MATERIALS FOR PROFESSIONAL TRAININGS

MODULE 3 - HARP Tool. Covering the whole journey

HARP
Heating Appliances Retrofit Planning

Structure

- Module 0 – Introduction to the training programme
- Module 1 - Current situation of space heating appliances in Europe
- Module 2 - HARP Tool
- **Module 3 - The HARP Tool. Covering the whole journey**
- Module 4 - Embedding HARP to your clients

Summary

- How-to guide of the HARP tool for heating professionals
- The whole journey: entering the data on the HARP tool
- Understanding the results gathered by the HARP tool

How-to guide of the HARP tool for heating professionals

HARP

Aim

Define a clear how-to guide with the heating professionals as the targeted audience.

The users of the tool should be able to:

- Introduce the current situation regarding the heating system they are working with.
- Understand the results gathered by the tool.

Click to open the HARP online app

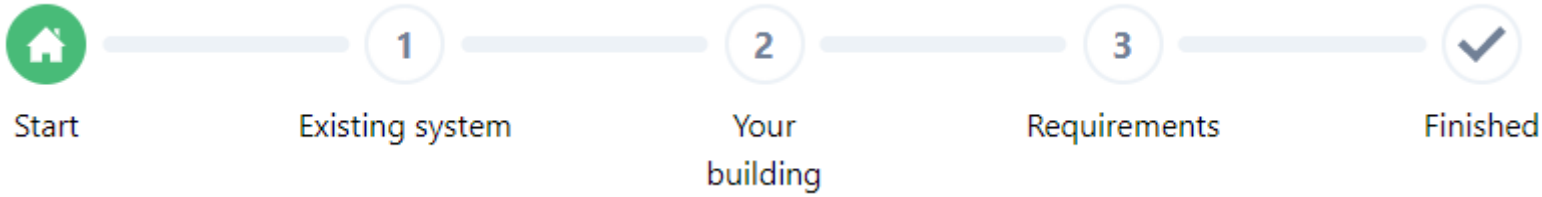
*SH = Space Heating

Tool stages

The HARP only tool, after answering some general questions, goes through three main stages, in each of them the user should introduce the information required.

The stages are:

1. Existing system
2. Your building
3. Requirements



The whole journey: entering the data on the HARP tool

HARP

The whole journey

User inputs:

General questions

When opening the tool, on a first, general sight, this is what the user is going to see.

This first page overview is asking the user to introduce some basic information.

Next slides present each step in detail.

Figure 1.- First general view

The whole journey

User inputs:

General questions: selection of the country.

As a first step, the users will have to choose their country from a drop-down list, just as is shown below, in Figure 2.

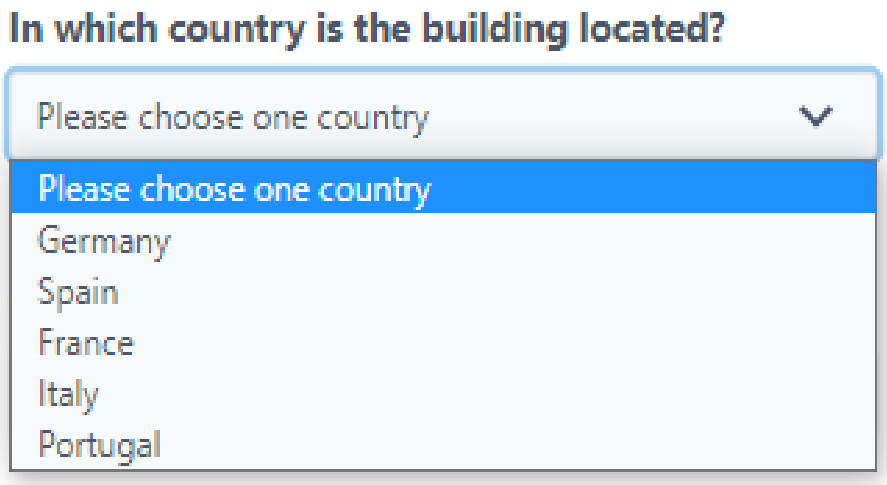


Figure 2.-Selection of the country

The whole journey

User inputs:

General questions: climate zone.

On this second step users will have to choose between three different options of climate zones, again from a drop-down list, like in Figure 3.

An easy to interpret colored map is included, so the users can decide in which zone they are.

