



D2.3: EMSA Web-Tool User Guide



H2020-EE-2015-3 Market Uptake · Project nr: 696112 · Coordinator: ITCL



Horizon 2020
European Union Funding
for Research & Innovation

WP2: Methodology development and EMSA web-tool design.

Task 2.2.:- EMSA web-tool design to compare and benchmark energy performance.

Del. 2.3: EMSA web-tool user guide.

Contract number :	H2020-EE-2015-3 Market Uptake · Project nbr: 696112
Project acronym :	EnergyWater
Project title :	Improving energy efficiency in industrial water processes through benchmarking and bench learning tools in Europe manufacturing industry
DELIVERY DATE	31/07/2017
Author(s):	ITCL
Partners contributed :	Instituto Tecnológico de Castilla y León (ITCL), Carbon Trust (CT), Socamex (SCMX), Cyprus Energy Agency (CEA), Office International de l'Eau (OIEau), Cork Institute of Technology (CIT), WINGS ICT, Okavango and SmartFuture.
Date :	31/07/2017
Version :	04
Abstract :	This document guides the user in amongst the Energy Management Self-Assessment (EMSA) web-tool.
Status:	<input checked="" type="checkbox"/> PU (Public) <input type="checkbox"/> PP Restricted to other programme participants (including the Commission Services) <input type="checkbox"/> Restricted to a group specified by the consortium (including the Commission Services) (please specify the group) <input type="checkbox"/> Confidential, only for members of the consortium (including the Commission Services)



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DOCUMENT REVISION LOG

VERSION	DATE	DESCRIPTION	AUTHOR
01	21/04/2017	Draft – First version	ITCL
02	31/05/2017	Main content revision	ITCL
03	30/06/2017	Web improvements update	ITCL + WINGS
04	31/07/2017	Final version update	ITCL + WINGS

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1 INTRODUCTION

The EnergyWater project provides assessment to companies as well as a list of improvement actions for those fields that have achieved the lowest scores or that are working below their optimum conditions.

Deliverable 2.3: “EMSA web-tool user guide” contains the information regarding the operation of the EMSA web-tool that has been developed during Task 2.2 of the EnergyWater project.

In order for the users to be able to get the most of the tool, this user guide has been created, where it appears information concerning:

- How should users introduce access the tool, depending if they want to become an Energy Angel or if they want to perform an assessment of a certain company.
- How the Energy Angel’s platform works.
- The introduction of information and the contact details of a user into the tool.
- Steps to follow in order to relate an Energy Angel with a company that wants to perform an assessment.
- Details about how a company should introduce their information in order to perform an accurate assessment, as well as the most relevant information that needs to be implemented.
- Results that will appear for a company once the assessment has been completed.

1.1 Objectives and outputs

The objectives of this Work Package (WP2) are the following:

- Introduce into the project work flow all existing information about energy efficiency in industrial water processes.
- Identify cross-cutting innovative technologies that can be applied to different companies and processes.
- Cooperate with stakeholders previously working on energy efficiency in industrial water processes.
- Provide methods and tools to companies, ESCOs and energy auditors for self-assessment and to benchmark energy performance in water process, identifying cost saving potential.
- Develop a methodology to identify excellence in industrial water management and energy savings potential.
- Develop an Energy Management Self-Assessment (EMSA) web-tool to compare and benchmark energy performance and facilitate the Benchlearning.
- Develop a guide for the EMSA web-tool so that the future users of the tool have a manual regarding how to get the maximum benefit from the EMSA tool.

The WP2 is split into two different Tasks:

- **Task 2.1. Methodology development for a self-assessment energy efficiency evaluation:**

The development of this task provides the creation of a methodology structure that calculates the score and the improvement of different energy models. It is based on 4 different models: CAF, EVO, ISO 50.001 and CARBON TRUST Energy Management self-assessment tool.

For this methodology structure to function it has to be created a list of information that the Energy Angels should demand the companies; this list of information will vary depending on the kind of that that is being collected.

- **Task 2.2. EMSA web-tool design to compare and benchmark energy performance:**

EMSA web-tool will be designed, a collaborative tool that will allow the spread of best energy efficiency strategies in water management among manufacturing companies.

In this task it will be designed a Benchlearning database that will compare all the management and energy performances in an anonymous way.

The information that will be stored in this web page will use comparative algorithms to facilitate the tasks of creating rankings, as well as to propose improvement actions to the processes that get the lowest scores.

2 INITIAL BASIS

The aim of this Deliverable is to explain how to perform an assessment in the EMSA Web Tool whether the user is a company who wants to perform a self-assessment or if it's an Energy Angel who wants to perform an assessment.

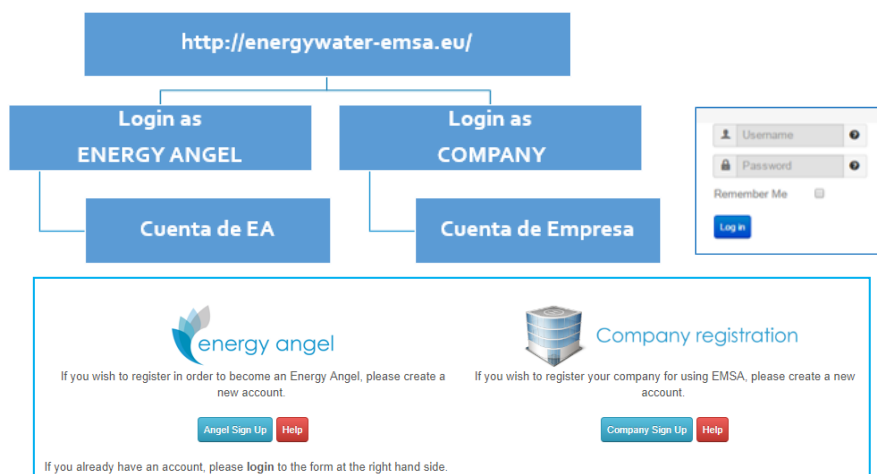
Depending on what the user is going to use the tool for, there are two different paths that a user can choose if he/she wants to access into the tool.

- **Companies:** If a company registers into the tool they will be guided in the path to perform a complete assessment of the working conditions of the company, regarding those processes and equipment owned by a company which are related to water use and energy consumption. The company will be allowed to introduce their data into the tool up to a point, where an energy expert will help the company to end the introduction of data.

After all the information is completed, the tool will provide results about the level of efficiency of the company as well as a list of possible improvement measures. If the company performs the already mentioned saving measures, they will be able to increase their efficiency level. To do this; they will also be able to contact experts in different fields who can guide them into the implementation process.

- **Energy Angels:** If a person registers as an Energy Angel, they will need to introduce their personal data and working experience in order to be validated as an Energy Angel. They will be given information about courses related to water and energy efficiency and they will be able to establish contact with different companies and create business opportunities by performing assessments with the EMSA tool and the Energy Angels network.

This document includes screenshots, as well as written steps to follow that will guide both groups of interest through the EMSA Web-Tool.



2.1 EMSA web tool features

As we have mentioned in the project deliverables, the EMSA web tool is designed to acquire the following features:

1. Simplicity: The tool has to be simple regarding its use. For the company to use the company correctly it has to be simple and easy to use.
2. Clarity: The information presented in the tool has to be clear and organised to provide a better use of the tool, this is why the Energy Angel has to be correctly trained and they should ask the required information in a clear way.
3. Easy to use: Depending on who is going to use the tool, the implemented features need to be easy to work with, in order to widen the use of the tool. The information that the tool requires need to be of easy access for the company in order not to invest a lot of time in the assessment.
4. Quick: Following with the topic of the previous point, a good feature that the tool and the assessment need to have in common is that they cannot be time consuming. The idea is to create a rapid assessment that can be completed in a short period of time.
5. Efficient: The tool has to be efficient; with the minimum information needed the tool will calculate and display the most information possible about the state of the company.
6. Useful: This feature is one of the most important ones, because for the companies to use the tool, they need to see that the tool is useful and that the procedures are necessary to achieve the final goal.
7. Adaptable: The EMSA tool needs to adapt to each company's processes. Depending on each company, the tool will have to deal with different sectors, processes and equipment; because of that reason, the tool needs to be suitable for these different conditions.
8. Wide range scope: The EMSA should perform a proper assessment process regardless the size of the company or their level of information. It should adapt to the existing information and provide useful results in every case of study.

This guide has been created to ensure the already mentioned features as well as a correct use of the tool from its users.

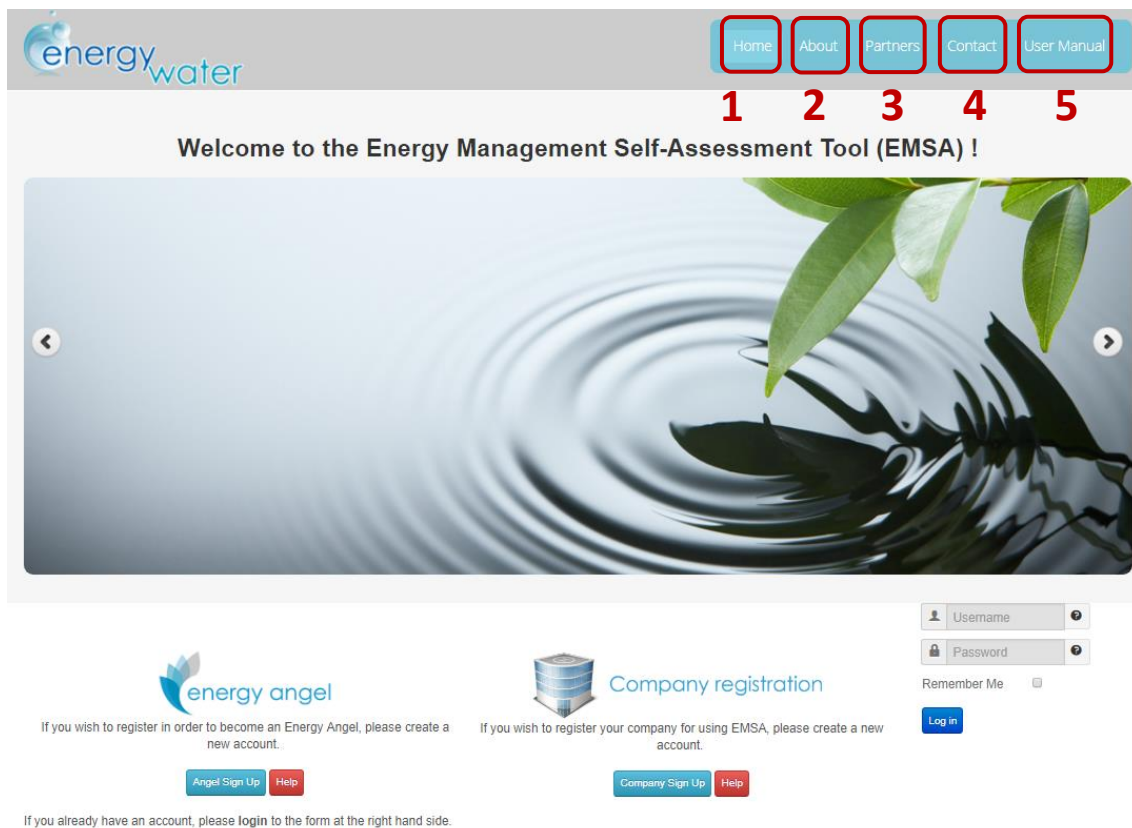
3 GENERAL ACCESS

The link to access the EMSA web tool is the following:

<http://energywater-emsa.eu>

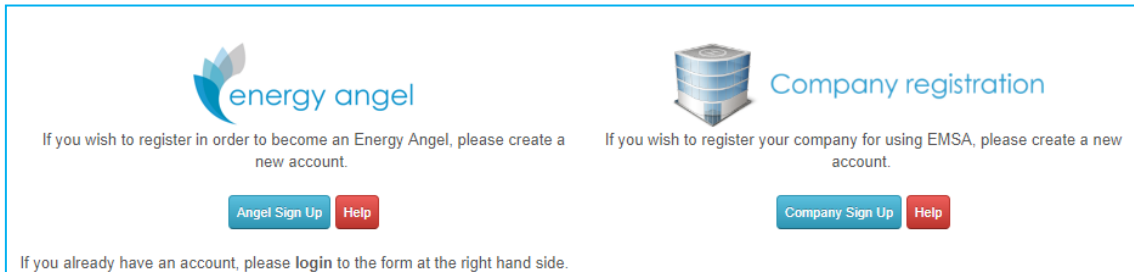
Once a user has entered in the link presented above, there are some functionalities offered by the tool before any registration.

The following screenshot corresponds to the main page of the EMSA, and there are 5 different tabs that give different information and functionalities.



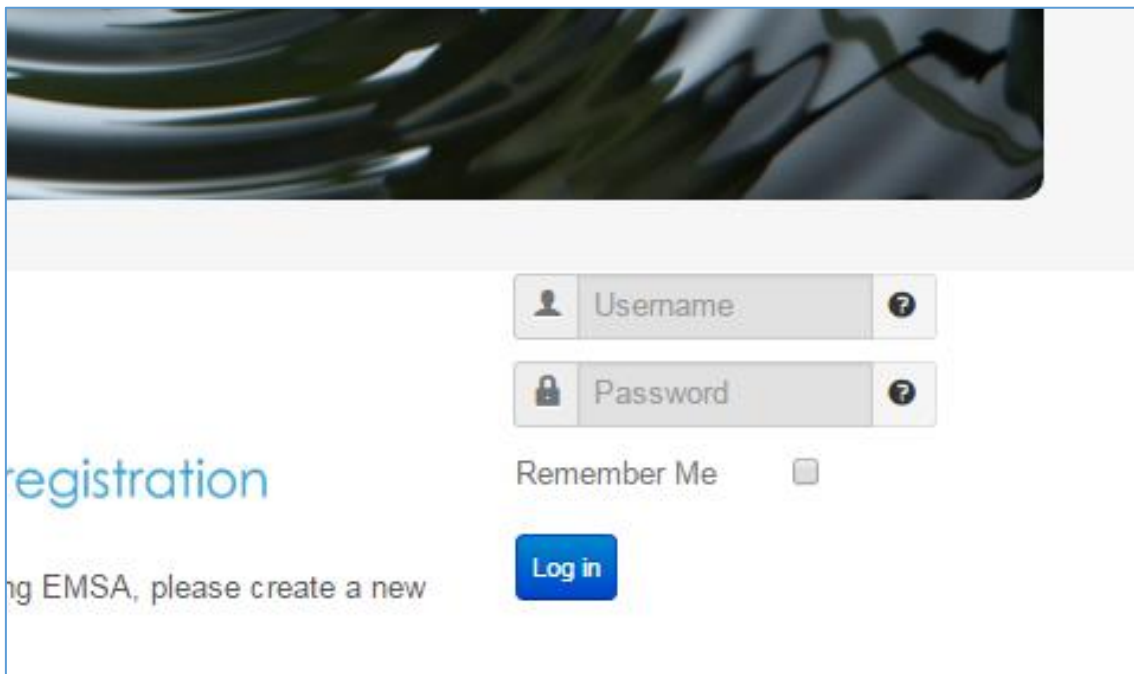
3.1 Home

In the home tab, people are able to freely register as Energy Angels or Companies just clicking in the sing up button.



The screenshot shows two registration options side-by-side. On the left, the 'energy angel' logo is displayed above the text: 'If you wish to register in order to become an Energy Angel, please create a new account.' Below this text are two buttons: 'Angel Sign Up' (blue) and 'Help' (red). On the right, a server icon is displayed above the text: 'Company registration'. Below this text is another set of buttons: 'Company Sign Up' (blue) and 'Help' (red). At the bottom of the section, a line of text reads: 'If you already have an account, please login to the form at the right hand side.'

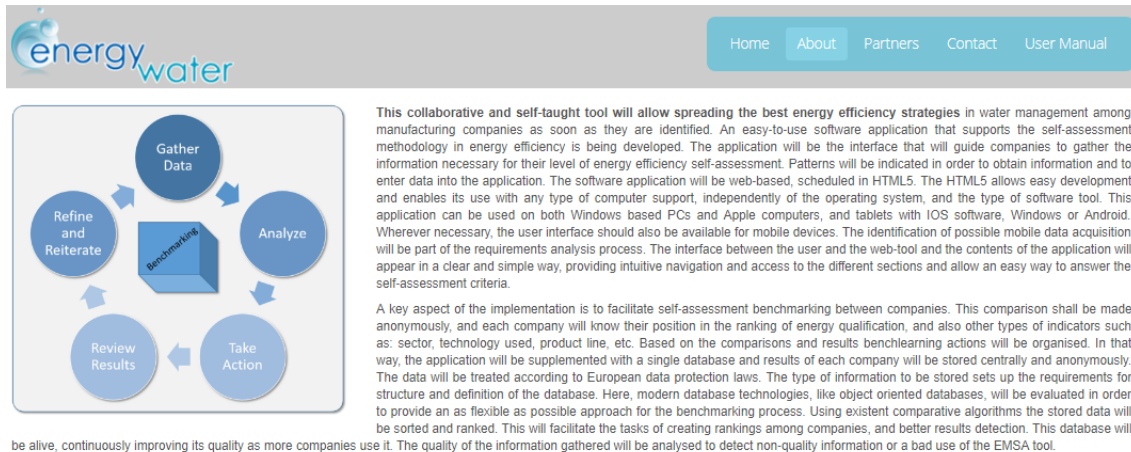
If the users already have an account, they are able to sign up directly from the home page.



The screenshot shows a login form with a dark, abstract background image at the top. Below the image, there are two input fields: 'Username' and 'Password', each with a user icon and a question mark icon. Below the password field is a 'Remember Me' checkbox. A blue 'Log in' button is positioned below the 'Remember Me' checkbox. To the left of the form, the text 'Company registration' and 'ng EMSA, please create a new' is partially visible.

3.2 About

In the “about” tab it is shown some information that explains the EMSA tool’s way of working as well as a brief summary of how the tool has been created and the language that has been used to program it.



This collaborative and self-taught tool will allow spreading the best energy efficiency strategies in water management among manufacturing companies as soon as they are identified. An easy-to-use software application that supports the self-assessment methodology in energy efficiency is being developed. The application will be the interface that will guide companies to gather the information necessary for their level of energy efficiency self-assessment. Patterns will be indicated in order to obtain information and to enter data into the application. The software application will be web-based, scheduled in HTML5. The HTML5 allows easy development and enables its use with any type of computer support, independently of the operating system, and the type of software tool. This application can be used on both Windows based PCs and Apple computers, and tablets with IOS software, Windows or Android. Wherever necessary, the user interface should also be available for mobile devices. The identification of possible mobile data acquisition will be part of the requirements analysis process. The interface between the user and the web-tool and the contents of the application will appear in a clear and simple way, providing intuitive navigation and access to the different sections and allow an easy way to answer the self-assessment criteria.

A key aspect of the implementation is to facilitate self-assessment benchmarking between companies. This comparison shall be made anonymously, and each company will know their position in the ranking of energy qualification, and also other types of indicators such as: sector, technology used, product line, etc. Based on the comparisons and results benchmarking actions will be organised. In that way, the application will be supplemented with a single database and results of each company will be stored centrally and anonymously. The data will be treated according to European data protection laws. The type of information to be stored sets up the requirements for structure and definition of the database. Here, modern database technologies, like object oriented databases, will be evaluated in order to provide an as flexible as possible approach for the benchmarking process. Using existent comparative algorithms the stored data will be sorted and ranked. This will facilitate the tasks of creating rankings among companies, and better results detection. This database will be alive, continuously improving its quality as more companies use it. The quality of the information gathered will be analysed to detect non-quality information or a bad use of the EMSA tool.



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3.3 Partners

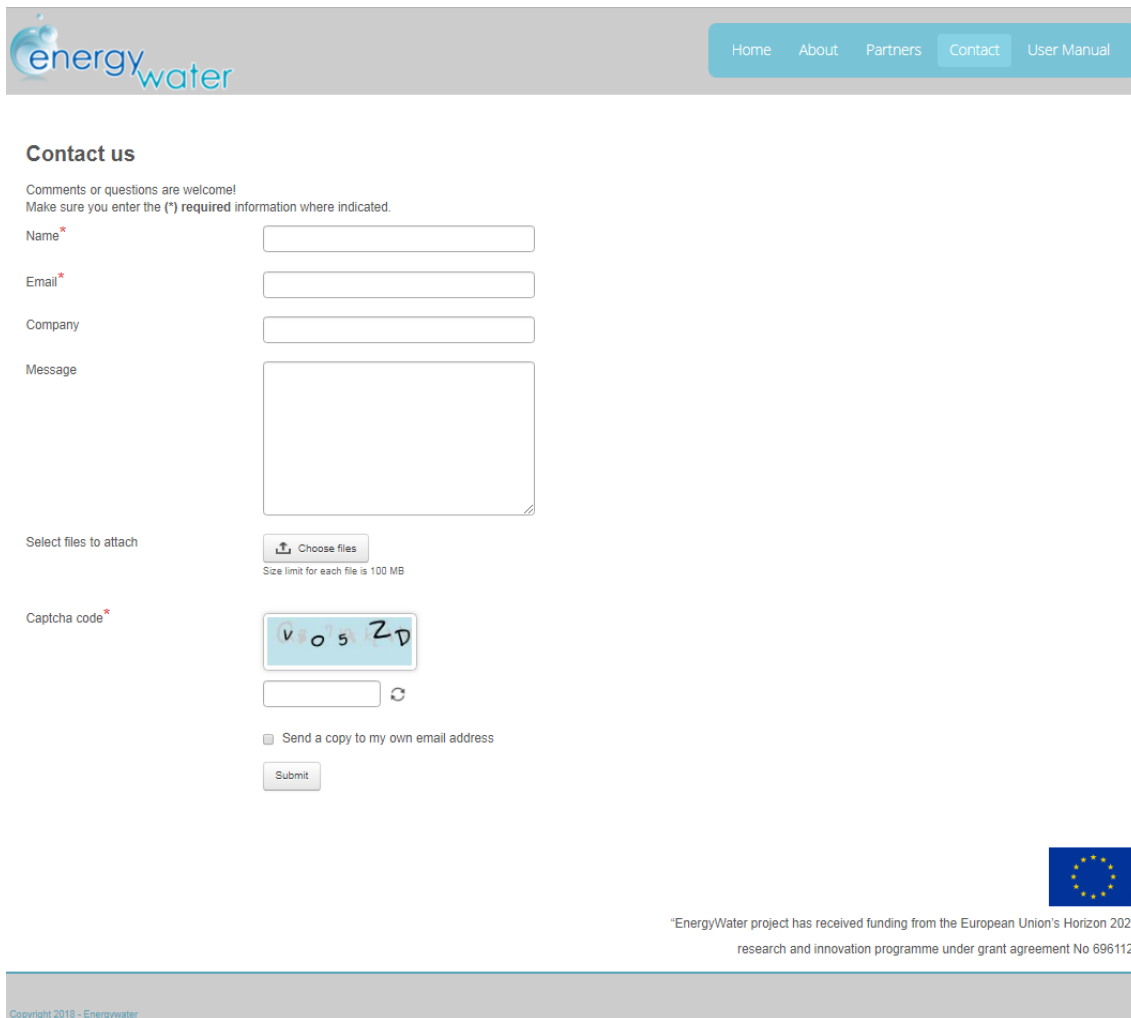
In the “partners” tab, the users can find information about the members of the consortium that has created the EMSA web tool. If the users click in the logos, the page will redirect them to each of the members’ webpage.



