

SPEEDIER

SME PROGRAM FOR ENERGY EFFICIENCY THROUGH DELIVERY AND IMPLEMENTATION OF ENERGY AUDITS

SPEEDIER TOOL INSTRUCTIONS

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Abbreviations

ECM	Energy Conservation Measure.
SME	Small or Medium sized Enterprise.

1 Introduction

1.1 Background

SPEEDIER is a highly innovative *one-stop-shop solution* that applies an integrated approach to energy management, providing information, advice, capacity building, energy auditing, financing, as well as implementation of energy efficiency solutions and monitoring of impacts. As part of the project, the SPEEDIER team, (led by partner, ITEC), has developed a SPEEDIER Tool for Experts that will assist them to quickly carry out an assessment of the energy saving opportunities available to SMEs that participate in the SPEEDIER Service.

1.2 Purpose of the document

The purpose of the document is to explain the operation of the tool and the correct workflow in order to obtain a proposal for measures and a calculation of energy savings. The document has been structured with explanations in text and captures images of the tool to make the guide more comprehensible.

2 Tool instructions

2.1 Log in

In order to log in to the Speedier tool, the user must have previously registered on the [ITeC website \(https://en.itec.cat/ https://itec.es https://itec.cat\)](https://en.itec.cat/), during Speedier Project this register to use Speedier Tool will be free.

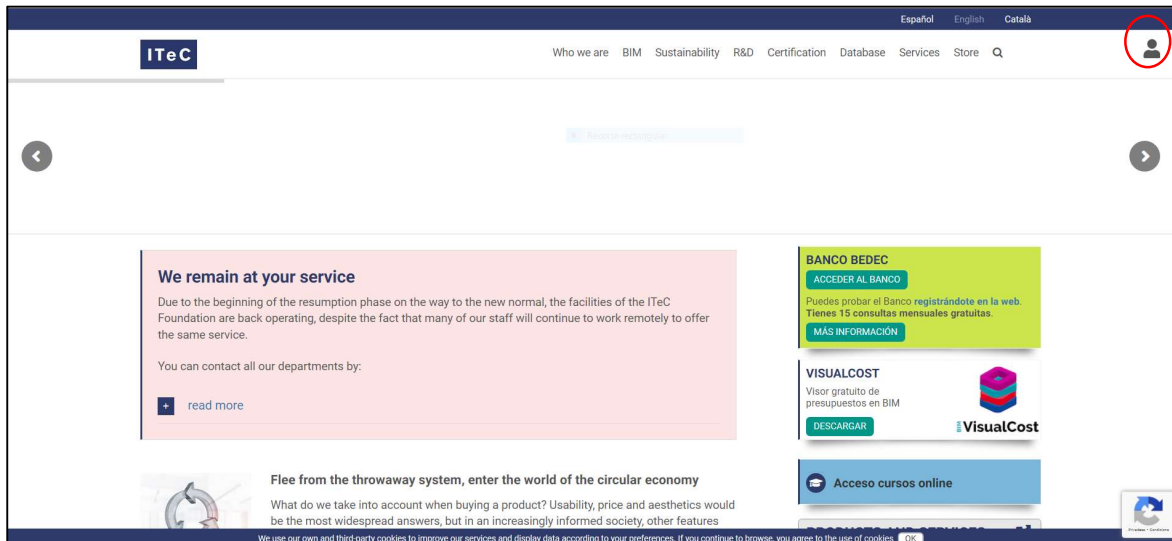


Figure 2-1. ITeC website

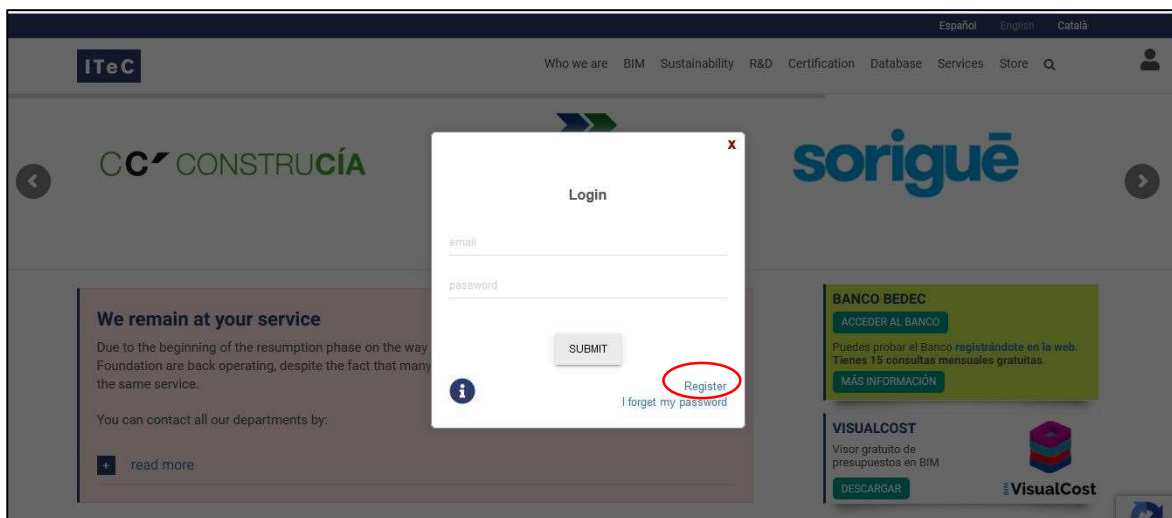


Figure 2-2. ITeC website register

The screenshot shows the ITeC website's registration form. At the top left is the ITeC logo, and at the top right are language options: Español, English, and Català. The main content area features a white 'Register' form with the following elements:

- Input fields for 'First Name' and 'Last Name'.
- Input fields for 'E-mail' and 'Password'.
- A 'Retype password' input field.
- A 'Preferred language' dropdown menu currently set to 'English'.
- Two checkboxes:
 - I want to be informed of [the latest news in the construction sector](#) as well as our [products and services](#)
 - I [accept the legal advice](#)
- 'SEND' and 'CANCEL' buttons at the bottom.

Figure 2-3. IteC register formulary

Once registered on the ITeC website, the user can now access the [Speedier Energy Exper Support tool](https://tcqi.eu/v1/speedier/#/app/home/projectList) and log in with the user email and password.

The screenshot shows a login window titled 'Iniciar sesión' (Log in) with a close button (X) in the top right corner. The form contains:

- An email input field with the text 'dromeu@tec.cat'.
- A password input field represented by a series of dots.
- An 'ENTRAR' (Log in) button.
- An information icon (i) in a blue circle at the bottom left.
- Two links at the bottom right: 'Registrarse' (Register) and 'No recuerdo el password' (I forgot my password).

Figure 2-4. Speedier tool log in

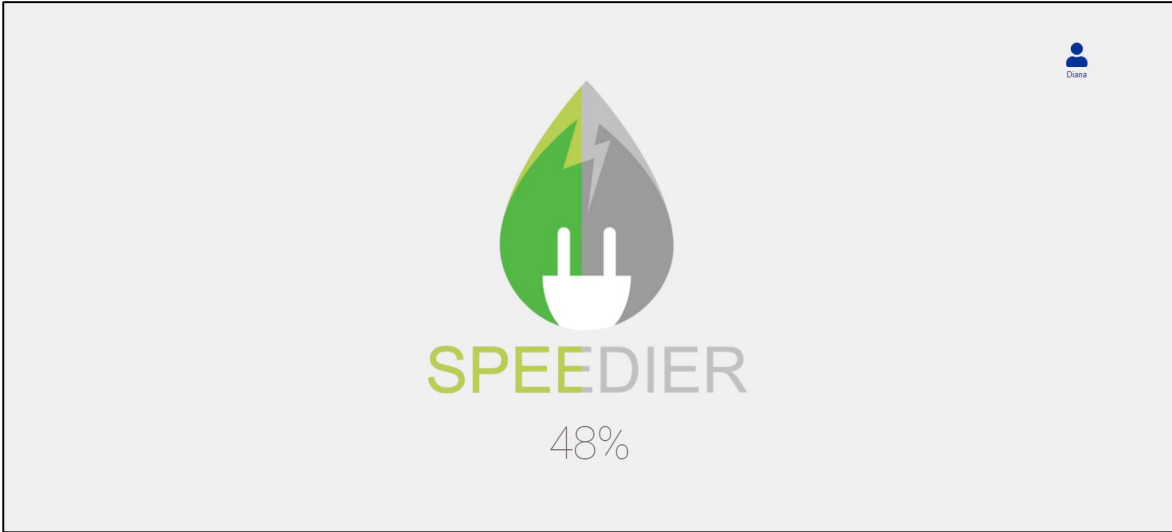


Figure 2-5. Speedier tool loading

2.2 Menus

The first screen that is seen when the user log in in Speedier Tool is Project List, in there the user have all projects and can managed it.

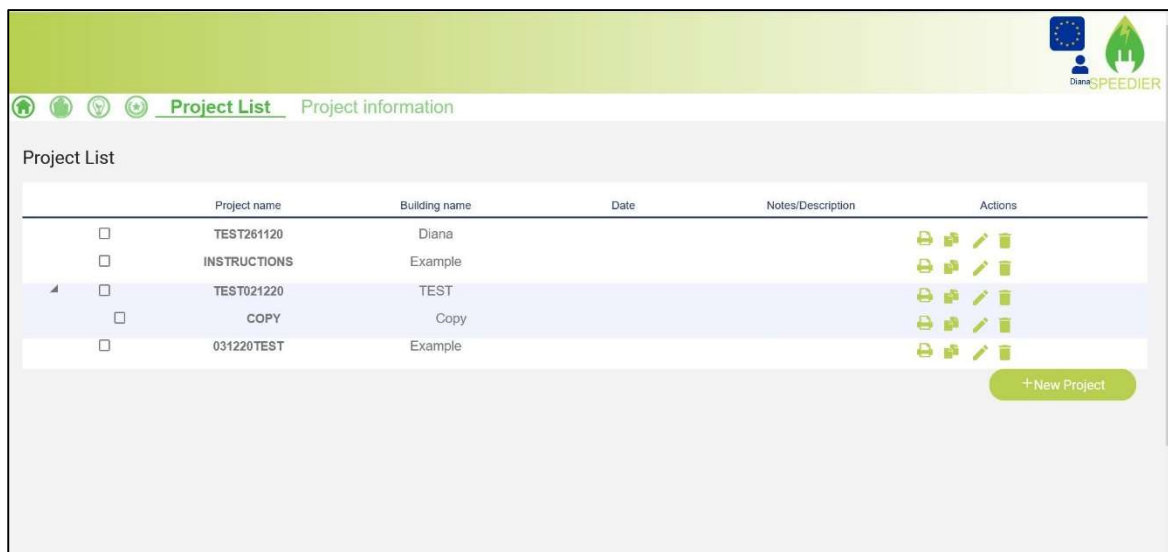


Figure 2-6. Project List

As the user can see, the tool is structured in four main menus and in each one there are different subsections. The menus and submenus are detailed below.