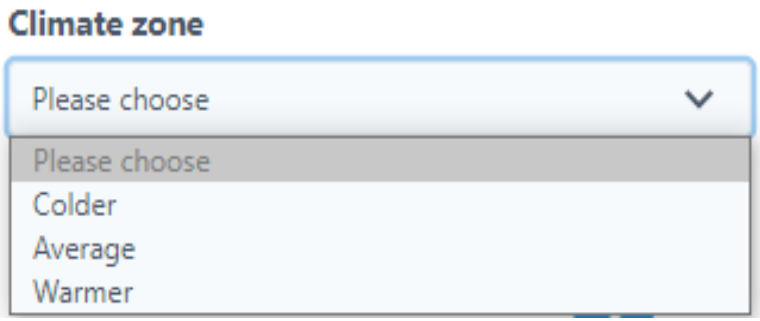


Figure 3.-Selection of the climate zone

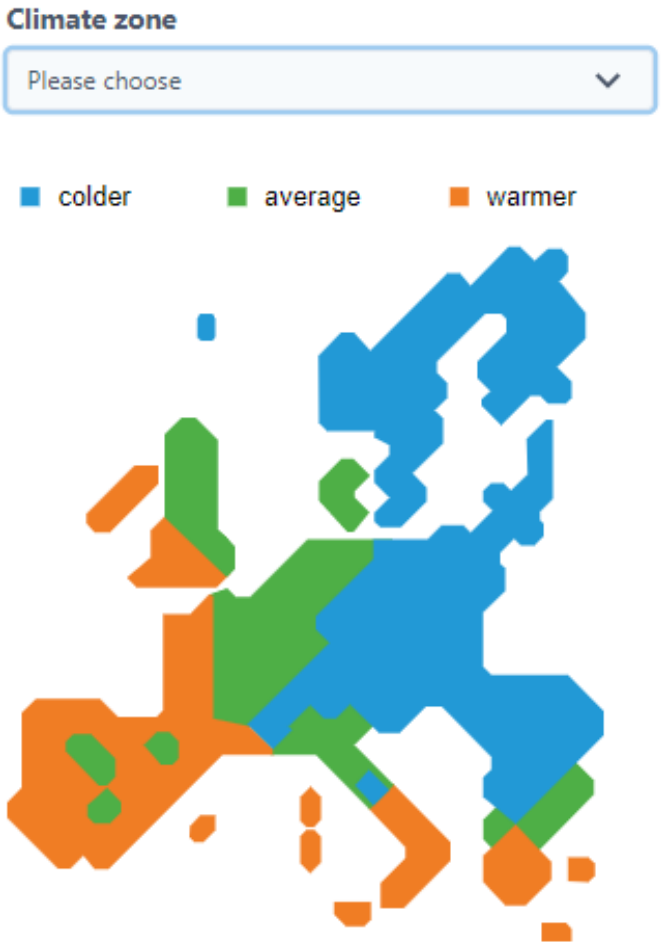


Figure 4.-Map of the climate zones

The whole journey

User inputs:

General questions: role of the user

Users will have to select their role between the two options given (Figure 5). Since this guide is intending to help heating professionals with the use of the tool, the option for them should be the second one, as it is shown in Figure 5.

Figure 5.-User´s role

After this third selection, user should click the bottom just below it, to continue entering data.

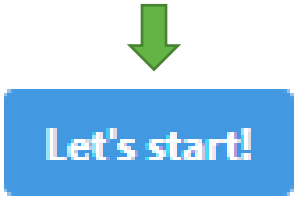


Figure 6.-Start bottom

The whole journey

User inputs:

Tool stages

1. Existing system - System type

For this stage, the users will be asked to introduce their system type, given the two options in a dropdown list, like in Figure 7. Depending on which one the user chooses, different questions will appear.

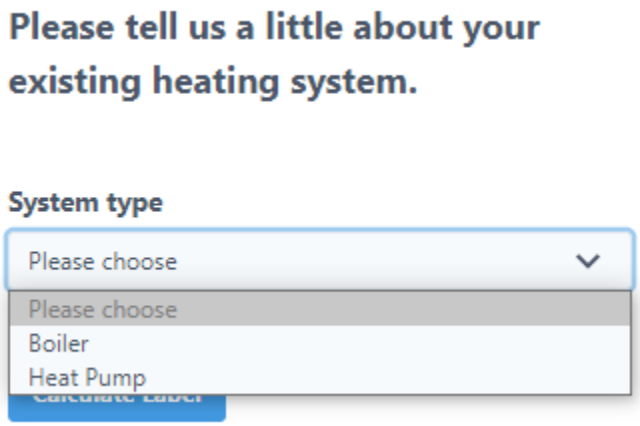


Figure 7.-User´s existing system

The whole journey

User inputs:

Tool stages

1. Existing system - System type

1.1. Boiler

If users choose “boiler” as their system type, some other questions appear.

