



ECassessment

User manual



Document change log	3
Introduction	4
Account structure	4
New site	6
Site identification	6
User identification	7
Login	8
Request your credentials	9
Sites	10
Data page	11
ECcloud	11
File	11
Controller page	13
General settings	13
PV settings	15
Genset settings	16
Grid settings	18
Assessment page	19
Dataset selection	19
Timezone condition	19
Irradiance and temperature condition	19
Operating condition	20
Perform assessment	21
Executive page	23
PV page	24
Genset page	26
Grid page	27
Settings	28
Date of origin	28
Map zoom	28
Admin	29
User list	29
Revoke user access	29

Grant existing user access to site	30
Modify site details	30
Discard the site	30
Manual data export	31
Report	32
Manual report	32
Profile	33
Logout	34

Document change log

2021-12-28	First version
2022-02-07	Updates about ENcombi Online
2022-04-15	Update about PV generating capacity via dataset.
2022-07-12	Panel degradation, DC and AC losses added.

Introduction

ECAssessement is the ENcombi web app tool for performing assessment analysis. Use ECAssessement to perform feasibility studies of adding PV to your site or use it as a digital twin to compare the expected and actual performance of a site already registered in ECloud.

ECAssessment is part of ENcombi Online and can be found at www.encombi.online. From here you will be guided to the actual ECAssessment portal associated with the specific ENcombi product that you are to perform assessments for. Just select the assessment product type in the drop down menu and click the Continue button.



Welcome to ENcombi Online
The portal for all the online ENcombi products
Please select your product type and press the continue button to proceed

ECAssessment - ECpv x ▾

CONTINUE

ECAssessment features

- Easy and straightforward user interface and menu system.
- Use your own data sets by uploading them in csv file format.
- Use data sets from ECcloud.
- The control dynamics of the actual ECpv controller and the associated settings.
- Base irradiance and temperatures on various models in case they are not part of your data set.
- Up to one year of analysis.
- Same graphical data representation and reporting as known from ECcloud making it easy to compare assessments with real site performance.

Account structure

To gain access to ECAssessment you need an account. Contact ENcombi on sales@encombi.com to get your ECAssessment account.

With your ECAssessment account you can register as many assessment sites as you want. The user registering a site in ECAssessment automatically becomes an

administrator of that site and can grant an infinite number of other ECassessment users access to view the same site free of charge.

When you receive your ECassessment account the first thing you must do before you are able to login is to create your first site.

New site

A new site is created before logging into the ECassessment portal.
Go to <https://www.encombi.online/> and pick your ECassessment product type (in this case an ECpv) and you are taken to the below page.

Select “New Site” on the front page. This will lead to the registration page with the below options.

Add a new site

Site identification

Enter site name
Enter country
Enter region
Enter city
Enter latitude
Enter longitude

User identification

Username
Password

Site identification

Under site identification you type in the various identifiers of your site.

