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D2.4. EnergyMatching (EM) Platform: public web-based knowledge transfer

WP 2, T 2.4

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www.energymatching.eu

Adaptable and adaptive RES envelope solutions to maximise energy harvesting and optimize EU building and district load matching

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°768766

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Executive summary

This document presents the EnergyMatching (EM) Platform, clarifying its main objective, the identified target users and the contents provided for specific user categories. The online EnergyMatching Platform was developed with the aim of support different categories of stakeholders in maximizing the RES (Renewable Energy Sources) harvesting in their built environment. Four main sections are included and targeted to specific visitors. They offer a tool that users can run to find an optimal solution for their BIPV projects, inspiring examples of active building skin solutions (BIPV and Solar Window Block) with expected performance indicators, and a direct channel to technology providers active on the market who developed within the EnergyMatching project products and strategies useful to support the RES integration in buildings.

1. Introduction

EU policy is boosting the reduction of the EU building stock energy demand, the integration of RES at building and district scale and their energy flexibility with the introduction of new European directives, such as the ("EU Directive 2018:2001," 2018 [1]) which introduces the concept of collective self-consumption (Article 21) and the creation of renewable energy communities (Article 22), enabling buildings to manage their energy demand and production according to their needs. Buildings are more than just stand-alone energy units. Buildings are becoming increasingly active elements of the energy network by consuming, producing, storing and supplying energy. This shifting paradigm is affecting the way the building envelope is conceived and designed, exploiting roof and façade surfaces to maximize the match between solar harvesting and building consumption. Thus, novel approaches are required to conceive buildings, their energy supply and the way they are designed since the early design phases.

The EnergyMatching (EM) Platform was developed in the framework of the EU H2020 EnergyMatching project with the aim of supporting the main stakeholders of the building sector value chain towards the maximization of RES harvesting in the built environment, both at building and district scale.

2. EnergyMatching (EM) Platform

The main objectives of the EnergyMatching (EM) Platform, the identified target users, and the provided contents are presented below.

2.1 EM Platform objective

The online EnergyMatching Platform aims to support designers and other professionals in maximizing the RES harvesting in their built environment, since the early stage of their projects. It guides users to meet their own interests and potential exploiting resources developed within the EnergyMatching project. It offers a simplified access to an optimization tool that suggests optimal configurations of BIPV systems and provides inspiring examples of active building skin solutions (BIPV and Solar Window Block). The platform also links users to the EnergyMatching technology providers, establishing an important connection with the industry sector.

A deep analysis of the further market penetration and the exploitation potential of the EnergyMatching Platform is included in the project deliverable D5.3 (available at [2]).

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2.1.1 Identified target users

An analysis was performed to identify the stakeholders that could benefit from using the EM Platform. It started before the platform creation and was carried out in parallel to the platform development. The identified stakeholders categories are presented below, with explanation of why they are considered the EM Platform target users.

- **Architects & Designers**. The platform can help the designer to get quickly an idea of how a technological solution can be applied concerning the installed power and the most proper orientation of the photovoltaic panels. So, it can help the designers to pre-assess the application of PV/BIPV technologies in a project through a series of outputs, depending on the level of detail and knowledge of the designer.
- **Engineering Consultancies**. The platform provides a quick estimation of the technological solutions which can be installed as a practical help for Engineering Consultancies. It can help on being updated with different case scenarios and on making a real quick comparison among several solutions. The platform can be also exploited to be aware of new harvesting technologies to use or to assess in the projects they deal with.
- **Energy Service Companies**. Through the platform they can acquire substantial knowledge of various building cases, being therefore able to make some comparisons, see many technological solutions and increase their competitiveness against the other ESCOs. As they must offer retrofit actions to the client, the platform can be useful in order to make some pre-assessments of the current situation of the district of interest, and to deploy new global approach in order to optimize the net present value. Moreover, they may consider scenarios at bigger scale than the single building, involving a whole district.
- **Housing Government Bodies** (public housing bodies vs government approval agencies). Housing government bodies could use the platform either in collaboration with the aforementioned stakeholders (e.g. Designers, ESCos, Engineering Consultancies) or for their own knowledge. The government agency could utilize the platform to verify if BIPV and other EnergyMatching products are beneficial to the local housing population, looking at the performance indicators that are available.
- **Technology providers**. The entity selling the technologies can utilize the platform to show their technical, esthetic and financial relevancies. They can get also a direct channel with customers who are interested in their technology.
- **Real estate firms.** They could utilize the platform in collaboration with expert stakeholders or on their own (with sufficient knowledge) to examine whether BIPV and EnergyMatching products are worth investing in. European real estate firms of various sizes could use the platform to perform cost/benefit analysis on the inclusion of these products for their properties.
- **Housing associations**. Public housing associations in collaboration with the aforementioned stakeholders (e.g. designers, ESCos, engineering consultancies) or with proper knowledge within the association. European housing association could utilize the tool to see if they would benefit the inclusion of BIPV & EM technologies in their houses.
- **Building owners.** When looking to retrofit their properties, building owners who are interested in sustainability and renewable energy will be able to utilize the platform to make informed decisions on how to implement BIPV and energy efficient technologies. Subsequently, building owners will be able to find the products and solutions to make those upgrades through the EnergyMatching project and Catalogue.
- **Investors**. Sustainability-minded investors will be able to utilize the platform as a part of their projections into BIPV, sustainable building and retrofit investments. As NZEB and other green building legislation comes into play investors will want to have as many tools as possible at their disposal when making investments in these growing segments.

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- **Universities, research centers, students**. The platform has great potential to be used as a teaching and research tool. The consortium foresees the platform being used for university courses focused on engineering, renewable energy, building construction and sustainability etc. The platform can also be utilized by research centers focused on research related to the aforementioned topics.

2.2 EM Platform contents

The EM Platform is composed of four main sections. One of them, containing the “EnergyMatching Tool”, is protected by an access control system and require a username and password for access. The others, related to the “BIPV case studies”, the “Solar Window Block” and the “Marketplace”, are open to the public.

Users are guided through the platform sections by a “Matchmaking tool” to exploit the contents that better fit with their interests and needs. Starting from the landing page, the platform sections and contents are described below.

2.2.1 Landing page

Figure 1 shows the landing page, the entry point to the EM Platform. The landing is divided in different blocks:

- **navigation header**, fixed in a top position with the links to the available sections. If the user is not logged and tries to access the section requiring credentials, the user will receive the login window;

- **main images**, including the landing image, the project icon and a two-liner with the project title;

- **“Can we help you” button**, guiding the users in a decision tree process that finally provides useful suggestions on how to use the platform according to the specific needs. It is explained in paragraph 2.2.2.

- **icons**, i.e. a collection of four icons with a title and subtitle linking to the four main sections of the platform. If the user is not logged and tries to access the section requiring credentials, the user will receive the login window;

- **carousel**, including slideshow elements for cycling through some relevant images case study buildings of the EnergyMatching project;

- **description,** providing the main objectives of the platform and the project. It links to the EM Catalogue and to the project website;

- **footer**, including the EU flag, the H2020 EnergyMatching project number and the text stating that the project, and thus the platform, is financed by the EU commission.