3.4 Contact

In the “Contact” tab, the users are able to contact the network administrator if they need advice about the tool or if they have more specific questions.

Their procedure to send a message implies introducing at least the name and the email of the interested user, followed by the message that this person wants to send to the admin. Additionally, the interested person will also be allowed to introduce the name of his/her company, in case this fact can provide more useful information.



The screenshot shows the 'Contact us' form on the EnergyWater website. The form includes fields for Name, Email, Company, and Message. It also features a file upload section with a 'Choose files' button and a note that the size limit for each file is 100 MB. A captcha code is displayed as 'v o s Z D' with a refresh button. There is a checkbox for 'Send a copy to my own email address' and a 'Submit' button. The form is set against a light gray background with the EnergyWater logo and navigation menu at the top.

Contact us

Comments or questions are welcome!
Make sure you enter the (*) required information where indicated.

Name*

Email*


Company

Message

Select files to attach
Size limit for each file is 100 MB

Captcha code*

Send a copy to my own email address



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3.5 User Manual

In the “User Manual” tab, the users are able to download the EMSA Web Tool User Guide by clicking the “User Manual” button (in red). The User will get the present document in a pdf format.



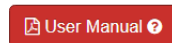
User Manual

Here you can find the EMSA Web Tool User Guide.

In order for the users to be able to get the most of the tool, this user guide has been created, where it appears information concerning:

- How should users introduce access the tool, depending if they want to become an Energy Angel or if they want to perform an assessment of a certain company.
- How the Energy Angel's platform works.
- The introduction of information and the contact details of a user into the tool.
- Steps to follow in order to relate an Energy Angel with a company that wants to perform an assessment.
- Details about how a company should introduce their information in order to perform an accurate assessment, as well as the most relevant information that needs to be implemented.
- Results that will appear for a company once the assessment has been completed.

Download the EMSA Web Tool User Guide here:



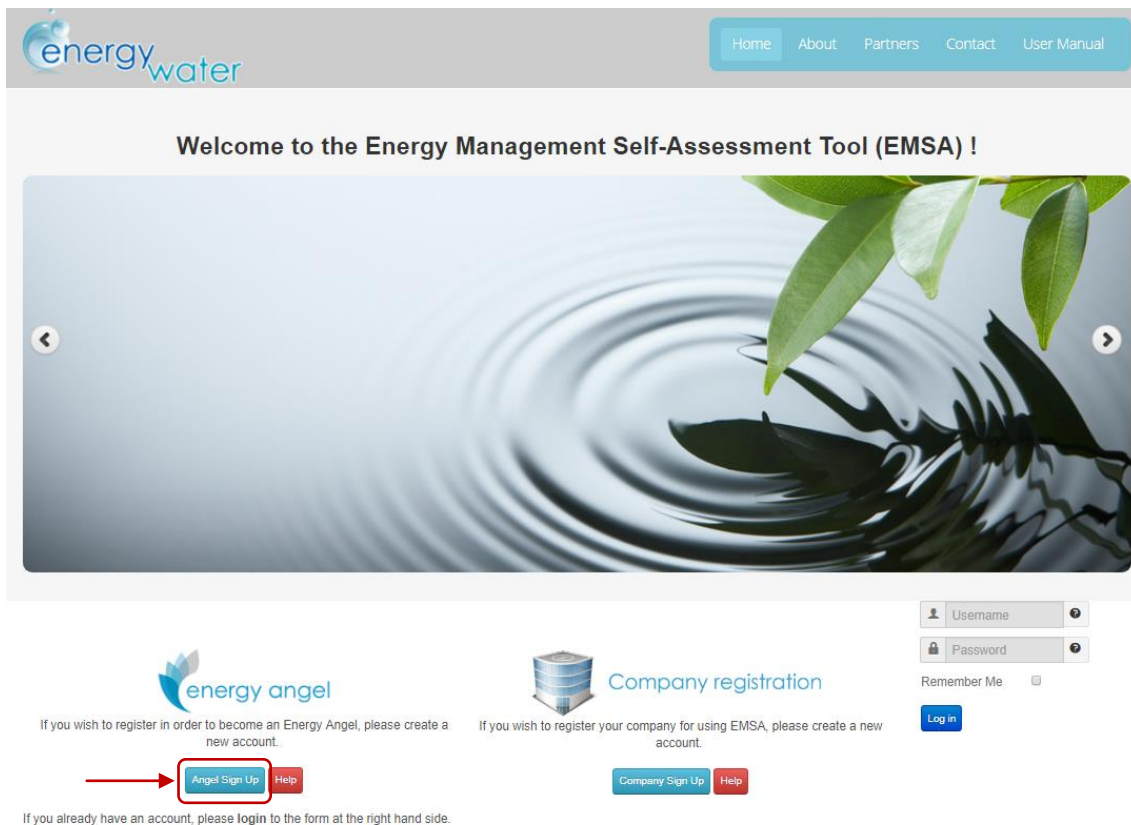
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4 ENTER AS AN ENERGY ANGEL

If a user wants to be part of the tool as an Energy Angel, by following this section of the guide he/she will be able to benefit from all the possibilities that the EMSA web-tool offers.

4.1 Access to the EMSA

The future Energy Angels, who want to benefit from the EMSA tool and join in the Energy Angels network, will have to firstly sign up as an Energy Angel candidate in the main page of the EMSA.



Once the future Energy Angel has decided to sign up into the tool, they will need to fill in a simple form in order to be granted access to the tool.

Click the “*Angel Sign Up*” button to start registering in the tool and start the process of becoming an Energy Angel.

Energy Angels Sign Up Form

[Forgot your password?](#)
[Forgot your username?](#)

Name
 Please provide your Name


Username
 Username can contain any letters or numbers

E-mail
 Please provide your E-mail

Password
 Password should be at least 4 characters

Password (Confirm)
 Please confirm password

I accept to the [Privacy Policy](#).

Human verification No soy un robot 
 Please verify that you are human

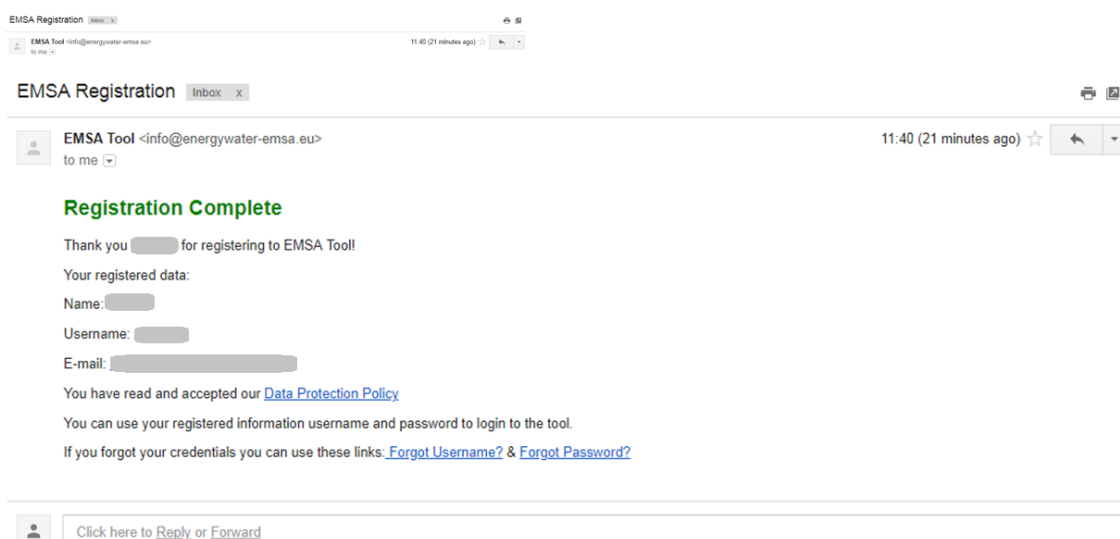


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Fill in the “Energy Angels Sign up Form” create an account in the EMSA Web tool.

When the users register, they will receive a “Registration complete” notification email granting them access to the tool. This access doesn’t ensure the user becoming an Energy Angel, it only confirms the creation of an Energy Angel User account.



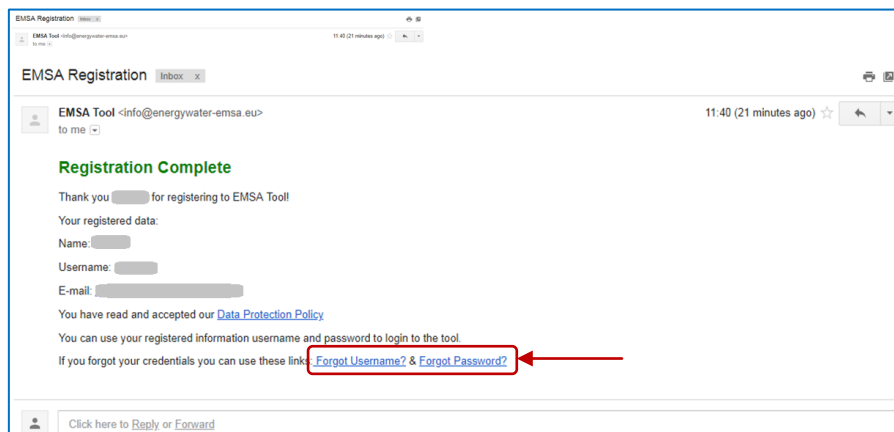
After receiving the confirmation by email, the user will be able to access to the EMSA tool with the previously defined username and password.

Introduce in the main page of the EMSA the username and password to enter the tool.

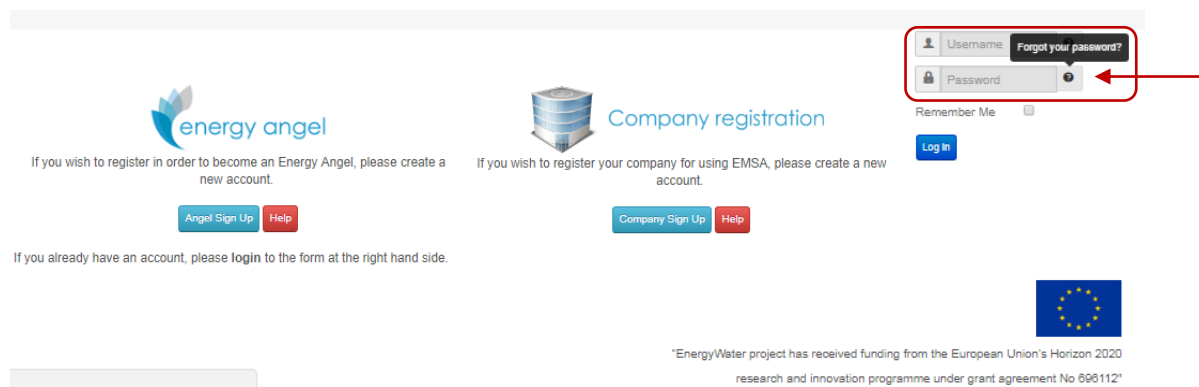
4.2 Forgotten Credentials

If the user has forgotten his password or his username, they will have two different options to recover them.

1. Recover the forgotten credentials by searching the registration email as it has a permanent link to the recovery page.
Click the redirection link “*Forgot Username*” or “*Forgot Password*” for being redirected to the EMSA tool.



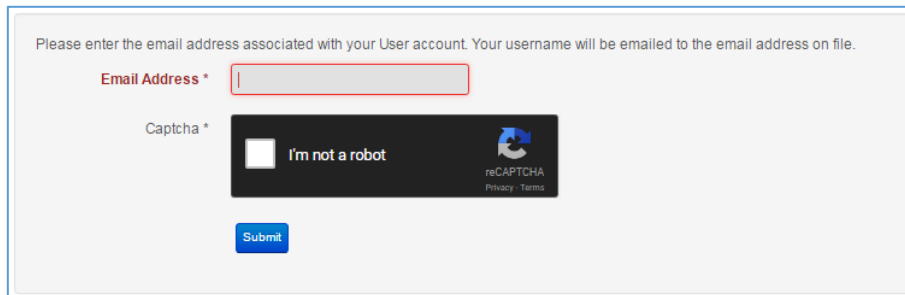
2. If the user has deleted the registration email, the recovery page can also be reached by clicking in the interrogation sign next to the username or password in the EMSA Main Page



The recovery page will ask the user to type the email where linked to the Energy Angel account and the EMSA will send an email to this account with a new password.

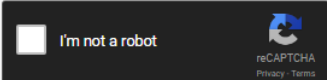
4.2.1 Forgotten username

Use one of the options listed above to enter to the recovery page of the EMSA web tool.

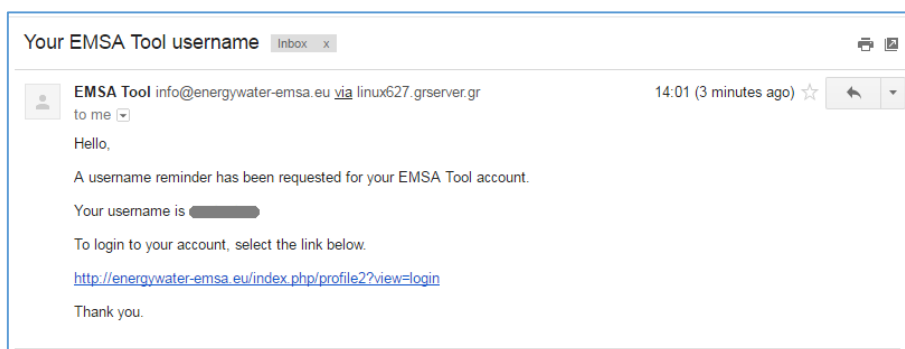


Please enter the email address associated with your User account. Your username will be emailed to the email address on file.

Email Address *

Captcha * 

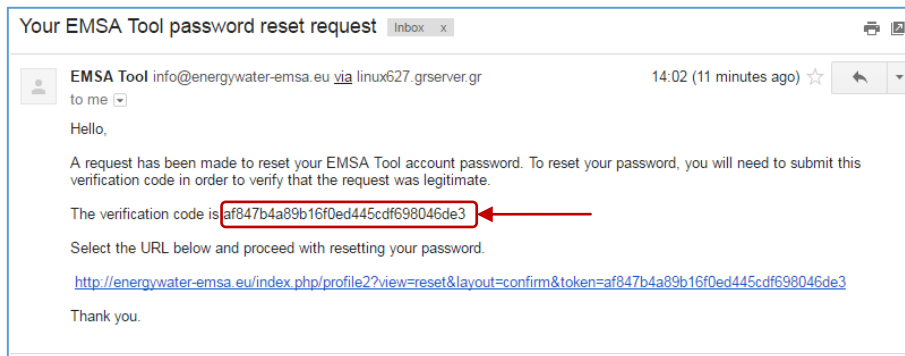
Introduce the email address related to the Energy Angel Account, then click submit and the EMSA will automatically send an email to this account reminding the username. EMSA will also provide a link to re-enter the tool



4.2.2 Forgotten password

If the future Energy Angel **forgot the password**, the procedure is the same as for a forgotten username.

EMSA will send a link to the tool as well as a verification code by email. Enter the link and introduce both the username and the verification code in the corresponding boxes. Then press the submit button.



An email has been sent to your email address. The email contains a verification code, please paste the verification code in the field below to prove that you are the owner of this account.

Username *

Verification Code * ←

EMSA will verify the code and, if it's correct, the user will be able to change the password in the following page:

To complete the password reset process, please enter a new password.

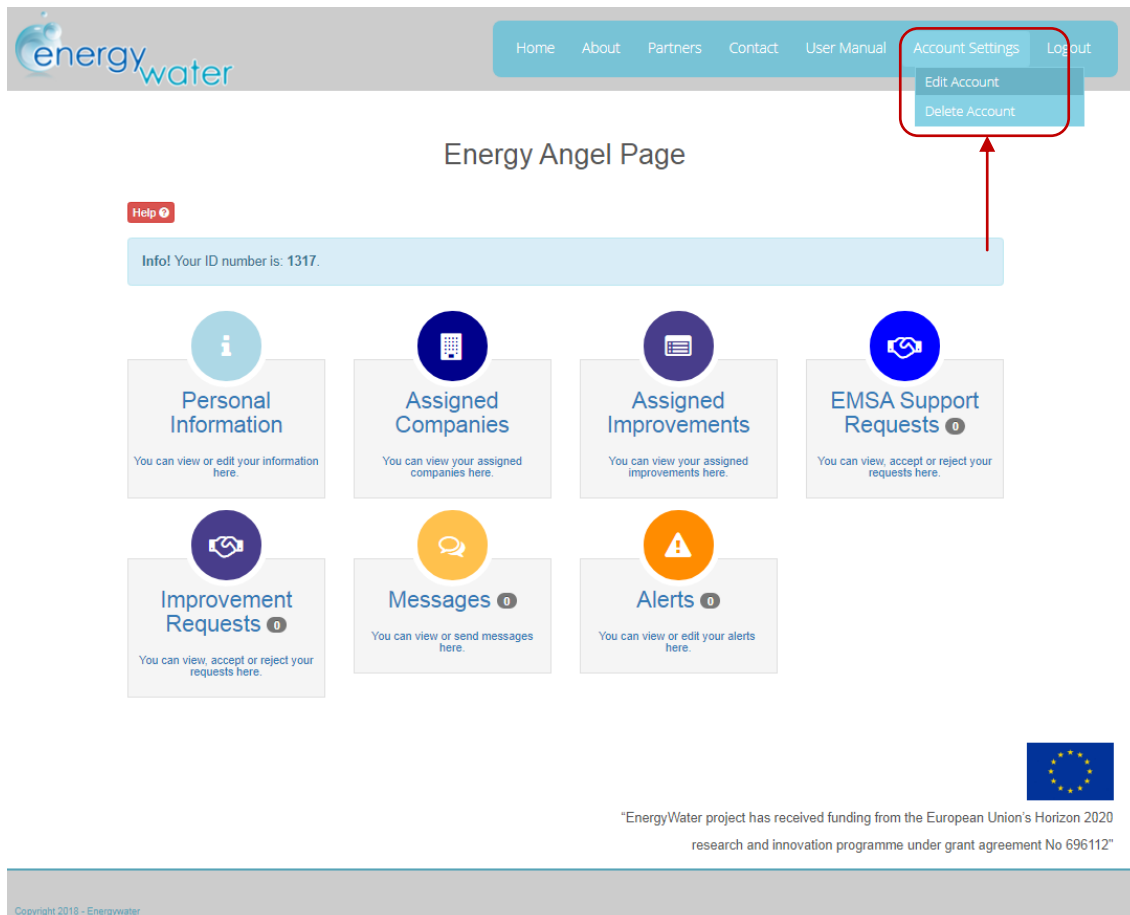
Password *

Confirm Password *

After that, the user will be able to re-enter in the EMSA tool again.

4.3 Modify Password or email

Once the Energy Angel has successfully registered into the tool, the Energy Angel's page will be unlocked. If an Energy Angel wants to modify password or email, he should enter in the "Edit Account" tab in the Account Settings tab.



The screenshot displays the Energy Angel Page interface. At the top, there is a navigation bar with the EnergyWater logo on the left and a menu on the right containing 'Home', 'About', 'Partners', 'Contact', 'User Manual', 'Account Settings', and 'Logout'. The 'Account Settings' menu is expanded, showing 'Edit Account' and 'Delete Account' options, with 'Edit Account' highlighted in blue. A red box and arrow point to this menu. Below the navigation bar, the page title 'Energy Angel Page' is centered. A 'Help' button is visible in the top left. An information banner states 'Info! Your ID number is: 1317.' The main content area features seven interactive cards: 'Personal Information', 'Assigned Companies', 'Assigned Improvements', 'EMSA Support Requests', 'Improvement Requests', 'Messages', and 'Alerts'. Each card includes an icon and a brief description of its function. At the bottom right, there is a European Union flag and a funding notice: 'EnergyWater project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696112'. The footer contains the copyright notice 'Copyright 2016 - Energywater'.

Once inside the tab, introduce the new information in the corresponding boxes. Make sure that the confirmed information matches the principal one.

Edit Your Profile

Username (optional)

Password (optional)

Confirm Password (optional)

Email Address *

Confirm email Address *

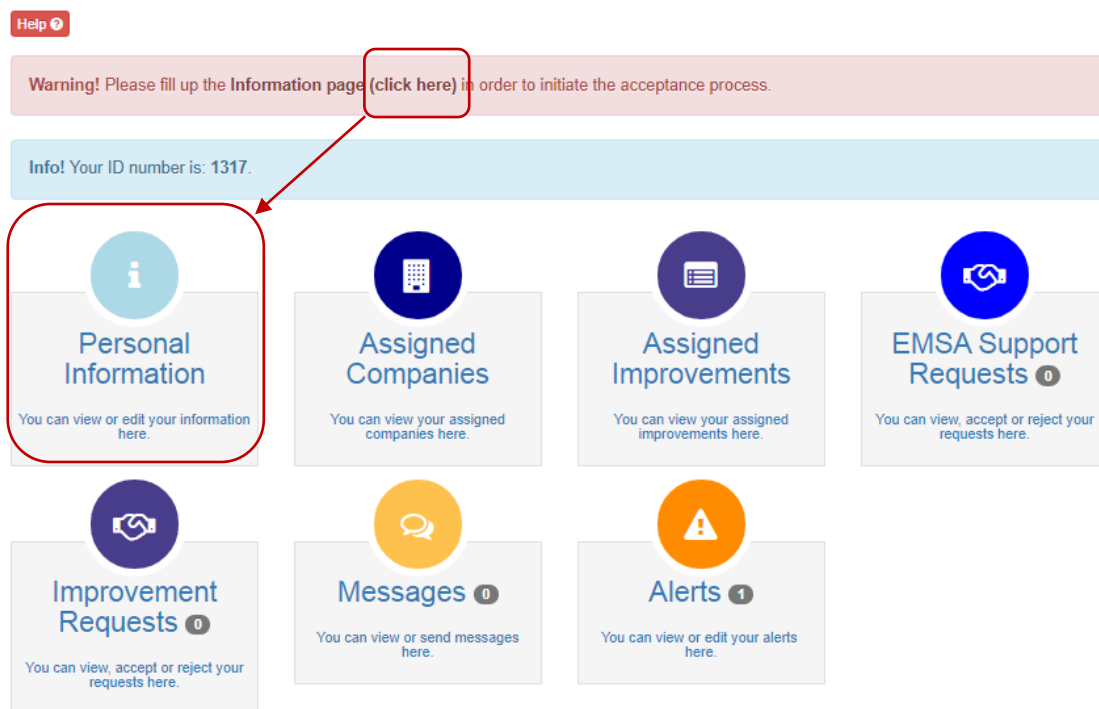
Click the submit button to save changes.

4.4 Introduce Information

Once the Energy Angel's page is unlocked, the first step to do is to fill in the "Personal Information" page. Information included in this section is decisive to become an Energy Angel.

A Warning message will appear until the user has introduced all the information the corresponding tab. Once the information is completed, the Network Administration will decide if the user meets the requirements of becoming an Energy Angel. If the "Information" tab remains empty, the account will remain inactive, and the acceptance procedure will not start.

Energy Angel Page



Help

Warning! Please fill up the Information page (click here) in order to initiate the acceptance process.

Info! Your ID number is: 1317.

Personal Information
You can view or edit your information here.