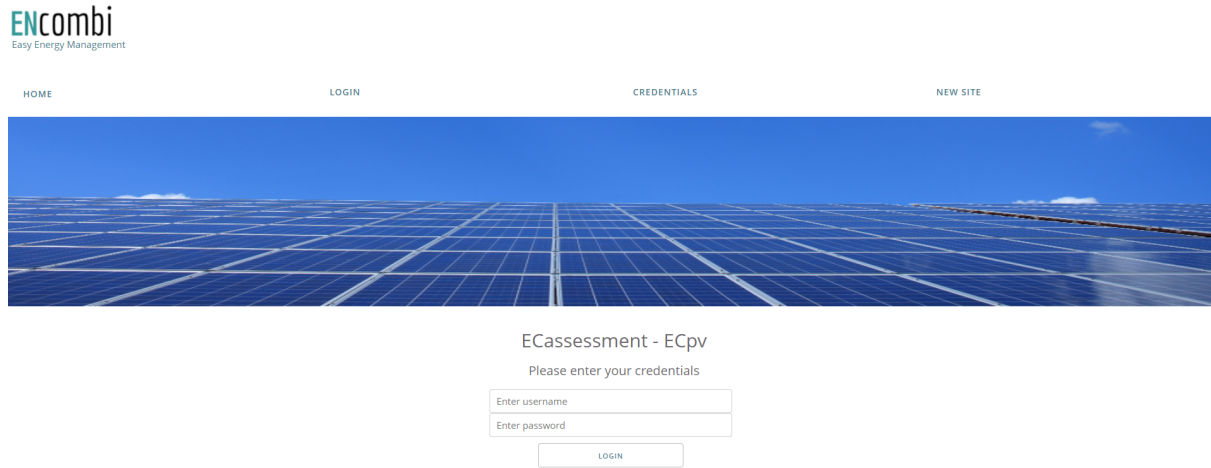
User identification

Here you identify your account to which the new site is to be registered and then press "ADD" to complete the site registration.

Upon successful registration a notification will be sent to the registered email address stating that the site has been registered. After receiving the email you can login to ECassessment and start to perform assessments and analysis on the new site.

Login

To login to ECassessment go to <https://www.encombi.online/> and pick your assessment product type (in this case an ECpv) and you are taken to the below page.



The screenshot shows the ENcombi website interface. At the top left is the ENcombi logo with the tagline "Easy Energy Management". A navigation menu contains links for HOME, LOGIN, CREDENTIALS, and NEW SITE. Below the menu is a large banner image of a solar panel array under a clear blue sky. The main content area is titled "ECassessment - ECpv" and includes the instruction "Please enter your credentials". There are two input fields: "Enter username" and "Enter password", followed by a "LOGIN" button.

Enter your credentials and press "LOGIN".

Request your credentials

In case you have forgotten your credentials you can request to have them sent to the email address you used when registering. To do so select "Credentials" on the front page. This will lead to the page with the below options.

Forgot your credentials?

Request them via email

Type in the email used when registering and press "REQUEST". You will then receive an email with your credential details.

Sites

Upon successful login you are automatically taken to the Sites page which provides a map and a list of available assessment sites accessible to you.

Accessible sites
Site currently selected: None

MAC	Site	Country	Region	City
0t211228110542	Testsite02	Denmark	Midtjylland	Viborg

Select which site you want to perform assessments on either by clicking the map or clicking the checkbox in the site list. Once a site is selected, you can use the top navigation bar to browse around and input data sets, set up the ECpv control settings, perform the assessments and subsequently analyze the results.

Data page

On the Data page the datasets available for the assessment are defined. The origin of the dataset can either be from ECcloud or from a csv file.

ECcloud

Here you identify from which ECpv site you want to extract the data set from. You can extract datasets from all the various ECpv models. Pick the ECpv model type and put in its unique identifier (MAC address) along with a set of Admin credentials for the specific site and press the "SAVE" button.

ECcloud

Identify the controller to retrieve the dataset from

Note that you must have Admin rights to the site in ECcloud

ECpv	x ▾
00305690C4D9	
MyUserName	
.....	
SAVE	

File

Here you can upload a csv file holding your data set. The file data must be ordered in the below listed columns. The first two columns are mandatory and the rest are optional. The order of the columns is fixed to be as shown.

1. Date and time
2. Load [kW]
3. Genset online rated capacity [kW]
4. GHI [W/m²]
5. POA [W/m²]
6. Ambient temperature [Celcius]
7. BOM [Celcius]
8. Genset supply active [0: False, 1: True]
9. Grid supply active [0: False, 1: True]
10. PV generating capacity [kW]

Pick what columns your file contains before uploading it.

Note that Column 8 and 9 go in pairs; either they are both to be present or none of them are to be present.

Furthermore multiple Date and time formats are supported. Pick the Date and time format that matches your file before uploading. Similar multiple file separators are supported. Pick the file separator used in your file as well before uploading.

File

Set the file attributes

File separator

Semicolon



File timestamp format

DD-MM-YYYY hh:mm:ss



Set the file content

Genset online capacity data in file

YES



GHI data in file

YES



POA data in file

YES



Ambient temperature data in file

NO



BOM data in file

NO



Genset vs Grid supply in file

YES



PV generating capacity data in file

YES



Upload the dataset file here

Drag and Drop or [Select File](#)

Note that your file must not include column headings. Below is an example from a sample file. In this example the file uses "YYYY-MM-DD hh:mm:ss" Date and time format and Comma as the data separator.

