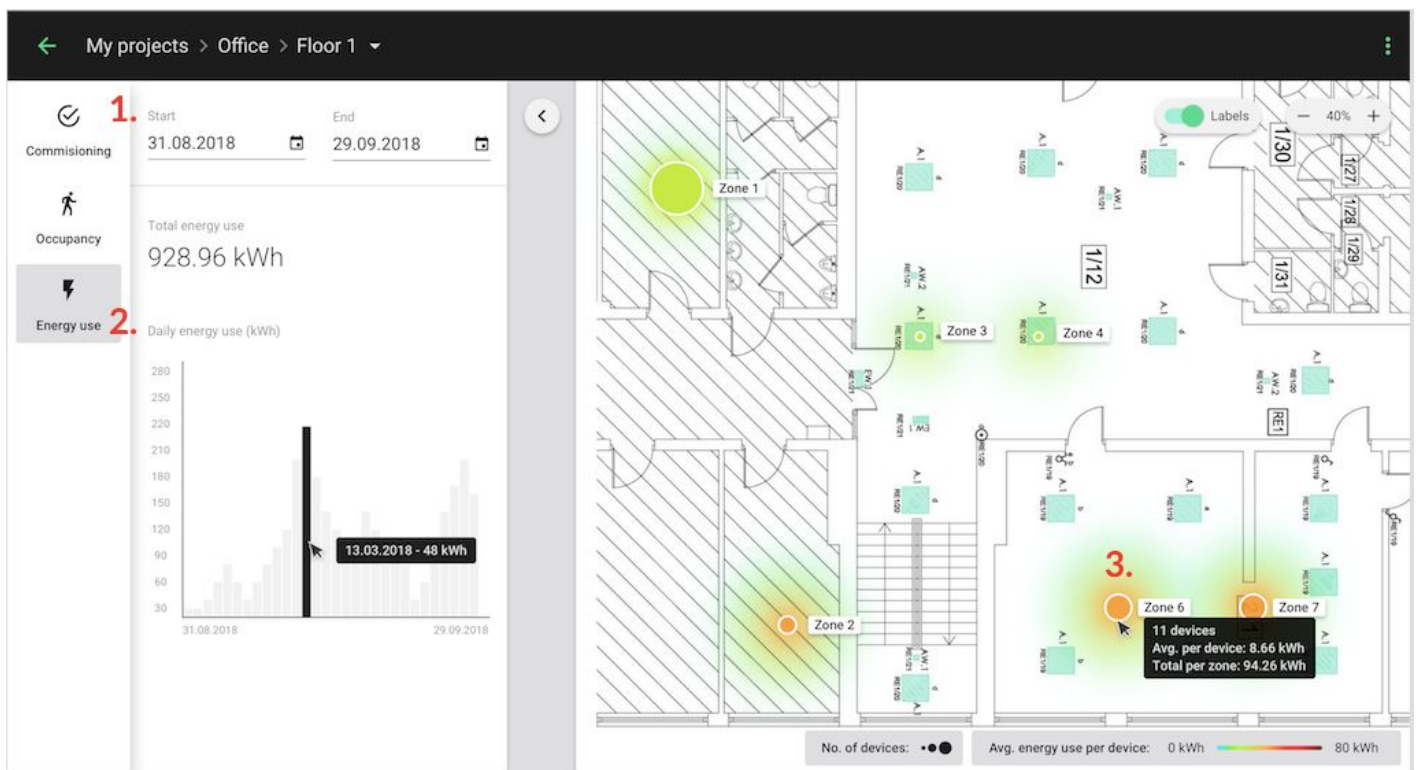


Fig.5 Energy use report panel (Silvair web app)

To access the Energy Use Report, open the Silvair web app → navigate to projects and select **Energy use**.

1. Datepicker - select Start and End date of your energy use report.
2. Bar chart - observe energy use for the selected dates.
3. Heatmap - observe energy use for the selected dates in your zones.

HINT: Hover onto a zone icon to see more details (e.g. number of devices, average energy use per device).

Energy Use Data

Energy monitoring data are stored by Silvair and available via:

- Energy Use report in the Silvair commissioning web app
- Energy monitoring API <https://api.platform-prod.silvair.com/docs/public/>

Energy consumption data are stored for a maximum of 5 years with varied data resolution, depending on the aggregation period.

Aggregation period	Resolution of data
Last 30 days	15-minute
> last 30 days	1 day
> 1 year	1 month
> 5 years	no data

FAQ

Power failures Q&A:

Q1: If there is a power failure for an hour and the lights were on right before the power failure, when the power is restored, will the Cloud indicate for the hour that the power was out or will it assume that the lights were still on during the time of the power failure?

A: In such a case the result comes from linear interpolation from the last data point before the failure to the first one after the failure.

Q2: If the gateway hadn't yet sent the energy consumption information to the Cloud prior to a power failure, is that information lost or is it kept in memory so that when the power is restored, the data can be sent to the Cloud?

A: There is no mechanism to store a current buffer to nonvolatile memory. So at the moment the data are lost on power loss.

Q3: If it's only the gateway that is broken, disabled or unplugged but the nodes are functioning, any energy consumption information will not be recorded (i.e. it's not temporarily stored in the nodes until the gateway is powered up and operational). Would it mean that for the time that the gateway is unpowered, the data on the Cloud indicate that the lights were off during this time (once the gateway is powered)?

A: Yes, if the gateway doesn't work at a given moment, power consumption information from that moment are lost.

Q4: If there is an issue with the Internet connection will the gateway store the information locally and send it to the Cloud once the Internet service is restored?

A: Yes, there is a buffer for captured data and it can grow up to the size of available memory and it can handle temporary internet connection loss, unless a gateway loses power or is rebooted (see #Q2).

Document revisions

Rev	Date	Editor	Changes
3	02.09.2019	IK	Added FAQ chapter
2	05.08.2019	IK	Added information about Report Retention Policy
1	26.04.2019	IK	Initial document release

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