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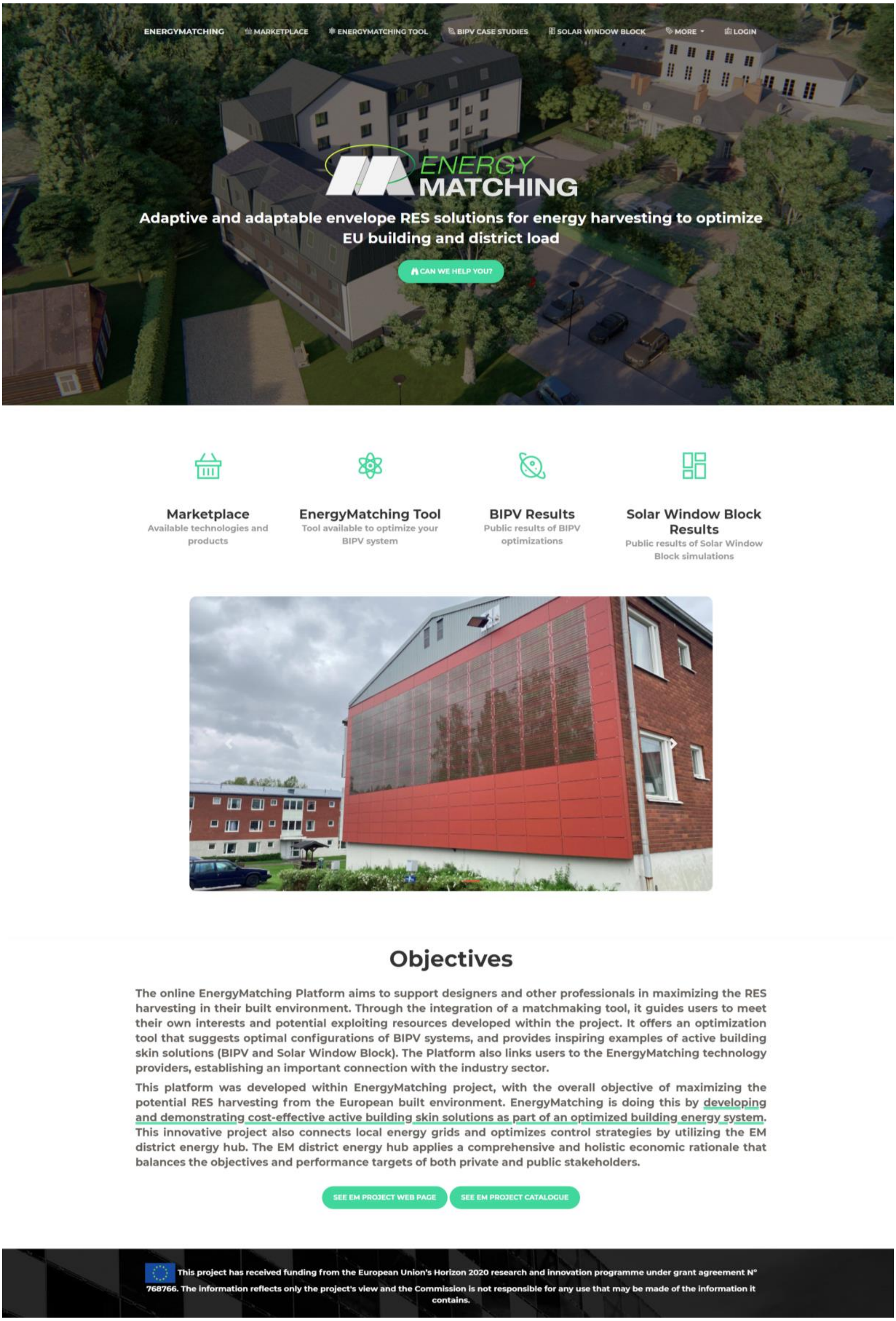

Figure 1: EnergyMatching Platform landing page.

On the right side of the navigation header, users can click on "MORE" and a floating menu will appear with some links providing further information about the platform contents and the EnergyMatching project (Figure 2).

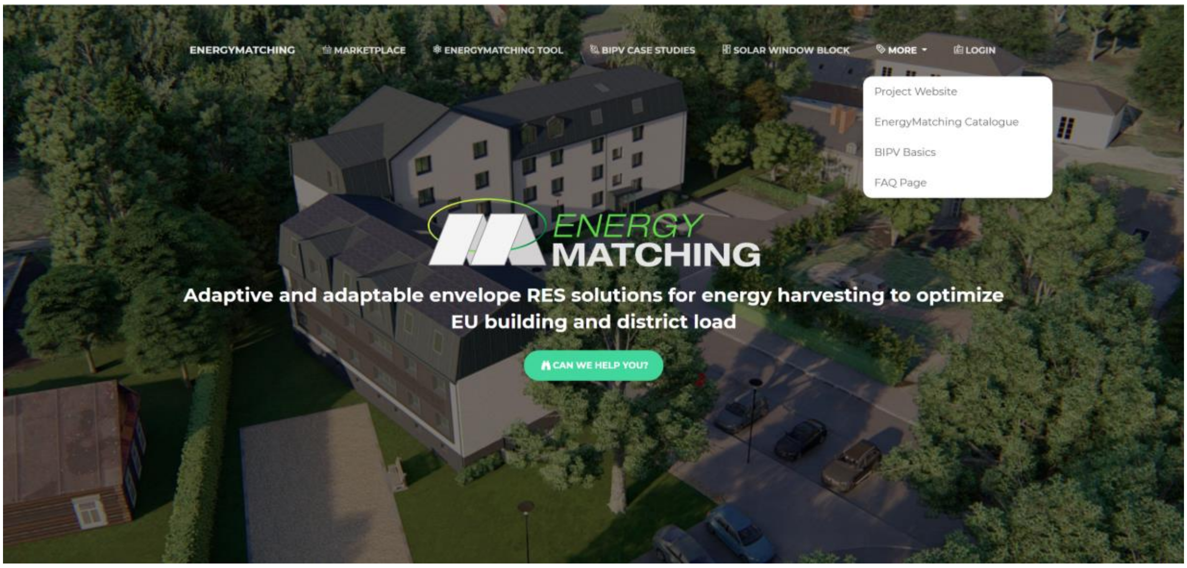

Figure 2: Floating menu linking to other pages connected with the EnergyMatching Platform.

The links connect to:

- the **project website**, where the user can have an overview of the EnergyMatching project, explore the demo sites, get information about events/news, or even access to the public reports of the project.

- the **EnergyMatching Catalogue**, where the user can find detailed information of the products and solutions developed within the project (Figure 3).

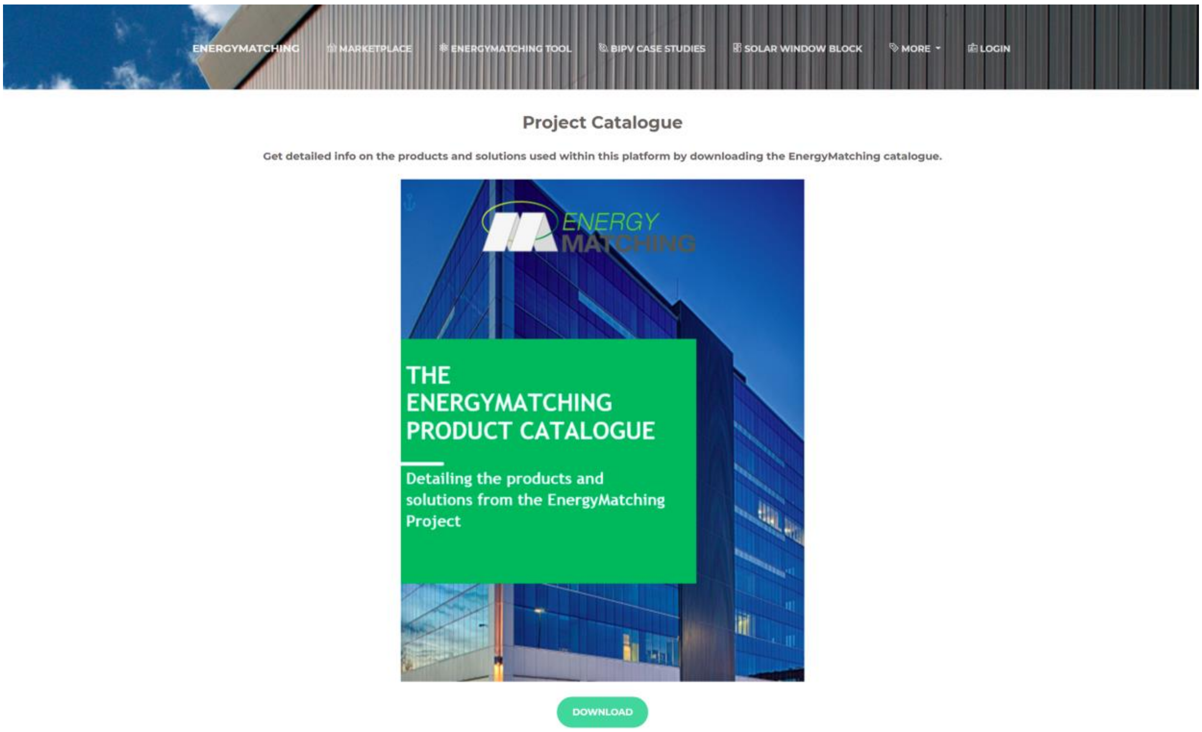

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Figure 3: EnergyMatching Catalogue cover

- BIPV basics, providing basic information about the BIPV technology (Figure 4). The page presents three clickable bubbles so the user can explore three important aspects basis of the integration concept: technology integration, aesthetic integration and energy integration. Below, a hint to possible BIPV applications and benefit is included.