	A	B	C	D	E
1	2021-08-08 09:34:08	999.0	2000.0	40.0	0.0,1,0
2	2021-08-08 09:39:10	999.0	2000.0	40.0	0.0,1,0
3	2021-08-08 09:44:12	999.0	2000.0	40.0	0.0,1,0
4	2021-08-08 09:49:15	999.0	2000.0	40.0	0.0,1,0
5	2021-08-08 09:54:17	999.0	2000.0	40.0	0.0,1,0
6	2021-08-08 09:59:19	999.0	2000.0	40.0	0.0,1,0
7	2021-08-08 10:04:21	999.0	2000.0	40.0	0.0,1,0

Controller page

On this page the setup of the ECpv controller to use when doing the assessment is made. In the top there is a dropdown to select what settings category you want to access. All the settings will not be elaborated on here - if you are unfamiliar with the settings and are seeking more information, then consult the ECpv User Manual.

Controller settings

Pick the setting category

 × ▾

The drop down holds the categories listed below:

1. General
2. PV
3. Genset
4. Grid

General settings

Here the general settings like the metrics to use are set up.

General settings

Metrics

Currency

Volume

Mass

PV settings

Here the settings related to the PV plant are set up.

PV settings

Inverter data

Total installed inverter capacity [kVA]

Inverter efficiency [%]

PV panel data

Total installed PV panel capacity [kW]

Panel temp. coefficient [%/°C]

Panel degradation coefficient [%/year]

Reference year for Panel degradation

DC losses [%]

AC losses [%]

Tariff & dispatch limits

Tariff for PV generation [currency/kWh]

Max dispatch limit when parallel to grid[%]

Max dispatch limit when parallel to genset[%]

Genset settings

Here the settings related to the genset plant are set up.

When Genset Management is "Disabled", the assessment will use the online genset rated capacity information from the data set. So to use this selection, that data needs to be present in the data set.

When Genset Management is "Non-sync", the assessment will pick a single genset best fitted for the load in accordance with the load depending start/stop conditions.

When Genset Management is "Sync-SR", the assessment will use the needed gensets for the load in accordance with the load depending start/stop conditions.

Genset settings

Power control

Number of gensets present

Minimum genset load [%]

Tariffs

Fuel consumption [volume/kWh]

Fuel price [currency/volume]

Fuel emission [mass/volume]

Genset Management

Genset management enable

Load depending start [%]

Load depending stop [%]

Spinning reserve [%]

Genset rated sizes

Rated power genset 1 [kW]

Rated power genset 2 [kW]

Rated power genset 3 [kW]

Rated power genset 4 [kW]

Rated power genset 5 [kW]

Rated power genset 6 [kW]

Rated power genset 7 [kW]

Rated power genset 8 [kW]

Rated power genset 9 [kW]

Rated power genset 10 [kW]

Rated power genset 11 [kW]

Rated power genset 12 [kW]

Rated power genset 13 [kW]

Rated power genset 14 [kW]

Rated power genset 15 [kW]

Rated power genset 16 [kW]

Grid settings

Here the settings related to the grid are set up.

Grid settings

Power control

Control method

 × ▾

Power reference [kW]

Tariffs

Import [currency/kWh]

Export [currency/kWh]

Assessment page

On this page the actual assessment is performed.
A few things need to be set up before starting the assessment.

Dataset selection

First thing is to select whether to base the assessment on a dataset from ECcloud or from a file.

Dataset selection

Select if to base the assessment on dataset from ECcloud or from an uploaded file

Assess type	Dataset
<input checked="" type="radio"/> ECcloud	ECpv (00305690C4D9)
<input type="radio"/> File upload	my_data_set.csv

Timezone condition

Then the dataset time zone must be set. This is required in case irradiance or temperature modeling is used in the assessment.

Timezone conditions

Set the dataset timezone

Timezone

GMT x ▾

Irradiance and temperature condition

Then the irradiance and temperature conditions must be set.

1. The GHI can be based on the dataset or it can be based on one of the Clear Sky models available.
2. The POA can be based on the dataset or it can be based on GHI transposition.
3. Ambient temperature can be based on the dataset or it can be based on historical weather data from the site location.
4. BOM can be based on the dataset or it can be based on one of the BOM models available.