Assigned Companies
You can view your assigned companies here.

Assigned Improvements
You can view your assigned improvements here.

EMSA Support Requests
You can view, accept or reject your requests here.

Improvement Requests
You can view, accept or reject your requests here.

Messages
You can view or send messages here.

Alerts
You can view or edit your alerts here.

Click in the "Personal Information" tab to complete all the information required by the EMSA. This will enable the Energy Angel's Network to determine if the applicant has the necessary skills to become an Energy Angel.

Complete all the questions with the most accurate information possible, in order to ease the validation process of the applicant's competences.

The information required for the company is the following:

Contact Details

Picture Ningún archivo seleccionado
Please upload an Energy Angel Picture

Full Name
Please provide your full name

Position in the company
Please provide the contact's current position

Company
Please provide the name of your company

Company's VAT number
Please provide the VAT number of the company you are currently working

Telephone
Please provide the contact's Telephone number

Email
Please provide the contact's E-mail address

Country ▼
Please choose Country

State ▼
Please choose State

City
Please enter the city name

Address
Please provide the Company's address name and number

Post Code
Please provide the Post Code of the Company's location.

Company Description

Company Size ▼
Please enter the Company's personnel current size

Company Sector ▼
Please choose the Company's sector

Other* Company's Sector
Please provide your own Company sector *(if applicable)

Company Activities

- Energy audits
- Energy efficiency studies
- Energy management system implementation
- Energy saving measures implementation
- Equipment supplier
- Legal advice
- Financial advice
- Financial services
- Energy services company (ESCO)

Please choose the Company's activities

Other* Company Activities
Please provide other Company activities *(if applicable)

Company Activities Description
Please provide a description of all the company's current activities

Energy Angel's Competences

Spoken Language

<input type="checkbox"/> Bulgarian	<input type="checkbox"/> Croatian	<input type="checkbox"/> Czech	<input type="checkbox"/> Danish
<input type="checkbox"/> Dutch	<input type="checkbox"/> English	<input type="checkbox"/> Estonian	<input type="checkbox"/> Finnish
<input type="checkbox"/> French	<input type="checkbox"/> German	<input type="checkbox"/> Greek	<input type="checkbox"/> Hungarian
<input type="checkbox"/> Irish	<input type="checkbox"/> Italian	<input type="checkbox"/> Latvian	<input type="checkbox"/> Lithuanian
<input type="checkbox"/> Maltese	<input type="checkbox"/> Polish	<input type="checkbox"/> Portuguese	<input type="checkbox"/> Romanian
<input type="checkbox"/> Slovenian	<input type="checkbox"/> Spanish	<input type="checkbox"/> Swedish	

Please select any of above Languages

Studies

<input type="checkbox"/> Mechanical Engineering degree	<input type="checkbox"/> Chemical Engineering degree
<input type="checkbox"/> Electrical Engineering degree	<input type="checkbox"/> Engineering Management degree
<input type="checkbox"/> Industrial Engineering	<input type="checkbox"/> Technical Engineering title
<input type="checkbox"/> Finance degree	<input type="checkbox"/> Economic degree
<input type="checkbox"/> Law degree	<input type="checkbox"/> Architect
<input type="checkbox"/> Certified Energy Audit courses	

Please choose from the available studies (if any)

Other* Studies

Please provide other Studies *(if applicable)

In which of the following subjects have you received courses?

<input type="checkbox"/> Water processes in the industry	<input type="checkbox"/> Thermal processes in Industry
<input type="checkbox"/> Industrial facilities maintenance	<input type="checkbox"/> Industrial facilities functioning
<input type="checkbox"/> Basics of energy engineering	<input type="checkbox"/> Climate protection management and emissions trading
<input type="checkbox"/> Energy legislation	<input type="checkbox"/> Energy management
<input type="checkbox"/> Monitoring and control systems	<input type="checkbox"/> ISO standards
<input type="checkbox"/> Project management	<input type="checkbox"/> Energy finances
<input type="checkbox"/> Financial Services	<input type="checkbox"/> Economic calculation

Please select any of the courses provided here

What is your work experience?

<input type="checkbox"/> Person in charge of different processes of a company (+3 years)	<input type="checkbox"/> Company's manager
<input type="checkbox"/> Maintenance responsible (+3 years)	<input type="checkbox"/> Quality Responsible (+3 years)
<input type="checkbox"/> Environmental Responsible (+3 years)	<input type="checkbox"/> Energy Auditor or participating in doing energy assessments (+3 years)
<input type="checkbox"/> Worker in energy services (+3 years)	<input type="checkbox"/> Worker in environmental services (+3 years)
<input type="checkbox"/> Worker in quality services (+3 years)	<input type="checkbox"/> Worker on financial services (+3 years)
<input type="checkbox"/> Worker on legal and energy regulations services (+3 years)	<input type="checkbox"/> Worker in a technology provider company (+3 years)
<input type="checkbox"/> Worker as a technology provider (+3 years)	

Please select any that apply to your experience

What kind of Services do you want to provide as an Energy Angel?

<input type="checkbox"/> Service 1: Access energy efficiency knowledge.
<input type="checkbox"/> Service 2: Information about legal or administrative requirements.
<input type="checkbox"/> Service 3: Energy audits.
<input type="checkbox"/> Service 4: Filling in and using the ESMA web-tool.
<input type="checkbox"/> Service 5: Identifying best practice opportunities.
<input type="checkbox"/> Service 6: Access to technology providers and to new innovative solutions.
<input type="checkbox"/> Service 7: Access to financial incentives.

Please choose any of the services provided

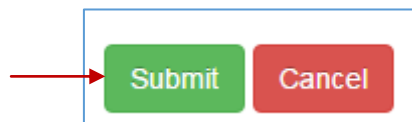
Privacy Policy Do you want to share your contact details in order to offer these services to other companies?

YES

NO

*By selecting in the "YES" button, your contact details will be public inside the Energy Angels' network (according to our privacy policy) so that companies

After concluding the questionnaire, the applicant should submit the changes performed. The information that has been introduced will be saved in a database and a request to become an Energy Angel will be sent to the Network Administrator.







4.5 Acceptance and Rejection

The Network Administration will revise the information presented by the applicant, and will accept or deny his application as an Energy Angel.

They will revise all the information that the Energy Angel will has introduced, and they will also validate the services that the future Energy Angel is able to provide, as well as its acceptance or denial in the tool.

The list of services that the Energy Angel will be able to provide are the following ones:

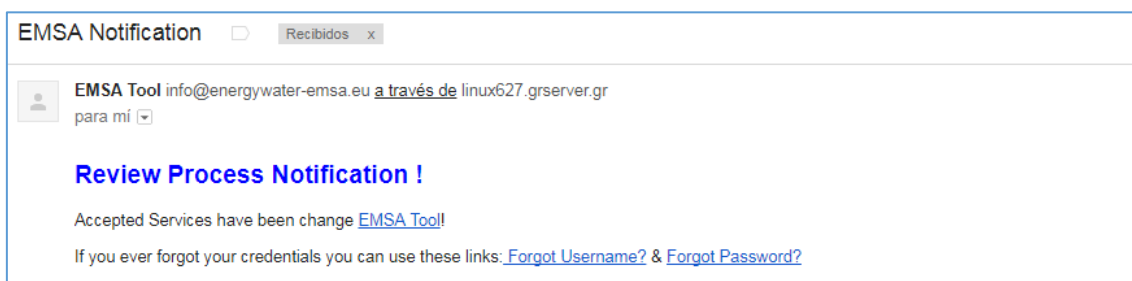
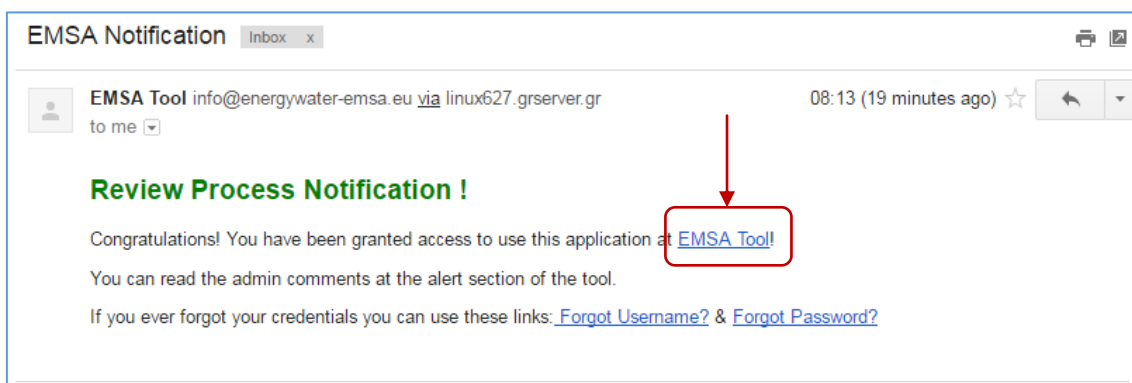
Icon of the service.	Number , name and description of the service.
	<p>Service 1: EMSA tool support.</p> <p>The EMSA web tool is an Energy Management Self-Assessment methodology that allows any industrial company to input data and receive an initial energy efficiency evaluation. This evaluation will be based on quantitative and qualitative data about their water processes. Results obtained include:</p> <ul style="list-style-type: none"> - Initial energy efficiency assessment. - Benchmarking and ranking position between industrial companies by sector, size, country, etc. - List of improvement actions. - List of related Energy Angels with required knowledge. <p>The Energy Angels will provide the companies not only with advertasing but also with an understanding of the EMSA web tool and guidance to input data after a short training session.</p>
	<p>Service 2: Energy audits and consultancy.</p> <p>Expert advice on energy management and identifying energy-saving opportunities.</p> <p>This service is related to the necessity of informing manufacturing companies about their potential implementing energy efficiency measures.</p> <p>Information about specific regulatory requirements linked to energy efficiency will be provided. The EU has mandates in place for each of the member states to have energy efficiency legislation in place. In addition, there may be further country-specific regulations requiring additional action for companies.</p> <p>Energy audits could be provided as the most effective way to identify energy-saving opportunities.</p> <p>The Energy Angels network will provide a quality mark to the companies with recognised accreditations for energy audits, ESCOs' services, etc.</p>
	<p>Service 3: Implementation and innovation support.</p> <p>Each Energy Angel will provide advisory services in fields such as:</p> <ul style="list-style-type: none"> - Advising on suitable technology providers. - Highlighting possible innovative solutions. - Facilitating contact with ESCOs and other relevant providers.
	<p>Service 4: Provider of financial advice.</p> <p>One of the main barriers to implementing energy efficiency measures is availability of finance. Energy Angels will provide advice about different financial options, contact with financial entities, as well as financial incentives in each geographical area.</p>

Depending on the future Energy Angel’s training and experience, they will be validated the services they selected in the “Information” tab.

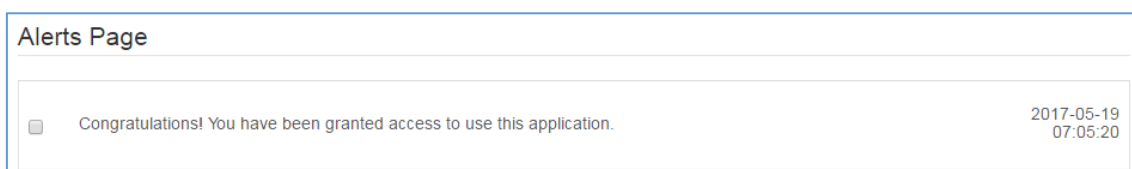
The Energy Angel’s will be able to see which services they have been accepted to provide. If they want to provide more services, they will need to have more experience in a certain subject or attend to a certain course, which will give them a certain accreditation.

4.5.1 Acceptance

If all the information provided by the Energy Angel is correct and his skills enable him to perform assessments to the companies within the EMSA methodology, the applicant will be accepted. The user will receive an email from the Network with the following information:



If they enter into the tool and go to the “Alerts” tab, they could also see the message of acceptance.



Since this moment, the Energy Angel will be able to perform the services that appear in the “Accepted services” list in his Information from. He will also be able to take courses for being able to acquire more skills and perform more services to the companies and therefore to create more business opportunities.

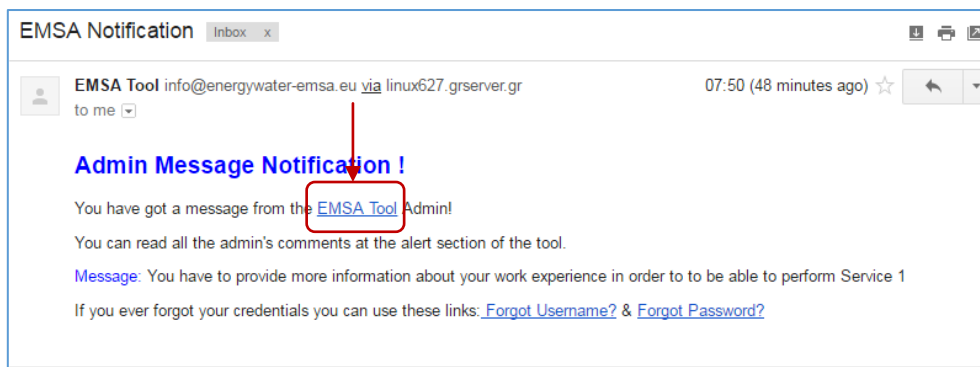
4.5.2 Pending

When an Energy Angel introduces data in the information form, the status of the account of the Energy Angel will be pending. A pending status means that:

- The Network Administration has not decided yet if the user is suitable for becoming an Energy Angel.
- The certifications or the professional experience are not detailed enough and they need to be explained in a more precise way. In this case, the Network Administration will request the information missing to the applicant via EMSA web tool.
- The Energy Angel does not have enough skills to provide any of the services proposed. In this case, the status of the Energy Angel will remain pending until he performs some of the courses proposed by the tool or he gains enough experience to be accepted definitively in the tool.

The Network Administrator is able to send comments to the applicants if any missing information is identified, or need more detailed data is needed to full validate the Energy Angel's competences.

The applicant will be able to receive the comments via email or in the alerts tab. To enter in the EMSA, click in the link provided by the email or enter directly through the Internet browser.



Click the alerts tab and revise the most recent alert, to see the message from the Network's Administration.



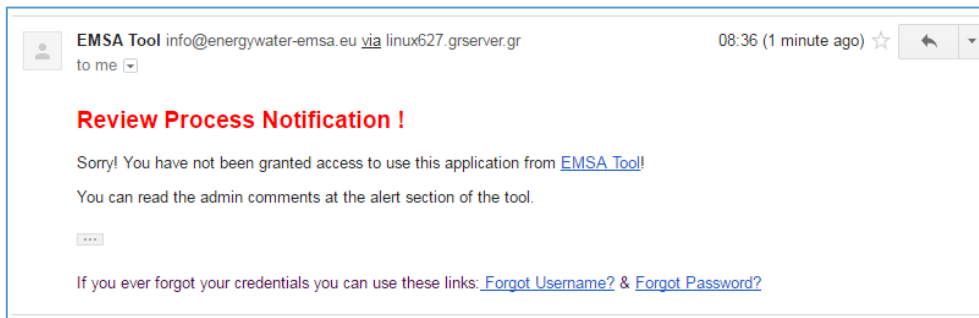
The applicant is able to modify the information presented in the questionnaire and will be given the opportunity to take some complimentary courses proposed by the EMSA to compensate any lack of skills to be finally accepted as an Energy Angel.

4.5.3 Rejection

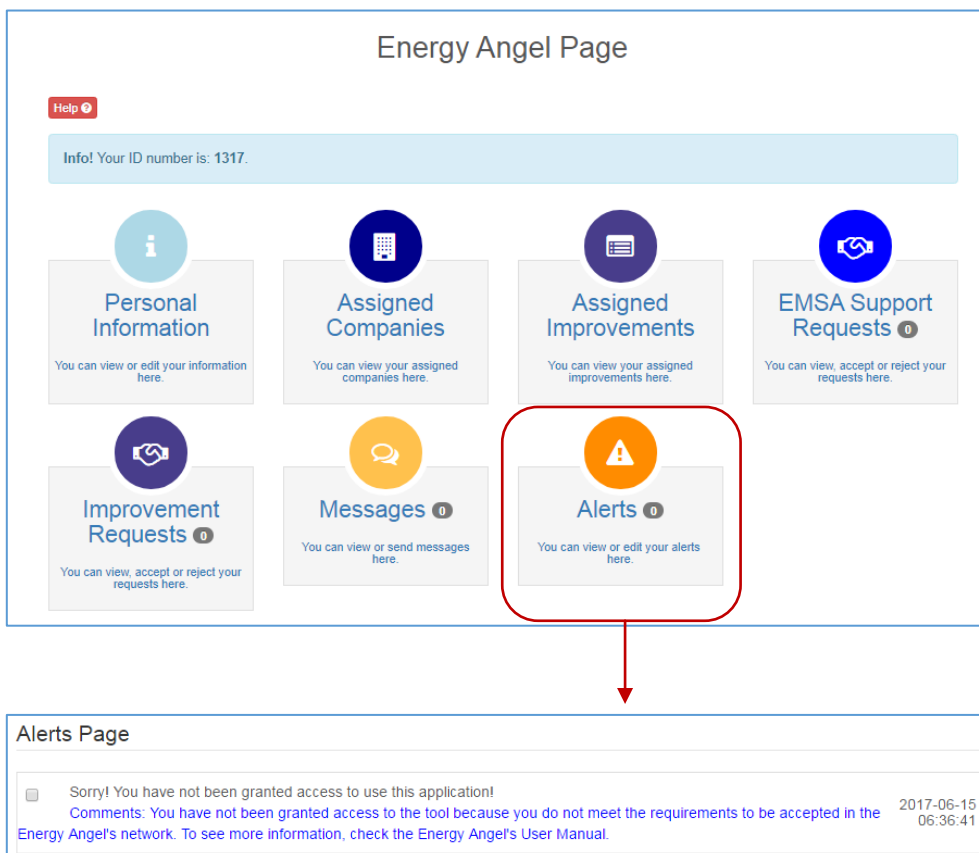
An Energy Angel application can be rejected if:

- The information provided by the candidate is not enough to certificate his skills and he refuses repeatedly to provide the requested data to demonstrate his competences in the services that he wants to provide.
- The Network Administration decides that an Energy Angel should leave the network because he is not fulfilling his duties as he should (See: "Energy Angels User Manual")

In this case, the applicants will receive the following notification in his email:



If they enter the tool and if they go to the “Alerts” tab, they will receive a message of rejection, and the reason why the Administration has performed this action.

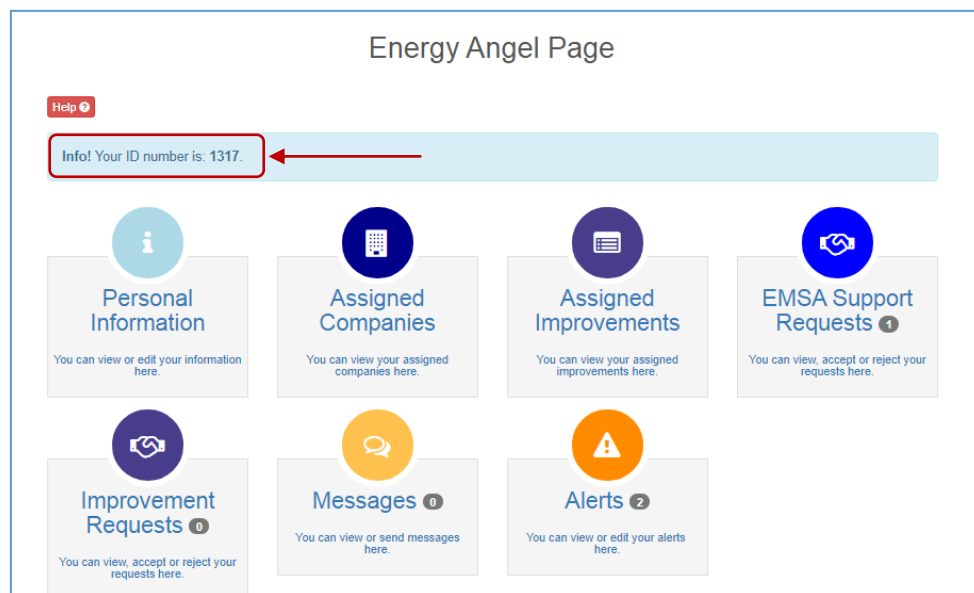


4.6 EMSA Support Requests

If an Energy Angel wants to evaluate a company in order to develop its business activity, the first step will be performing an assessment and giving support to a certain company. To do this, he should be certified in the service 1 “EMSA web-tool support”.

Then, the Energy Angel could provide to the company his personal ID number to establish a direct contact between them.

An Energy Angel can check his ID number in the main page.



In order to perform an assessment, companies need to make the first contact to request the services of an Energy Angel, but the Energy Angel can also guide them in that process.

To choose a certain Energy Angel, the company can introduce the ID number in the “EMSA Support” section of the companies’ account.

There is also a shortcut where, if the Company goes to the “Management of Users” module, are able to go to the Energy Angel selection module, as we can see in the following picture:

[← Back](#)

User Permissions

Select	Category	Name	Username	Email	Status	Date Created	Permissions					
							A	B	C	D	E	F
<input type="radio"/>	User	[Redacted]	[Redacted]	[Redacted]		2018-07-16 11:41:10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	Angel	[Redacted]	[Redacted]	[Redacted]		2018-07-17 10:41:03	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[✓ Submit Permissions](#)
[✗ Submit User Deletion](#)

Select an Energy Angel

Click on the button to see all available Energy Angels.

[Select Angel](#)

Create a new User

Click on the button to create a new user for the company.

[Create User](#)

Show User Permissions

Click on the button to see the six user Permissions.

[Show Permissions](#)



"EnergyWater project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696112"

Once in the “EMSA Support” module, a Company can search an Energy Angel using different methods. All this processes will be explained in more detail in the section “Enter as a Company”.

The company can select a certain Energy Angel through the “Angel’s ID Number”.

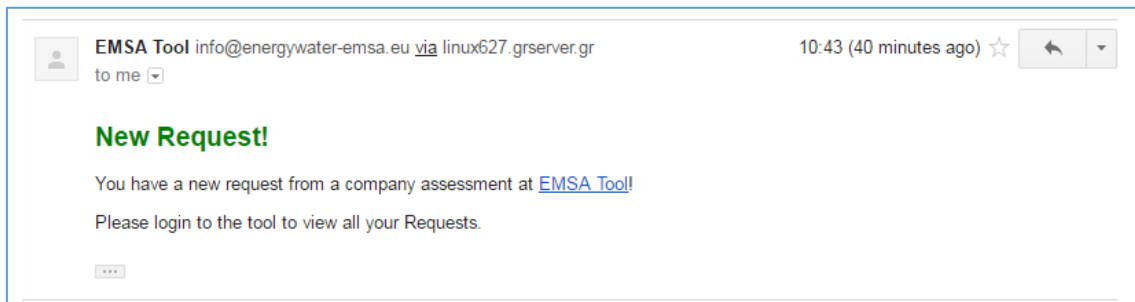


“EnergyWater project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 696112”

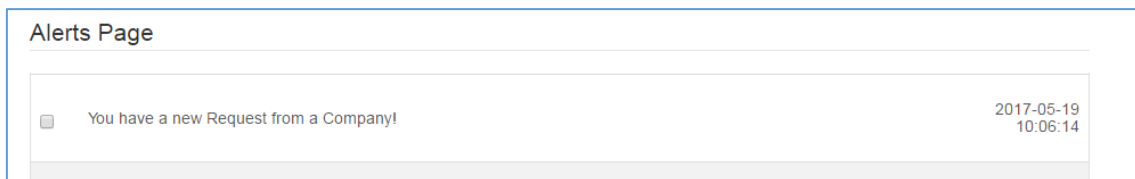
4.6.1 Procedure of acceptance

Only companies can contact Energy Angels, and this contact is done by sending them a request for a certain service.