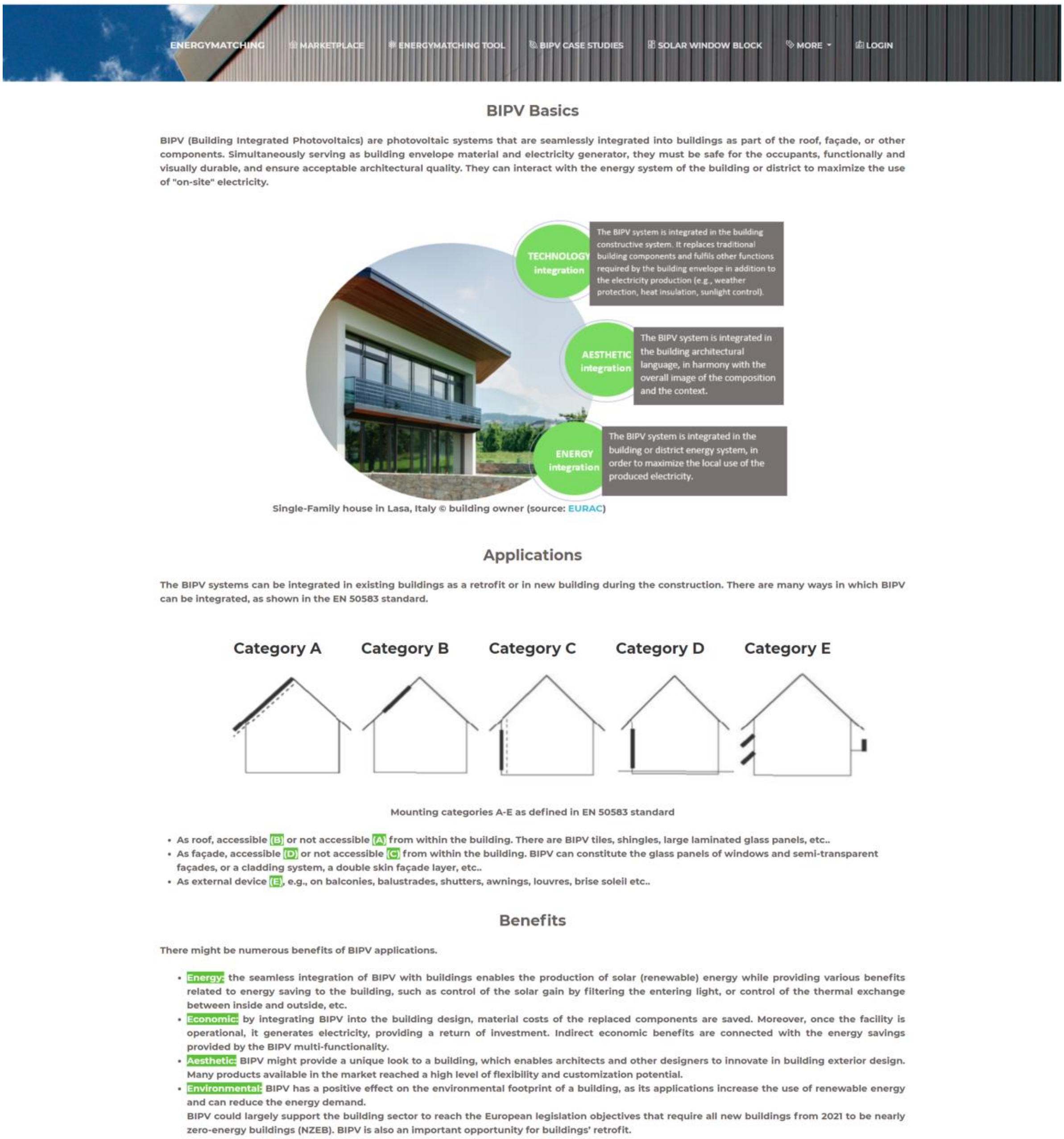

Figure 4: Supporting page containing some basics of the BIPV technology.

- FAQ page, providing the user with access to Frequent Asked Questions.

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2.2.2 „Can we help you?“

Clicking on the “Can we help you” button, users find a matchmaking tool that can support them in exploiting the platform contents. The matchmaking tool (schematized in Figure 5) is based on a decision-making trees structure. It divides a set of purposes of using the platform, users and the users’ actions and put them into different levels to guide the use of the matchmaking tool.

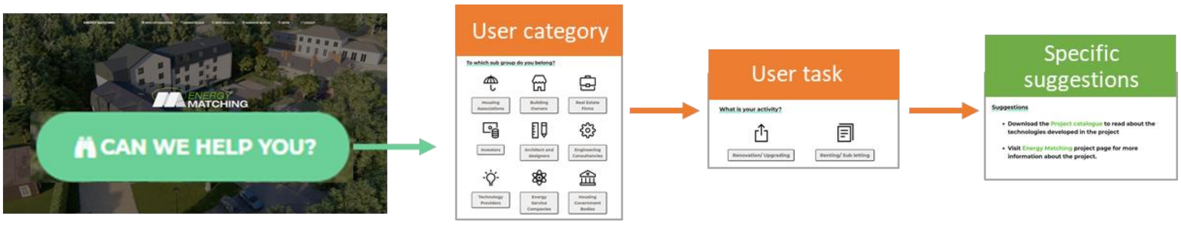

Figure 5: schematic representation of the matchmaking tool that guides users to find the contents that meet their interest.

The potential use of the platform is divided into three categories: building management, knowledge provision, and general public. In each category, the roles and actions of different users are further defined. For instance, in the building management category, the roles of users include housing associations, building owners, real estate firms, investors, architect and designers, engineering consultancies, technology providers and energy service companies. In the knowledge provision category, the roles of users include housing government bodies, university staff and students, and research center staff. For different roles, a set of different actions are defined. The building owners may take actions such as renting/subletting, or renovation/upgrading. The real estate firms may take actions such as long term buy/sell or long-term investment. The investors can also take actions such as long-term investment. The architect, designers and technology providers can take actions such as renovation/upgrading. The energy service companies can take actions such as facility management, renovation/upgrading. The university staff and students can take actions such as training and increasing the knowledge base. There is also another category named the general public, which represent the users without specific purposes for using the tool but just wander around.

Following the different roles and actions, a set of further actions and links will be recommended to the users. Some of the recommendations are shown below.

- Learn more about the EnergyMatching project.
- The EnergyMatching Catalogue can help you in your renovation project.
- Discover the cost-efficient EnergyMatching solutions we can offer.
- Download the EnergyMatching Catalogue to read about the technologies developed in the project.
- Ask for credentials and run the EnergyMatching Tool for BIPV optimization to get performances parameters.

The performances parameters which can be derived from the platform are classified into four specific categories: energy-related performance parameters (e.g., PV power production and electricity demand at different time intervals), social/comfort-related performance parameters (e.g., light density), economy-related performance parameters (e.g., Net Present Value and payback periods) and environment-related performance (e.g., carbon emissions). For different stakeholders and actions, only the most relevant performance parameters will be provided. Such setting can help avoid overwhelming of information on the users.

2.2.3 EnergyMatching Tool

The “EnergyMatching Tool” section provides a simplified version of the optimization tool for BIPV systems developed within the project and presented in the deliverable D2.2 [3]. The tool supports the users to find a suitable capacity and positions for their BIPV system and the optimal storage capacity to maximize the

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techno-economic performance of the whole system. The optimization provides a set of indicators giving an insight about the system performance. This section is protected by an authentication mechanism. Credentials have to be asked to the platform developers.

Once the users click in the “EnergyMatching Tool” link in the navigation bar, they will see a page similar to the screenshot shown in Figure 6.

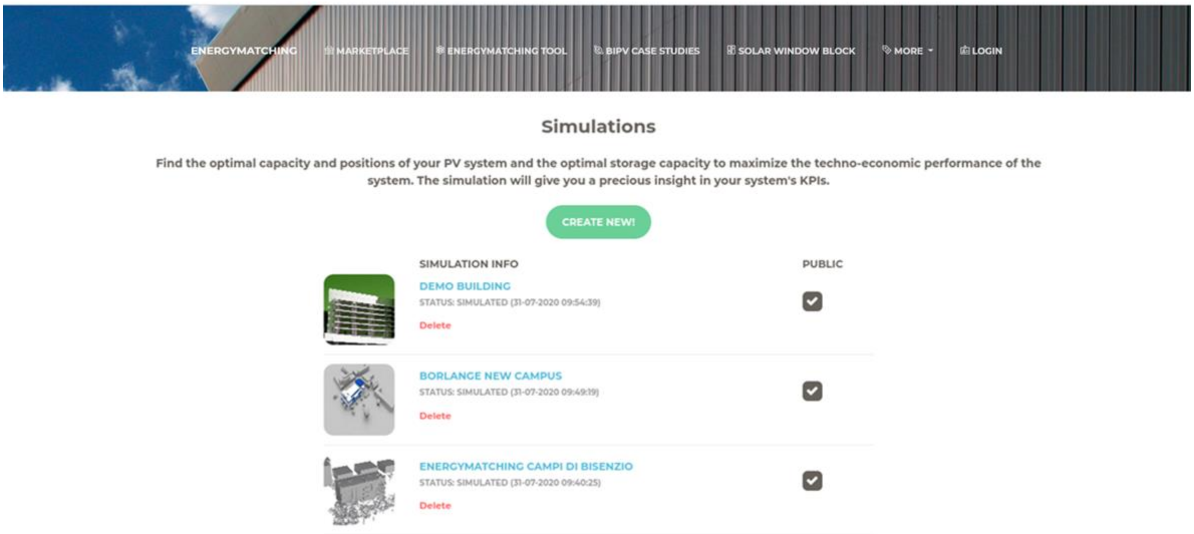

Figure 6: “EnergyMatching Tool” section, introductive page.