Irradiance & temperature conditions

Set the PV panel positioning and the data origin of irradiances and temperatures

GHI
Clear sky model (Simplified solis) × ▾
POA
GHI transposition × ▾
Tilt angle, from horizontal [°]
30
Surface azimuth, from north [°]
180
Ambient temperature
Historical data × ▾
BOM
Temp. model (Ross) × ▾
NOCT [°C]
45

Operating condition

Then the operating conditions must be set.

The PV generating capacity can be set to the following

1. From Dataset
2. Calculated

If “From Dataset” is selected, then the PV generating capacity is taken from the Dataset. This way such modeling can be inherited from third party part modeling tools like PVsyst.

If “Calculated” is selected, then the PV generating capacity is calculated based on the setup made in the Irradiance and temperature conditions section.

The Genset vs Grid supply can be set to the following

3. From Dataset
4. Genset

5. Grid without genset backup
6. Grid with genset backup

If "From Dataset" is selected, then the pattern of when the grid is connected and when the genset(s) is connected is taken from the Dataset.

If "Genset" is selected, then the Assessment will be based on continuous genset supply.

If "Grid without genset backup" is selected, then the Assessment will be based on continuous grid supply but with grid outage as per the grid outage period defined in which there will be no supply.

If "Grid with genset backup" is selected, then the Assessment will be based on continuous grid supply but with grid outage as per the grid outage period defined in which there will be genset supply.

The grid outage will happen daily in the defined period. If the grid outage period start/stop time is set to the same, then there is no grid outage.

Operation conditions

Set the various conditions of operations

PV generating capacity
From dataset x ▼
Genset vs Grid supply
From dataset x ▼
Grid outage start time
11:00 AM 🕒
Grid outage stop time
12:00 PM 🕒

Perform assessment

Then everything is set to perform the assessment. Just pick the period that the assessment should cover and press the "ASSESS" button. A maximum period of 1 year is possible.

Perform assessment

Select the assessment period and perform the assessment

Maximum period is one year

The assessment may take a few minutes to complete

Period

Nov 15th, 2021 → Nov 24th, 2021

ASSESS

The assessment can take a few minutes to perform.

After a successful assessment is completed, you can go to the Executive, PV, Genset & Grid pages to analyze the assessment results.

Executive page

The executive page gives information about the key financial numbers on a daily, monthly, yearly and total basis.

ENcombi Assessment site 02

Pick a period

Total



PV production	225 kWh	Fuel save	31 Liter	Grid import save	8 Euro
PV curtailed	0 kWh	Fuel save	39 Euro	Grid export	0 Euro
PV revenue	4 Euro	Emission save	82 Kg	PEN	9.4 %
				PERF	100.0 %



Genset production	1172 kWh	Fuel consumed	293 Liter
Emission generated	773 Kg	Fuel consumed	366 Euro