Project List

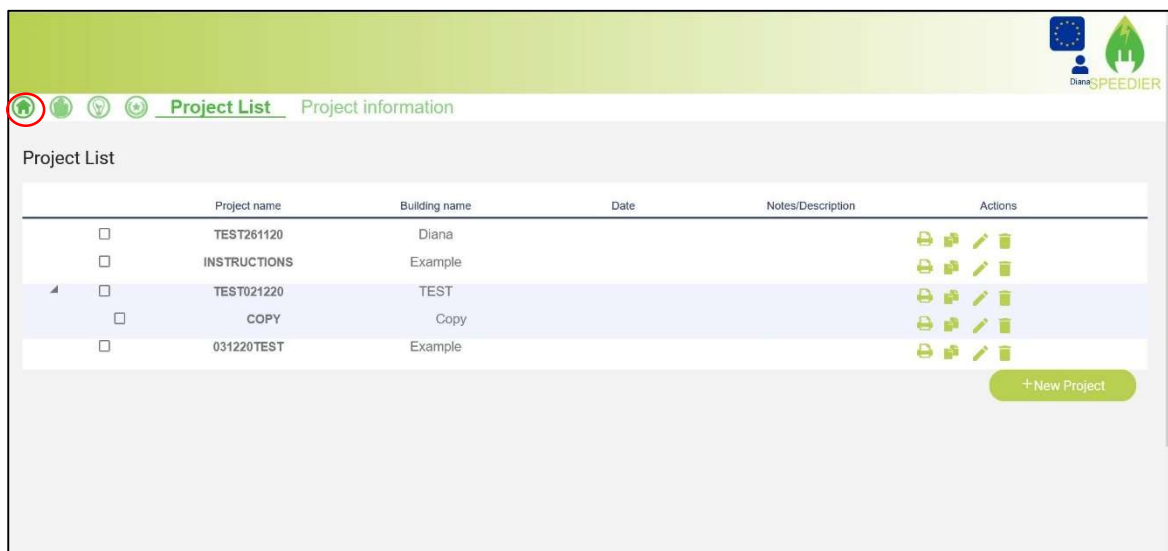


Figure 2-7. Project Home

The Project Home menu has two different submenus:

- Project List: where the user can manage all the projects.
- Project Information: where the user can create or modify a project.

Building information

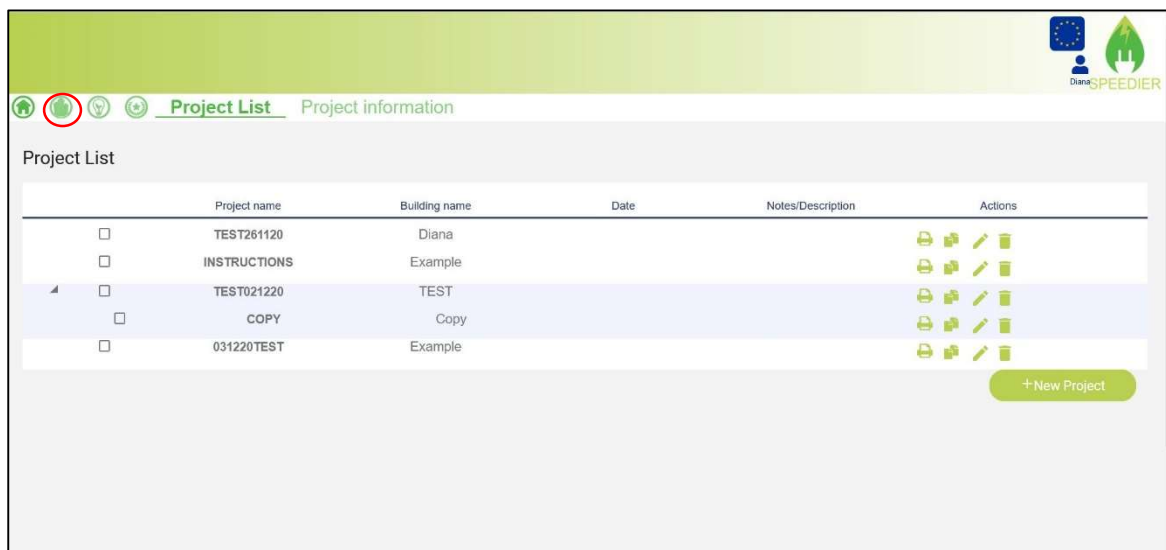


Figure 2-8. Building Information

The Building Information menu has four different submenus:

- Use details: where the user has to define the schedule and amount of users
- Economic data: where the user has to accept or modify the prices proposed and some other economic data
- Energy contributions: this submenu it has to be complete only if the project has some installation that is consuming energy
- Building Information: where the user has to define the envelope characteristics and the energy contribution elements.

Saving measures

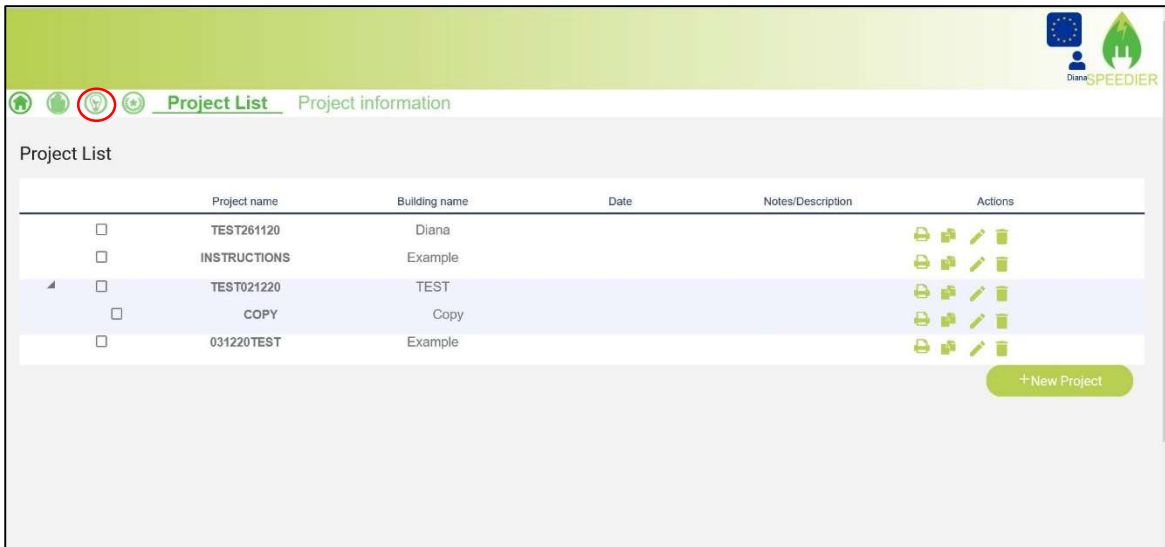


Figure 2-9. Saving Measures

The Saving Measures menu has two different submenus:

- Energy Conservation Measures: the tool will provide some measures with the energy savings and the cost.
- Periodic report: after applying one simulation the user can track the application of the measures in a period of time

Ranking

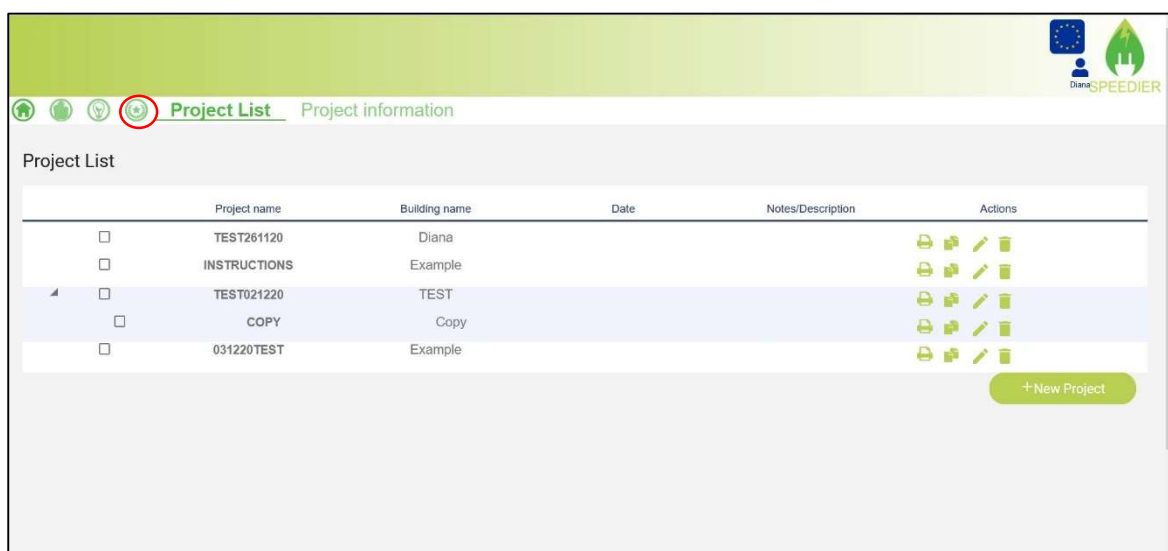


Figure 2-10 Ranking

Ranking menu is use to perform a gamification, to show and share energy savings that the application of specific measures has provide, and establish a ranking between project always with no sharing personal data.

2.3 Project Home

This is the first screen that the user see when the user star Speedier tool. As has told before the menu has two submenus.

2.3.1 Project List

In this screen the user could manage the projects, could create one, delete or modify the one's on the list, copy project (explain in section 2.3.3) and print reports (explain in section 2.3.4).

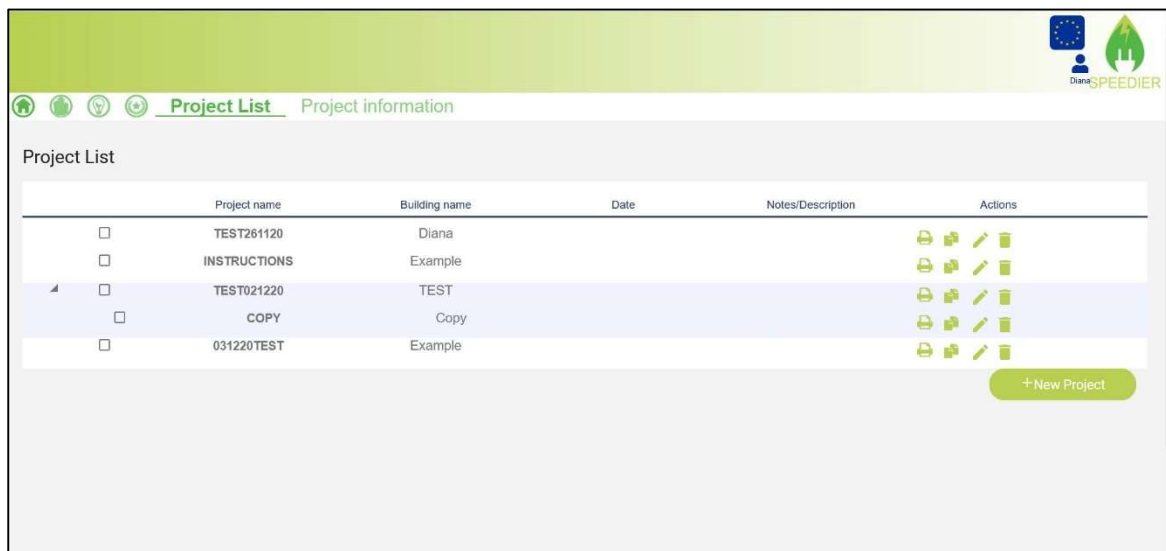


Figure 2-11. Project List

To work on a project, the user must first select and then click on the menu the user want to go to.