- For the first one, energy source, is possible to choose between five options
- Next step is choosing the boiler age, for that, the tool gives the following list of options.

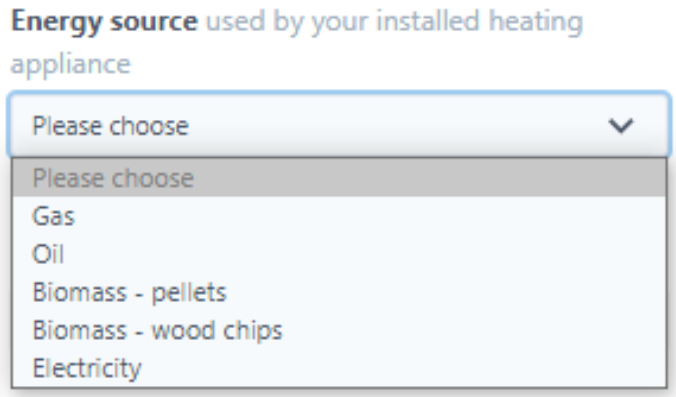


Figure 8.-Boiler: energy source

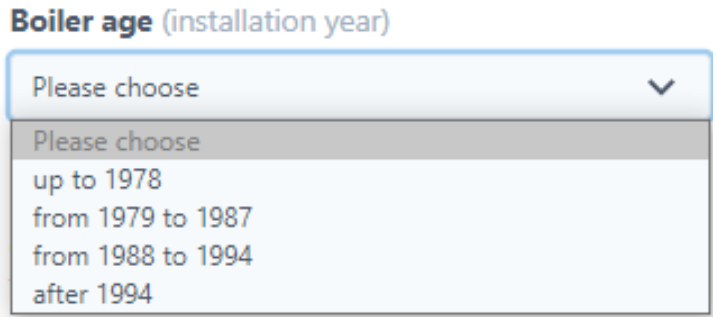


Figure 9.-Boiler: boiler age

The whole journey

User inputs:

Tool stages

1. Existing system - System type

1.1. Boiler

After completing the previous points, the users will face a list of optional questions, if they are not sure about any of them, they can leave it in blank and the program will take some default values.

First, they should choose, between the options given, the type of boiler they are dealing with. (Figure 10)

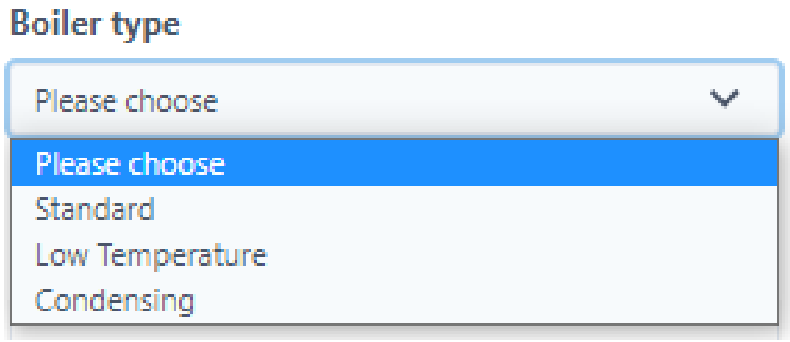


Figure 10.-Boiler: boiler type

The whole journey

User inputs:

Tool stages

1. Existing system - System type

1.1. Boiler

After the boiler type, they should complete, whenever possible, the list shown in Figure 11. It is important to keep in mind that this fields are optional; users can leave them in blank if necessary.

After filling this, the user can click on the bottom below to continue with the simulation.

Calculate Label

Nominal power (in Kilowatt, kW)

η_{30} (efficiency at 30% part load defined at net calorific value, in %)

η_{100} (efficiency at full load defined at net calorific value, in %)

P_{stby} (stand-by heat losses, in Watt)

el_{min} (electrical consumption at 30% part load, in Watt)

el_{max} (electrical consumption at full load, in Watt)

Figure 11.-Boiler: boiler specifications

The whole journey

User inputs:

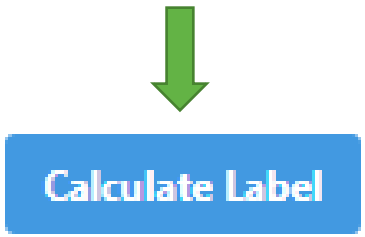
Tool stages

1. Existing system - System type

1.1. Heat pump

When choosing heat pump as system type, only one more question has to be answered, again by choosing an option from a drop-down list.