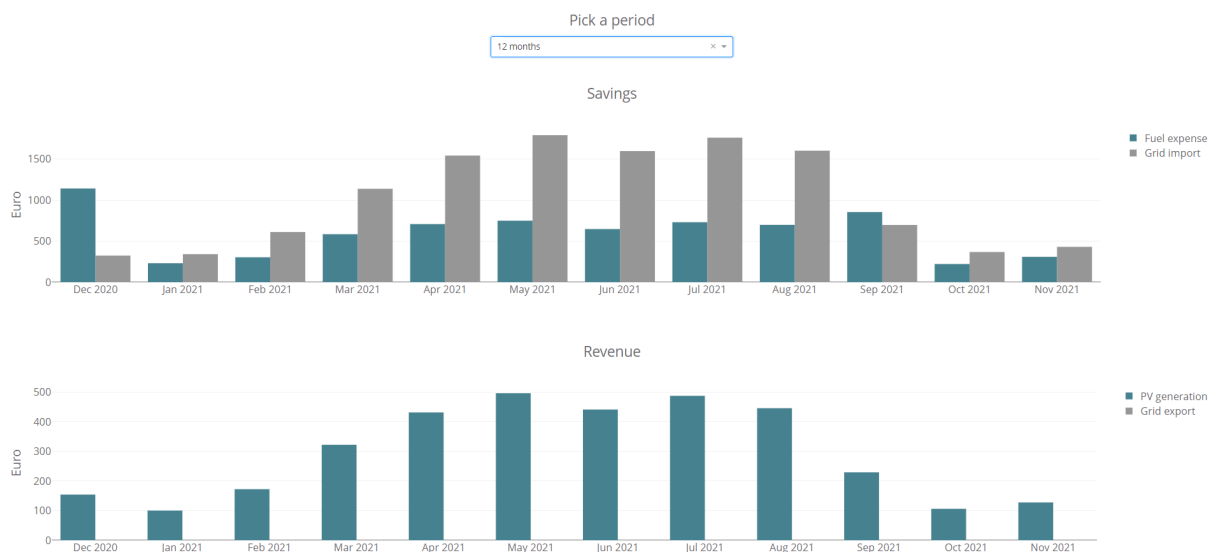
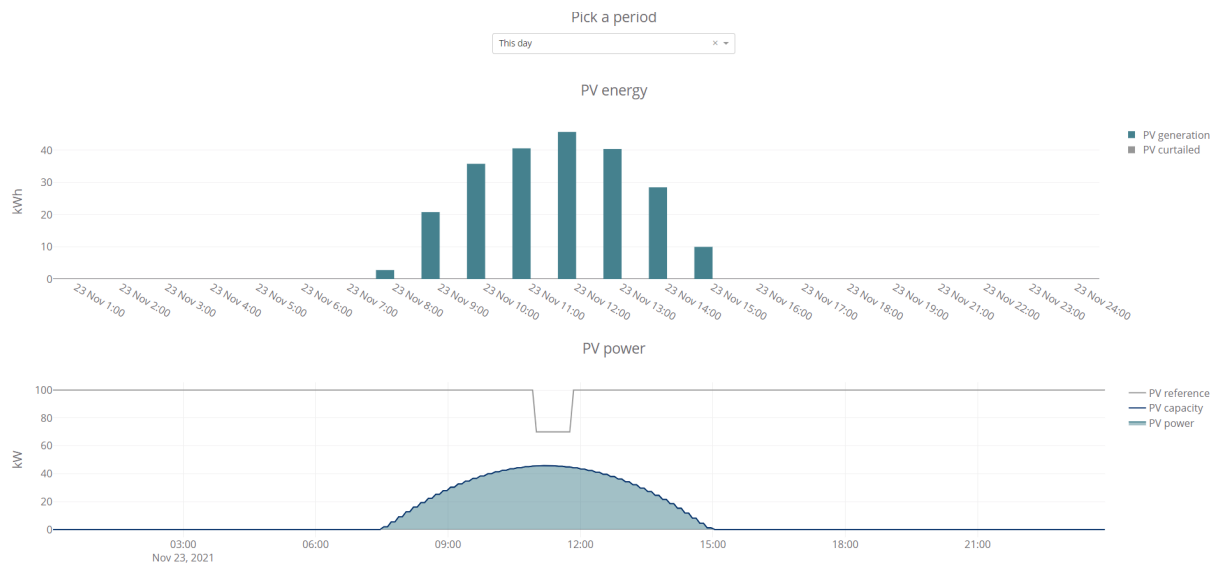
Grid import	995 kWh	Grid import	80 Euro	Grid export	0 kWh
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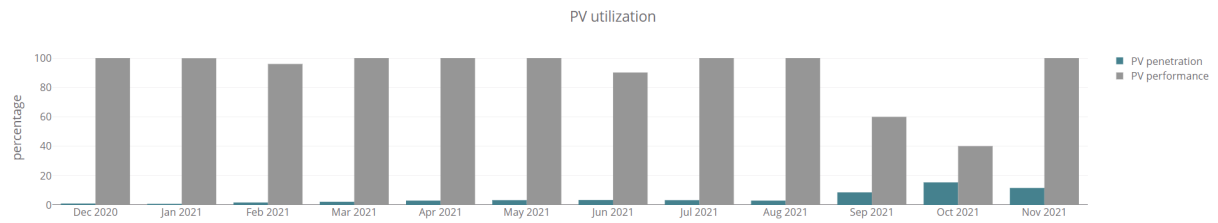
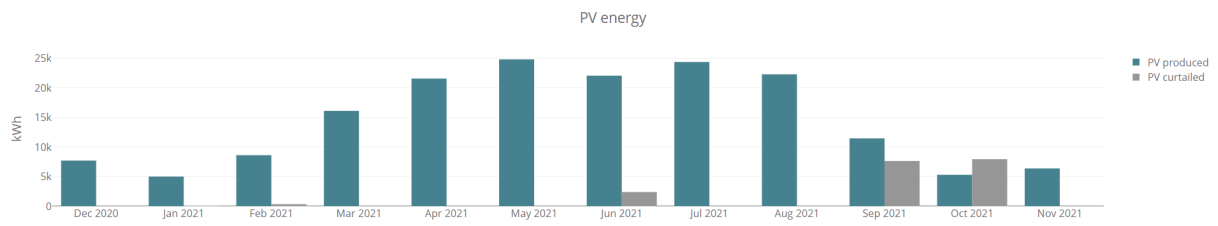
PV page