In this page the user can:

- manage previous performed optimizations and mark them as public. The optimizations are private by default, so only the user creating the optimization has access to the related files and info. In case the user wants to public it in the section “BIPV case studies”, just needs to mark it as public. This page allows also the user to delete optimizations or access the contents of each one, by clicking on the optimization title. When the user clicks in the tile, a new page with all the optimization information (i.e. inputs, outputs and files) is presented (more details about that information are explained in section 2.2.4);

- run new optimizations. By clicking the green “Run the EnergyMatching Tool” button, a new page appears (Figure 7) including a form to fill in with the inputs asked to run the optimization tool.

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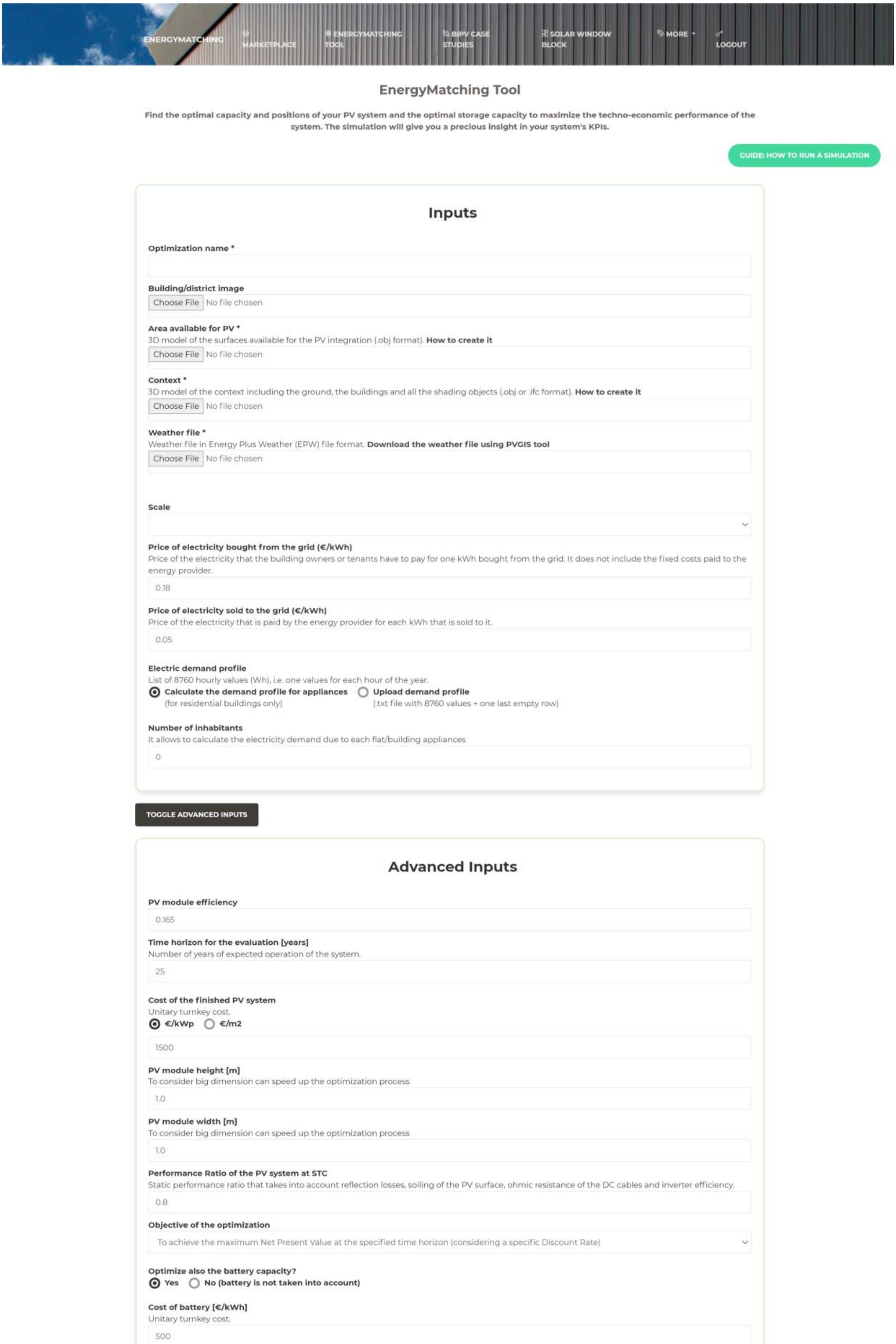

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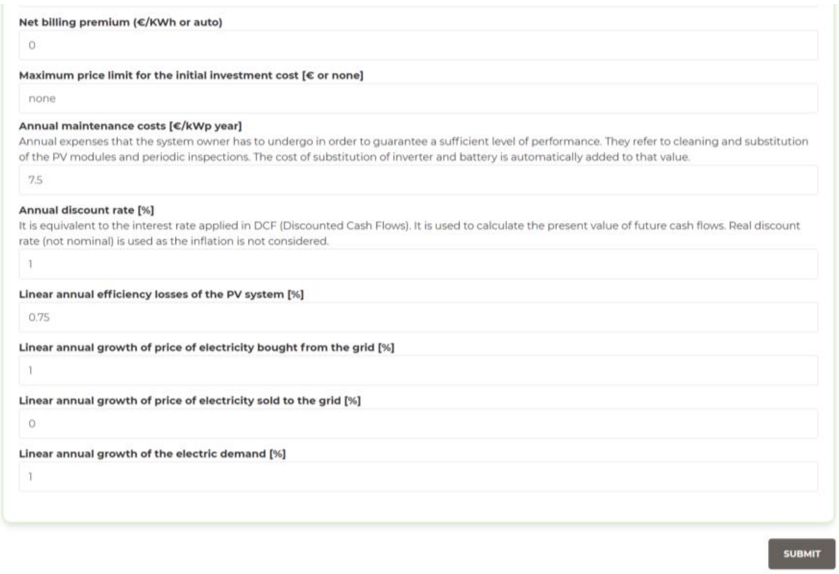
Net billing premium (€/KWh or auto)
0
Maximum price limit for the initial investment cost [€ or none]
none
Annual maintenance costs [€/kWp year]
Annual expenses that the system owner has to undergo in order to guarantee a sufficient level of performance. They refer to cleaning and substitution of the PV modules and periodic inspections. The cost of substitution of inverter and battery is automatically added to that value.
7.5
Annual discount rate [%]
It is equivalent to the interest rate applied in DCF (Discounted Cash Flows). It is used to calculate the present value of future cash flows. Real discount rate (not nominal) is used as the inflation is not considered.
1
Linear annual efficiency losses of the PV system [%]
0.75
Linear annual growth of price of electricity bought from the grid [%]
1
Linear annual growth of price of electricity sold to the grid [%]
0
Linear annual growth of the electric demand [%]
1
SUBMIT

Figure 7: “EnergyMatching Tool” section, input form page.

The creation of a new optimization requires a list of inputs. With the objective of making it easier for the user to understand how to run an optimization, in the top right corner of the input form a green button appears providing access to a supporting document.

The inputs are categorized in two groups (the required info is marked with an *):
- inputs, including files (e.g., the surface available for the PV installation, the 3D model of the optimization context, the weather file) and other basic information (e.g., the scale of the building, the electric demand profile);
- advanced inputs, like information related to the PV system, the electricity price, and others.

Default values are provided for most of the inputs to support the user, who can anyway modify them in order to fine tune the optimization.
Two instruction documents are available (Figure 8) explaining how to create the 3D models (using the Rhinoceros software [4]) required by the optimization tool (i.e. the objects like buildings, trees, etc. constituting the context, and the area available for the PV installation).

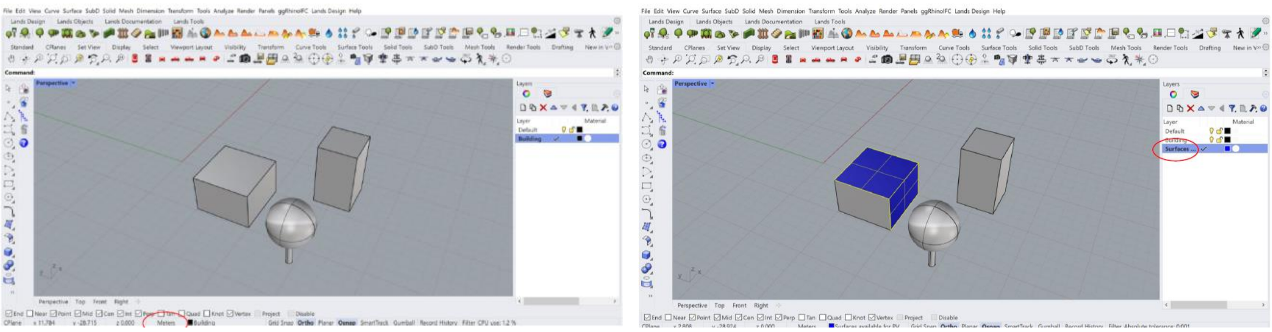
Figure 8: screenshot of the two instruction document provided to support the creation of the optimization context (on left) and the area available for the PV installation (on right).