2.3.2 Project Information

To go to Projecte Information the user can click on the pencil icon to edit an existing project or to create a project. The Projecte Information submenu is a form where the user can edit the data if it is an existing project or fill it in if the user create a new one.

Figure 2-12. Project Information formulary

The required fields are: Project name, Building name, Building surface, Country, Region, Building Type (selection from a list) and Ranking agreement.

In the field Country there is a list from 4 countries Ireland, Italy, Rumania and Spain, and after the user select one of them the tool will provide with a list of Regions of this country. It's only these four countries because there are the places where the Pilot cases from Speedier project has been done. This selection will provide with data for the annual heating and cooling hours that are needed to the calculation for the saving from the measures.

After completing the information the formulary has to be save and the tool will return to Project list.

Figure 2-13. Project Information formulary complete

2.3.3 Copy project

To go copy project the user can click two pages icon to copy an existing project. Then a new screen will appear with two fields to complete Project name and Building name. To

finish the process and copy any project there is a condition: to have applied a simulation. This condition is establish because the idea for copy project is to continue applying new measures, so after the application of some measures, when the period agreed between the expert and the SME is finished, they could continue with new simulations of new measures.

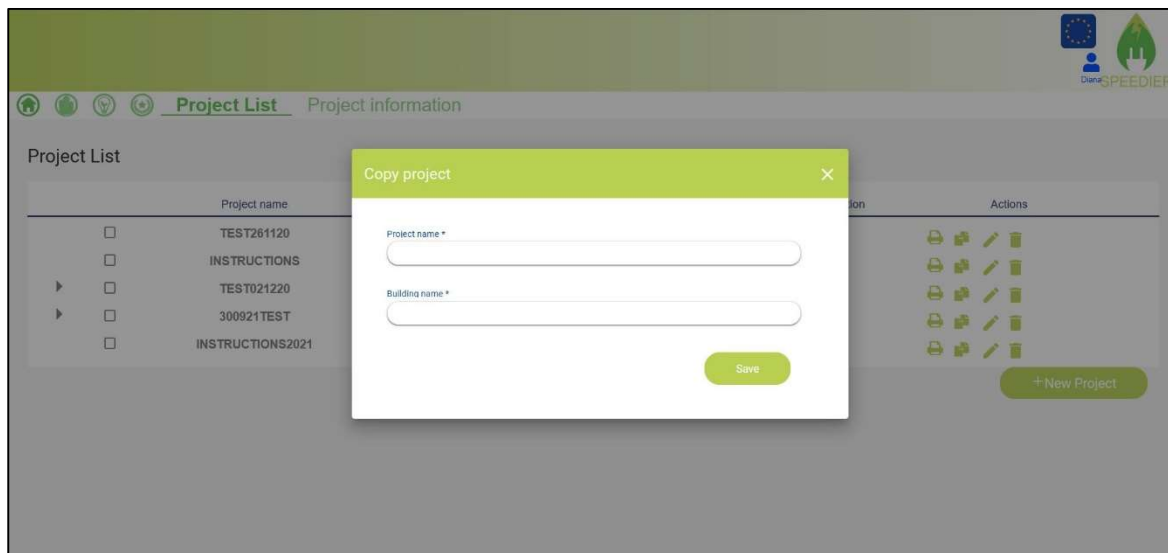


Figure 2-14 Copy projects

2.3.4 Print reports

To go print reports the user can click the printer icon. The user can print any simulation the user have and also the periodic report.

The user can print it selecting all of them o just the ones the user want to print and the user can print it in three different formats: .pdf, .doc and .xls

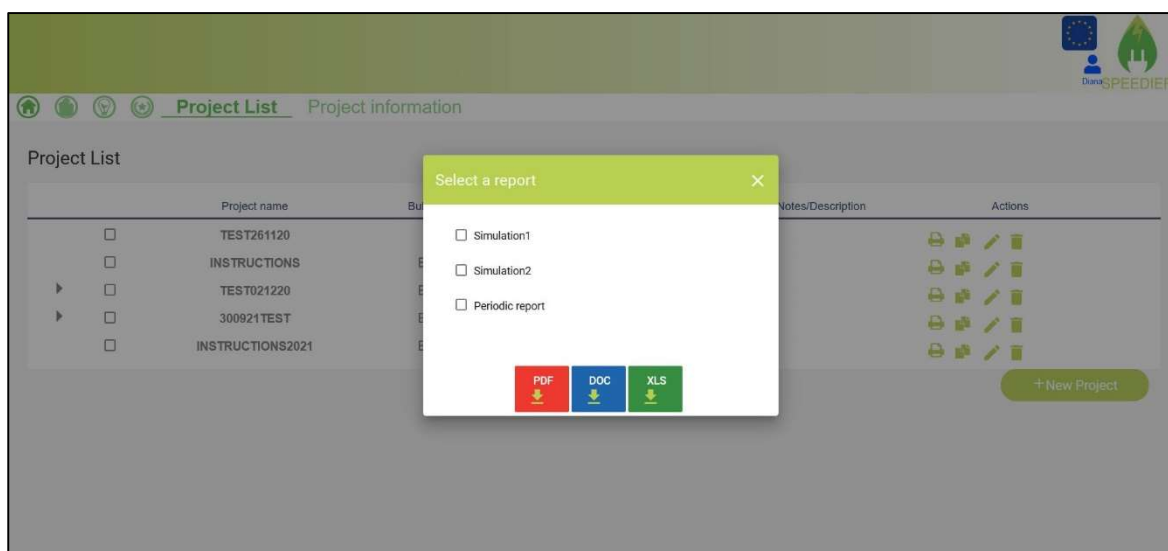


Figure 2-15 Print reports

Some examples of the reports:

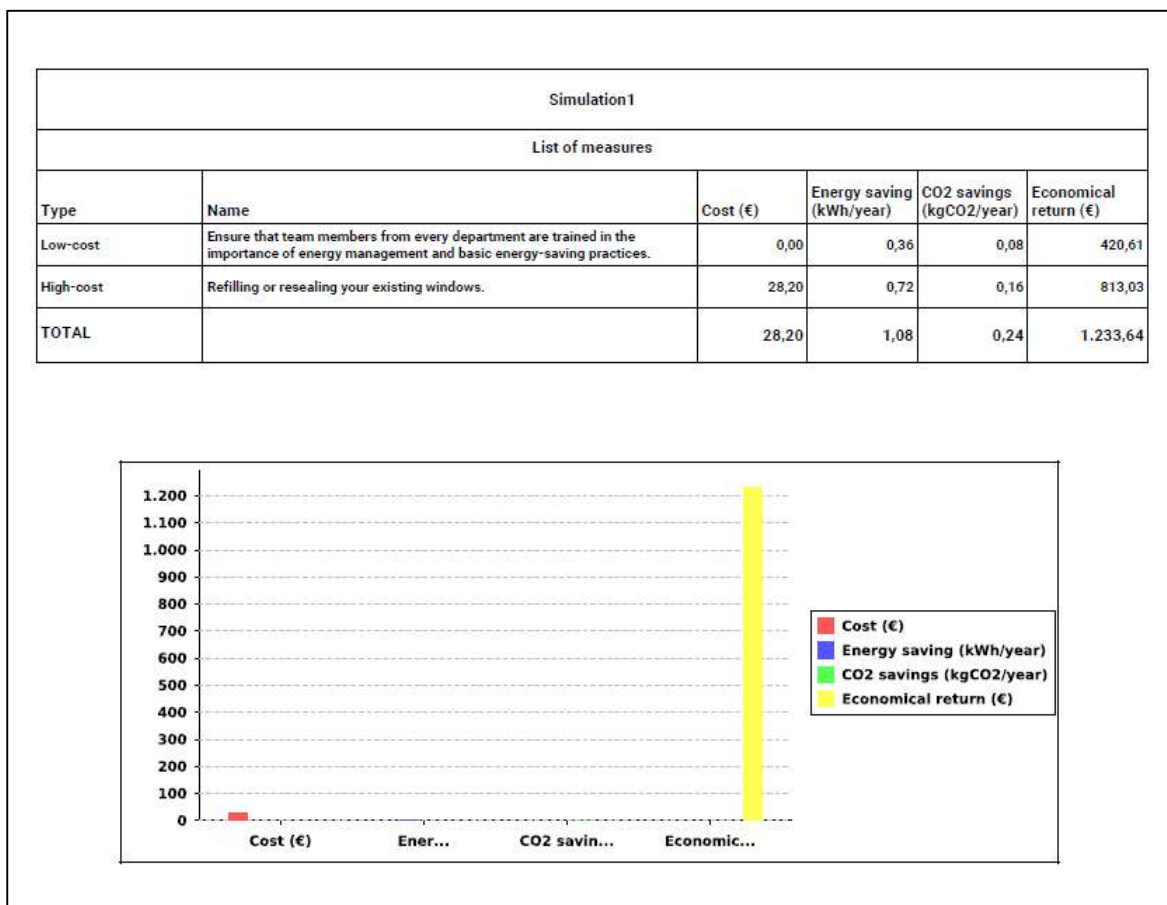


Figure 2-16 Simulation report

Periodic Report		
List of measures		
Turn off All communal equipment at the end of the day, including printers, copiers, vending machines and kitchen equipments like coffee machine, microwave and		
Ensure that team members from every department are trained in the importance of energy management and basic energy-saving practices.		
Install task fans.		
Period 0		
	Initial Date	Final date
Period's dates	28/09/2021	30/09/2021
Fuel	Cost (€)	Energy (kWh)
Electricity	45,00	50,00
Gasoil	20,00	35,00
TOTAL	65,00	85,00
Period 1		
	Initial Date	Final date
Period's dates	03/10/2021	14/10/2021
Fuel	Cost (€)	Energy (kWh)
Electricity	40,00	35,00
Gasoil	16,00	25,00
TOTAL	56,00	60,00
TOTAL		
	Initial Date	Final date
Period's dates	28/09/2021	14/10/2021
Fuel	Cost (€)	Energy (kWh)
Electricity	85,00	85,00
Gasoil	36,00	60,00
TOTAL	121,00	145,00

