

## User Manual My Femtogrid for the End User

This user manual deals with the features of the My Femtogrid portal for the end user or system owner of the solar installation. The document discusses the functionalities that are part of Femtogrid Monitoring at the end user level. Note that your installer can monitor your solar installation as well. The My Femtogrid portal is a web-based portal, which is available if and only if there is an Internet connection.

### Login My Femtogrid

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- 1 Visit <http://www.femtogrid.com/> and go to 'My Femtogrid'.
- 2 Login using the username and password combination from the Femtogrid Registry e-mail received via your Femtogrid supplier. Keep this login combination so your installer can always login to see what you see in the My Femtogrid portal in case of questions from your side.
- 3 My Femtogrid will open up in the section 'Toon productie'. Swap between Dutch and English by clicking on the English flag in order to follow the instructions of this user manual.
- 4 Click on 'System Image' on the left-hand side of the page to upload your own picture of your solar installation.
- 5 My Femtogrid contains 4 different sections, which will be discussed below.

### Production view - Total Production

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Once logged in, you enter My Femtogrid in the section 'Production view' and in the subsection 'Total production'. This subsection shows the **total production of your solar installation in Wh per day**; Wh is on the vertical axis (left-hand side) and time is on the horizontal axis. Each day will appear as a bar in the total production graph. A production of, for example, 2 488 Wh for a particular day implies your solar panels together have produced 2.488 kWh that day.

Zoom in on specific periods using the 'YTD' (year to date) and 'MAX' (showing energy production since the installation/commissioning date) buttons on the right-hand side below the graph to get more insight information about how much solar energy is produced by your solar installation.

#### Show savings in the total production graph

Go to the section 'Profile' and fill in the amount you pay in € Cent/kWh. For example, if you pay € 0,23 for every kWh consumed to your energy supplier, than fill in '23' here and save this change. Going back to 'Production view' and 'Total Production' total production of your solar installation will from the next day onwards also be presented in €'s on the vertical axis (right-hand side).

Since you will now produce energy yourself the number of kWh's **NOT** consumed from your energy supplier but directly from your own solar energy will result in less energy purchased from your supplier and therefore in savings.

### Compare total production over time

Over time also the options 14D (14 days), '1M' (1 month), '1Y' (1 year) etc. will become available. You can select these buttons on the right-hand side below the graph to compare, for example, months with each other in order to learn about the production capabilities of your solar panels. In addition you can select a custom period of interest using year-month-date on the left-hand side below the graph.

### Production of period

Select the complete period since the start of solar installation by clicking on the button 'MAX'. If your pointer is located somewhere outside the area of the graph (your pointer is presented as a 'cursor'), then total production is presented both in Wh and €'s on the left-hand side above the graph. This amount in kWh is also displayed in the subsection 'Environmental impact since installation'. If your pointer is located somewhere inside the area of the graph (your pointer is presented as a 'hand') then the production of that particular day is presented both in Wh and €'s on the left-hand side above the graph.

### Environmental impact of your solar installation

This subsection shows the environmental impact of your solar installation since the start of your solar installation using some benchmarks. As mentioned above, the total energy generated in kWh is presented here together with the number of hours a PC operates or the number of kilometers an electric car drives using this amount of energy. Besides the fact that you are producing your own solar energy you are also helping to reduce the global carbon footprint. This impact is displayed as the CO<sub>2</sub> offset together with the number of trees that need to be planted or the number of kilometers with a fossil car that must be avoided to achieve the same CO<sub>2</sub> result.

### Add notes

Add notes to particular days in order to remember important changes to your solar installation or occurrences. For example, over time a component (a solar panel, DC cable, or inverter) of your installation may be replaced, or snow or other adverse weather conditions may cause your solar panels to produce significant less energy than expected for a particular day or period. Adding such notes help you keep track of the optimal performance of your solar installation during its lifetime and help to manage your own expectations.

## Production view - Production of inverters

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This subsection presents the number of inverters that have been used in your solar installation and the production in Wh per day per inverter. Again it is possible here to zoom in on a specific period to get more in depth information or to compare certain periods to each other.

### More than one inverter

This section is particularly interesting if your solar installation consists of more than one inverter **AND** the installer has prioritized the inverters using a **Master/Slave setting**. Imagine 2 inverters have been used in the solar installation; **inverter 1** is chosen as the **Master** inverter and **inverter 2** as the **Slave** inverter. Inverter 1 is active as soon as there is irradiation and the solar panels produce energy, whereas inverter 2 will only be active if the power being produced exceeds the pre-set level for inverter 1. This way inverter 2 will only be active if demanded, which turns your installation into a smart grid installation.

## Production view - Daily Production

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### Power chart

Besides the total production of your solar installation the My Femtogrid portal also displays the solar production in kWh per solar panel and inverter in the Power chart. This graph shows the **average solar energy production per hour per solar panel or inverter**. Select solar panels and/or inverters by clicking on the colored square underneath the Power chart. A '✓' implies the solar panel or inverter is represented in the graph, or in other words is active. Clicking once more on the square will deactivate or deselect the solar panel or inverter. As a result, the solar panel or inverter will not be represented in the graph.

### Bigger installations

Depending on the number of solar panels and inverters used in the solar installation your installer can divide the total installation in subsections to keep the graph simple and easy to use. Imagine, for example, that more than 30 colored lines are visible in one graph. Besides transparency, there are more reasons to divide the total installation in subsections. Your installer can choose to display the inverter(s) in a different graph than the solar panels. Moreover, different azimuths or different types of solar panels are sometimes used for solar panels in one solar installation.

### Deselecting

In case the inverter(s) and the solar panels are displayed in one graph, then deselect the inverter(s) to see how all solar panels are contributing to the energy production. See how the scale and hence also the shape of the graph changes once the inverter(s) are deselected and no longer visible in the graph. It is now possible to directly compare the performance of solar panels to each other.

If the installer has used the Femtogrid installation form, which shows the sequence of the solar panels, you can see the locational impact for each solar panel. For example, if there is a chimney resulting in partial shading for solar panel 1 and 2, but not for solar panel 3 etc. solar panel 3 is expected to produce more energy than panel 1 and 2. Using the section 'Daily Production' you are able to learn more about the locational impact on the energy production capabilities of your solar panels.

### Energy chart

The section 'Daily Production' also presents the accumulated energy production in kWh during the day for each inverter and solar panel. Again, the same (de)selections can be used as described above for the Power chart. Here, you can see the total locational impact per inverter or solar panel per day. It helps shaping your expectations about how your solar installation and each inverter and solar panel is performing.

## Profile

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'Profile' contains your personal information. As mentioned before you can enter here the amount you pay to your energy supplier for every kWh consumed. As you will now produce energy yourself the number of kWh's **NOT** consumed from your energy supplier but directly from your own solar energy will result in less energy purchased from your supplier and therefore in savings. Save your change to have the production in Wh per day also be scaled in €'s saved.

## FAQs

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Most frequently asked questions are listed here. Ask your Femtogrid supplier for more information if your question is not listed here or in case the answer does not meet your expectations.

## Home

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The first section is 'Home'. Clicking on 'Home' opens a new Internet tab and enables you to go to the Femtogrid website by clicking on the header 'Home', 'Products', 'Technology' etc. It also offers you the possibility to go to our demo account of My Femtogrid. This demo account is a solar installation in Zeewolde, in which 10 solar panels are installed on 3 different rooftop areas (2 different azimuths and 2 different angles to the sun). It's an interesting installation to examine next to your own solar installation.

## Logout

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Logout of My Femtogrid by clicking on the logout button on the right-hand side of the page.