To allow users to easily download a weather file, a front end to a cloud based PVGIS tool [5] is included to get the file, just clicking on a map. Figure 9 shows the map: the user has clicked the location and thus is ready for downloading the file.

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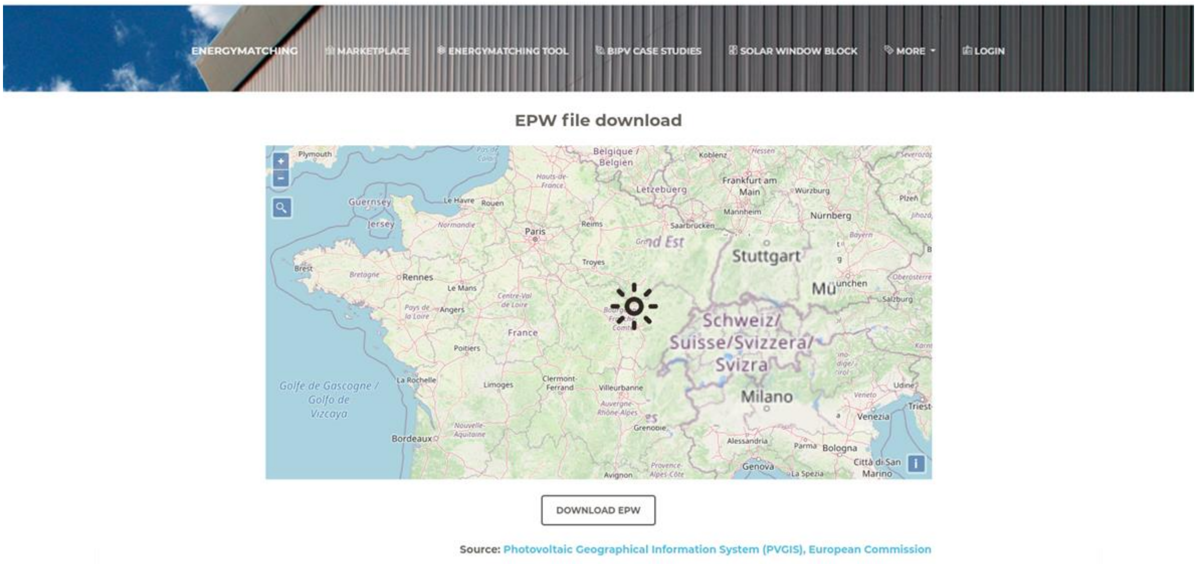
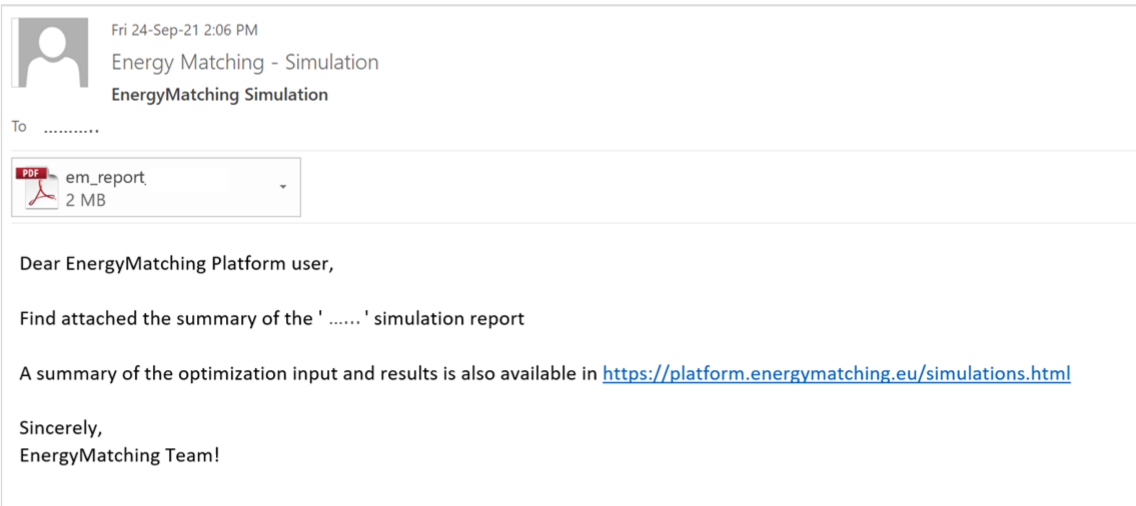


Figure 9: “EnergyMatching Tool” section, PVGIS map to download the weather file.

Once the inputs are ready, the users can click the “Submit” button and the inputs will be preprocessed and transferred to the optimization engine so the optimization is performed.

An informative feedback is sent via e-mail about the status of the optimization. If any problem or error occurs, the users get notified so they can re-submit the optimization. Once the optimization finishes, the users get another e-mail (Figure 10) stating that the optimization results are ready in the platform. The e-mail also includes a summary report of the optimization in pdf format (Figure 13).


Fri 24-Sep-21 2:06 PM
Energy Matching - Simulation
EnergyMatching Simulation
To ....

em_report
2 MB

Dear EnergyMatching Platform user,

Find attached the summary of the ' ...... ' simulation report

A summary of the optimization input and results is also available in https://platform.energymatching.eu/simulations.html

Sincerely,
EnergyMatching Team!

Figure 10: sample email sent to the user informing that the optimization was successful and providing a pdf summary report of the optimization including inputs and outputs (on left); first page of a sample report (on right).

If the users click on the provided link, they are directed to the “EnergyMatching Tool” page that collects all the private optimizations performed, as shown in Figure 6. Just select one of the optimizations and a page opens providing all the optimization details, as shown in **Error! Reference source not found.**.

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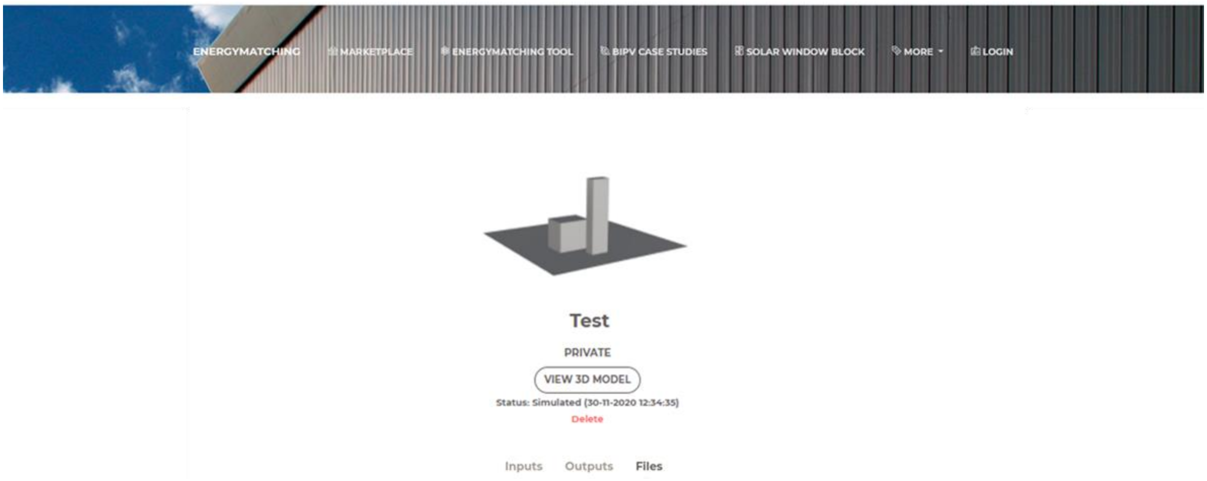

Figure 11: “EnergyMatching Tool” section, page containing all the information related to one sample optimization result.

On the top the user sees the image and the link to the 3D model used as input. The optimization date and status are also provided, as well as the possibility to delete the optimization.

Below, three links are visible, each one will present different information regarding to the optimization:

- **inputs**, i.e. all the information related to the data provided by the user;

- **outputs**, i.e. the information generated by the optimization engine, based on the provided inputs;

- **files**, i.e. some files provided by the user and other files generated by the optimization (e.g., the area suggested for PV installation, the hourly production profile). Apart from downloading the data, the 3D models can be seen online in the embedded 3D renderer. The suggested PV configuration uses the 3D engine to show in the same 3D viewer the information related to the 3D model of the context plus the suggested PV configuration. A screenshot of the inputs, outputs and files sections related to the sample building shown in

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Error! Reference source not found., is reported in Figure 12.