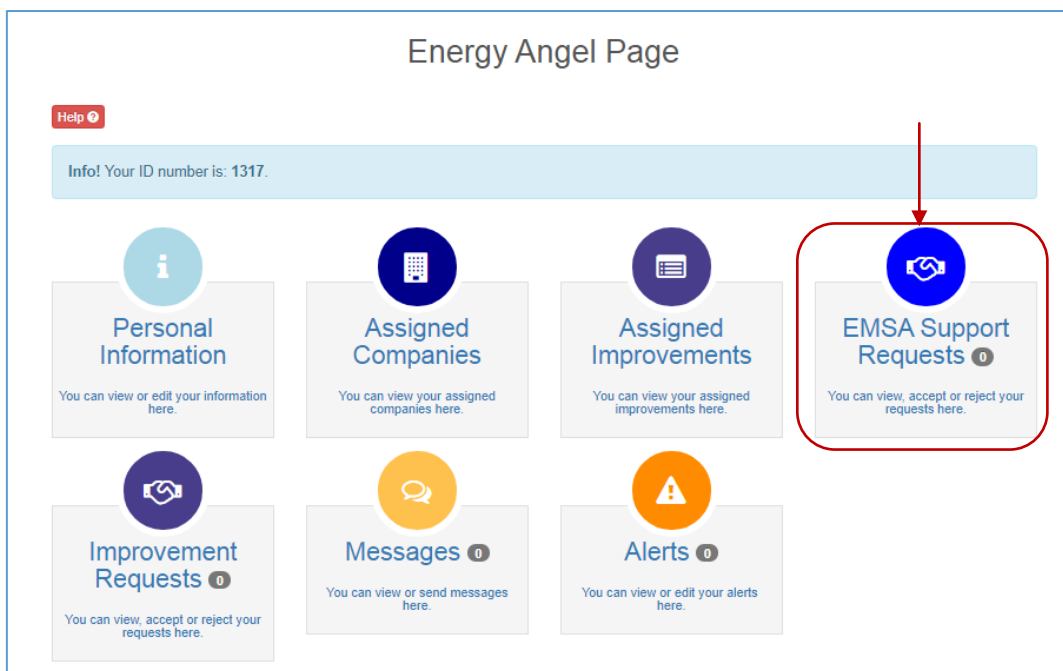
Once the company has sent an assessment request, the Energy Angel will receive a notification email from the EMSA web tool informing that a company demands his services to perform an assessment.



The “Alerts” tab will also display a message informing the user that a company has requested the Energy Angel’s services



By entering in the “EMSA Support Requests” tab, the Energy Angel will be able to see what companies have requested his services.



To accept a request, the Energy Angel has to select the company's request by clicking in the selection circle. Then press the "Final acceptance" button, and wait for the company to follow the same "Final acceptance" procedure as part of a double check.

energywater | Home | About | Partners | Contact | User Manual | Account Settings | Logout

User page → Energy Angel Requests page

← Back

Requests from Companies

Status	Company Name	Company Size	Sector	Country	City	Activities	Activities Description	Request Date	Reply Date	Comments from the Company	Type your Comments
<input type="radio"/>	onecompany	<10	Automotive Industry	Spain				2018-07-17			Please type your message here: <input type="text"/>

← Back | |

In general, companies can accept or decline the Energy Angel acceptance, as they have the last word in term of selecting an Energy Angels to do the assessment. If a company accepts or denies an Energy Angel, the state of the request will appear in the "request" tab as Declined.

Replies to Requests

#	ID	Angel Decision	Angel Name	Sector	Country	State	City	Accreditations	Activities	Registered Date	Request Date	Reply Date	Angel Comments	Comments
Accepted	347	Accepted	[Redacted]		Spain	Castilla y Leon	Burgos			2017-04-21 06:41:02	2017-05-16 11:43:23	2017-05-16 11:44:48	Message from EA to Company	<input type="text"/>
Declined	347	Accepted	[Redacted]		Spain	Castilla y Leon	Burgos			2017-04-21 06:41:02	2017-05-16 11:49:23	2017-05-18 08:05:02		<input type="text"/>

The "Alerts" tab will also display a message informing the user that a company has accepted the Energy Angel's services

Alerts Page

Congratulations! You have been accepted for assessment of a Company! 2017-05-24 10:30:01

If a company **declines** an Energy Angel, the procedure stops and this user will not be able to perform an assessment for the company.

If a company **accepts** an Energy Angel by the "Final acceptance" button, the procedure of performing the assessment starts and both Company and Energy Angel can contact each other by the "Messages" section of the tool or by their own contact details.

4.7 Improvement Requests

When an Energy Angel is required to implement an improvement, he will receive an improvement request.

To enter in the Energy Angel's improvements request, the Energy Angel should go to the "Improvements Request" tab in the Energy Angels Account.

Energy Angel Page

Help

Info! Your ID number is: 1317.

Personal Information

You can view or edit your information here.

Assigned Companies

You can view your assigned companies here.

Assigned Improvements

You can view your assigned improvements here.

EMSA Support Requests 0

You can view, accept or reject your requests here.

Improvement Requests 1

You can view, accept or reject your requests here.

Messages 0

You can view or send messages here.

Alerts 6

You can view or edit your alerts here.

Then, all the improvement implementation requests from companies will appear. The Energy Angel has to analyze the request and the company, this module allows the Energy Angel to send messages to the company. Once the Energy Angel has decided what to do, he can accept or reject the request.

Improvement implementation Requests from Companies

Status	Company Name	Company Size	Sector	Country	City	Activities	Activities Description	Request Date	Reply Date	Comments from the Company	Type your Comments
▶		<10	Other		s			2018-07-25			Please type your message here: <input style="width: 90%; height: 20px;" type="text"/>

← Back
✔ Final Acceptance
✘ Final Rejection

As the company has the last word, if the Energy Angel is accepted, the user will receive an email from the Network with the following information:

Congratulations !

You have been accepted for the assessment of a company at [EMSA Tool!](#)

Please login to the tool to view all the Companies you are connected with and view their info.

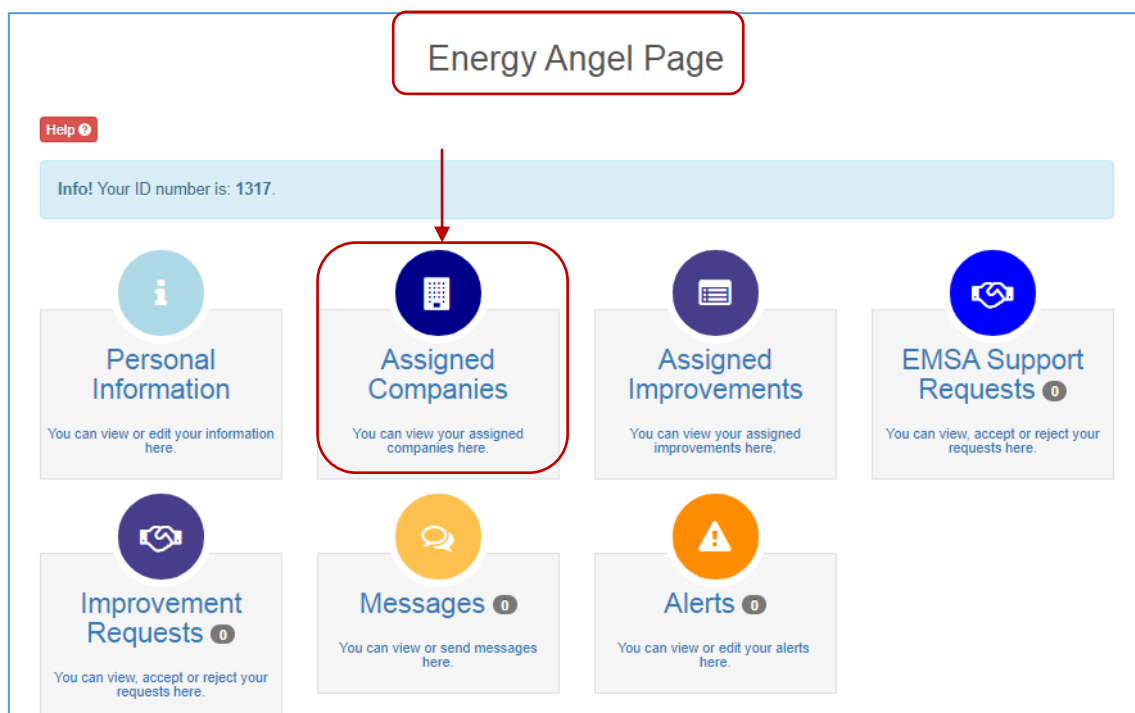
In the “Improvements Management” module will appear the improvement that has been accepted,

Improvement Actions									
Process Improvement Actions									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	Contact company		
EMSALiteTest	EMSALiteTest	EMSALiteTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.	In progress	Contact		
Equipment Improvement Actions									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description	Status	Contact Company

4.8 Assigned Companies

In order to perform an assessment for the companies, the **Energy Angel** needs to have granted access to the part of the Company's account where all the information is introduced.

To enter in the Energy Angel's assigned companies go to the *"Assigned Companies"* tab in the Energy Angels Account.



An Energy Angel is able to perform several assessments at the same time. To enter to a certain company, the Energy Angel can choose different options.

An Energy Angel can enter in the Company's page by following these steps:

4.8.1 Enter via “Assigned Companies” Tab

Enter in the “Assigned Companies” tab

Energy Angel Page

Help ?

Info! Your ID number is: 1317.

Personal Information

You can view or edit your information here.

Assigned Companies

You can view your assigned companies here.

Assigned Improvements

You can view your assigned improvements here.

EMSA Support Requests 0

You can view, accept or reject your requests here.

Improvement Requests 0

You can view, accept or reject your requests here.

Messages 0

You can view or send messages here.

Alerts 0

You can view or edit your alerts here.

Select from the list of companies one to assess, and click “Go to Company’s Page”

Assigned Companies

← Back

Please select an account	Company Name	Sector	Country	City	Connection Info		
					Username	Password	Date assigned
<input checked="" type="radio"/>	██████████	Other	Spain		██████████480qOEI	██████████	2018-02-07 13:43:46
<input type="radio"/>	██████████	Other	Spain	Burgos	██████████7254j9p	██████████	2018-02-13 11:36:59
<input type="radio"/>	██████████	Other	Spain	Burgos	██████████734iCOz	██████████	2018-02-13 11:40:23
<input type="radio"/>	██████████	Beverages Industry	Spain	Burgos	██████████4487GHc	██████████	2018-02-13 12:13:29

→
Go to Company's Page
Login back to my account



*EnergyWater project has received funding from the European Union's Horizon 2020

This will enable the Energy Angel to quick-access to the Company's account. The Energy Angel will not have default permissions, so the Company should give him some permissions depending on the information that he is going to be allowed to access.

By doing this, Companies give their explicit permission to access to their data.

It is important to note that if the company does not grant any permission to the Energy Angel, he is not going to be able to access to any tabs.

With no permissions, the Energy Angel will see the following screen when he access to the company's account:

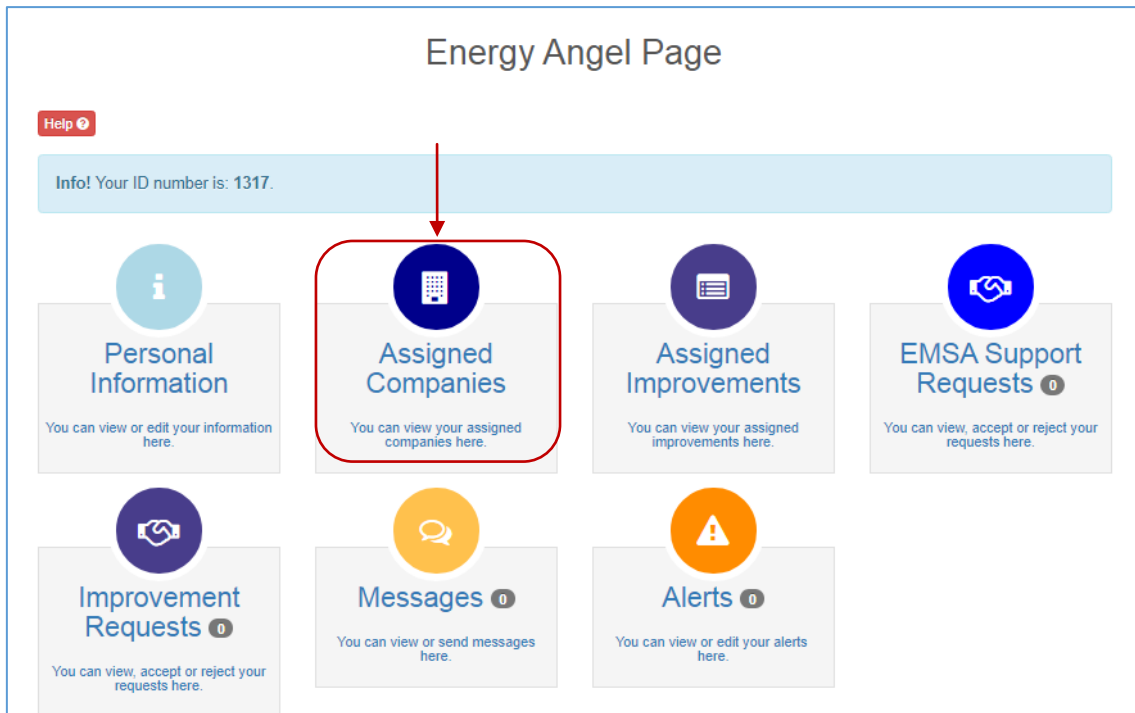


To perform the assessment, both company and Energy Angel will work in the "Scenarios" tab to enter information and the "Results" tab to supervise the result of the assessment.

4.8.2 Enter via the Company's Username

If the "Go to Company's Page" button does not work, a second option to access Company's page is to go to EMSA main page and introduce the credential of our specific user assigned to the Company

To know those credential, enter in the "Companies" tab



In the "Companies" page for Energy Angels, EMSA will automatically create a new username and password that belongs to the assigned Company but contains the login details for the Energy Angel to grant him the access to the Company's account.

Assigned Companies

[← Back](#)

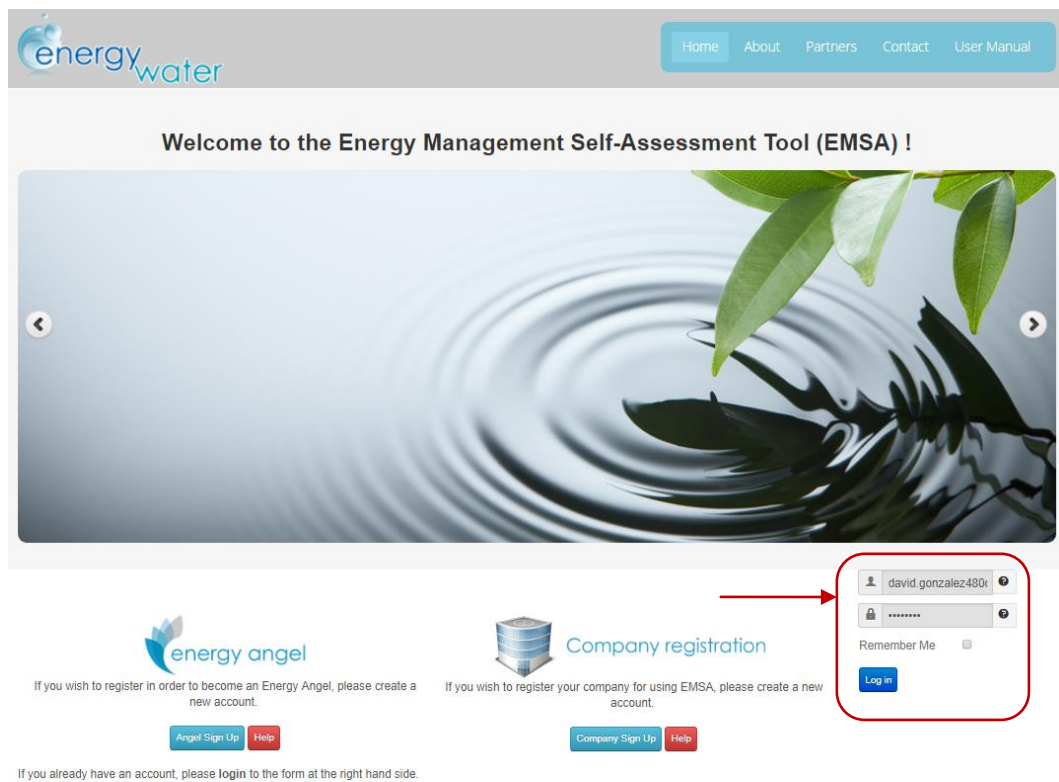
Please select an account	Company Name	Sector	Country	City	Connection Info		
					Username	Password	Date assigned
<input type="radio"/>	[Redacted]	Other	Spain		[Redacted]480qOEI	[Redacted]	2018-02-07 13:43:46
<input type="radio"/>	[Redacted]	Other	Spain	Burgos	[Redacted]7254j9p	[Redacted]	2018-02-13 11:36:59
<input type="radio"/>	[Redacted]	Other	Spain	Burgos	[Redacted]734lC0z	[Redacted]	2018-02-13 11:40:23
<input type="radio"/>	[Redacted]	Beverages Industry	Spain	Burgos	[Redacted]4487GHc	[Redacted]	2018-02-13 12:13:29

[← Back](#)
[Go to Company's Page](#)
[Login back to my account](#)



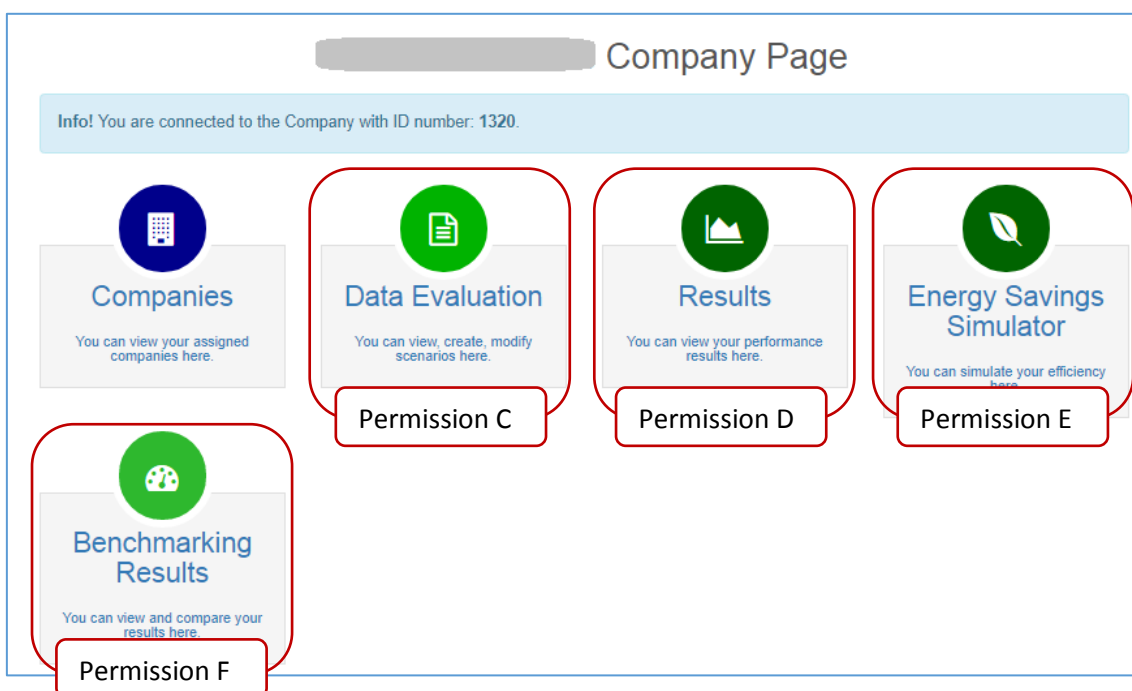
*EnergyWater project has received funding from the European Union's Horizon 2020

If the “Go to Company’s page” link does not work or if the Energy Angel wants to enter to the Company’s page from the EMSA main page, he should introduce this new username and password in the EMSA login textbox.



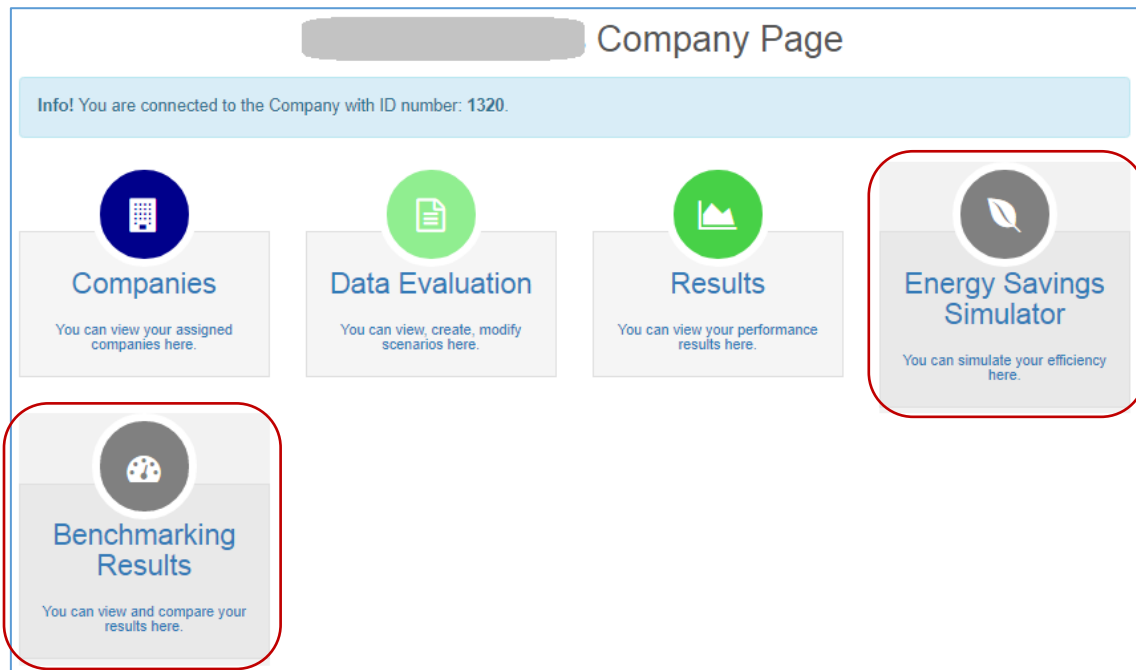
This will enable the Energy Angel to enter in the Company’s page.

The Energy Angel will be able to see Company’s information depending on the permissions the company has selected for them. **With all the permissions**, the Energy Angel will see the following page:



The A and B permissions only can be granted to Company's Users, not to Energy Angels.