The PV page provides the views below:

- 24 hour history of kW, kVar, PV generating capacity, target reference etc.
- 30 day history of revenue, savings, energy produced etc.
- 12 month history of revenue, savings, energy produced etc.
- 10 years history of revenue, savings, energy produced etc.
- This day's history of kW, kVar, PV generating capacity, target reference etc.
- This month's history of revenue, savings, energy produced etc.
- This year's history of revenue, savings, energy produced etc.

Note that the 24 hour and the Daily histories are available only when the assessment period is less than 10 days. Below are a few examples.



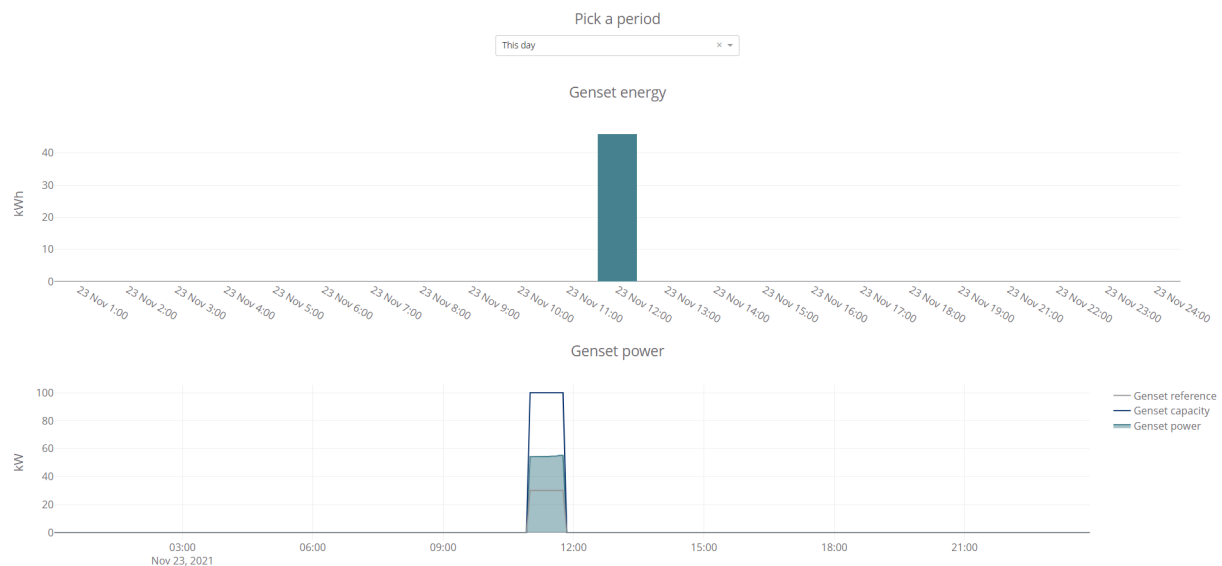


Genset page

The Genset page provides the views below:

- 24 hour history of kW, genset generating capacity, target reference etc.
- 30 day history of fuel expense, CO2 emissions, energy produced etc.
- 12 month history of fuel expense, CO2 emissions, energy produced etc.
- 10 years history of fuel expense, CO2 emissions, energy produced etc.
- This day's history of kW, genset generating capacity, target reference etc.
- This month's history of fuel expense, CO2 emissions, energy produced etc.
- This year's history of fuel expense, CO2 emissions, energy produced etc.