After that the user can click the bottom below to continue.



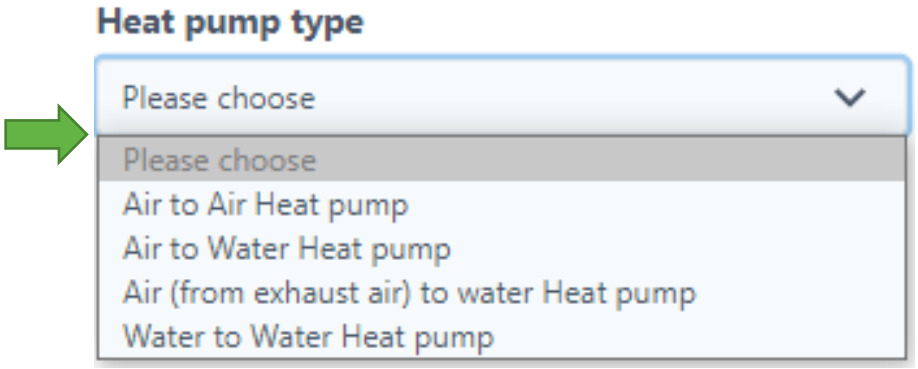


Figure 12.-Heat pump: type

The whole journey

User inputs:

Tool stages

1. Existing system - System type

After clicking “calculate label” a message with the efficiency of the existing system and what would be its label, appears. Figure 13 is showing an example.

Keeping this on mind, the user can click on the bottom below to continue with the simulation.

Calculate Your Options

Your existing boiler has an estimated efficiency of 65%, reaching an energy label class of D.

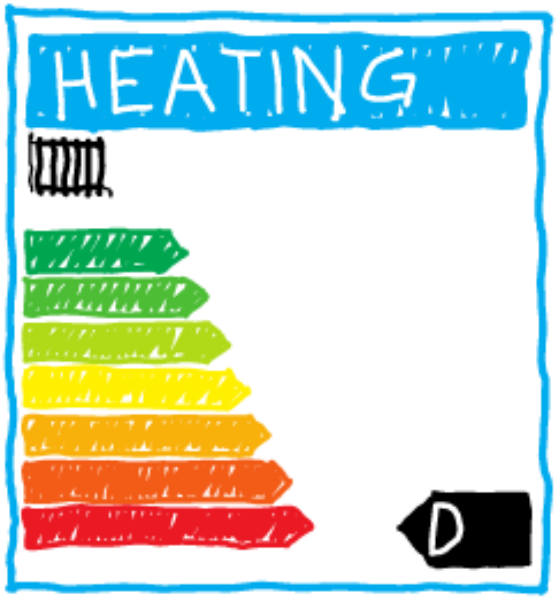


Figure 13.- Existing system: Label

The whole journey

User inputs:

Tool stages

2. Your building

On this stage, users will be asked to introduce some basic information about the building of the case of study.

First, they should choose a building type from the options given.