Figure 2-17 Periodic report data

Periodic Report

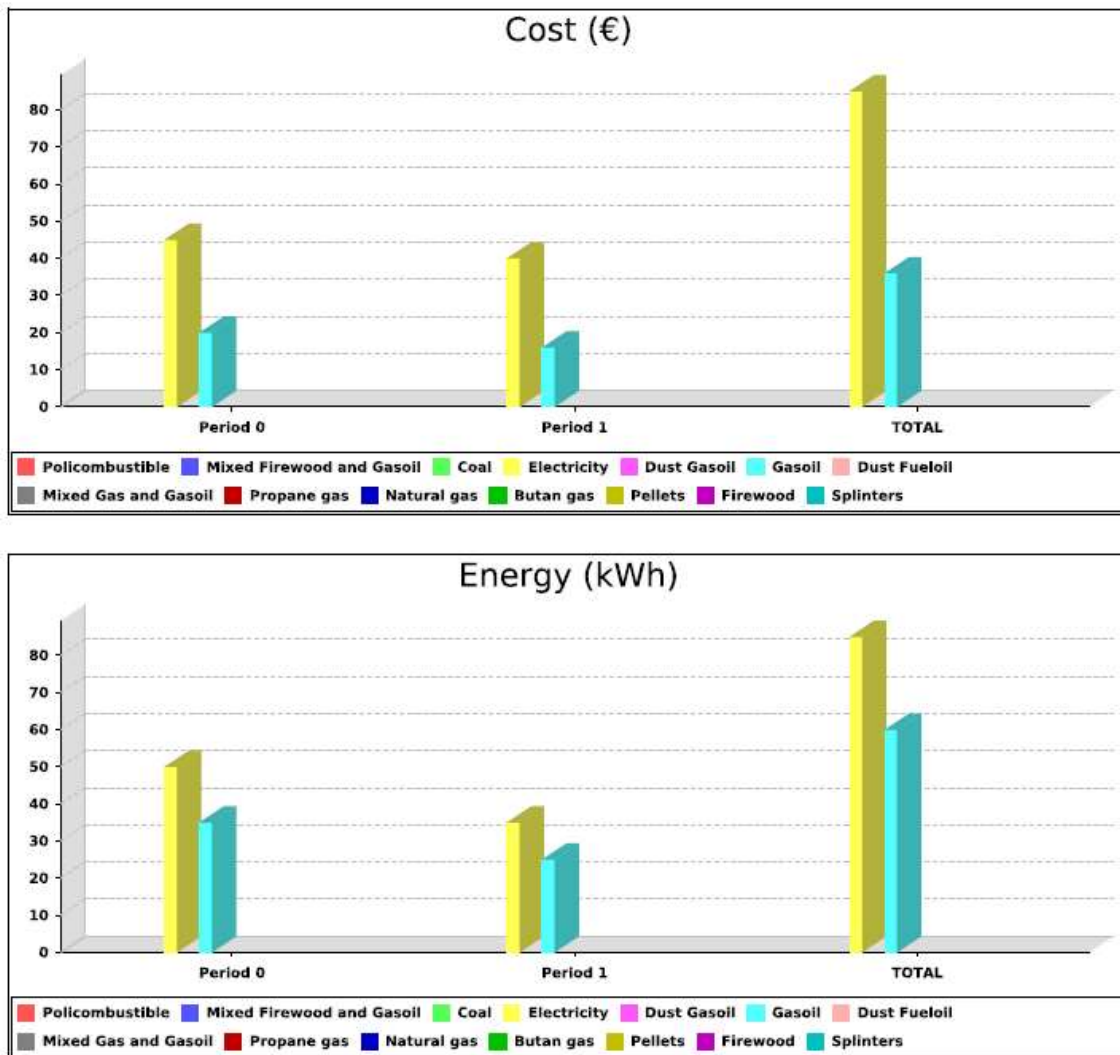


Figure 2-18 Periodic report graph

2.4 Building Information

This menu it's where the user defines all the information that has from the building and the use of the building. As has told before the menu has four submenus that will be explaining below.

2.4.1 Use details

In this screen the user could fill the use details of the building or space from the project.

Figure 2-19. Use details empty formulary

There are different fields to complete.

- **Building activity:** where there is a list of proposing activities and the user can choose one of them or click on the add button and create a new one.

Figure 2-20. Use details new activity

- Scheduling profile: it is a proposal for working hours, for example 8 hour 5 days a week, and this results in the Annual usage schedule that will we use in the calculations to establish the time some elements are running. The annual usage schedule could be entered directly but the schedule profile will not appear.

The screenshot shows the 'Use details' form with the following fields:

- Building activity: Administrative
- Scheduling profile: Open dropdown menu with options: Schedule 12h/5d, Schedule 12h/6d, Schedule 12h/7d, Schedule 16h/5d, Schedule 16h/6d
- Annual heating hours: **
- Annual cooling hours: **
- Amount of users: **
- Annual usage schedule: **

Figure 2-21. Use details scheduling profile

The screenshot shows the 'Use details' form with the following fields:

- Building activity: Administrative
- Scheduling profile: Schedule 8h/5d
- Annual heating hours: 1,064.99
- Annual cooling hours: 368.44
- Amount of users: **
- Annual usage schedule: 1,984.00

Figure 2-22. Use details annual usage schedule

- Annual heating and cooling hours: this data it will be show it because it's a data that is coming from theoretical data from each country about the hours that the heating and the colling are activated in each country and region depending on the weather. This data could be modified if there's another data that the speedier expert has. These data it will be use in the calculations to calculate the hours that the heating and cooling are running.

Use details

Building activity: Administrative

Scheduling profile: Schedule 8h/5d

Annual heating hours: 2,000.00

Annual cooling hours: 368.44

Amount of users: *

Annual usage schedule: 1,984.00

Save

Figure 2-23. Use details annual heating and cooling hours

- Amount of users: the quantity of people that is working on the building or space.

Use details

Building activity: Administrative

Scheduling profile: Schedule 8h/5d

Annual heating hours: 2,000.00

Annual cooling hours: 368.44

Amount of users: 50

Annual usage schedule: 1,984.00

Save

Figure 2-24. Use details amount of users

2.4.2 Economic data

In this screen is where the user establishes the economic criteria to later calculate the prices and economic return of the measures.

The first time that the user goes to this page the information that is on it it's about the prices from the country where the project is (fuel prices) and the ratio reference between Spain and the country from the project. That is because the measures are from a data base from Spain.

Use details **Economic Data** Energy contributions Building Information

Country: Spain

Coefficient Spain respect to reference country (Spain): € 1.00

Spain fuel price

Code	Unit	Price (€)	Conversion co2 kg
Splinters	kWh	0.027	0
Firewood	kWh	0.040	0
Pellets	kWh	0.046	0
Butan gas	kWh	0.082	0.238

Interest rate: % **

Save

Figure 2-25. Economic data

If the user modifies the ratio proposed then the prices titles changes and the fuel prices, the user could change also the fuel prices one by one.

Use details **Economic Data** Energy contributions Building Information

Country: Spain

Coefficient Spain respect to reference country (Spain): € 1.30

Spain fuel price

Code	Unit	Price (€)	Conversion co2 kg
Splinters	kWh	0.027	0
Firewood	kWh	0.040	0
Pellets	kWh	0.046	0
Butan gas	kWh	0.082	0.238

Interest rate: % **

Save

Figure 2-26. Economic data modified

Interest rate

Interest rate is the proportion of a loan that is charged as interest to the borrower, typically expressed as an annual percentage of the loan outstanding. It's used to calculate economical return of the measures. If there will be no loan to apply measures the user has to fill it with 0%.

Economic Data

Country: Spain

Coefficient Spain respect to reference country (Spain): € 1.30

Spain fuel price

Code	Unit	Price (€)	Conversion co2 kg
Splinters	kWh	0.027	0
Firewood	kWh	0.040	0
Pellets	kWh	0.046	0
Butan gas	kWh	0.082	0.238

Interest rate: 5.00 %

Save

Figure 2-27. Economic data interest rate

2.4.3 Energy contributions

This screen has to be complete only if there's solar panels or similar installed. It will also have to be complete after in the simulation if there isn't this installation before and a measure that proposes solar panels wants to be implemented.

Fuel saved by solar panels

Fuel type: [Dropdown] Covered percentage: [%]

Fuel type: [Dropdown] Covered percentage: [%]

Fuel type: [Dropdown] Covered percentage: [%]

Save

Figure 2-28. Energy contributions

From the list of fuel type the user could select the combustible that is saving energy from the solar panels.

Fuel saved by solar panels

Fuel type	Covered percentage
Coal	%
Dust Fueloil	%
Dust Gasoil	%
Electricity	%
Firewood	%

Save

Figure 2-29. Energy contributions fuel list

The saving percentage must be indicated for each fuel, all percentages must add up to 100%.

Fuel saved by solar panels

Fuel type	Covered percentage
Dust Gasoil	20.00%
Butan gas	80.00%
	%

Save

Figure 2-30. Energy contributions fuel percentages

2.4.4 Building information

In the building information is where all the information collected about the characteristics of the building have to be completed. There are two main parts: Enveloping elements and Energy consumption elements.

It is not mandatory to fill in all the forms, but at least one of them is required. It must be borne in mind that if there is not enough data, the saving measures will not be calculated.

To create any element the user have to click on the plus icon, once it's created to deleted the user have to click on the trash can icon.

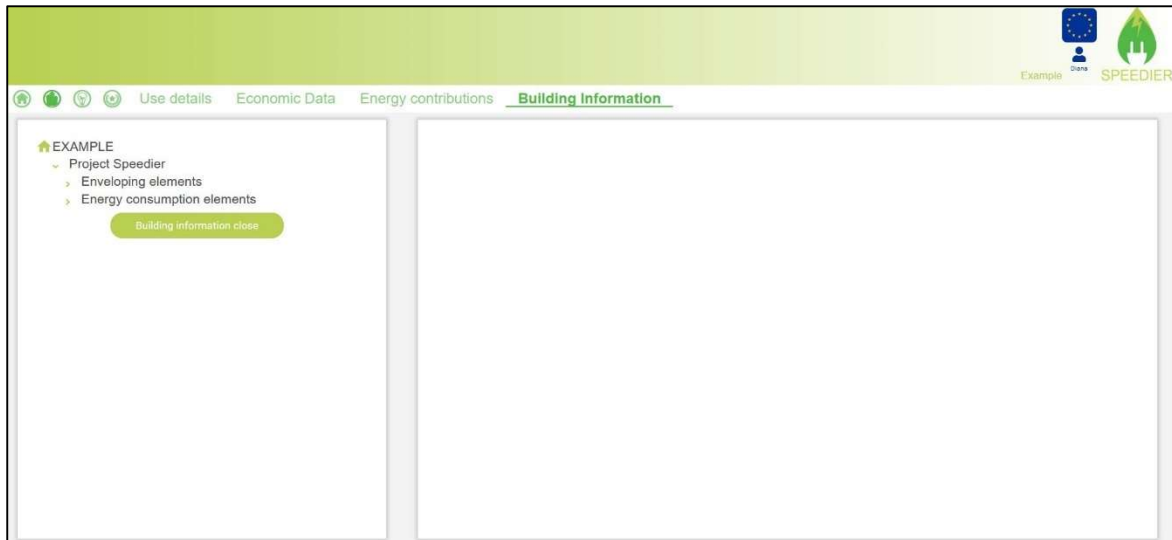


Figure 2-31. Building information

2.4.4.1 Enveloping elements

In the envelope the user has to define the structure of the building. There are three types of elements to fill up: Façade, Floor/Slabs and Roof/Deck.