If the company has not enabled the "EMSA Professional" option, the "Energy Savings Simulator" and the "Benchmarking Results" tabs will appear gray.



Company Page

Info! You are connected to the Company with ID number: 1320.

- Companies**
You can view your assigned companies here.
- Data Evaluation**
You can view, create, modify scenarios here.
- Results**
You can view your performance results here.
- Energy Savings Simulator**
You can simulate your efficiency here.
- Benchmarking Results**
You can view and compare your results here.

4.9 Assigned Improvements

To enter module, the Energy Angel should click the “Assigned Improvements” tab.

Energy Angel Page

Help ?

Info! Your ID number is: 1317.

Personal Information

You can view or edit your information here.

Assigned Companies

You can view your assigned companies here.

Assigned Improvements

You can view your assigned improvements here.

EMSA Support Requests 0

You can view, accept or reject your requests here.

Improvement Requests 0

You can view, accept or reject your requests here.

Messages 0

You can view or send messages here.

Alerts 6

You can view or edit your alerts here.

In this tab appears the complete list of all the improvements requested for the companies to be implemented with the support of the Energy Angel.

Assigned Improvements
Completed Actions

Improvement Actions

Process Improvement Actions									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	Contact company		
Equipment Improvement Actions									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description	Status	Contact Company

Recommendations

Process Recommendation Actions									
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied.									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	Contact Company		
Equipment Recommendation Actions									
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied.									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description	Status	Contact Company

Management

Improvements								
Company Name	Scenario Name	Category	Criterion	Sub-Criterion	Label	Improvement Description	Status	Contact Company

The assigned improvements are divided in three types:

1. Improvement Actions

- Process Improvement Actions
- Equipment Improvement Actions

2. Recommendations

- Process Recommendation Actions
- Equipment Recommendation Actions

3. Management

Then, the Energy Angel is free to contact the company in order to start the implementation of the improvements.

Improvement Actions									
Process Improvement Actions									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description			Status	Contact company
EMSALiteTest	EMSALiteTest	EMSALiteTest	Heating	Heating1	Regular inspection searching for erosion, corrosion, leaks, scaling, fouling.			In progress	Contact

Equipment Improvement Actions										
Company Name	Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description		Status	Contact Company
EMSALiteTest	EMSALiteTest	EMSALiteTest	Heat Exchange	HeatExchange2	PUMPS	TYPE-1	Installing high efficiency motors. Replacement of existing low efficiency motors.		Pending	Contact

Recommendations									
Process Recommendation Actions									
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description			Status	Contact company
EMSALiteTest	EMSALiteTest	EMSALiteTest	Heat Exchange	HeatExchange2	Heating nominal capacity should be adjusted to all possible heat demand in the process			Pending	Contact

When the company considers that the improvement is implemented, he set the improvement status to "Done". The complete actions are shown in the "Complete Action" tab.

Assigned Improvements	Completed Actions
-----------------------	--------------------------

Improvement Actions									
Process Improvement Actions									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description			Status	Contact company
EMSALiteTest	EMSALiteTest	EMSALiteTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.			Done	Contact

Equipment Improvement Actions										
Company Name	Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description		Status	Contact company

Recommendations									
Process Recommendation Actions									
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied									
Company Name	Scenario Name	Main Process	Process Type	Process Name	Improvement Description			Status	Contact company

Equipment Recommendation Actions										
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied										
Company Name	Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description		Status	Contact company

4.10 Delete Account

If a user no longer wants to be a part of the Energy Angels Network, it exists the possibility of deleting the account by the “Delete account” section.

The screenshot shows the Energy Angel Page interface. At the top right, a navigation menu includes 'Home', 'About', 'Partners', 'Contact', 'User Manual', 'Account Settings', and 'Logout'. The 'Account Settings' dropdown menu is open, showing 'Edit Account' and 'Delete Account' options. A red box highlights the 'Delete Account' option, with a red arrow pointing to it. Below the navigation bar, the page title is 'Energy Angel Page'. A 'Help' button is visible. A blue info bar states 'Info! Your ID number is: 1317.'. The main content area features seven dashboard cards: 'Personal Information', 'Assigned Companies', 'Assigned Improvements', 'EMSA Support Requests', 'Improvement Requests', 'Messages', and 'Alerts'. Each card includes an icon and a brief description of its function. At the bottom right, there is a European Union flag and a text box stating: "EnergyWater project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696112".

To fully erase the account the user should write the Energy Angel’s user name and then click the “Delete” button

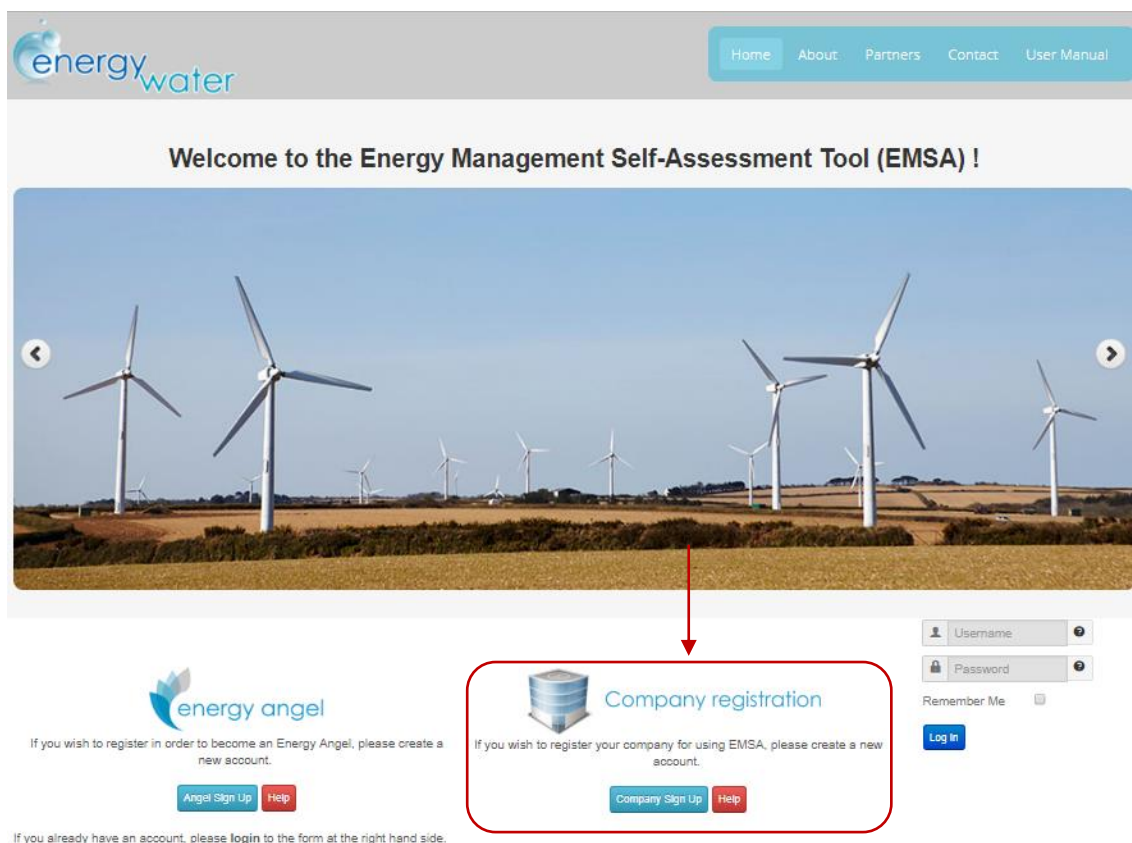
The dialog box is titled 'Are you sure you want to delete your account?'. Below the title, it asks the user to 'Please enter your username to continue with the account deletion'. There is a text input field for the username, which is highlighted with a red box and a red arrow. Below the input field is a red 'Delete' button, also highlighted with a red box and a red arrow. At the bottom right of the dialog is a 'Close' button.

5 ENTER AS A COMPANY

If an energy manager or a person working inside an industrial company want to become an user of the EMSA web-tool and wants to perform an assessment in his company within the EMSA framework, by following this section of the guide he/she will be able to benefit from all the possibilities that the EMSA web-tool offers.

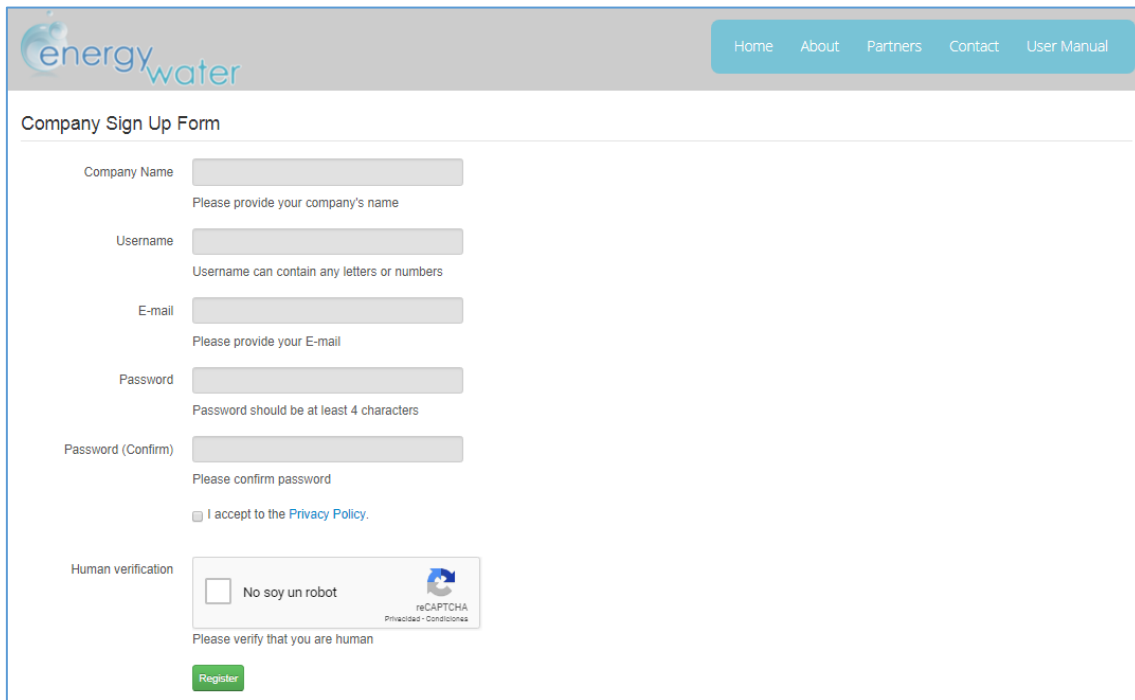
5.1 Access to the EMSA

If companies want to take advantage of the EMSA tool, first they will have to sign up as a company in the main page of the EMSA.



Once a company has decided to register into the tool, they will need to fill in a simple form in order to be granted access to the tool.

Click the “*Company Sign Up*” button to start registering in the tool and start the process of entering the EMSA web tool.



Company Sign Up Form

Company Name
Please provide your company's name


Username
Username can contain any letters or numbers

E-mail
Please provide your E-mail

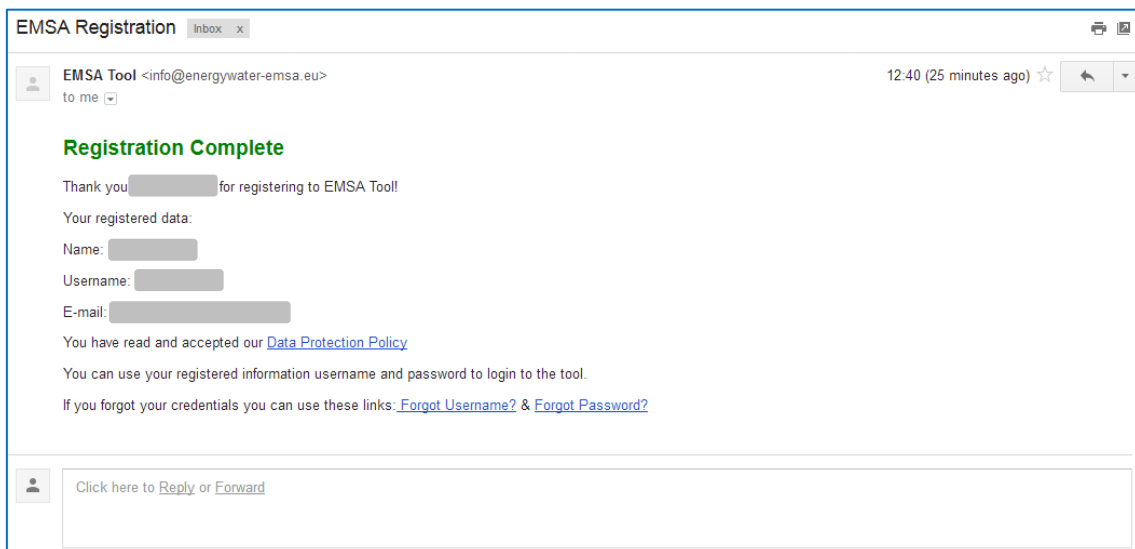
Password
Password should be at least 4 characters

Password (Confirm)
Please confirm password

I accept to the [Privacy Policy](#).

Human verification No soy un robot 
Please verify that you are human

When the company registers in this previous page their basic information, they will receive an email granting them access to the tool.



After receiving the confirmation by email, the company will be able to access to the EMSA tool with the previously defined username or password.

energy water

Home About Partners Contact User Manual

Welcome to the Energy Management Self-Assessment Tool (EMSA) !

energy angel
If you wish to register in order to become an Energy Angel, please create a new account.
[Angel Sign Up](#) [Help](#)

Company registration
If you wish to register your company for using EMSA, please create a new account.
[Company Sign Up](#) [Help](#)

If you already have an account, please [login](#) to the form at the right hand side.

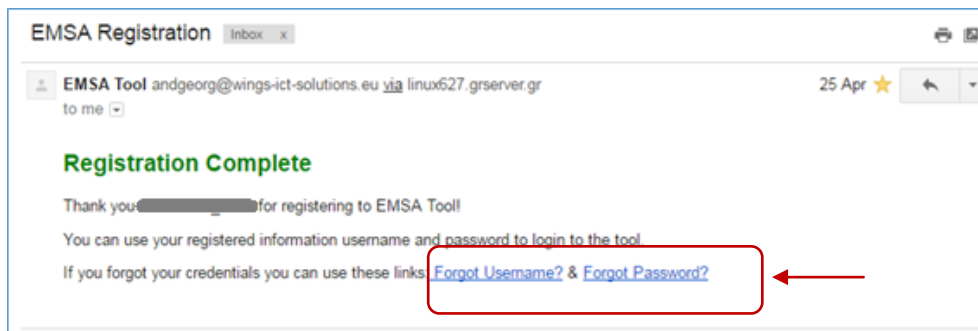
Username
Password
Remember Me
[Log In](#)

Introduce in the main page of the EMSA the username and password to enter the tool.

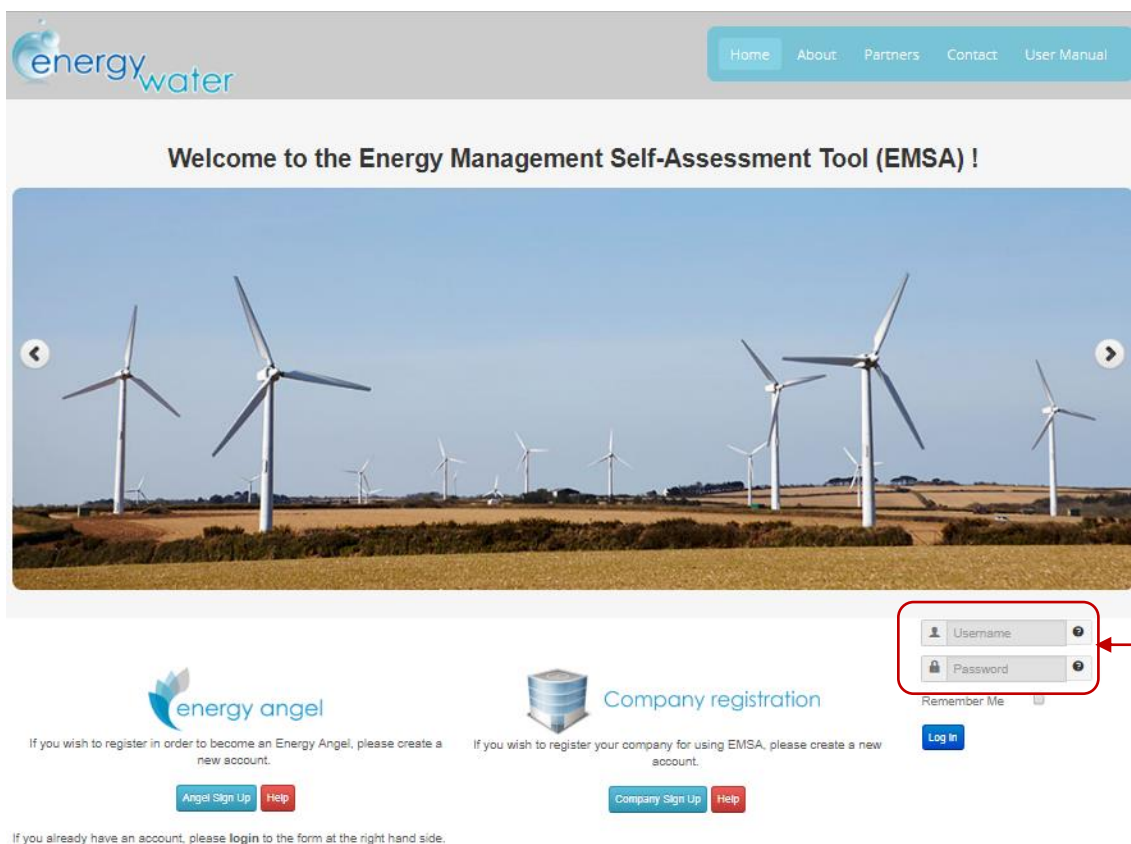
5.2 Forgotten Credentials

If the user has forgotten his password or his username, they will have two different options to recover them.

1. Recover the forgotten credentials by searching the registration email as it has a permanent link to the recovery page.
Click the redirection link *"Forgot Username"* or *"Forgot Password"* for being redirected to the EMSA tool.



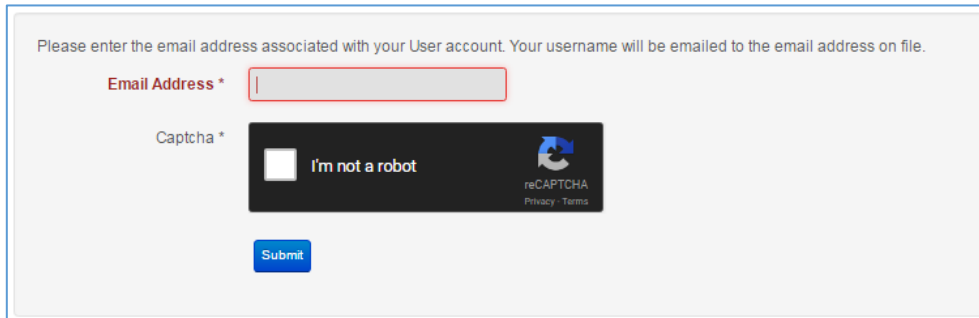
2. If the company has deleted the registration email, the recovery page can also be reached by clicking in the question mark icon next to the username or password in the EMSA Main Page



The recovery page will ask the user to type the email that the company has linked to the EMSA account and the EMSA will send an email to this account with a new password.


5.2.1 Forgotten username

Use one of the options listed above to enter to the recovery page of the EMSA web tool. Introduce the email address related to the Company's Account,

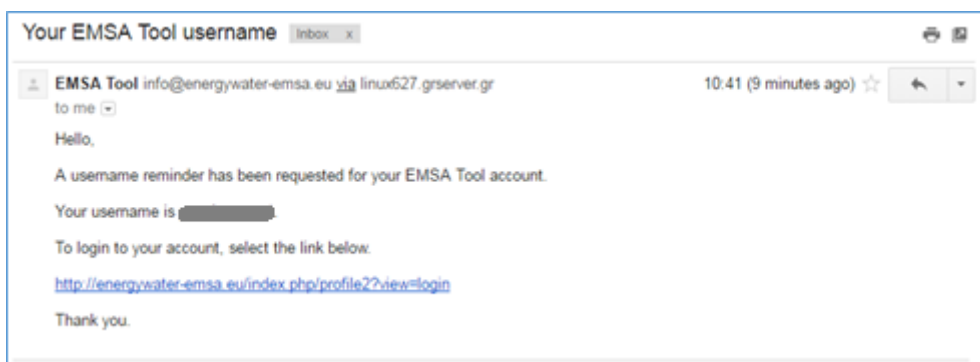


Please enter the email address associated with your User account. Your username will be emailed to the email address on file.

Email Address *

Captcha * I'm not a robot  reCAPTCHA
Privacy Terms

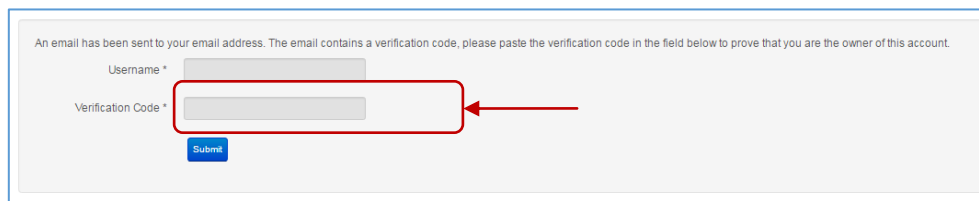
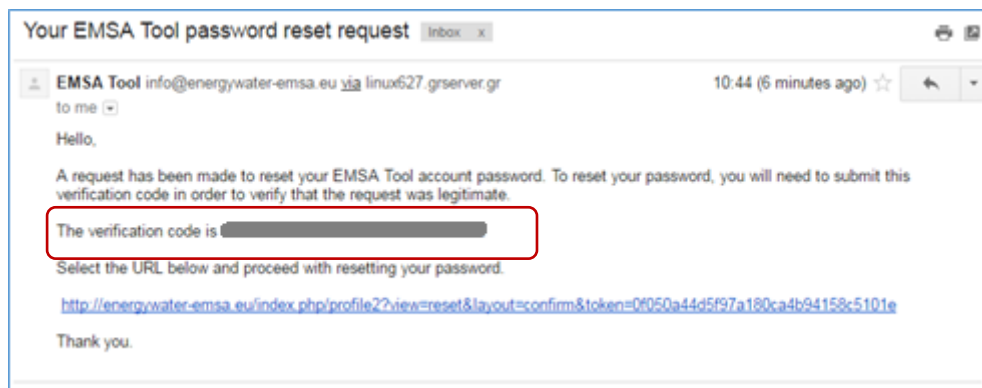
Then click submit and the EMSA will automatically send an email to this account reminding the username. EMSA will also provide a link to re-enter the tool



5.2.2 Forgotten password

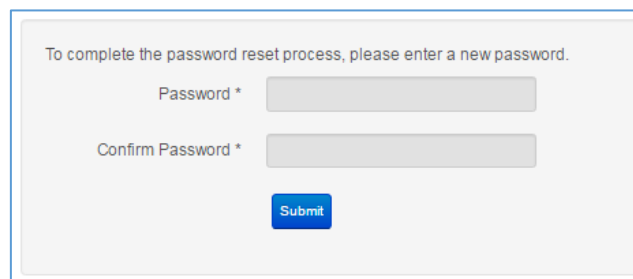
If the company **forgot the password**, the procedure is the same as for a forgotten username.