Input

Scale	single building
Time horizon for the evaluation [years]	30
Supply	['centralized heating system', 'centralized cooling system', 'lighting of common spaces']
Number of inhabitants	0
Objective of the optimization	maximum NPV
Annual Discount Rate [%]	1
Net billing premium [€/kWh or auto]	0.0
Maximum limit for the initial investment cost [€]	none
Price of electricity bought from the grid [€/kWh]	0.18
Price of electricity sold to the grid [€/kWh]	0.05
Module efficiency	0.149
Module height (m)	0.9
Module width (m)	0.35
Cost of battery [€/kWh]	700
Cost of the finished PV system [€/kWp]	1500
Performance ratio of the system at STC	0.8
Linear annual efficiency losses of the PV system [%]	0.75
Annual maintenance costs [€/kWp year]	7.5
Linear annual growth of price of electricity bought from the grid [%]	1
Linear annual growth of price of electricity sold to the grid [%]	0
Linear annual growth of the electric demand [%]	1

Output

PV capacity [kWp]	0.70
PV area [m²]	4.72
Battery capacity [kWh]	0.00
Expected Net Present Value [€]	1216.87
Self-sufficiency [%]	43.52
Self-consumption [%]	59.63
Annual cumulative production [kWh]	767.29
Annual cumulative balance production/consumption	0.77
PV system initial cost [€]	1056.04
Expected payback time	13 years 11 months 0 days
Expected LCOE considering self-consumed electricity [€/kWh]	0.11
Expected LCOE considering the produced electricity [€/kWh]	0.08
Specific emission of self-consumed electricity [kg CO2-eq/MWh]	146.57
Specific emissions of the produced electricity [kg CO2-eq/MWh]	102.55

Files

Optimization report	em_report.pdf	
Area available for PV	PV_areas.obj	VIEW
Area suggested for PV	PV_layer.obj	VIEW
Context	context.obj	VIEW
Suggested PV configuration		VIEW
Weather file	epwfile.epw	
PV Production Profile	ProductionProfile.csv	
Electric Demand Profile	ConsumptionProfile.csv	

Figure 12: screenshot of inputs, outputs and files provided for a sample case study with optimized BIPV system.

Each time the user clicks in “View 3D model” or “View” links, the embedded 3D engine starts and shows the 3D model. The user can rotate, zoom in/out and move the model in a way similar to other 3D viewers to visualize the details of the model.

Among the provided files, there is the same pdf summary report of the optimization that was included in the e-mail got by the user. Figure 13 shows an example of report related to the building shown in Figure 11. It includes the optimization inputs and outputs, also in chart format.

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Figure 13: example of an optimization summary report. It includes inputs and outputs, also in chart format.

Below, the charts included in the summary report are shown more in detail.

- **Consumption chart**, showing the original cumulative monthly electric demand and the proportion of it that is directly covered by PV electricity (**Error! Reference source not found.**);

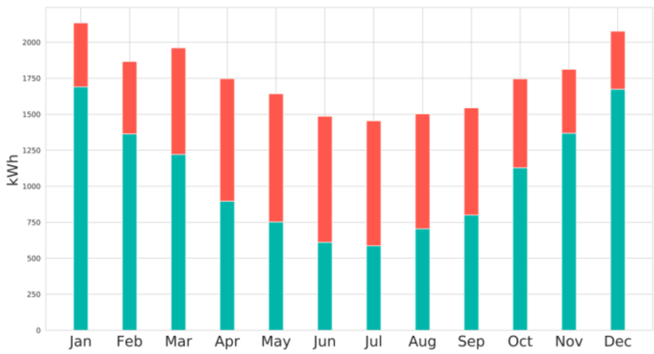

Figure 14: consumption chart, showing the original cumulative monthly electric demand and the proportion of it that is directly covered by PV electricity.

- **consumption-production chart**, showing the monthly cumulative production from PV alongside the relative building demand. It shows also the fraction of the produced electricity that is consumed on site (i.e. used directly or stored) (Figure 15**Error! Reference source not found.**);

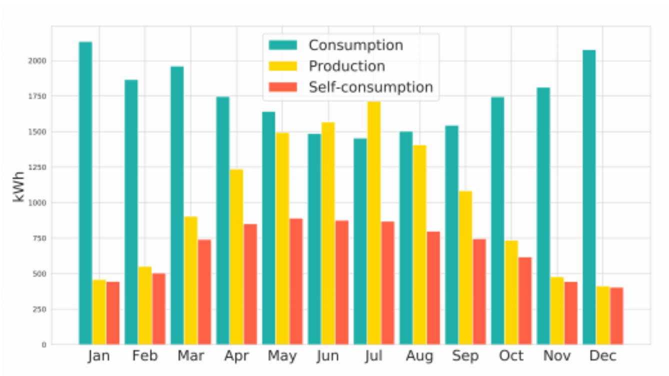

Figure 15: consumption-production chart, showing the monthly cumulative production from PV alongside the relative building demand. It shows also the fraction of the produced electricity that is consumed on site (i.e. used directly or stored).

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- **self-consumption chart**, showing the fraction of the electricity produced that is injected into the grid and the fraction that is effectively used into the building (Figure 16);

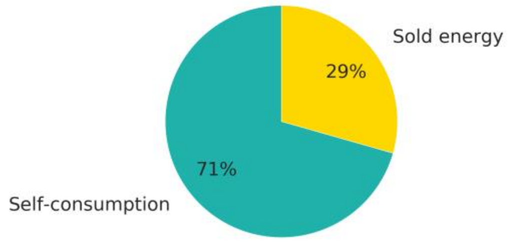

Figure 16: self-consumption chart, showing the fraction of the electricity produced that is injected into the grid and the fraction that is effectively used into the building.

- self-sufficiency chart, showing the fraction of the building electricity demand that is covered by PV and the fraction that needs to be purchased from the local grid (Figure 17**Error! Reference source not found.**);

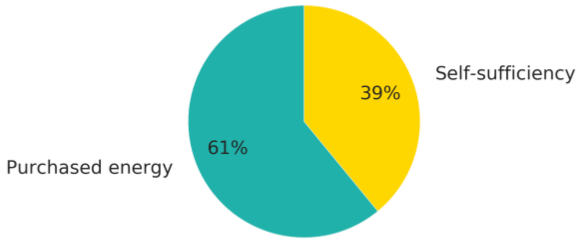

Figure 17: self-sufficiency chart, showing the fraction of the building electricity demand that is covered by PV and the fraction that needs to be purchased from the local grid.

- cashflow chart, where the blue dots represent the expected discounted cashflow of the PV investment over the planned life-time of the system, the red dot represents the expected payback time (Figure 18).

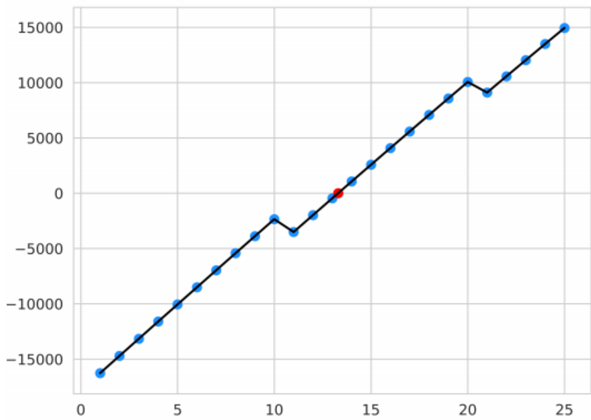

Figure 18: cashflow chart, where the blue dots represent the expected discounted cashflow of the PV investment over the planned life-time of the system, the red dot represents the expected payback time.

2.2.4 BIPV optimization results

Connected to the EnergyMatching Tool is the “BIPV case studies” section, i.e. a page containing results coming from the optimization tool, so case studies of buildings with optimized PV systems (Figure 19).