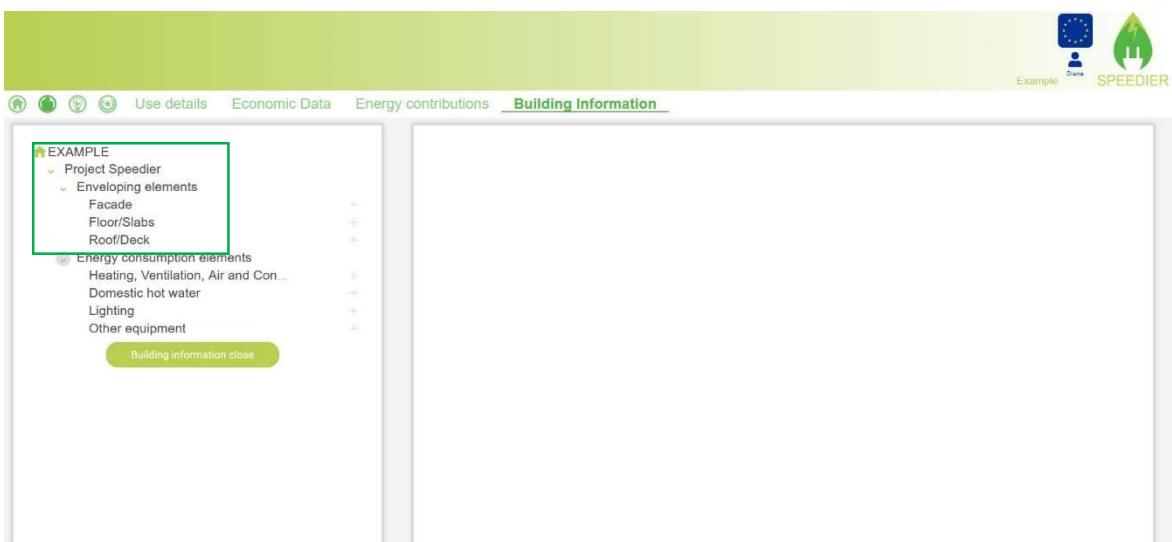


Figure 2-32. Building information Enveloping elements

2.4.4.1.1 Façade

The first element from the envelope is the façade, there has to be at least one face completed to continue with the process.

There are three sections with different fields on it: Shape and dimensions, Technical information and Windows.

- Shape and dimensions:
 - Facade name:
 - Surface:
 - Orientation:

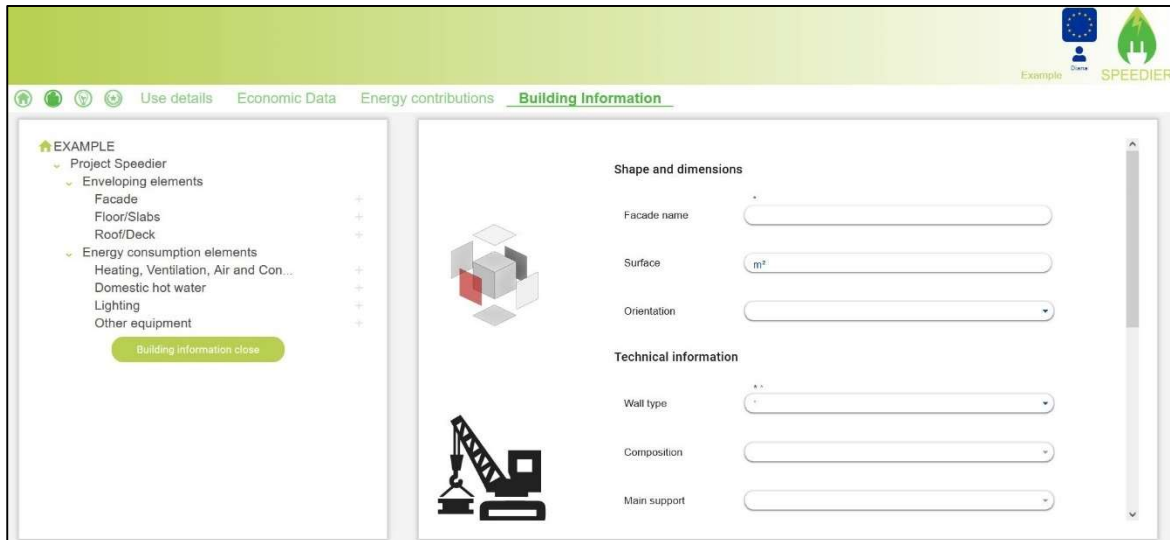


Figure 2-33. Building information Façade. Shape and dimensions

- Technical information:
 - Wall type:
 - Composition:
 - Main support

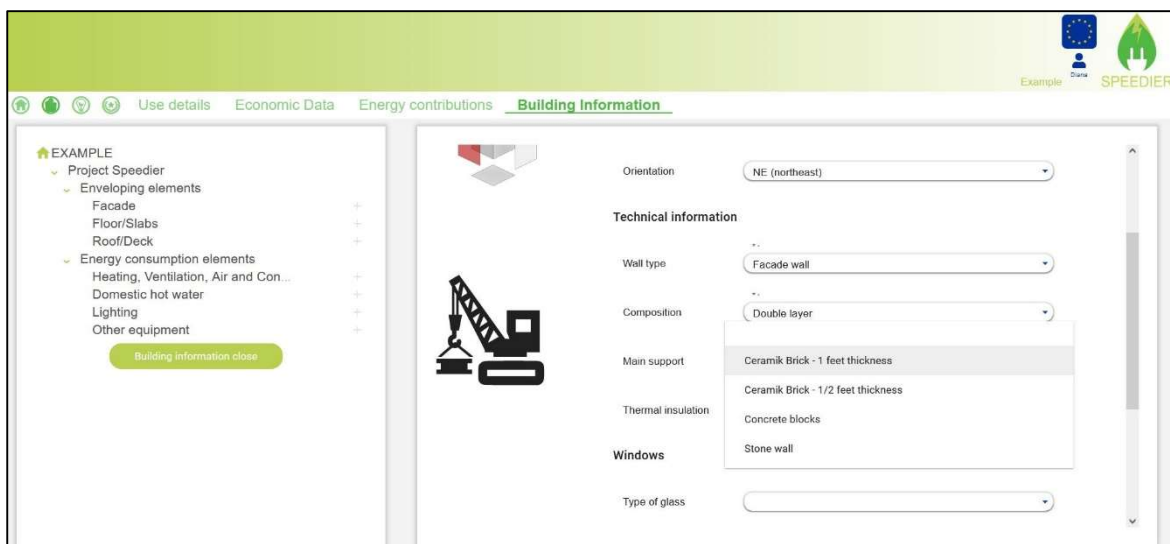


Figure 2-34. Building information Facade. Technical information

- Thermal insulation:

Figure 2-35. Building information Facade. Technical information. Insulation

- Windows:
 - Type of glass:
 - Frame type:
 - Surface :

Figure 2-36. Building information Façade. Windows

Formulary completed

EXAMPLE

- Project Speedier
 - Enveloping elements
 - Facade
 - Floor/Slabs
 - Roof/Deck
 - Energy consumption elements
 - Heating, Ventilation, Air and Con...
 - Domestic hot water
 - Lighting
 - Other equipment

Building information close

Use details Economic Data Energy contributions **Building Information**

Example SPEEDIER

Shape and dimensions

Facade name: Facade1

Surface: 250.000 m²

Orientation: NE (northeast)

Technical information

Wall type: Facade wall

Composition: Double layer

Main support: Ceramik Brick - 1 feet thickness

Figure 2-37. Building information Facade completed

EXAMPLE

- Project Speedier
 - Enveloping elements
 - Facade
 - Floor/Slabs
 - Roof/Deck
 - Energy consumption elements
 - Heating, Ventilation, Air and Con...
 - Domestic hot water
 - Lighting
 - Other equipment

Building information close

Use details Economic Data Energy contributions **Building Information**

Example SPEEDIER

Main support: Ceramik Brick - 1 feet thickness

Thermal insulation: Yes

EPS (Expanded...): 5.000 mm

Windows

Type of glass: Double low emission

Frame type: Metallic with thermal break

Surface: 40.000 m²

Save

Figure 2-38. Building information Facade completed

2.4.4.1.2 Floor/Slabs

The second element from the envelope is the floors or slabs.

There are two sections with different fields on it: Shape and dimensions and Technical information.

- Shape and dimensions:
 - Floor name:
 - Surface:
- Technical information:
 - Floor position:

- Slab type:
- Material:

The screenshot shows the 'Building Information' section of the SPEEDIER software. On the left, a navigation tree lists 'EXAMPLE' with sub-items: 'Project Speedier', 'Enveloping elements', 'Facade', 'Floor/Slabs', 'Roof/Deck', 'Energy consumption elements', 'Heating, Ventilation, Air and Con...', 'Domestic hot water', 'Lighting', and 'Other equipment'. A 'Building information close' button is at the bottom of the tree. The main area features a 3D model of a building with a red base and a crane icon below it. To the right, the 'Shape and dimensions' section has a 'Floor name' text input field and a 'Surface' dropdown menu with 'm²' selected. The 'Technical information' section has a 'Floor position' dropdown menu, a 'Slab type' dropdown menu, and a 'Material' dropdown menu. A 'Save' button is located at the bottom right of the form.

Figure 2-39 Building information. Floor or slabs

2.4.4.1.3 Roof/Deck

The third element from the envelope is the roof or deck.

There are two sections with different fields on it: Shape and dimensions and Technical information.

- Shape and dimensions:
 - Roof name:
 - Surface:
- Technical information:
 - Roof type:
 - Composition:
 - Thermal insulation:

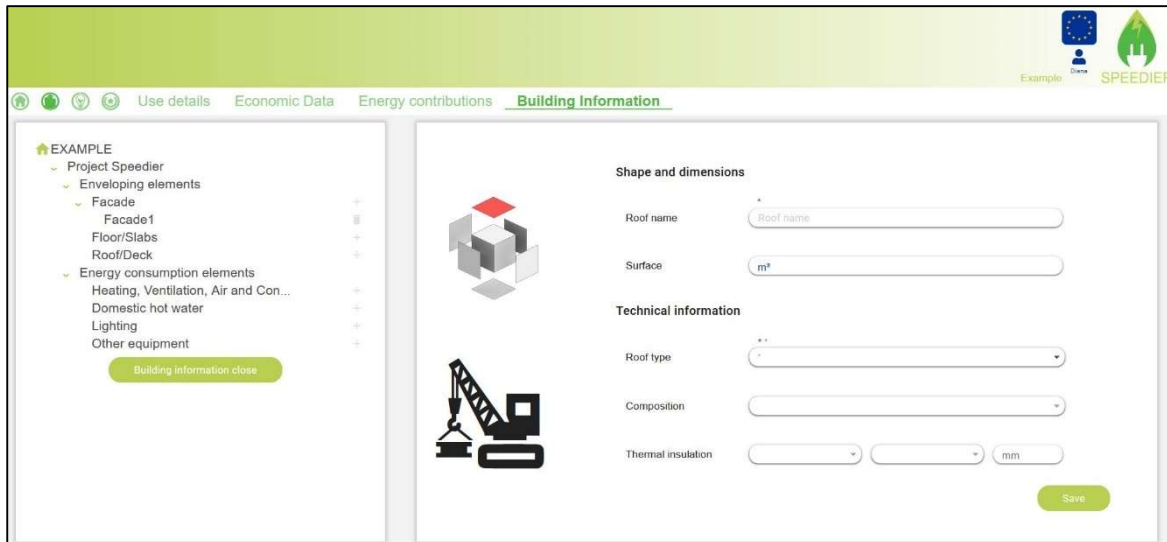


Figure 2-40 Building information. Roof or deck

2.4.4.2 Energy consumption elements

In the Energy consumption elements the user has to define the principal consumer elements of the building. There are four types of elements to fill up: Heating, Ventilation and Air conditioning, Domestic hot water, Lighting and Other equipment.