EMSA will send a link to the tool as well as a verification code by email. Enter the link and introduce both the username and the verification code in the corresponding boxes. Then press the submit button.



The screenshot shows a web form for password reset verification. It includes a 'Username *' field and a 'Verification Code *' field. A red box highlights the 'Verification Code *' field, and a red arrow points to it from the right. A 'Submit' button is located below the fields.

EMSA will verify the code and, if it's correct, the company will be able to change the password



The screenshot shows a web form for password reset confirmation. It includes a 'Password *' field and a 'Confirm Password *' field. A 'Submit' button is located below the fields.

After that, the company will be able to re-enter in the EMSA tool again.

5.3 Modify Password or email

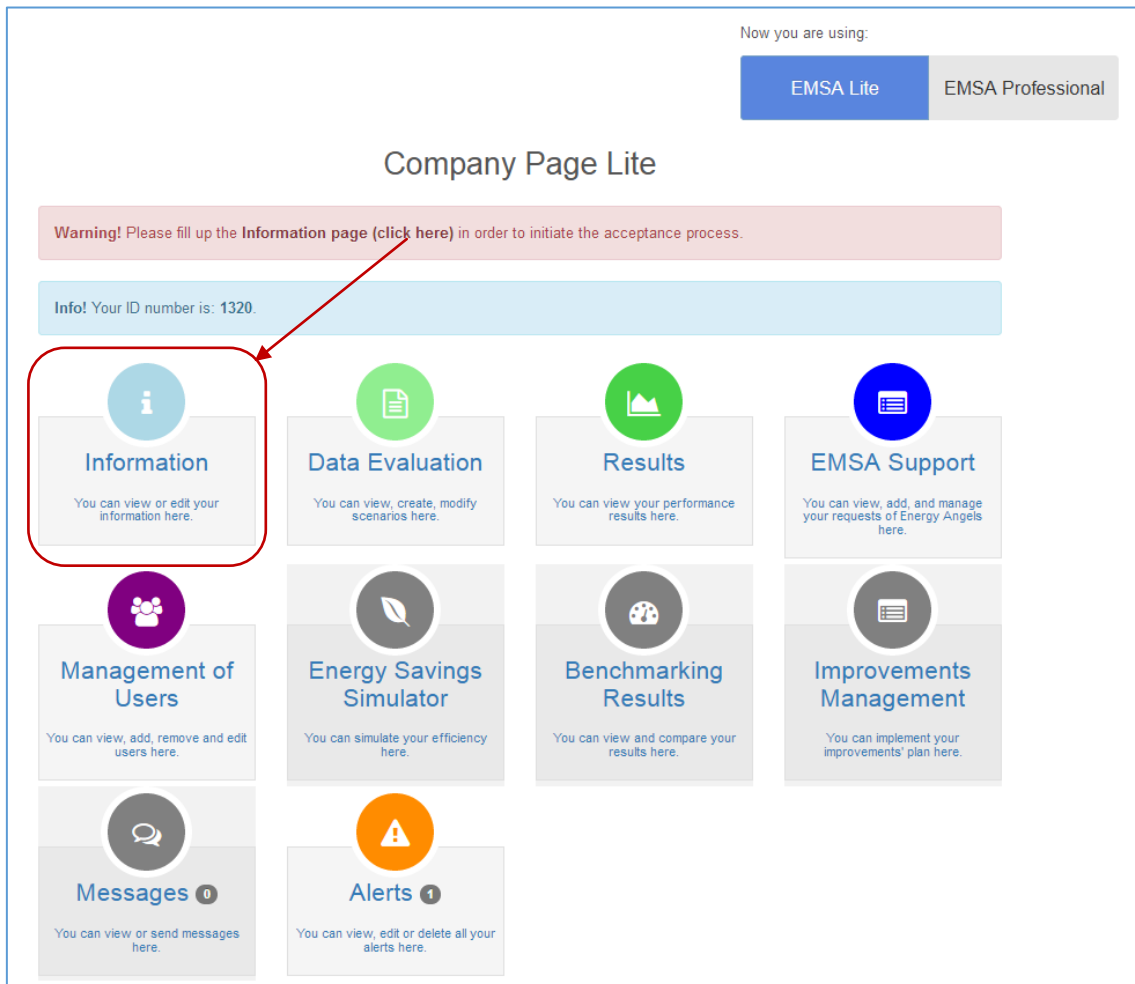
After a successful registration in the tool, the Company's page will be unlocked. If a company wants to modify password or the email, enter in the "Edit Account" tab in the Account Settings.

Once inside the tab, introduce the new information in the corresponding boxes. Make sure that the confirmed information matches the principal one.

Click the submit button to save all the changes performed.

5.4 Introduce Information

The first step to do is to fill in the information page, because the information that it's included here will be decisive to be fully accepted in the tool.



Now you are using: EMSA Life EMSA Professional

Company Page Lite

Warning! Please fill up the Information page ([click here](#)) in order to initiate the acceptance process.

Info! Your ID number is: 1320.

Information
You can view or edit your information here.

Data Evaluation
You can view, create, modify scenarios here.

Results
You can view your performance results here.

EMSA Support
You can view, add, and manage your requests of Energy Angels here.

Management of Users
You can view, add, remove and edit users here.

Energy Savings Simulator
You can simulate your efficiency here.

Benchmarking Results
You can view and compare your results here.

Improvements Management
You can implement your improvements' plan here.

Messages 0
You can view or send messages here.

Alerts 1
You can view, edit or delete all your alerts here.

Click in the “Information” tab to complete all the information required by the EMSA. This will enable the Energy Angel’s Network to determine if a company is accepted and enabled to be assessed. Before being accepted, companies would have limited access to some sections if the account.

Complete all the questions with the most accurate information possible, in order to ease the validation process.

The information required for the company is the following:

Contact Details

Company Logo Ningún archivo seleccionado
Please upload the Company logo

Contact person
Please provide the contact's full name

Position in the organization
Please provide the contact's current position

Company
Please provide the name of your company

Company's VAT number
Please provide the VAT number of your company

Registration Date

Status

Telephone
Please provide the contact's Telephone number

Email
Please provide the contact's E-mail address

***Country** Previously chosen:

Please choose Country
*Choose a Country if only you want to change your old selection.

***State** Previously chosen:

Please choose State
*Choose a State if only you want to change your old selection.

City
Please enter the city name

Address
Please provide the Company's address name and number

Post Code
Please provide the Post Code of the Company's location.

Company Description

Company Size
Please enter the Company's personnel current size

Company Sector
Please choose the Company's sector

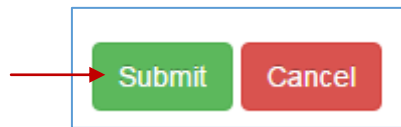
Company Activities Description
Please provide a description of all the company's current activities

Accreditations
Multiple choice is supported (please hold 'Ctrl' or 'Cmd' key and select values)

Other* Accreditations
Please provide other Company's Accreditations *(if applicable)

Data Monitoring (Do you monitor your processes?)

After completing the questionnaire, the company should submit the changes performed. The information that has been introduced will be saved in a data base and a request will be sent to the Network.

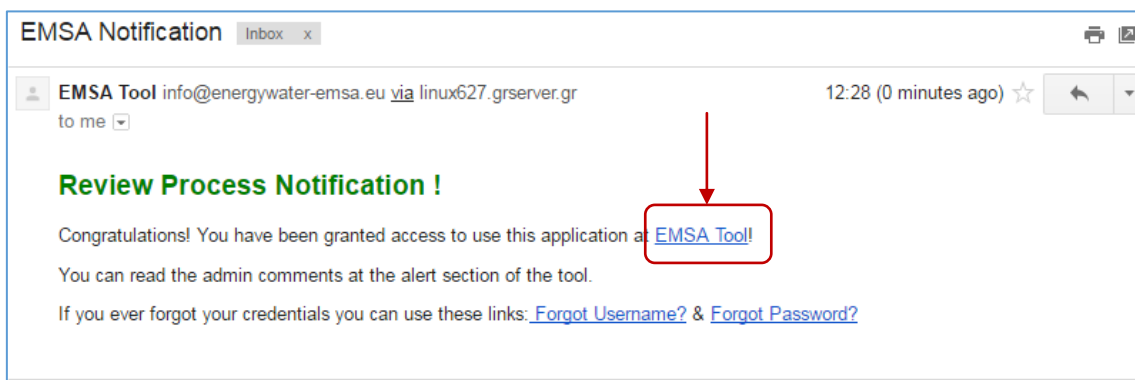


5.5 Acceptance and Rejection

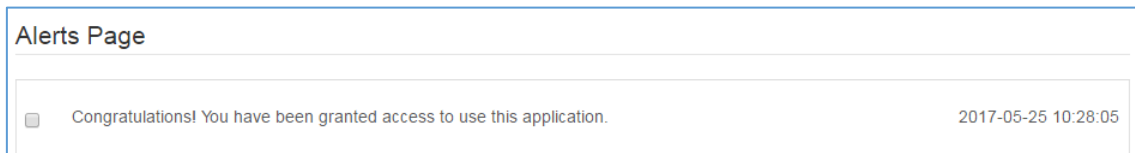
The Network Administration will revise the authenticity of the information presented by the company, in order to accept or deny the entrance of the company's entrance in the tool.

5.5.1 Acceptance

If all the information provided by the company is correct and their identity is validated, the company will be accepted. They will receive an email from the Network with the following information:



If they enter the tool and if they go to the alerts tab, they will receive a message of acceptance.



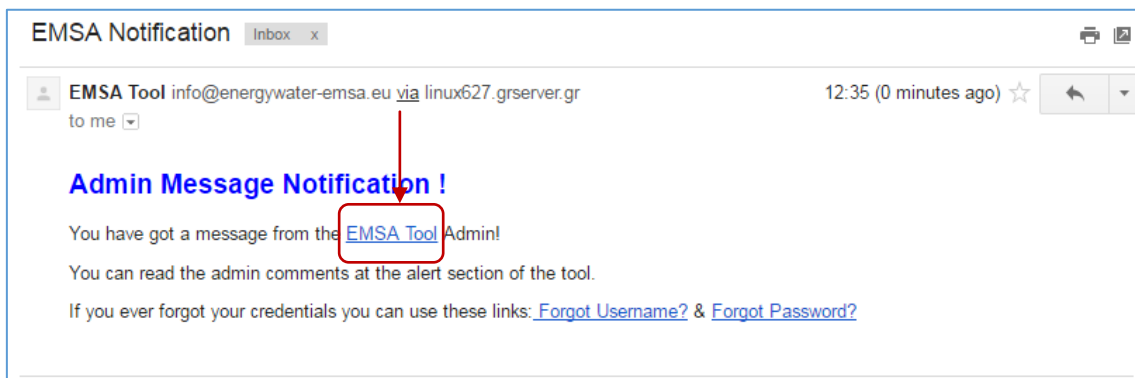
Since this moment, the company is able to start an assessment as well as to choose an Energy Angel to guide them among the tool.

5.5.2 Pending

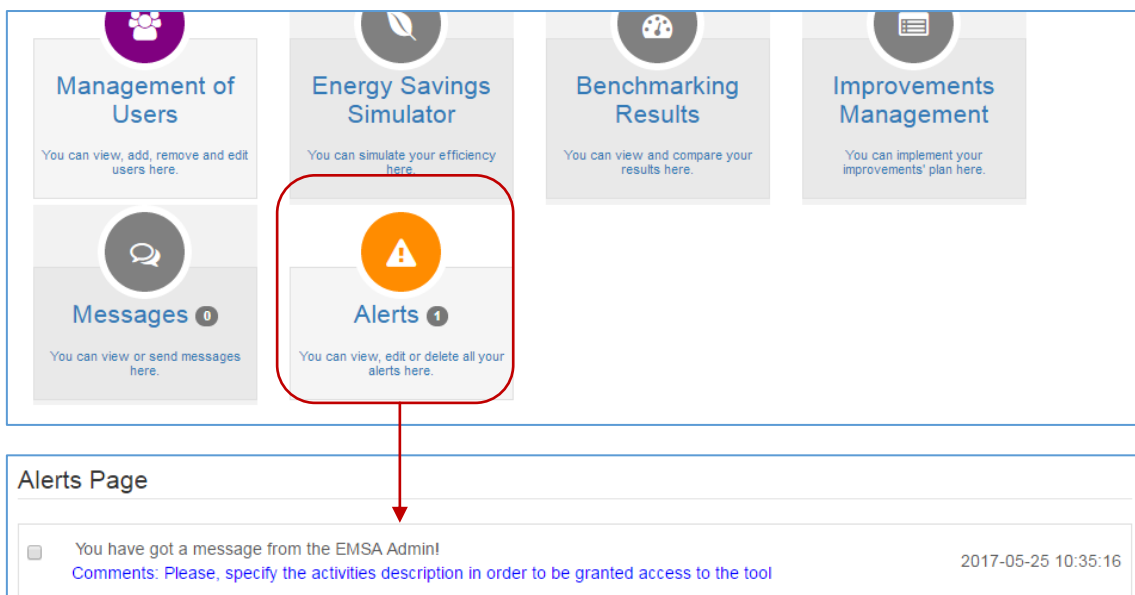
If a company hasn't been accepted or denied, means that the Network Administration has not started the acceptance process.

The Network Administration can send comments to the companies if they identify any missing information in order to verify its identity.

The company will be able to receive the comments via notification email or the alerts tab. To enter in the EMSA, click in the link provided by the email or enter directly through the browser.



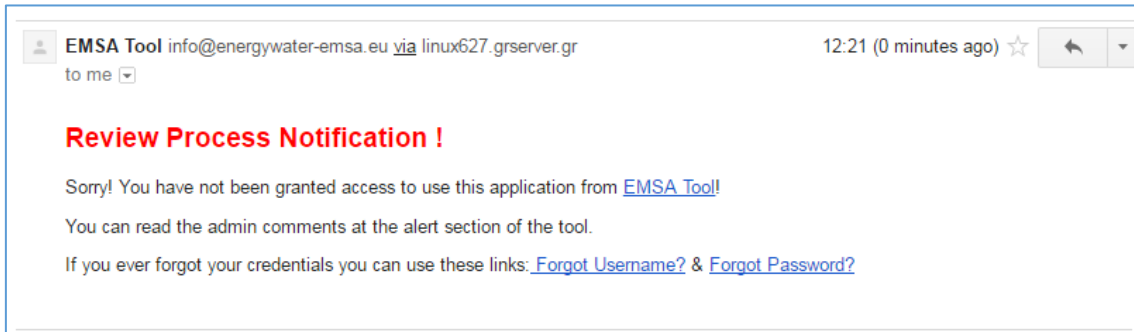
Click the alerts tab and revise the most recent alert, to see the message from the Network Administration.



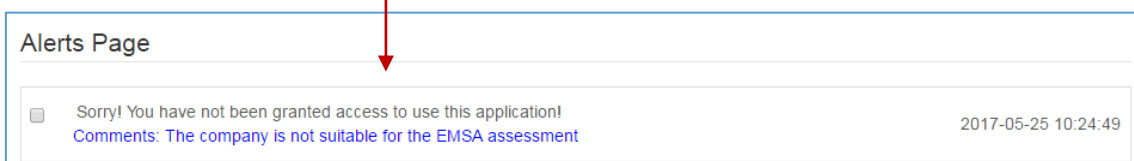
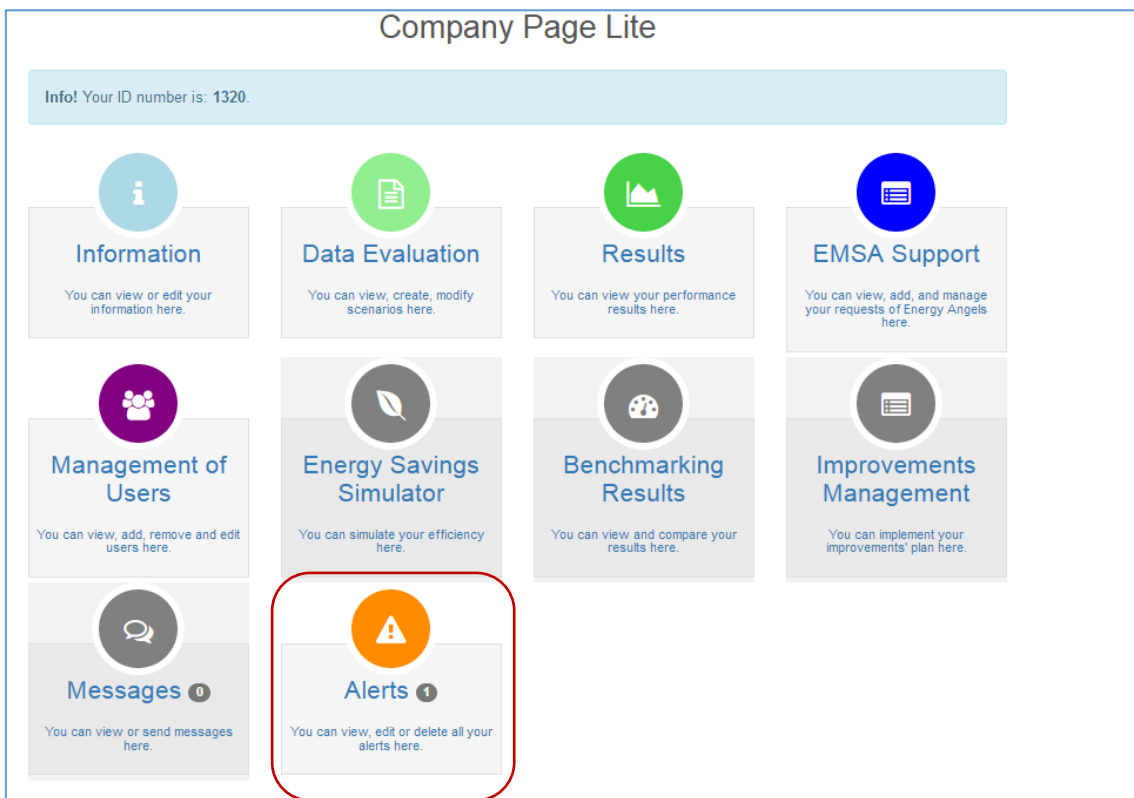
In order for the company to be accepted, they have to include all the information required by the tool.

5.5.3 Rejection

If all the information provided by the company means a problem of impersonation of the identity or the information is not trusted, the Network will reject the company's entrance.



Companies will receive the email presented above. If they enter the tool and if they go to the alerts tab, they will receive a message of rejection, and the reason why the network has performed this action.



5.6 EMSA Lite and EMSA Professional

To facilitate the access to the EMSA web tool contents, two versions have been developed:

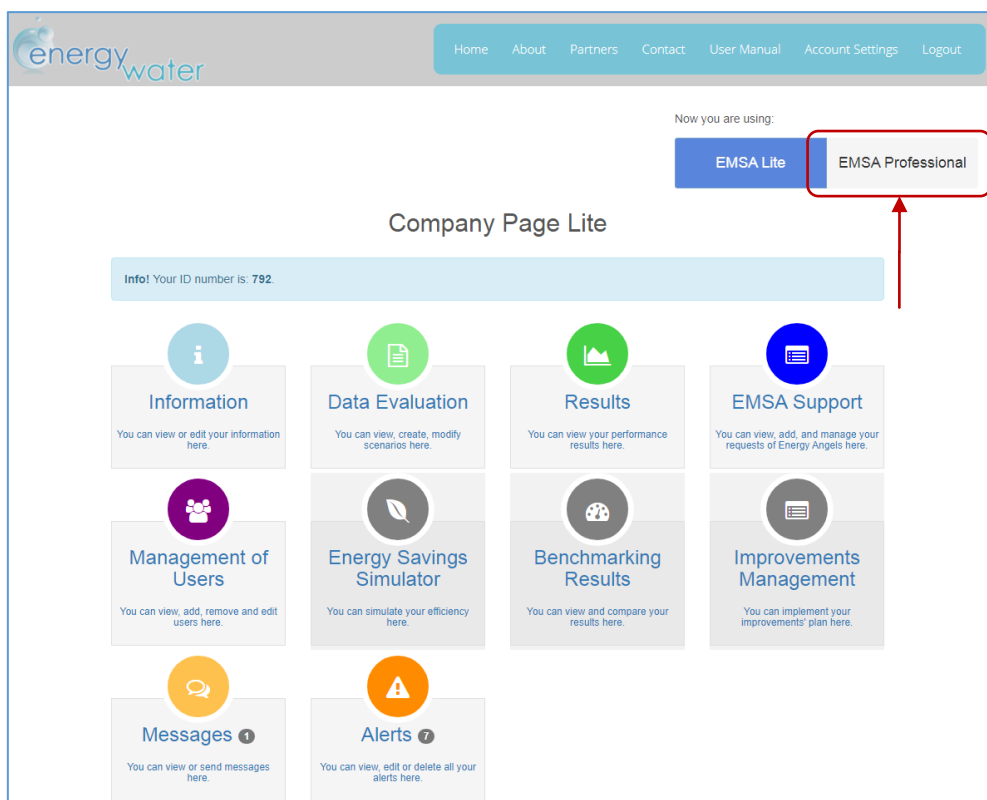
- EMSA Lite
- EMSA Professional

After registration, Companies will arrive to the “EMSA Lite” dashboard, where they will have access to the basic modules of EMSA, being able to use them on their own, giving them an easy-to-use methodology to evaluate themselves and obtain quick useful results.

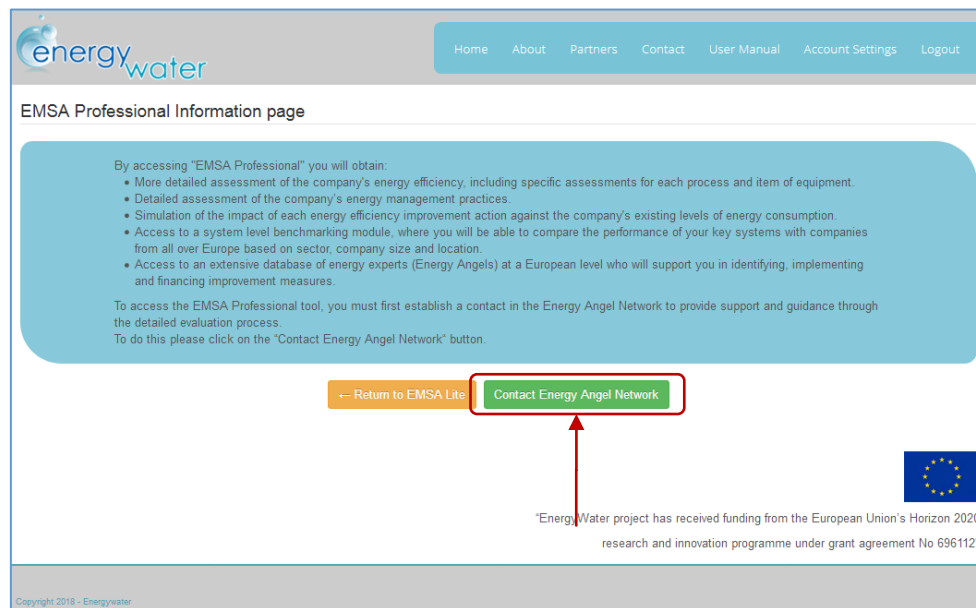
They will notice that some other modules are coloured in grey. These ones are modules that belong to the “EMSA Professional” version, where the tools displays their whole functionalities, and some technical knowledge are required to use them, that why the support on an Energy Angel is needed.