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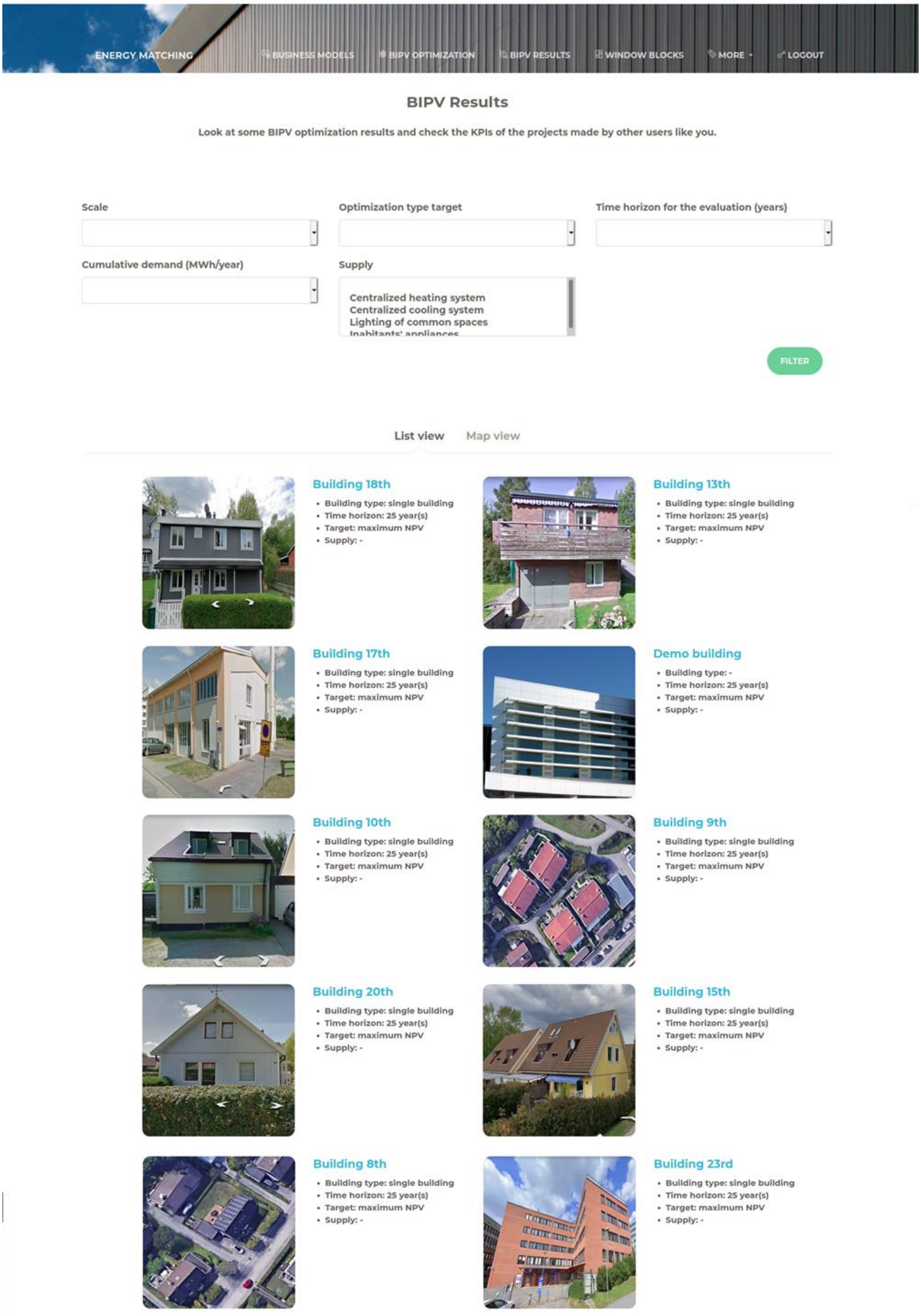

Figure 19: “BIPV case studies” section.

The “BIPV case studies” section is open to all users and has two differentiated parts:

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- **search and filter section**, allowing users to filter the results, based on their interest. The filters are inclusive, so only the results matching all are displayed. The backend of the filter uses information coming from the optimization tool inputs and outputs and the case studies' database to do the filtering. The available filters are:
  - **scale**, to select if the optimization is for one or more than one buildings;
  - **optimization type target**, distinguishing between two target functions:
    - to achieve the maximum Net Present Value (NPV) at the specified time horizon (considering a specific Discount Rate);
    - to achieve the maximum self-sufficiency having the payback of the initial investment within the specified time horizon (considering a specific Discount Rate);
  - **time horizon for the evaluation**, grouped in ranges: to 10 years, from 11 to 20, from 21 to 30 and 31+;
  - **cumulative demand**, also grouped in ranges: to 10 MWh/year, from 11 to 100, from 101 to 200, from 200 to 500 and 500+;
  - **supply**, to select one or more types of supply among centralized heating system, centralized cooling system, lighting of common spaces and inhabitants' appliances;
- **results section**, including two types of views:
  - list view, showing the results in a list format, including one image, the title of the optimization and some details (Figure 19);
  - map view, showing a dynamic map with all the locations in which there is an optimized BIPV configuration matching the search done by the user. The location of the simulation is obtained processing the Energy Plus Weather file (EPW) used when defining the weather file for the optimization (Figure 20).

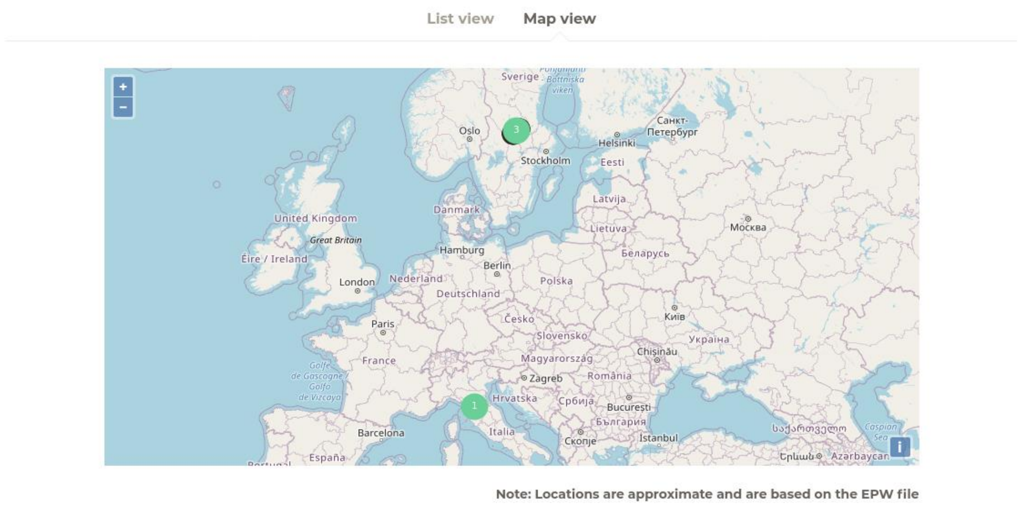

Figure 20: EnergyMatching Platform containing the BIPV results set in "map view".

Once one of the BIPV optimization results is selected (clicked), the page containing all the information related to the optimization opens, the same page presented in Figure 11.

2.2.5 Solar Window Block simulation results

The "Solar Window Block" section shows different system configurations of the Solar Window Block system, i.e. an autonomous and multifunctional system (developed within the EnergyMatching project) that integrates an insulating frame, a highly efficient window, a shading system, a decentralized ventilation machine and a PV module plus battery. Users can customize the Solar Window Block configurations and

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obtain results in terms of the system performance (Figure 21).