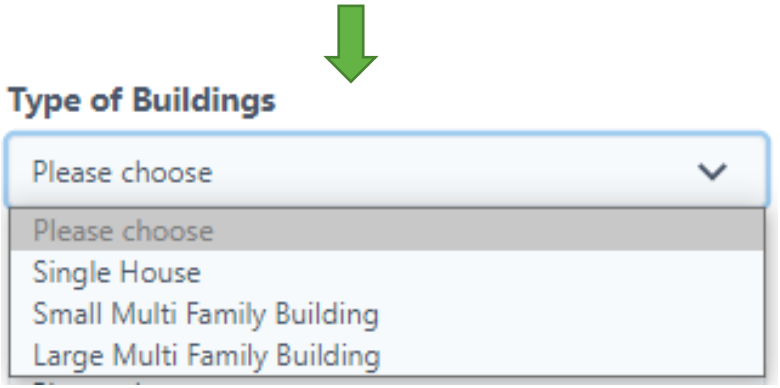


Figure 15.- Building: type

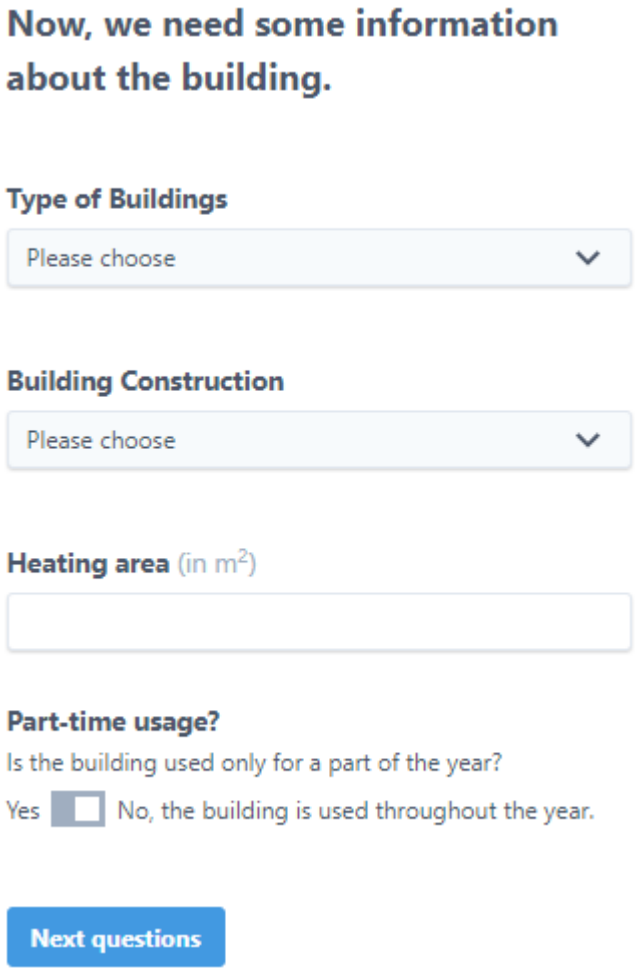


Figure 14.- Building

The whole journey

User inputs:

Tool stages

2. Your building

Following on, users should choose, from the ranges given, the approximate date of construction of the building.

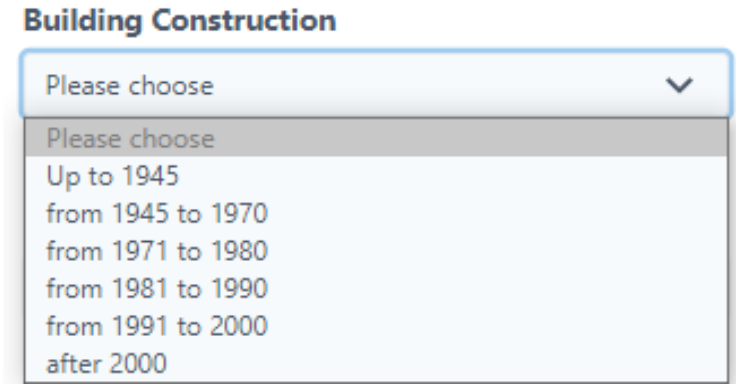


Figure 16.- Building: construction

Then, users will be asked to introduce the heating space, meaning the house surface size in square meters.

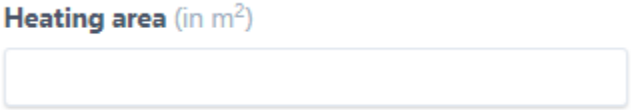


Figure 17.- Building: heating area

Next question is referred to the periods that the building is inhabited.

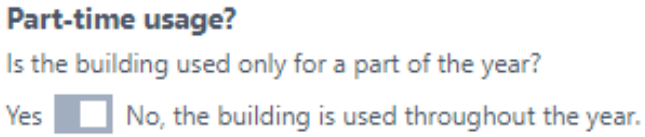


Figure 18.- Building: part-time usage

The whole journey

User inputs:

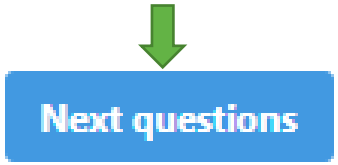
Tool stages

2. Your building

If the building is only inhabited part of the year, option “yes” should be selected in question shown in Figure 19. Users will have to enter two answers:

- To introduce, in days, the annual use given to the building.
- To select one of the given options in terms of seasonal usage.

Then click the bottom to continue.