Note that the 24 hour and the Daily histories are available only when the assessment period is less than 10 days. Below are a few examples.

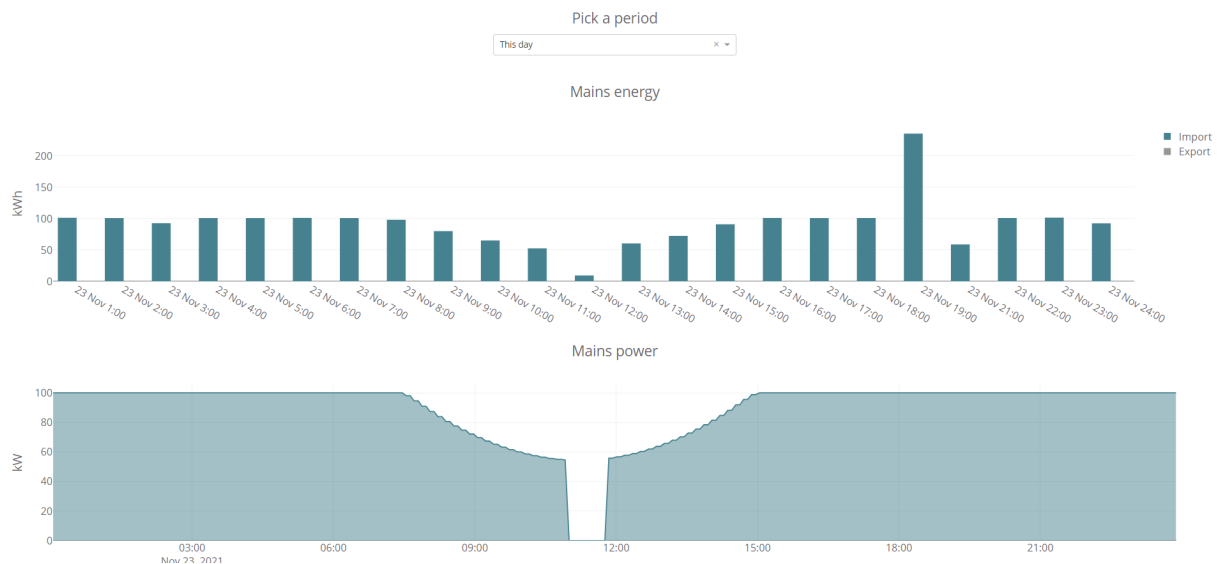


Grid page

The Grid page provides the views below:

- 24 hour history of kW.
- 30 day history of imported energy, exported energy and import expenses.
- 12 month history of imported energy, exported energy and import expenses.
- 10 years history of imported energy, exported energy and import expenses.
- This day's history of kW.
- This month's history of imported energy, exported energy and import expenses.
- This year's history of imported energy, exported energy and import expenses.

Note that the 24 hour and the Daily histories are available only when the assessment period is less than 10 days. Below are a few examples.



Settings

Various settings are added that will impact the data displayed on the site pages.

Date of origin

With the date of origin the user can select the point in time from which he/she will conduct the analysis. If selection is disabled the analysis will be from the date and time of the most recent data logged.

Settings

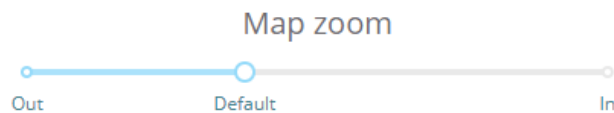
Date of origin for data to be analyzed

- Disable
 Date selection

06/14/2020

Map zoom

The initial map zoom used when landing on a page in ECcloud that features a map can be set. The zoom can always be adjusted manually on the pages afterwards.



Admin

On the Admin page a map and a list of the sites for which the user has administrator rights are presented.