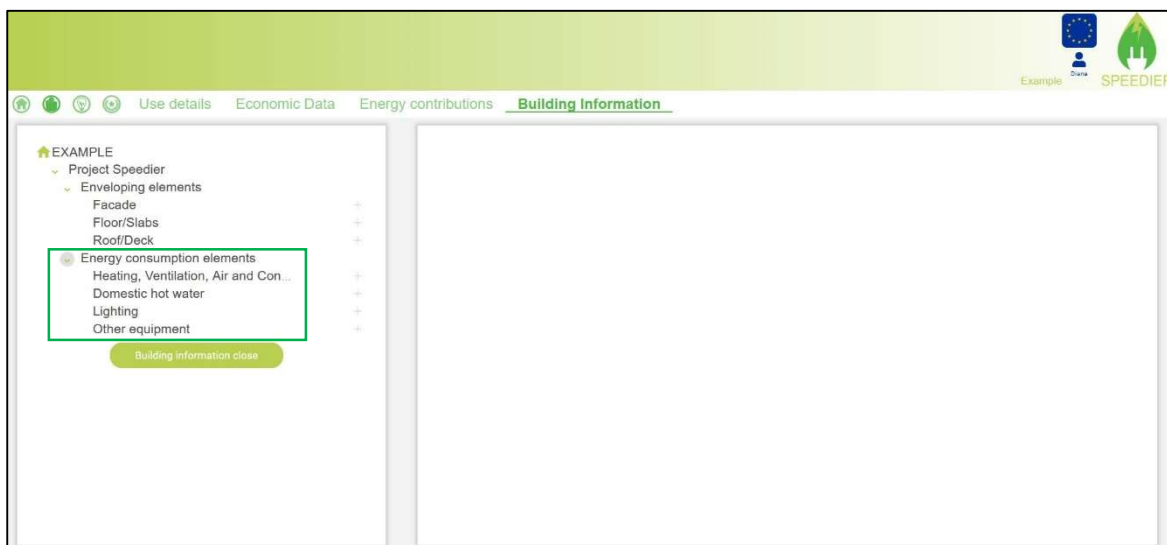


Figure 2-41 Energy consumption elements

2.4.4.2.1 Heating, Ventilation and Air conditioning

The first element from the Energy consumption elements is the Heating, Ventilation and Air conditioning, there has to be at least one completed to continue with the process.

There are four sections with different fields on it: HVAC, Features, Demand and Average performance.

To start the user has to select one of the types and all the options will appear. As example the heating and cooling option is explain below.

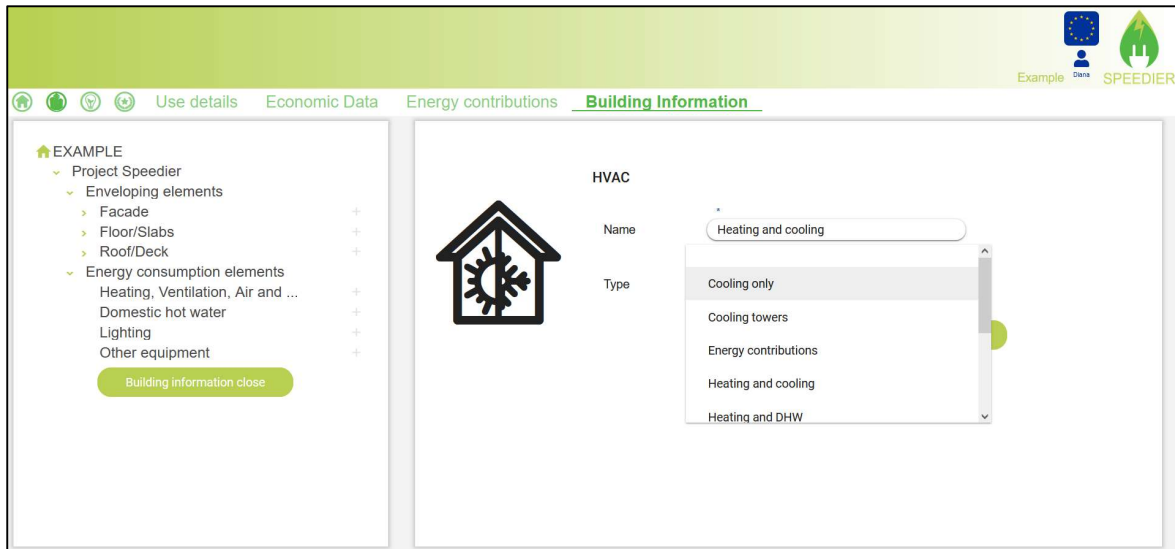


Figure 2-42 Energy consumption elements. HVAC type

- HVAC:
 - Name:
 - Type:

- Features:
 - Generator:
 - Fuel type:
 - Amount:

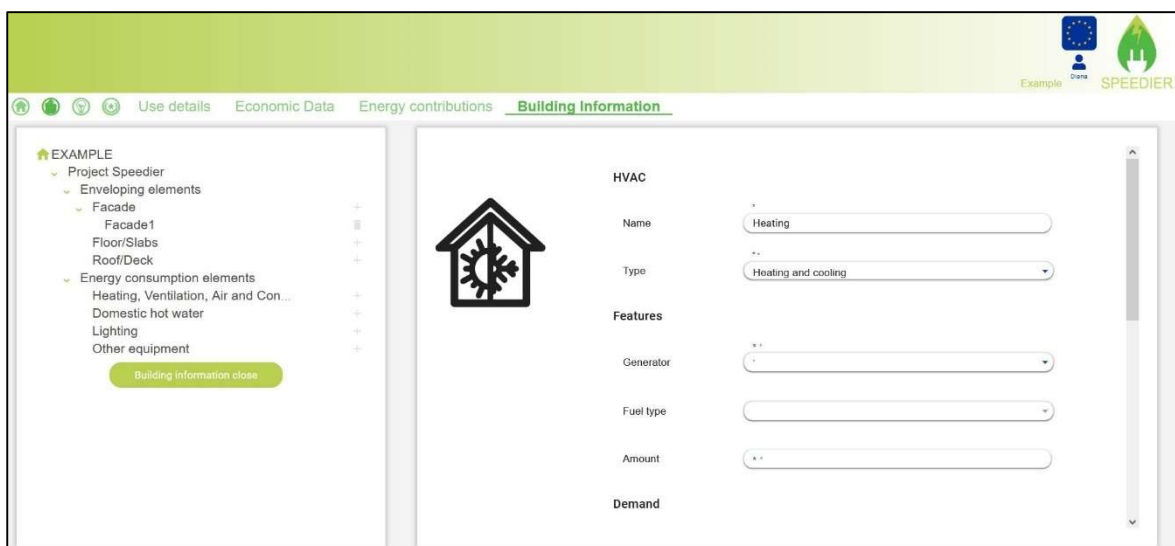


Figure 2-43 Energy consumption elements. HVAC and Features

- Demand:
 - Heating surface:
 - Heating percentage:
 - Cooling surface:

- Cooling percentage

Figure 2-44 Energy consumption elements. HVAC. Demand

- Average performance:
 - Nominal power:
 - Heating efficiency:
 - Cooling efficiency:

Figure 2-45 Energy consumption elements. HVAC. Average performance

2.4.4.2.2 Domestic hot water

The second element from the Energy consumption elements is the Domestic Hot Water.

There are four sections with different fields on it: Domestic hot water, Features, Demand and Average performance.

- Domestic hot water:
 - Name:
- Features:
 - Generator:
 - Fuel type:
 - Amount:

The screenshot shows the SPEEDIER software interface. At the top right, there are logos for the European Union, 'Example Data', and 'SPEEDIER'. Below the navigation bar, the 'Building Information' tab is selected. On the left, a tree view shows the project structure: 'EXAMPLE' > 'Project Speedier' > 'Enveloping elements' (Facade, Floor/Slabs, Roof/Deck) > 'Energy consumption elements' (Heating, Ventilation, Air and ...; Domestic hot water; Lighting; Other equipment). A 'Building information close' button is at the bottom of the tree. The main content area displays the 'Domestic hot water' configuration form, which includes a shower icon, a 'Name' text input field, a 'Features' section with a 'Generator' dropdown menu, a 'Fuel type' dropdown menu, and an 'Amount' text input field. The 'Demand' section is partially visible at the bottom.

Figure 2-46 Energy consumption elements. Domestic hot water and Features

- Demand:
 - Surface:
 - Percentage:
- Average performance:
 - Nominal power:
 - Heating efficiency:
 - Cooling efficiency:

Figure 2-47 Energy consumption elements. DHW. Demand and Average performance

2.4.4.2.3 Lighting

The third element from the Energy consumption elements is the Lighting.

There are four sections with different fields on it: Lighting, Features, Demand and Average performance.

- Lighting:
 - Name:
- Features:
 - Type:
- Demand:
 - Surface:

Figure 2-48 Energy consumption elements. Lighting, Features and Demand

- Average performance:
 - Lighting control:
 - Surface with lighting control:
 - Installed power:
 - Amount:
 - Horizontal average illuminance (lux):

Figure 2-49 Energy consumption elements. Lighting. Average performance

2.4.4.2.4 Other equipment

The four element from the Energy consumption elements is Other equipment.

There is one section.

- Lighting:
 - Name:
 - Power consumption per unit:
 - Hour per week usage:
 - Amount

Figure 2-50 Energy consumption elements. Other equipment

After complete at least one façade and one HVAC, the user has to Close the Building and that means that won't be able to change anything from the Building information. The user has to click on Building Information close and before the user can complete this action there a message to assure the user wants to do this. If the user Cancel it will return to previous screen but if the user accept then will go to ECM and the information from Building information will be locked.

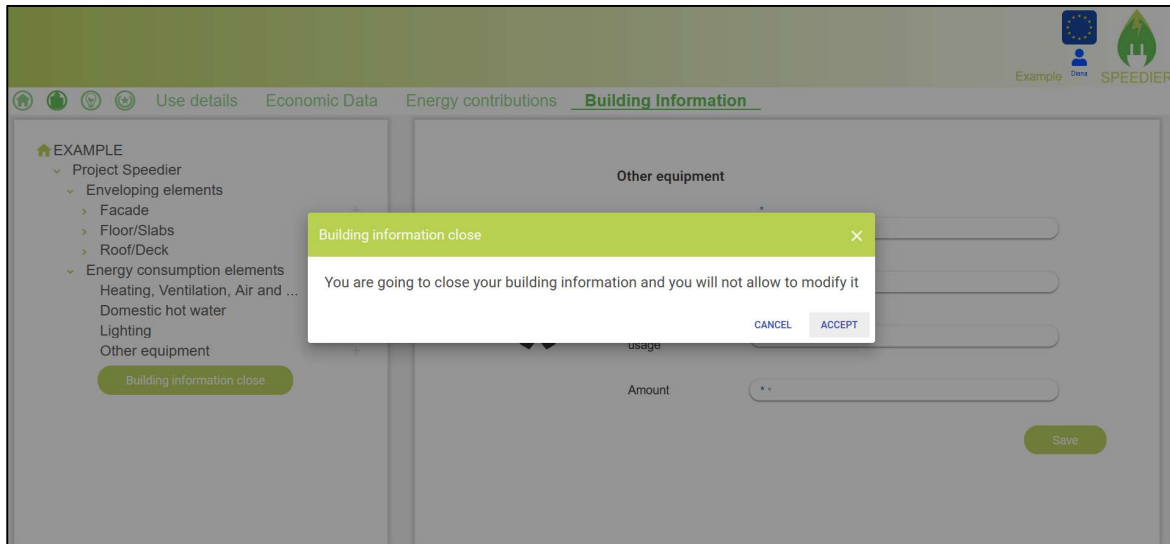


Figure 2-51 Building information close

2.5 ECM

In this menu the user has the Energy Conservation Measures to be applied and the Periodic report where the user can track all the energy savings that the application of measures has provide.