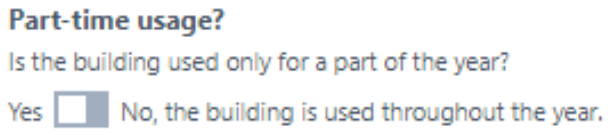


Figure 19.- Building: part-time usage

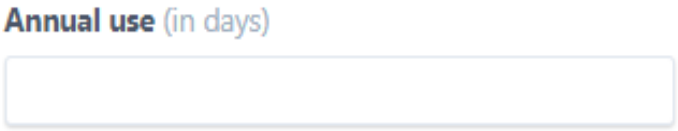


Figure 20.-Building: annual use

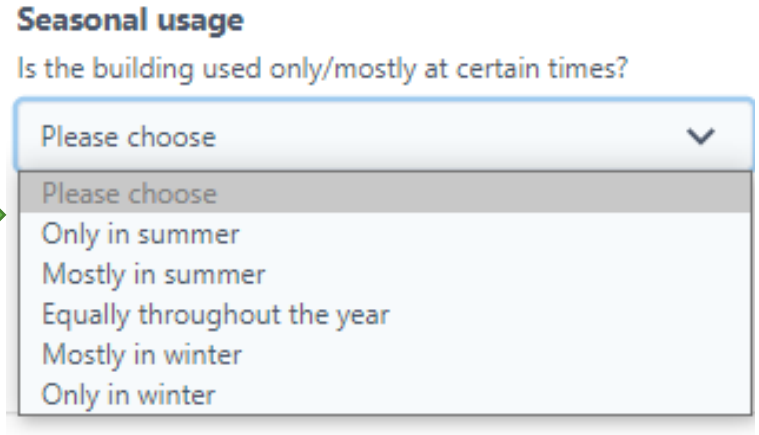


Figure 21.- Building: seasonal use

The whole journey

User inputs:

Tool stages

3. Requirements

In this stage, users of the tool, only have to answer the questions choosing “yes” or “no”

When finished they can click the bottom below to see the results of the simulation

Show Results

Figure 22.- Requirements

Understanding the results gathered by the HARP tool

HARP

Results

Tool outputs:

After clicking the “show results” bottom, users of the HARP tool will see the results for different technologies and their situation.

Figure 23.- Results

Results

Tool outputs:

Results can be seen in more detail by clicking on the More Details bottom and a table like the one shown will appear. (Figure 24)

Is possible to choose between the three options given on the blue squares to see the table corresponding to each of them

Order by Energy Bill Savings | Order by Energy Savings | Order by CO_2 Savings

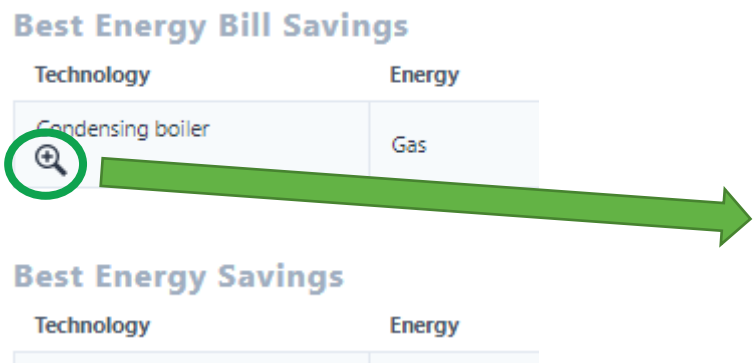
Technology	Energy	Energy bill savings [€/year]	Energy savings [kWh/year]	CO_2 savings [t/year]	Estimated label class
Biomass boiler	Biomass	68	-8,475	1.196	A
Condensing boiler	Gas	83	-7,458	-1.093	A+
Condensing boiler	Oil	-168	-7,819	-1.874	A

Figure 24.- Detailed results

Results

Tool outputs:

To amplify their information on each of the technologies, the tool users can click on the bottom that appears below each of them, and some information like the one shown in Figure 25 will appear for each of the technologies.



Condensing boiler

Energy consumption	11,200 to 11,700 kWh/year
Energy bill	653 to 686 €/year
CO_2-emissions	2.23 to 2.35 t/year
Energy efficiency	96 to 100 %
Estimated energy label Class	A+
Investment cost (without installation)	undefined to undefined €

Your existing system

Energy consumption	3,890 to 4,090 kWh/year
Energy bill	734 to 772 €/year
CO_2-emissions	1.17 to 1.23 t/year
Energy efficiency	110 to 115 %
Estimated energy label Class	A+

Condensing boiler compared with your existing system

Energy consumption	7,270 to 7,640 kWh/year
Energy bill	-81 to -86 €/year
CO_2-emissions	1.07 to 1.12 t/year

Figure 25.- Technology information

Results

Tool outputs:

Apart from the "more details" bottom there are other two options on which the user can click, which are:

- Financial incentives: the tool will give information on existing incentives.
- Installers/Heating professionals: the tool will give information on installers/heating professionals the user can contact.