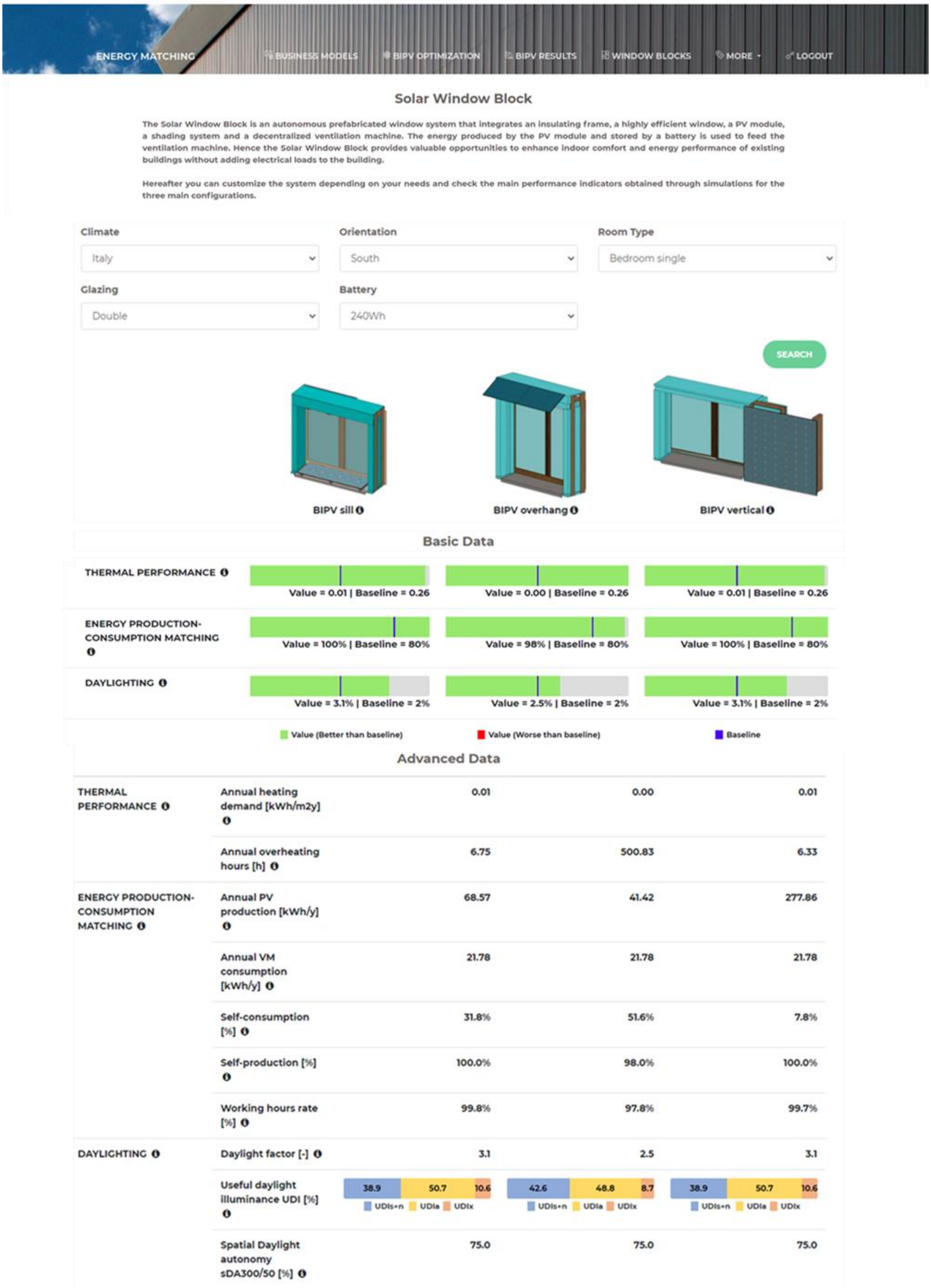

Figure 21: “Solar Window Block” section.

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As in the "BIPV case studies" section, the "Solar Window block" page is divided in two parts:

- **search and filter section**, allowing the user to find the best configurations based on a series of inclusive filters. These filters are based on the next different factors:
    - **climate**, to select one of the three locations (Italy, France and Sweden) considered in the dynamic simulations performed within the project;
    - **orientation**, to select the preferred orientation for the Solar Window Block. The user can select among three cardinal directions (South, East, West) and all of the intercardinal directions (SW, NW, NE, SE);
    - **room type**, allowing the user to filter based on the type of the room. Three different rooms types can be selected in this filter: single room, double room or living room;
    - **Glazing,** to select between a Solar Window Block with double glazing or with triple glazing;
    - **battery**, allowing the user to refine the search based on the battery type. Currently 240Wh and 512Wh batteries are considered;
- **results section**, showing three different configurations for the search performed by the user. The configurations are: BIPV sill, BIPV overhang and BIPV vertical. Each one is presented with its own picture and a collection of relevant information coming from a set of simulations performed within the project. The information is classified in thermal performance, energy production-consumption matching and daylighting. It is presented in two different ways: as graphical representation, indicating a baseline as reference for the performance value, and as data. This section allows the user to quickly compare different configurations and select the most efficient or preferred one for the user configuration.

2.2.6 Marketplace

The "Marketplace" is a section intended to showcase the advances and innovations carried out during the project, or developed by the project partners. The objective is to provide an immediate and visual display of the information while offering a contact option so that the interested visitor can obtain more details, directly reaching the technology provider. When accessing the marketplace the visitor can find a panel with the different innovations, together with a representative picture of them. Upon accessing each of them, a kind of profile of each innovation is displayed. Figure 22 shows the "Marketplace" section and an example of profile page.

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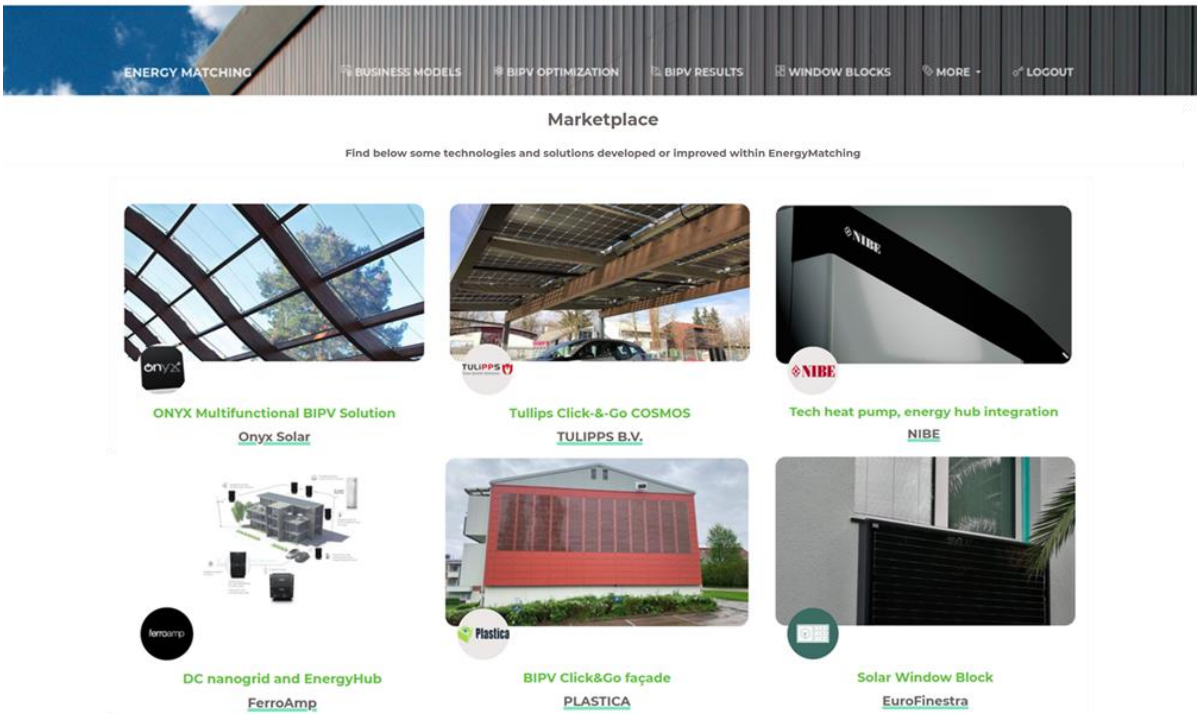

Figure 22: “Marketplace“ section.

The profile is structured identically for all innovations in the Marketplace (Figure 23). First, it shows the company or innovation logo, if any, along with the name and contact person. Just below, it shows the direct link to the solution on the portal of the partner who developed it, and a brief description explaining what the solution consists of. Finally, a sort of technology showroom is presented in the form of a slideshow of photos and images.

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Figure 23: sample profile page.

The structure and contents of the Marketplace have been designed to display and reach the internal and external technology providers as well as to attract the stakeholders identified in the stakeholders' analysis (section 2.1.1).

3. Conclusion

The EnergyMatching Platform was developed with a clear focus on specific target users, aiming to support them in maximizing the integration of RES harvesting solutions in buildings and districts. The target users were identified through a deep analysis of potential interested stakeholders, evaluating how they could benefit from the platform. Furthermore, around 40 professionals from different countries were reached and asked to test the platform and provide their feedback. The testing activity was a useful support as it allowed both to spread the platform and collect many feedback. The feedback mainly referred to the clearness of the provided contents and the related objectives, the real suitability of the platform by the identified target users, the capability to transmit basic knowledge and to make the public aware of the potentialities connected to the proposed solutions. The later development of the platform toke into account and implemented several of the collected suggestions. In order to support the identified target users in finding what they need to perform their own activities, a matchmaking tool was integrated aimed to guide each stakeholder to specific contents. Different kinds of contents are available on the EnergyMatching Platform. An optimization tool and a repository of simulation results can help designers and other professionals in integrating RES solutions in buildings and district. They offer an instrument to support the early design phases, on one side, and inspiring example of integration with related performance data, on the other side. The platform also links users to the EnergyMatching technology providers. The "Marketplace" section offers a showcase of technologies developed within the EnergyMatching project. Basic information, photos and reference contacts are available

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for the users interested to know more about some technologies and to get in touch with the related providing companies. To connect stakeholders is one important objective of the platform, aiming to boost the network between research, market and industry.

4. References

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Technical references

Project Acronym	**EnergyMatching**
Project Title	Adaptable and adaptive RES envelope solutions to maximise energy harvesting and optimize EU building and district load matching
Project Coordinator	David Moser and Laura Maturi EURAC david.moser@eurac.edu laura.maturi@eurac.edu
Project Duration	October 2017 – July 2022 (58 months)

Deliverable No.	D2.4
Dissemination level*	PU
Work Package	WP 2 – Modeling environment and EnergyMatching web platform
Task	T2.4 – EnergyMatching platform
Lead beneficiary	EURAC
Contributing beneficiary/ies	R2M, HDA, WIP
Due date of deliverable	30 September 2021
Actual submission date	30 September 2021

PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

v	Date	Beneficiary	Author
1.0	30/09/2021	Eurac, R2M	Jennifer Adami, Rubén Alonso

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