Thus far we have seen that some of the modules were in greyscale. This is due to we are in the EMSA Lite version. In order to obtain the complete version of the tool the user has to access “EMSA Professional”.

For this purpose the user should click in the “EMSA Professional” Button.



If it is the first time, this page will appear:



This screen explain that, by accessing the “EMSA Professional” you will obtain:

- More detailed assessment of the company’s energy efficiency, including specific assessment for each process and item of equipment.
- Detailed assessment of the company’s energy management practices.
- Simulation of the impact of each energy efficiency improvement action against the company’s existing levels of energy consumption.
- Access to a system level benchmarking module, where you will be able to compare the performance of your key systems with companies from all over Europe based on sector, company size and location.
- Access to an extensive database of energy experts (Energy Angels) at a European level who will support you in identifying, implementing and financing improvement measures.

To access the EMSA Professional tool, you must first establish a contact with an Energy Angel form the Energy Angel Network to provide you support and guidance through the detailed evaluation process.

To do this you should click on the “Contact Energy Angel Network” button. Also, we can select an Energy Angel form the “EMSA Support” module.

Then, the next screen will appear:

Energy Angel's EMSA | Energy Angel's Services | Angel's ID number | Company's Angels

Search for Country, City, Language, etc...

Please select your preferred Energy Angel!

#	Type of Energy Angel	Spoken Language	Country	City	Activities	Qualifications
<input type="checkbox"/>	WINGS Angel Account		Greece	Athens		
<input type="checkbox"/>	Energy consultant	English, Spanish	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Mechanical Engineering degree, Industrial Engineering
<input type="checkbox"/>	Technician	English, Italian	Italy	Monte di Malo (Vicenza)	Energy audits, Energy efficiency studies, Energy Management System Implementation, Energy saving measures implementation, Energy Services Company ESCO	Architect
<input type="checkbox"/>	Project Manager	English, French, Portuguese, Spanish	France	Paris	Energy audits, Energy efficiency studies, Energy Management System Implementation, Energy saving measures implementation	Industrial Engineering

There, you will be able to search and select an Energy Angel, this process is explained in the point 5.7 “Energy Angel’s Request”.

Once the Energy Angel has accepted the request, both the Company and the Energy Angel will obtain access to the EMSA Professional, and all the tabs for the complete assessment.

EMSA Lite | EMSA Professional

Company Page

Help

Info! Your ID number is: 792.

- Information**: You can view or edit your information here.
- Data Evaluation**: You can view, create, modify scenarios here.
- Results**: You can view your performance results here.
- EMSA Support**: You can view, add, and manage your requests of Energy Angels here.
- Management of Users**: You can view, add, remove and edit users here.
- Energy Savings Simulator**: You can simulate your efficiency here.
- Benchmarking Results**: You can view and compare your results here.
- Improvements Management**: You can implement your improvements' plan here.
- Messages (1)**: You can view or send messages here.
- Alerts (7)**: You can view, edit or delete your alerts here.

If for any circumstance the company wants to change his EMSA version, the company has the option of switch from EMSA Professional to EMSA Lite and from EMSA Lite to Professional always he wants. To do it, the company user should click the buttons at the top right of the page.



5.7 Energy Angel's Request

In order to get access to the EMSA Professional and perform a complete assessment a company needs to choose an Energy Angel from the EA Network, in order to guide them along the assessment process within the tool.

Enter in the “EMSA Support” tab to select an Energy Angel to perform an assessment or click in the EMSA PRO button in the company's page.

The screenshot displays the EMSA Professional user interface. At the top, there is a navigation menu with links for Home, About, Partners, Contact, User Manual, Account Settings, and Logout. Below the menu, a status bar indicates 'Now you are using:' with two options: 'EMSA Lite' and 'EMSA Professional'. The 'EMSA Professional' option is highlighted with a red box and a red arrow pointing to it. The main content area is titled 'Company Page Lite' and features an information bar stating 'Info! Your ID number is: 1320'. Below this, there are several functional tiles: Information, Data Evaluation, Results, EMSA Support (highlighted with a red box and a red arrow), Management of Users, Energy Savings Simulator, Benchmarking Results, and Improvements Management. At the bottom, there are two notification tiles: Messages (0) and Alerts (5).

Once in the tab, there are four different paths of selecting an Energy Angel.

energy water

Home About Partners Contact User Manual Account Settings Logout

User page → Select Energy Angel page

← Back

Select Energy Angel

1 2 3 4

Energy Angel's EMSA Energy Angel's Services Angel's ID number Company's Angels

Search for Country, City, Language, etc...

Please select your preferred Energy Angel!

#	Type of Energy Angel	Spoken Language	Country	City	Activities	Qualifications
<input type="checkbox"/>	WINGS Angel Account		Greece	Athens		
<input type="checkbox"/>	Energy consultant	English, Spanish	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Mechanical Engineering degree, Industrial Engineering
<input type="checkbox"/>	Technician	English, Italian	Italy	Monte di Malo (Vicenza)	Energy audits, Energy efficiency studies, Energy Management System Implementation, Energy saving measures implementation, Energy Services Company ESCO	Architect
<input type="checkbox"/>	Project Manager	English, French, Portuguese, Spanish	France	Paris	Energy audits, Energy efficiency studies, Energy Management System Implementation, Energy saving measures implementation	Industrial Engineering

5.7.1 Energy Angel's EMSA

If a company wants to select an Energy Angel from the whole list of Energy Angels, enter in the “Energy Angel's EMSA” tab.

Read the description of each Energy Angel and click in the selection box of the most suitable Energy Angel for you and press the “Submit Selection” button.

Companies can also use the search bar to filter Energy Angels by country, city or language.

Energy Angel's EMSA Energy Angel's Services Angel's ID number Company's Angels

greece

Please select your preferred Energy Angel!

#	Type of Energy Angel	Spoken Language	Country	City	Activities	Qualifications	Fields of Expertise
<input checked="" type="checkbox"/>			Greece	Athens			
<input type="checkbox"/>		English	Greece	Athens	Energy audits, Energy efficiency studies, Energy Management System Implementation, Energy saving measures implementation	Electrical Engineering degree	Heating, Steam generation Boiling, Ballast water and cleaning water

← Back

Submit Selection

You can view and compare your results here.

5.7.2 Energy Angel's Services

If a company wants to select an Energy Angel according to the services provided for him, enter in the “Energy Angel's Services” tab.

Select the services desired and will only appear Energy Angels with those services and click in the selection box of the most suitable Energy Angel for you and press the “Submit Selection” button.

Energy Angel's EMSA
Energy Angel's Services
Angel's ID number
Company's Angels

Show all Services
 Service 1: EMSA tool Support
 Service 2: Energy Audits and consultancy
 Service 3: Implementation and innovation support
 Service 4: Provider of financial advice

Please select your preferred Energy Angel!

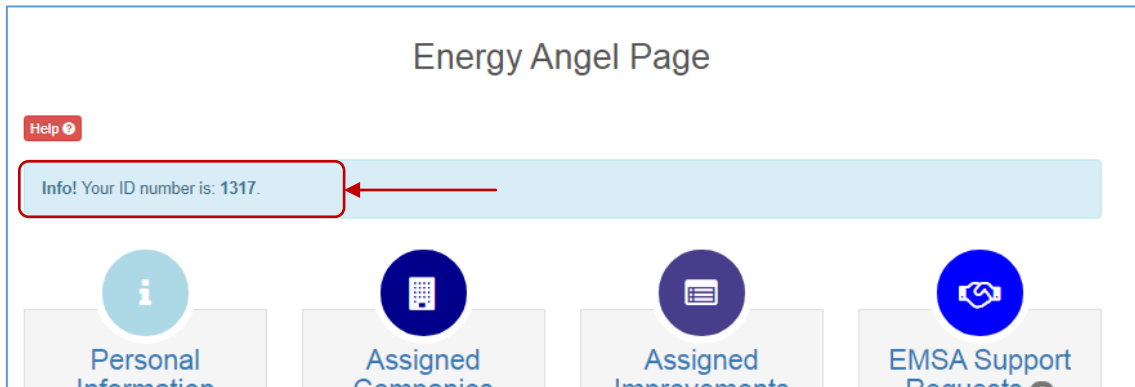
#	Type of Energy Angel	Spoken Language	Country	City	Services
<input type="checkbox"/>	WINGS Angel Account		Greece	Athens	Service 1, Service 2, Service 3,
<input type="checkbox"/>	Freelance	Bulgarian, Maltese, Spanish	Spain	Burgos	Service 1,
<input type="checkbox"/>	health		Cyprus	limassol	Service 1, Service 2, Service 3, Service 4,
<input type="checkbox"/>	Senior Consultant	English, Greek	Cyprus	Nicosia	Service 1, Service 2, Service 3, Service 4,

[← Back](#)
[Submit Selection](#)

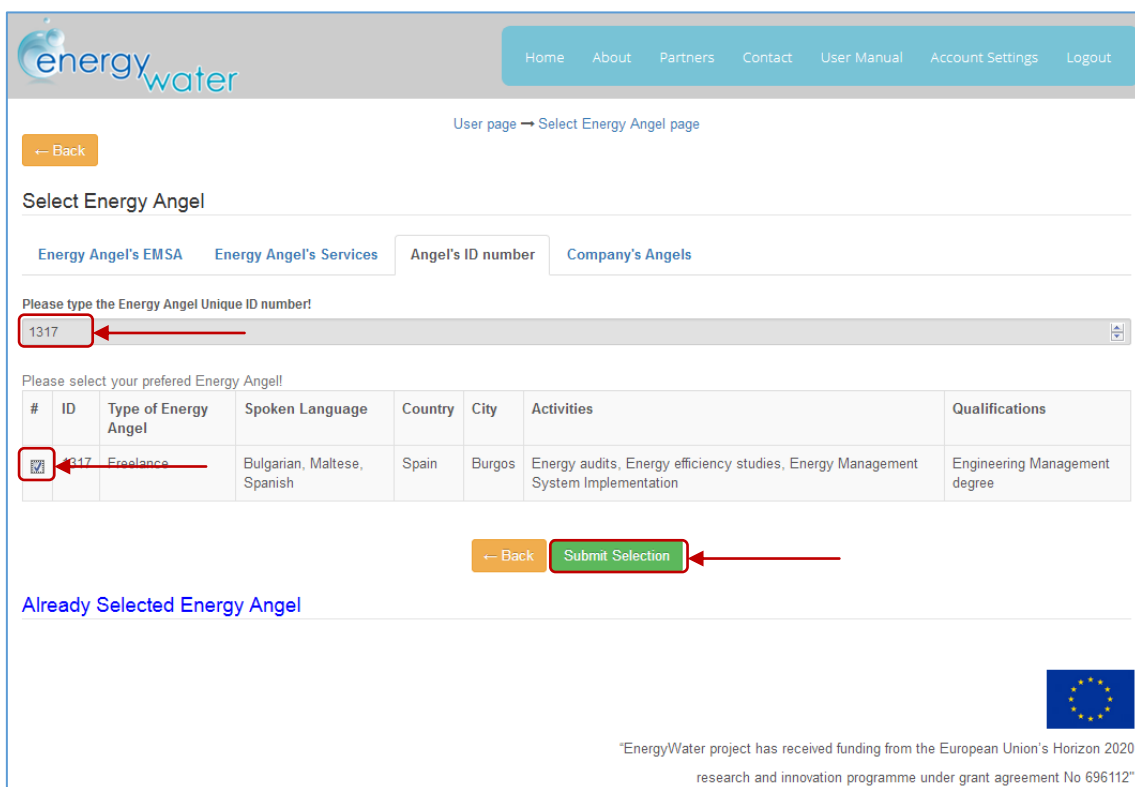
5.7.3 Energy Angel's ID number

If a Company knows the Energy Angel's ID and wants to select this specific person to guide them, they will be able to select this Energy Angel by introducing the ID number in the tool.

An Energy Angel can check his number in the main page.



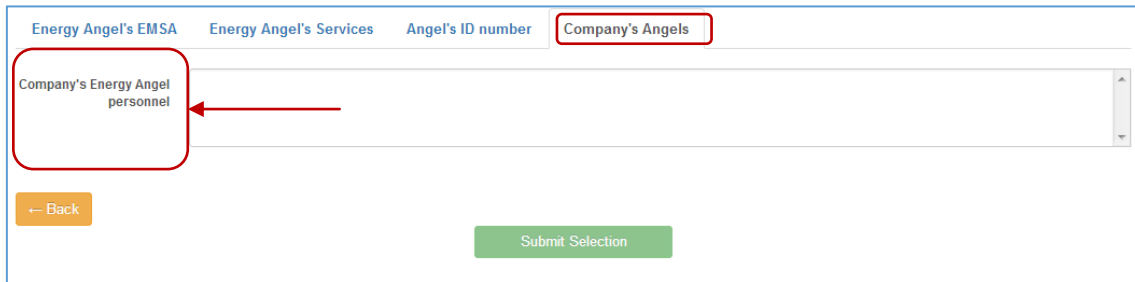
To choose a certain Energy Angel, the company has to introduce the ID in the "Angel's ID number" tab.



5.7.4 Company's Angel

This path can be applied if a company has an Internal Energy Angel, to do this, a person from the Company's staff need to follow the EMSA training and thus be certificated in the services no.1 "EMSA web-tool support"

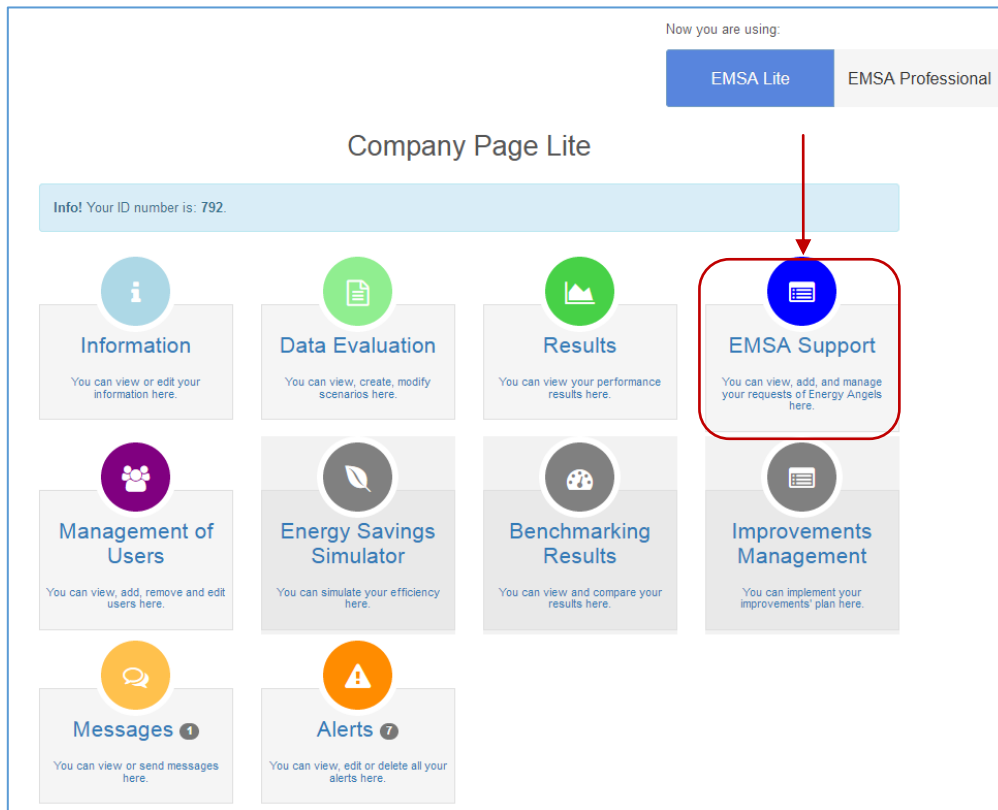
Also, both the company and the Energy Angel should have introduced the same VAT number to link them with the same company's identity, then, they will automatically appear in the box named: "*Company's Energy Angel*"



Select an Energy Angel from the "*Company's Energy Angel*" box and click the button "*Submit Selection*" to send a request to the selected Energy Angel.

5.7.5 Procedure of acceptance

After asking for an Energy Angel, a new request is generated. To see it, enter in the “EMSA Support” tab and consult “Replies to Requests” section.



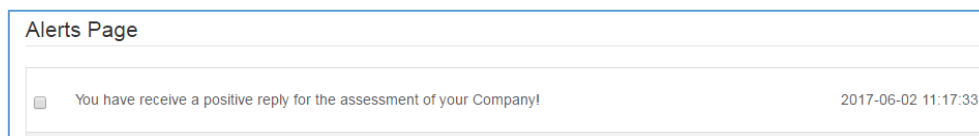
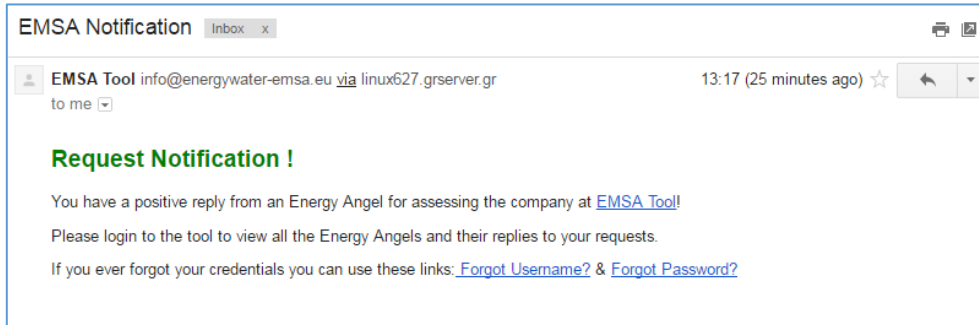
This pending message should appear on screen

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel	Rating
⊙	Accepted		Automotive Industry	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Aerobic Biological Treatment, Filtration	2018-07-17	2018-07-17		Please type your message here:	
Please wait for Angel's Respond first	Pending		R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Decantation, Equalization	2018-07-17			-	

When this information appears, means that the request has been sent to the Energy Angel. The company has to wait for the Energy Angels answer.

5.7.5.1 Energy Angel's acceptance

If an Energy Angel accepts the company's request, the company will receive a response via email, as well as a notification in the alerts page.

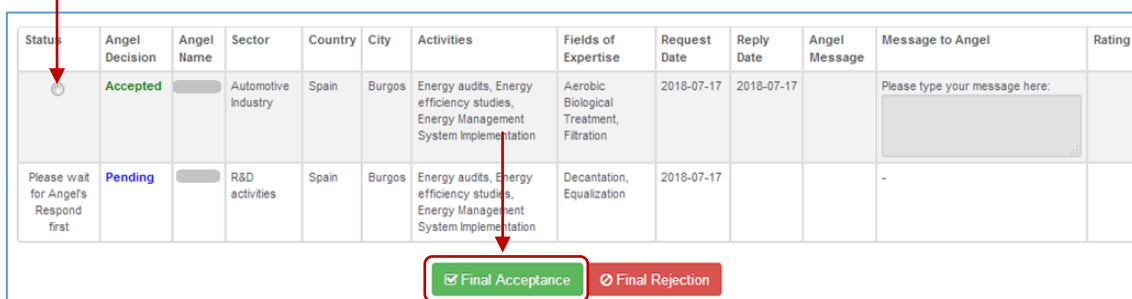


If the user of the Company enters in the "EMSA Support" tab again, it will be shown the positive answer of the Energy Angel.

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel	Rating
<input type="radio"/>	Accepted		Automotive Industry	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Aerobic Biological Treatment, Filtration	2018-07-17	2018-07-17		Please type your message here:	
Please wait for Angels Respond first	Pending		R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Decantation, Equalization	2018-07-17			-	

Final Acceptance Final Rejection

The company is the one that has to make the final acceptance of the Energy Angel, by selecting the specific Energy Angel and clicking in the "Final Acceptance" button.



Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel	Rating
<input type="radio"/>	Accepted		Automotive Industry	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Aerobic Biological Treatment, Filtration	2018-07-17	2018-07-17		Please type your message here:	
Please wait for Angels Respond first	Pending		R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Decantation, Equalization	2018-07-17			-	

Final Acceptance Final Rejection

It is important to note that, even if the company makes the final acceptance of an Energy Angel, if they do not grant any permission to the Energy Angel, he is not going to be able to access to any data form the company. To give permissions, go to the "Manage Users" module.

If the company does not want an Energy Angel to perform the assessment, by clicking the “Final Rejection” button, the Energy Angel will be denied access to the company’s information.

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel	Rating
	Accepted		Automotive Industry	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Aerobic Biological Treatment, Filtration	2018-07-17	2018-07-17		Please type your message here:	
Please wait for Angels Respond first	Pending		R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Decantation, Equalization	2018-07-17			-	

Final Acceptance Final Rejection

5.7.5.2 Energy Angel's refusal

If an Energy Angel does not accept the company’s request, in the “EMSA Support” tab it will appear that the Energy Angel has declined the proposal of the company.

Replies to Requests														
#	ID	Angel Decision	Angel Name	Sector	Country	State	City	Accreditations	Activities	Registered Date	Request Date	Reply Date	Angel Comments	Comments
	376	Declined	TCL		Spain	Castilla y Leon	Burgos			2017-05-18 11:33:28	2017-06-02 12:06:56	2017-06-02 12:07:54		

In this case, and in order to perform an assessment, the company will be required to send another request to a different Energy Angel.

5.8 Managing the EMSA users

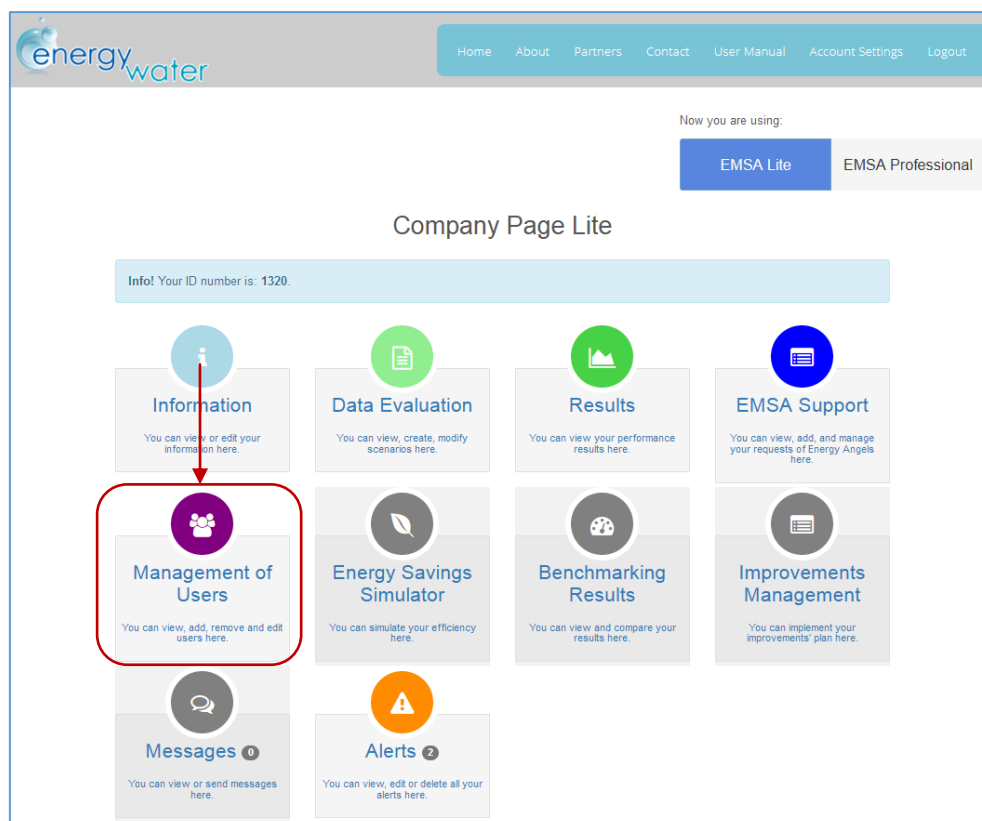
To register the Company in the EMSA, a contact person is needed. This contact person will act as the Admin User of the company and he/she will have all the permissions and access to all the functionalities of the Company's EMSA account.