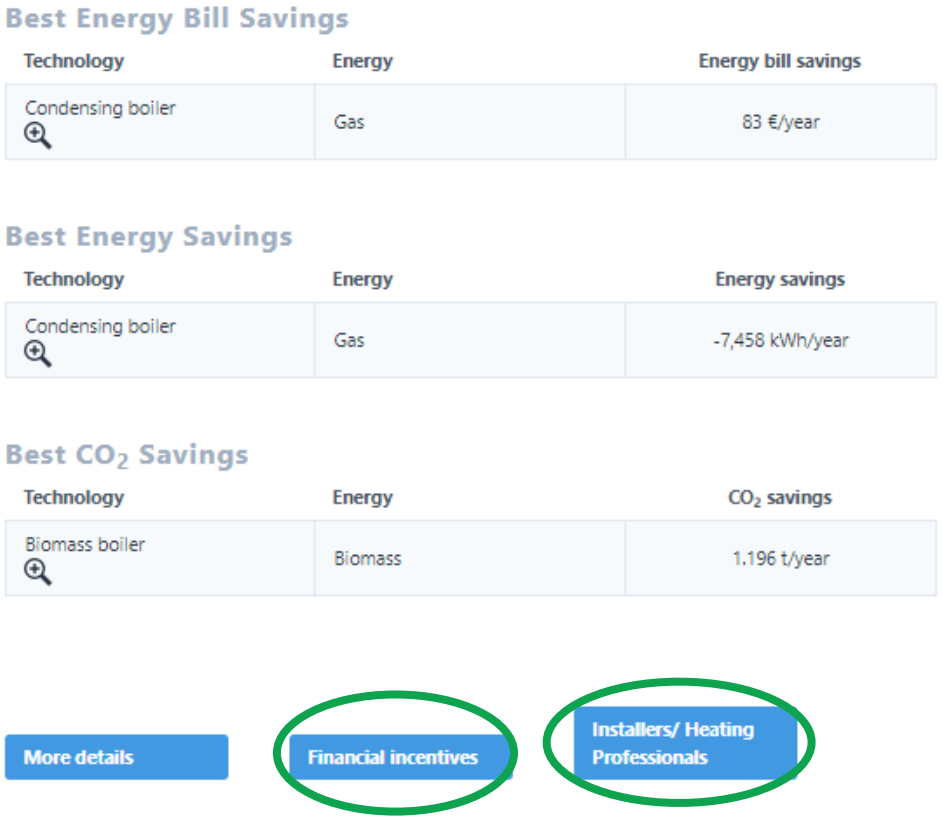


Figure 26.- Results options

Results

Tool outputs:

Apart from the "more details" bottom there are other two options on which the user can click, which are:

- Financial incentives: the tool will give information on existing incentives.
- Installers/Heating professionals: the tool will give information on installers/heating professionals the user can contact.