The screenshot shows the ENcombi Admin interface. At the top is a navigation menu with tabs: LIVE, EXEC, PV, INV, SENSOR, GENSET, GRID, METER, LOG, WEATHER. Below this is a secondary menu with options: LOGOUT, PROFILE, SITES, ADMIN, SETTINGS, REPORT, ELINK, REFRESH. The main content area is titled "Sites with admin rights" and shows "Site currently selected: None". Below the title is a map of Europe with several sites marked. Underneath the map is a table titled "Site list" with the following data:

MAC	Site	Country	Region	City	kWp
10030569108A2	RUT950	Denmark	Midtjylland	Viborg	100

Below the table is a "Site selector" dropdown menu with the text "Select..." and a downward arrow.

When a site is selected a list of users with access to that specific site is automatically populated along with various options.

User list

Below is an example of a user list.

The screenshot shows a table titled "Users with access to site" with the following data:

Users	Company	Mail	Access
ENcombi	ENcombi ApS	support@encombi.com	ADMIN
claes	ENcombi	claes.sterreagaard@live.com	ADMIN

Revoke user access

Here a user can be revoked access to the site. The user being revoked access will be notified by email.

The screenshot shows a form titled "Revoke user access to site". It contains a dropdown menu with the text "Select..." and a downward arrow. Below the dropdown is a button labeled "REVOKE".

Grant existing user access to site

Here, an existing ECassessment user can be granted access to the site. The user being granted access will be notified by email.

Grant existing user access to site

VIEWER x ▼

GRANT

Modify site details

Here the selected ECassessment details can be modified.

Modify site details

MODIFY

Discard the site

This will delete the site. You must be the only user of the site to execute this command. First the drop down must be set to "Accept Discard" and then the "Discard" button must be clicked to issue the command.

Discard the site

You must be the only user with site access to succeed
Please logout and do new login to ECcloud afterwards

REJECT DISCARD x ▼

DISCARD

Manual data export

Here the raw assessment data can be downloaded manually. The data is downloaded in csv file format with the content accounted for in the separate document "ENcombi_API.pdf" as Method1.

Manual data export

Download the raw assessment data in csv format



The date of the data origin is set up on the Settings page.

Report

On the Report page reports and site notifications can be set up.

Manual report

The content of the report can be tailored, created and downloaded manually.

ENcombi Assessment site 02

Report

Select the elements to be included in the report

- Executive day analysis
- Executive month analysis
- Executive year analysis
- Executive total analysis
- PV 30 day analysis
- PV 12 month analysis
- PV 10 year analysis
- PV this month analysis
- PV this year analysis
- Genset 30 day analysis
- Genset 12 month analysis
- Genset 10 year analysis
- Genset this month analysis
- Genset this year analysis
- Grid 30 day analysis
- Grid 12 month analysis
- Grid 10 year analysis
- Grid this month analysis
- Grid this year analysis

Create report

PDF

The date of the report's origin is set up on the Settings page.

Profile

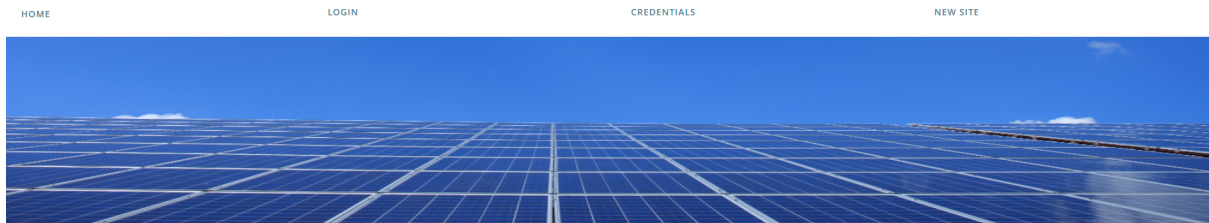
On the Profile page a user can update his/her profile.

Profile

Edit your profile

Logout

On the Logout button the user can logout. ECassessment will then revert to the Login page.



ECassessment - ECpv

Please enter your credentials

To return to the ENcombi Online start page from where you can pick the product type, you must click "Home" in the navigation bar.



Welcome to ENcombi Online

The portal for all the online ENcombi products

Please select your product type and press the continue button to proceed