2.5.1 ECM

This submenu it's where the user selects from the list of measures, that the tool suggest related to the building information, the measures that will apply. Each group of measure is a different Simulation, the user can create as many simulations as they want. The measures are classified by colour, each colour means a different cost category.

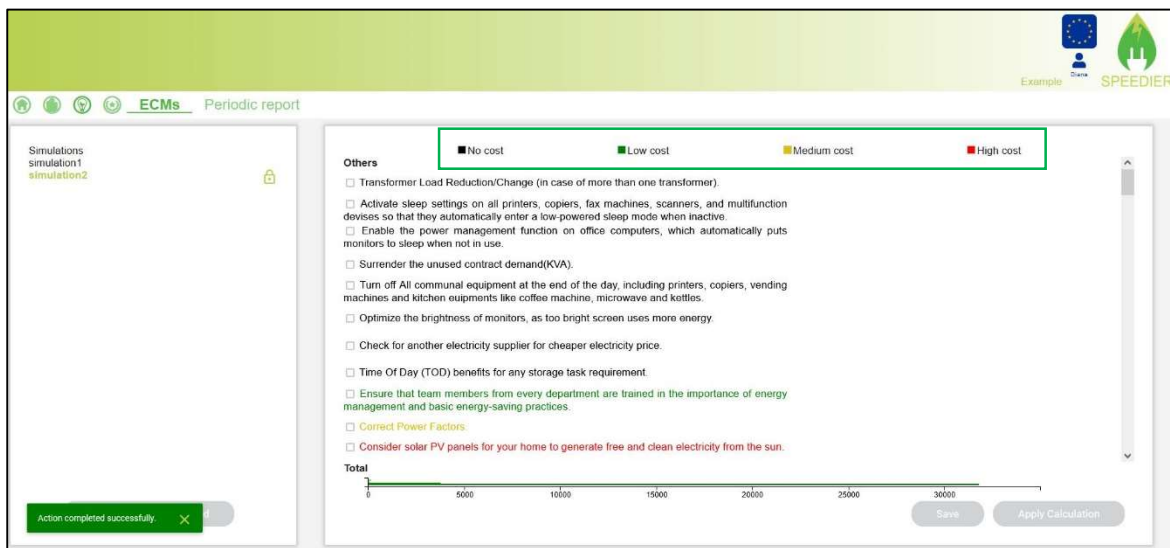


Figure 2-52 ECM. Measures cost type

Each measure has a Cost, an energy estimated savings, CO₂ estimated savings and Economical return. At the end there is a total of all measures selected. When a group of measures is selected there are two steps, first is to save the selected measures, after that the user could continue to select more measures for the simulation or Apply Calculation, that will prepare the data from each measure.

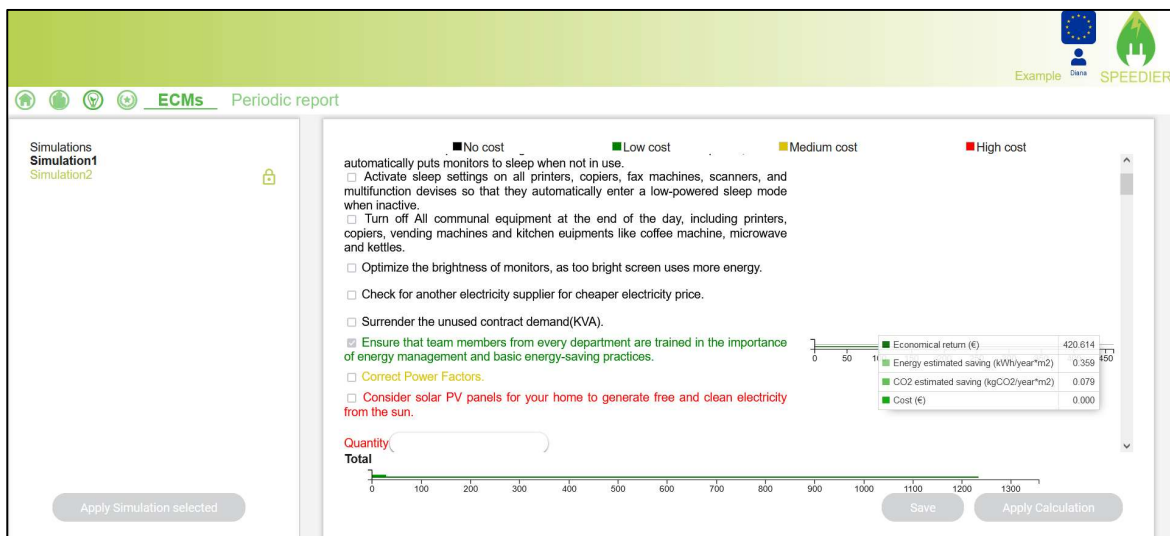


Figure 2-53 ECM. Data from each measure

Some of the measures need and amount to be able to calculate savings.

Facade

Exterior Door Replacement.

Quantity

Use thermal insulated curtains for windows and/or front door to avoid draught and heat loss.

Quantity

Figure 2-54 ECM. Amount for some measures

When the simulation to be apply is selected the user has to click on Apply Simulation selected and then the simulation will be locked.

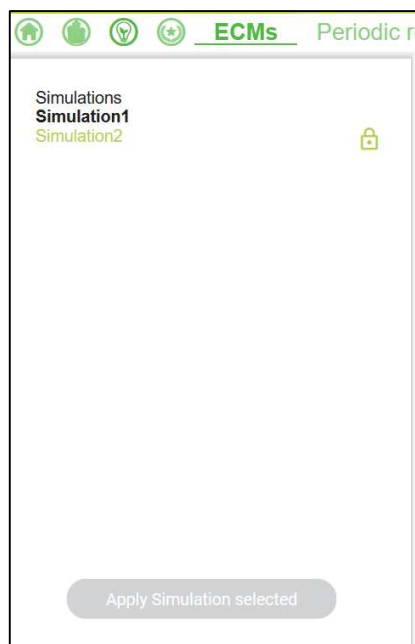


Figure 2-55 ECM. Apply simulation

If later on the user wants to unlock the simulation has to click on the padlock but there is a message because all the data entered in Periodic report will be lost.

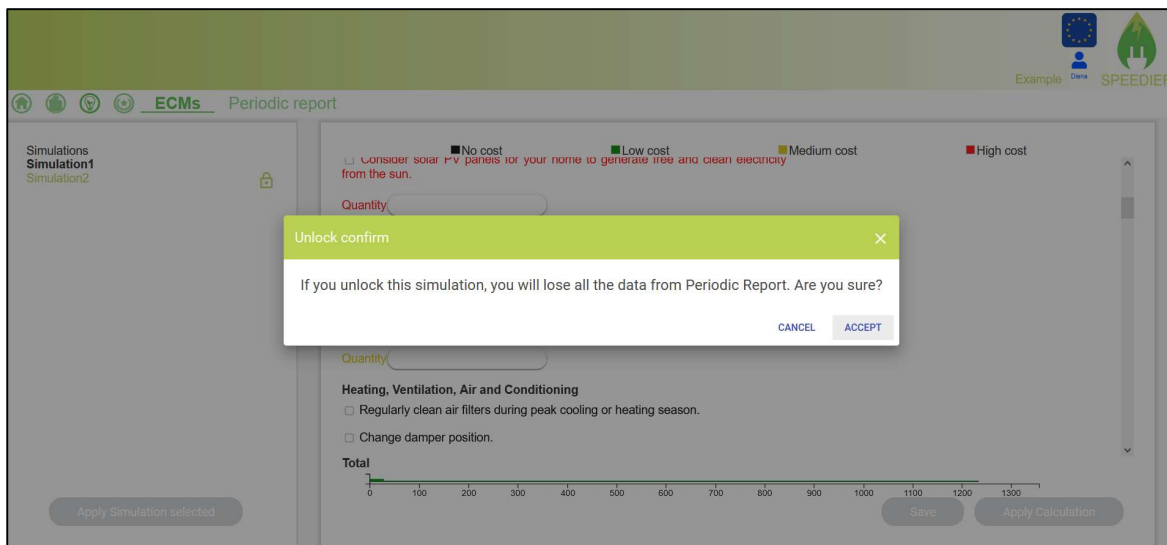


Figure 2-56 ECM. Unlock

2.5.2 Periodic Report

In this submenu on the left there are the applied measures from the simulation in selected and on the right the different period and the saving for each period, in kWh and in €.

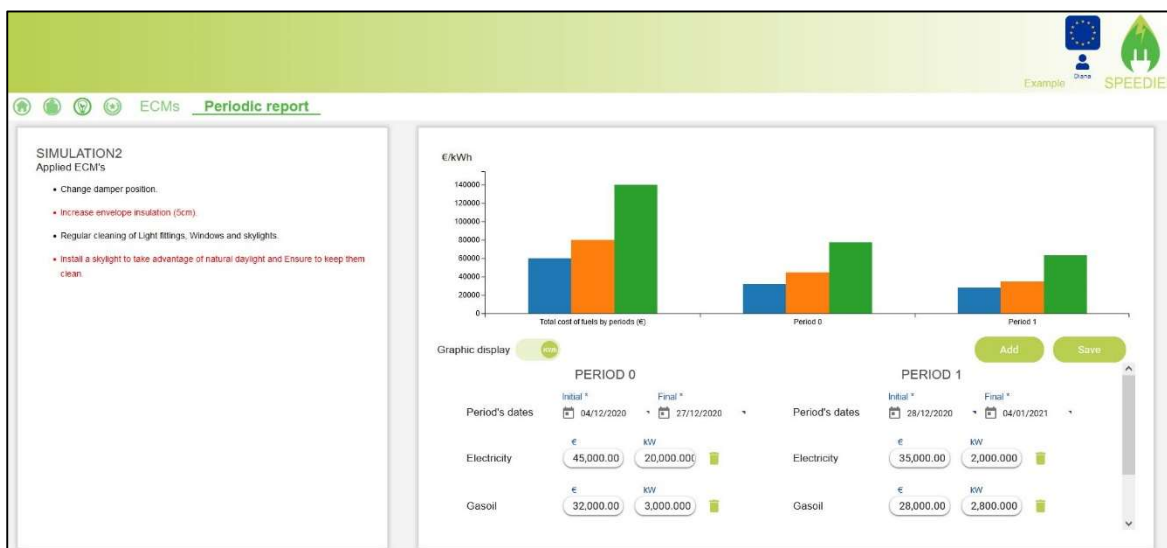


Figure 2-57 ECM. Periodic report

The user has to establish an initial and final date from each period. Can add new periods and should save the data from each period.