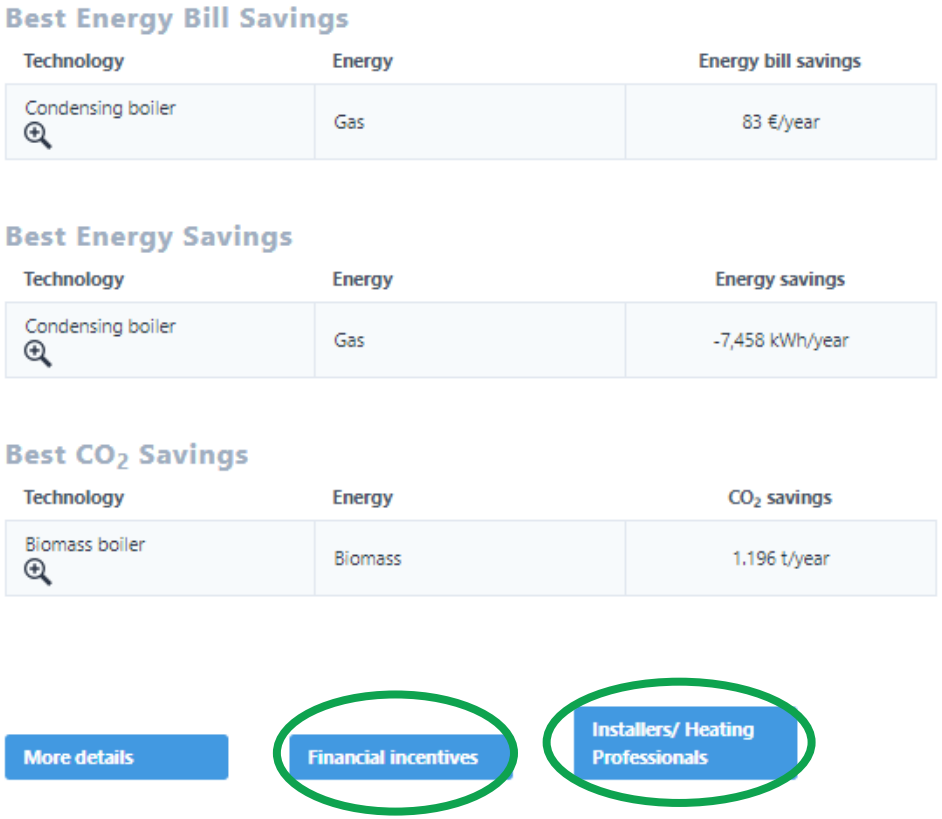


Figure 26.- Results options

Do you want your professional contact details to be included in the HARPa list? Let us know!

Results

Tool outputs:

There is a remote possibility that the program is not able to present any viable option, it would happen if the building does not have neither storage capacity, garden, gas network available nor sufficient electric capacity. This is highly unlikely, but Figure 26 shows what the tool would return in this case.

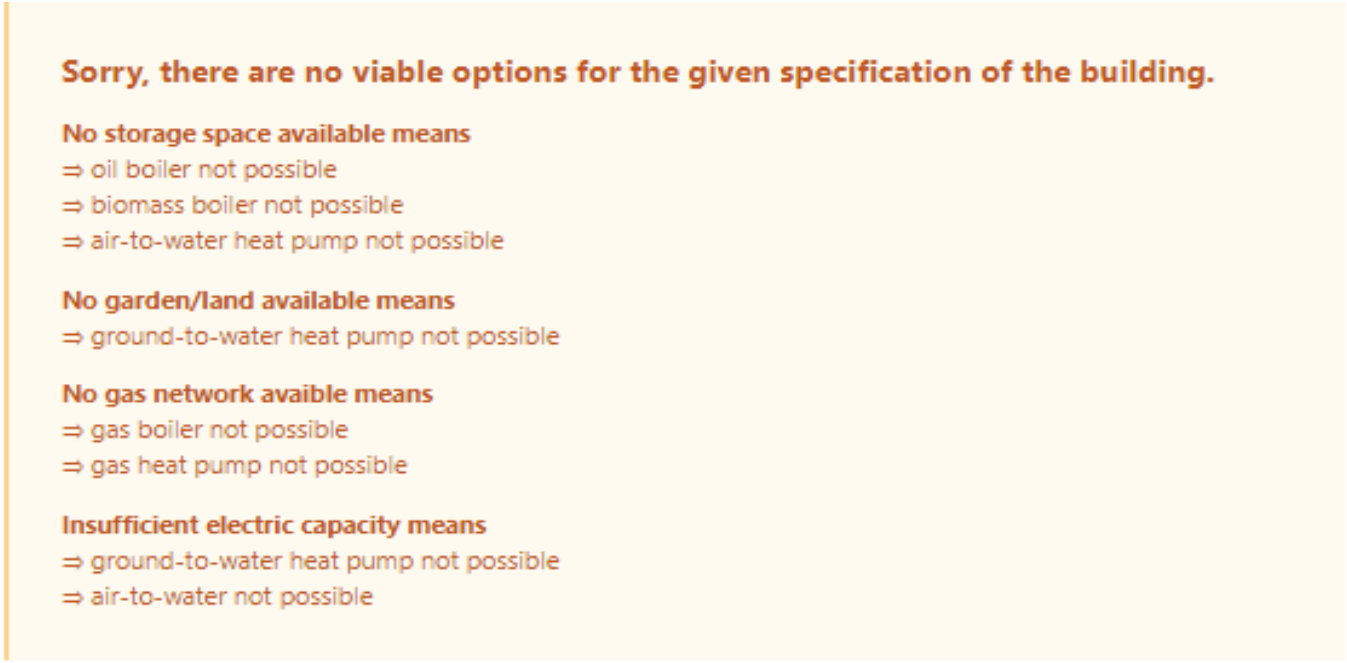


Figure 27.- No viable options