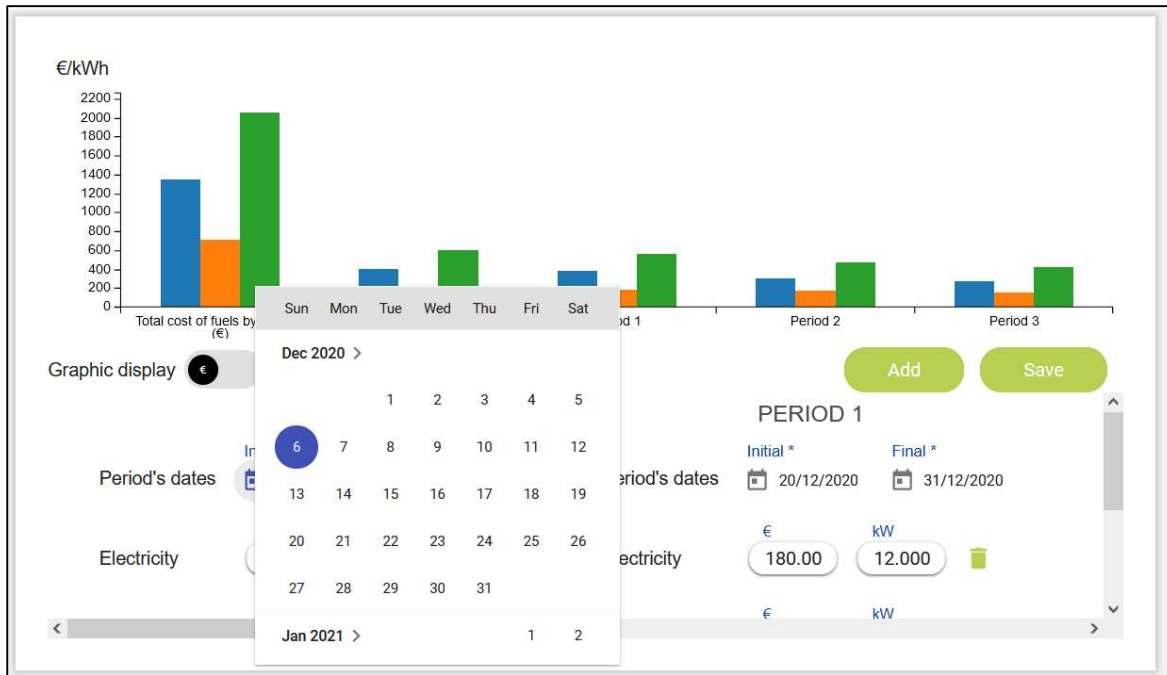


Figure 2-58 ECM. Periodic report data

There are two type of savings at first: electricity and gasoil. These two could be deleted but also the user could add other types.

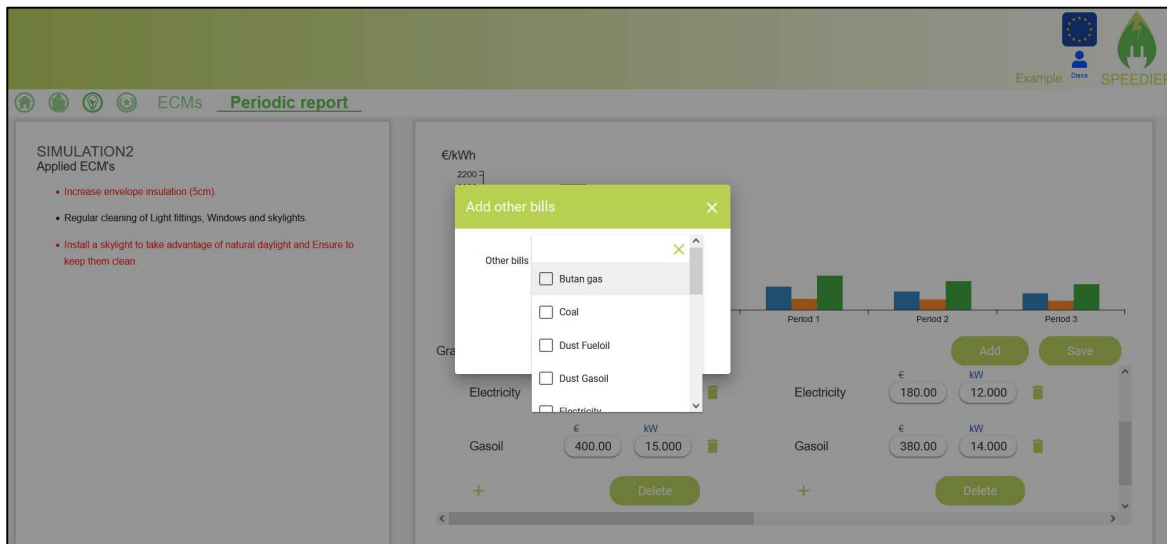


Figure 2-59 ECM. Periodic report. New bills

2.6 Ranking

The Ranking menu is a gamification of all the projects from Speedier that has access to share non personal data.

On the left there's the Energy savings achieved in the project selected and the position on the ranking. On the right there is the ranking with seven columns: Position, Project Name, Country, Surface, Activity, Reduction of emissions (5) and Measures. The first five columns could be ordered, the last one is to check on the list of measures that each project has applied.

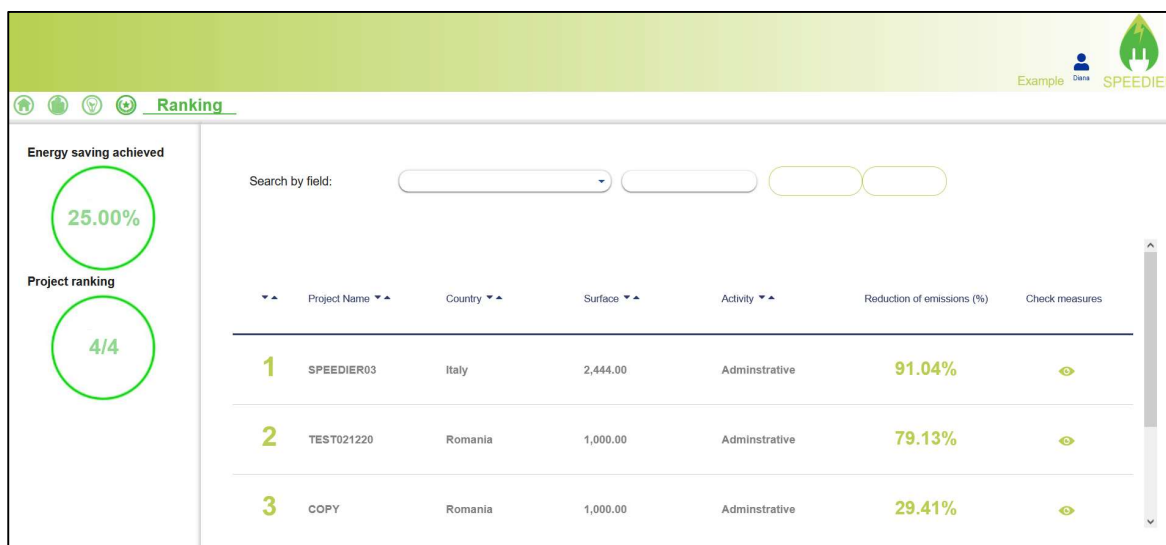


Figure 2-60 Ranking

There are two conditions to be able to access to the Ranking, at least to be agree to share information in one of the user expert and at least to be two periods of periodic report with data.

Do you want to allow the non-personal data of this project to be consulted in Ranking for all Speedier users? *

Yes

No

Figure 2-61 Project information agreement

On the top there is a filter where the user could search by field, if the result of the filter is less than three project there is a message that says that the tool won't show the results because it may could lead to identify the project.

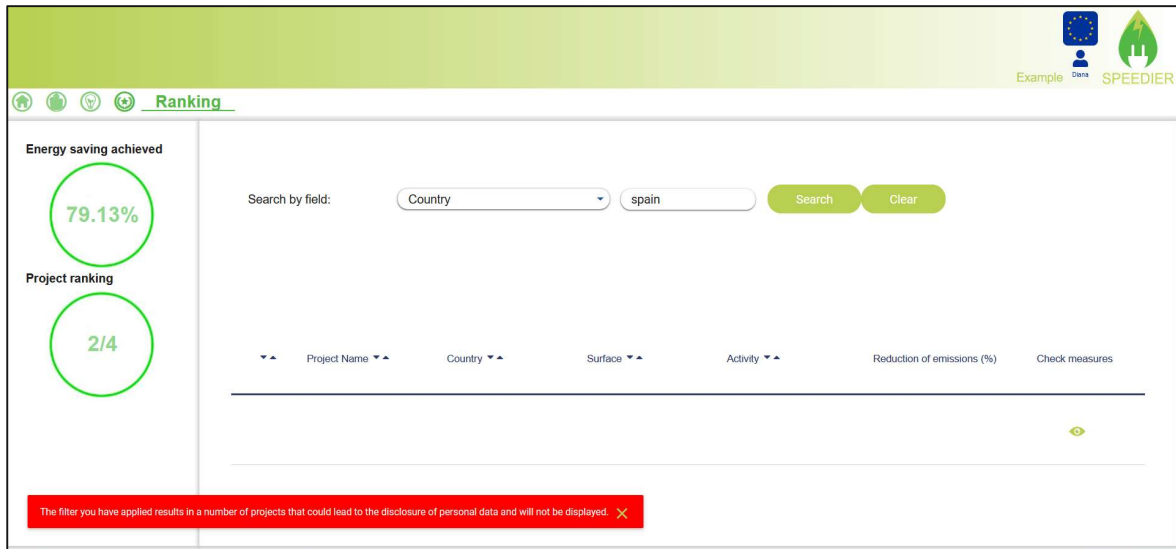


Figure 2-62 Ranking. Filter with less than three projects



Figure 2-63 Ranking. Filter message

3 Summary

This tool should be used to be able to apply the most appropriate measures in a gradual way in SMEs. The aim is to facilitate the process of identifying the best measures and calculating on the basis of what energy savings have been defined in a clear and simple way. These instructions are intended to make it easier for the expert to enter data and the operation of the tool, it should be borne in mind that like any online tool the calculation process or other functionality may have a longer reaction time than the product in the tools that work locally.

On the other hand this tool, it provides benefits to both SMEs and experts.

3.1 Benefits for SMEs

For SMEs, the greatest benefit is that they have a more understandable and practical way of seeing the energy saving measures that can be applied in their case and understanding the options they have, both at the cost and energy benefit level. On the other hand, they can obtain reports on both the selected solutions and the development of energy savings that are obtained from the application of energy conservation measures.

3.2 Benefits for Energy Efficiency Experts

For Energy Efficiency Expert it is a way to always have all the projects that it manages online and in a joint way, it can also improve the way of showing our clients, SMEs, the result of simulations and the periodic report of the state of the application of the measures.

Finally, they can use the Ranking as a way of positioning themselves within all the projects, creating a community with the other experts and checking which measures are providing the greatest savings according to the country or the type of SMEs.

The SPEEDIER Energy expert support tool is designed for easy management by the Energy Efficiency Expert and understandable communication with customers.