One of these Admin permissions is the Management of different Users in the Company's account, that is to say, the Admin User is able to add more user to the Company's account in order to help him to introduce data or to see some specific results, for instance.

Here exists an exceptional case in the Company's Users: the **Energy Angel**. Once an Energy Angel has been finally accepted by the Company, becomes automatically a user from the Company's account in order to facilitate the support to the company. In this case, the Company's Admin User is always able to modify its permissions and control how deep does the Energy Angel participates in the assessment process.

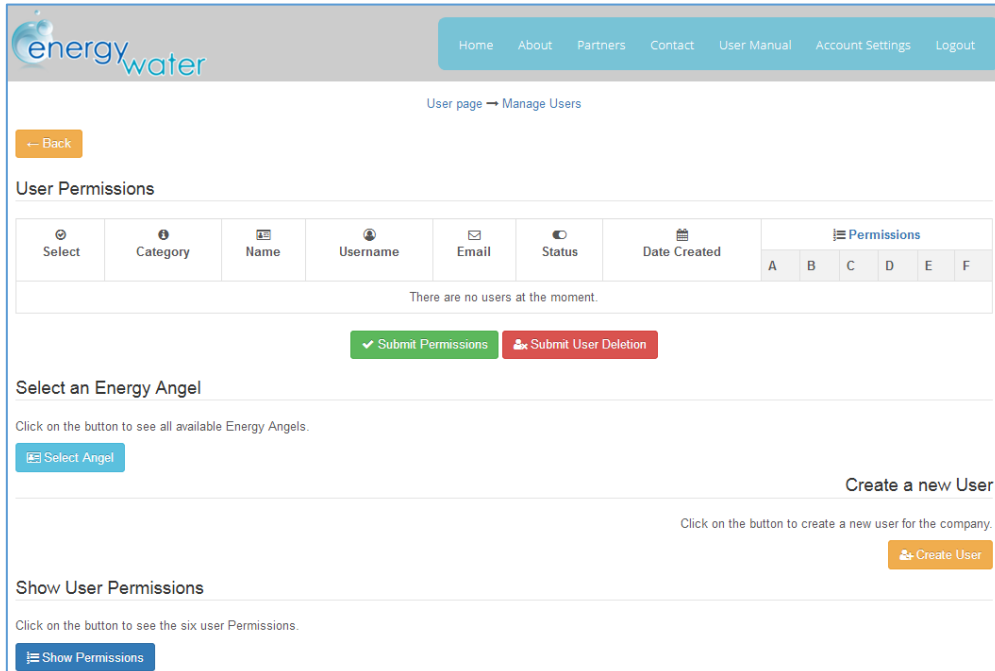
Then, the Company's Admin User can add as many new users as he considers and also, once the Company and an Energy Angel have confirmed the acceptance proposal, the company will select what type of access the Energy Angel will have to the company's information inside the EMSA tool.

This can be performed in the "Management of Users" Tab.



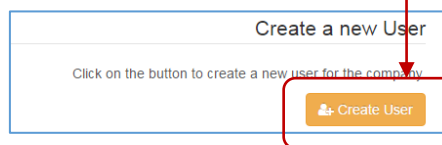
There, the companies can select the permissions of each user of the company.

This is the initial page that appears:



5.8.1 Create a new User

The Company's Admin User is able to create New Users within the Company's account. The users can access to the company's account with a different username and password and fill in information inside the tool, which will be corroborated by the Energy Angel.



If the company selects the options of creating a new user, they will have to introduce the user's data to give this person access to the EMSA tool. Then press the "submit" button

energy water

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User page → Manage Users

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User Permissions

Select	Category	Name	Username	Email	Status	Date Created	Permissions					
							A	B	C	D	E	F
There are no users at the moment.												

Submit Permissions Submit User Deletion

Select an Energy Angel

Click on the button to see all available Energy Angels.

Select Angel

Create a new User

Click on the button to create a new user for the company.

Create User

Name:
Please provide User's Name

Username:
User's Username can contain any letters or numbers

E-mail:
Please provide User's E-mail

Password:
Password should be at least 4 characters

Password (Confirm):
Please confirm the password

Submit →

Show User Permissions

Click on the button to see the six user Permissions.

Show Permissions

When the Company has different users as well as an assigned Energy Angel, the Admin User will be able to give different permissions to the different users. The permissions are the following ones, and can be checked in the option called "Show User Permissions".

Show User Permissions

Click on the button to see the six user Permissions.

Show Permissions

- User Permission: A**
 - Manage Users
 - Change SuperUser
 - Modify Permissions
 - Add/Delete Users
- User Permission : B**
 - See/Modify Energy Angel Selected
 - See/Modify Company Information
 - See/Modify Improvements Management
- User Permission: C**
 - Scenarios
 - Current Scenario
 - See/Modify Data
 - Submit and Generate Results
 - Check old Scenarios
 - Reset and Create New Scenario
- User Permission: D**
 - Evaluation results
 - Last Evaluation
 - Create new comparison
- User Permission: E**
 - Improvement of management tool
- User Permission: F**
 - Permission only for benchmarking.

Any new user of the company has no permissions in the tool. The Company's Administrator will select the permissions of each user individually, by introducing them in the right side of the table. A new Energy Angel accepted by the company also has no permissions. Moreover, Company's Administrator can modify those permissions anytime he considers.

Select	Category	Name	Username	Email	Status	Date Created	Permissions
<input type="radio"/>	User	George				2018-07-16 11:41:10	A B C D E F
<input type="radio"/>	Angel	Antonio				2018-07-17 10:41:03	A B C D E F

Buttons:

The A and B premises only can be granted to Users, not to Energy Angels.

Select those users whose permissions are going to be modified, modify their permissions and press the "Submit Permissions" button to save all the permissions provided by the company to a certain user or an Energy Angel.

5.8.2 Delete a User

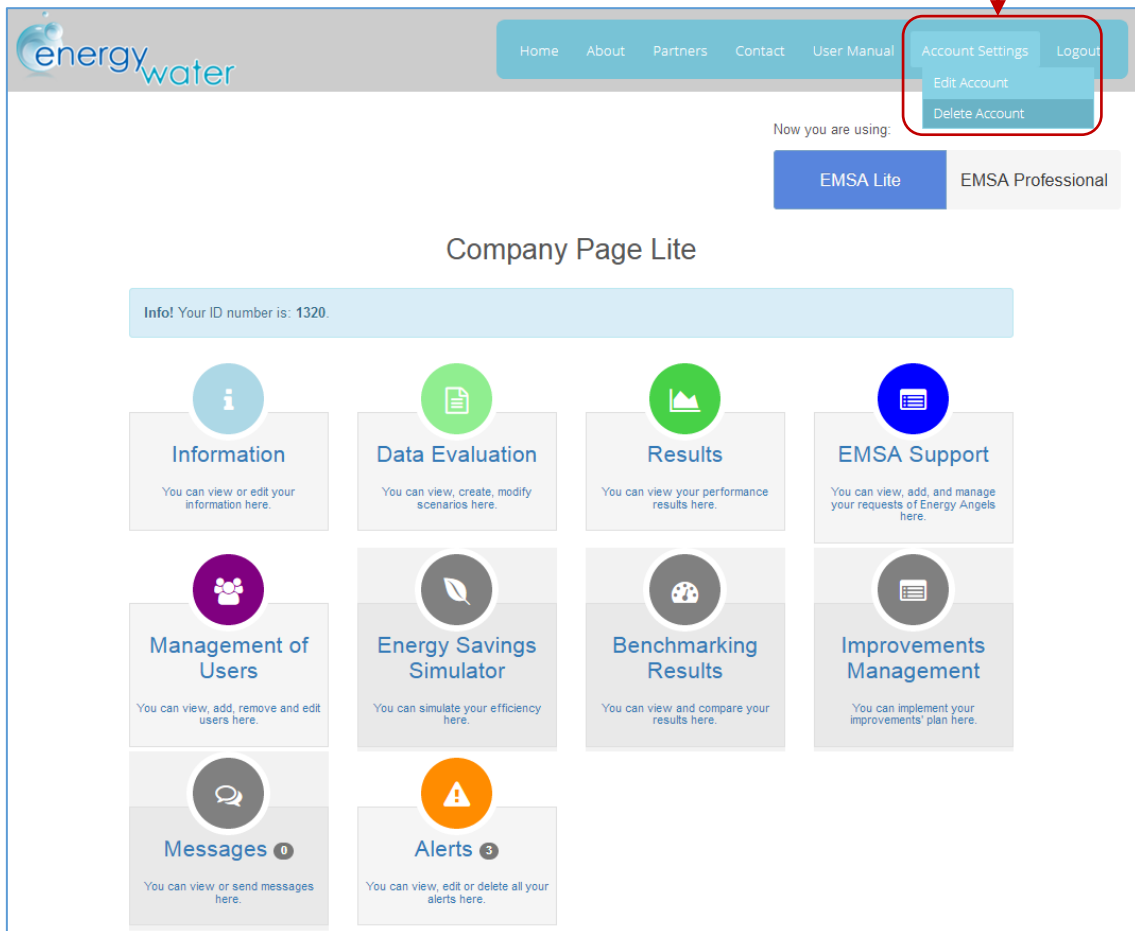
In order to delete a user, the company has to select a certain user and press the "Submit User Deletion" button.

Select	Category	Name	Username	Email	Status	Date Created	Permissions
<input type="radio"/>	User	George	Smith	smith.george@gmail.com		2018-07-16 11:41:10	A B C D E F

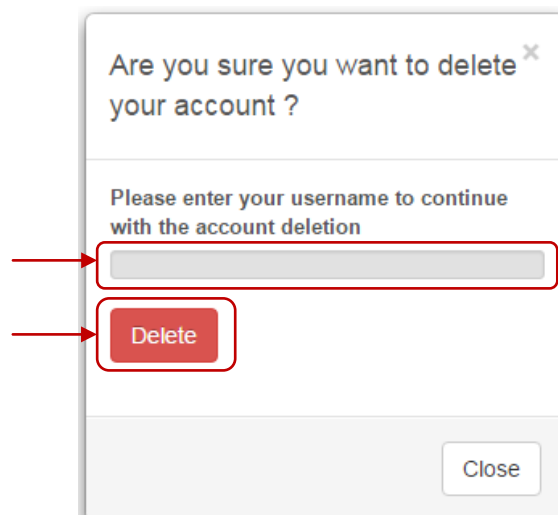
Buttons:

5.9 Delete Company's Account

If a company no longer wants to perform any more assessments and wants to leave the network, it exist the possibility of deleting the account by entering in the “*Account Settings*” tab and clicking in the “*Delete Account*” option.

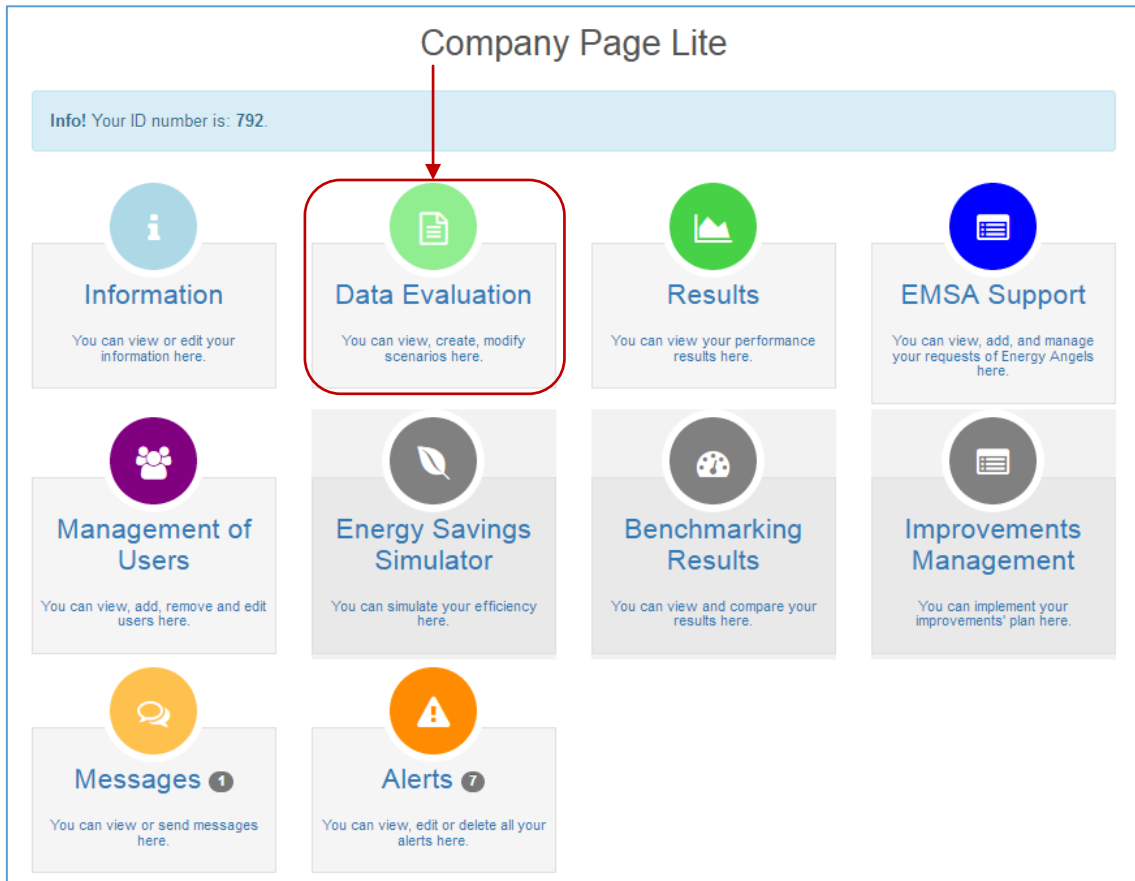


Click in the “*Delete account*” option, and to fully erase the account the user should write the Company’s user name and then click the “*Delete*” button



6 EMSA LITE ASSESSMENT

A general EMSA assessment can be performed without an Energy Angel. To start with the assessment, the user should click the “Data Evaluation” tab.

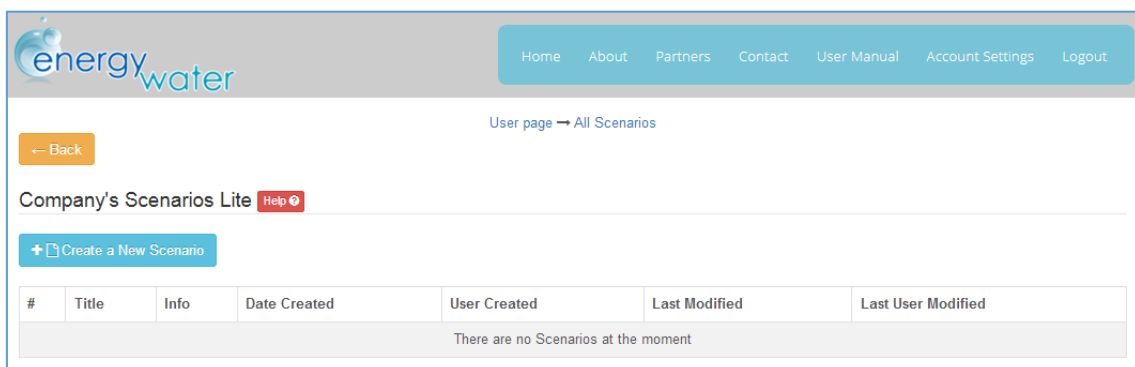


Company Page Lite

Info! Your ID number is: 792.

- Information**: You can view or edit your information here.
- Data Evaluation**: You can view, create, modify scenarios here.
- Results**: You can view your performance results here.
- EMSA Support**: You can view, add, and manage your requests of Energy Angels here.
- Management of Users**: You can view, add, remove and edit users here.
- Energy Savings Simulator**: You can simulate your efficiency here.
- Benchmarking Results**: You can view and compare your results here.
- Improvements Management**: You can implement your improvements' plan here.
- Messages** (1): You can view or send messages here.
- Alerts** (7): You can view, edit or delete all your alerts here.

Once we enter to the “Data Evaluation” tab for the first time, the following screen appears:



energy water

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User page → All Scenarios

← Back

Company's Scenarios Lite [Help](#)

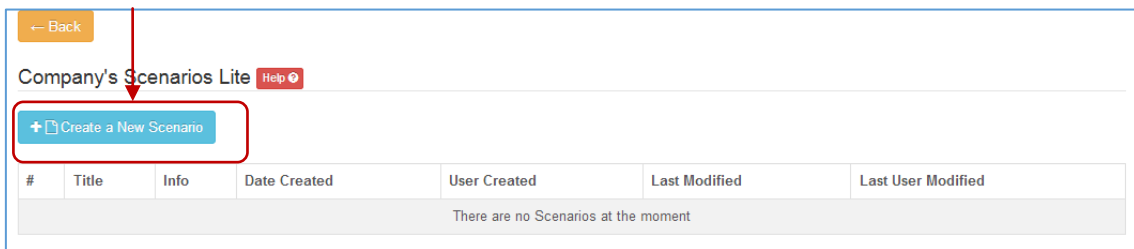
+ Create a New Scenario

#	Title	Info	Date Created	User Created	Last Modified	Last User Modified
There are no Scenarios at the moment						

Firstly, in order to start the EMSA Assessment, a “New Scenario” needs to be created. This scenario will contain all the company’s information from a certain period of time.

The EMSA methodology considers a period of **one year** as a period which is representative enough to show a Company’s Energy Efficiency status.

To introduce the first scenario press the “Create a New Scenario” button.



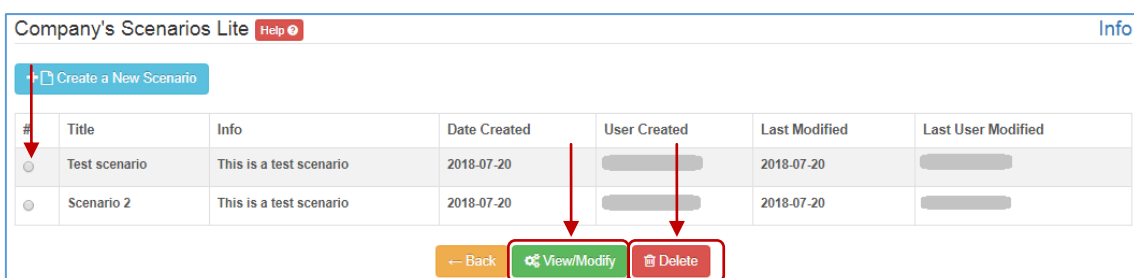
Then we should introduce a name for this new scenario and a brief description if necessary. Finally, to submit this new scenario press “Start Scenario”



When a new scenario has been created, the company can edit its information or delete the whole scenario.

In order to **delete** a Scenario permanently, select the scenario and press the “Delete” Button.

In order to **modify** the internal information of a Scenario, select the scenario and press the “View/Modify” Button.



To perform a new assessment, the company has to complete a series of sets of Questions that will evaluate the company as a whole. The sets of questions are shown in the next picture.



The company has to select the “General Questions” section, and answer them with the most accurate information as possible for obtaining the most representative results for the assessment.

Scenario: **Scenario 1 - Sections**

#	Title	Info	Last Modified	Last User Modified	Results
<input checked="" type="radio"/>	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-17	Onecompany	View
<input type="radio"/>	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-17	Onecompany	View
<input type="radio"/>	Management Questions	Data regarding management information of the company	2018-07-17	Onecompany	

← Back [Edit Data](#)

To modify the information of the “General Questions” section, select the section and then press the “Edit Data” Button.

In this section, Companies need to introduce their data relative to their yearly production, water consumption, electricity consumption, gas consumption and their associated costs, in addition, companies also need to introduce information of their main processes to build a general picture of the company status in terms of energy consumption and cost.

6.1 Questions Step 1



Firstly, the company has to enter the year of the scenario’s data that are going to be introduced, as well as the currency that it is going to be used. There currency can be introduced in Euros (EUR - €), Pounds (GBP - £) or United States Dollars (USD - \$).

Note: Please introduce the cost values excluding the “VAT” taxes.

Select Year and Currency of the specific scenario:

Year:

Currency:

EUR
GBP
USD

For the production part, companies need to select the units of the production of the company, in weight, volume or production units.

Besides, the production can be filled in per year or per month. When introducing the information per month, the yearly production will be automatically calculated by adding all the productions of the twelve months of the year.

Production Fill in the Year values

Production

Fill in per Month values

Month	Production
January	0
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Basic

- 1 unit
- 1K units
- 10K units

Weight

- kg
- Oz
- Tonnes
- Lb

Volume

- m³
- gal
- l

Units

For the water consumption part, companies need to select the consumption units of the company, in volume units (m³, litres or gallons).

Besides, the water consumption can be filled in per year or per month. When introducing the information per month, the yearly water consumption will be automatically calculated by adding all the different consumptions of the year.

The same happens with the cost of the water consumption, which can be introduced yearly or monthly, in the currency previously selected.

Water consumption Fill in the Year values

Consumption

Cost

Fill in per Month values

Month	Consumption	Cost
January	<input type="text"/>	<input type="text"/>
February	<input type="text"/>	<input type="text"/>
March	<input type="text"/>	<input type="text"/>
April	<input type="text"/>	<input type="text"/>
May	<input type="text"/>	<input type="text"/>
June	<input type="text"/>	<input type="text"/>
July	<input type="text"/>	<input type="text"/>
August	<input type="text"/>	<input type="text"/>
September	<input type="text"/>	<input type="text"/>
October	<input type="text"/>	<input type="text"/>
November	<input type="text"/>	<input type="text"/>
December	<input type="text"/>	<input type="text"/>

Units

- m³
- gal
- l

For the electricity consumption part, companies need to select the consumption units of the company in energy units (kWh and its variants).

Besides, the electricity consumption can be filled in per year or per month. When introducing the information per month, the yearly electricity consumption will be automatically calculated by adding all the different consumptions of the year.

The same happens with the cost of the electricity consumption, which can be introduced yearly or monthly, in the currency previously selected.

Electricity consumption Fill in the Year values

Consumption

Cost

Fill in per Month values

Month	Consumption	Cost
January	<input type="text"/>	<input type="text"/>
February	<input type="text"/>	<input type="text"/>
March	<input type="text"/>	<input type="text"/>
April	<input type="text"/>	<input type="text"/>
May	<input type="text"/>	<input type="text"/>
June	<input type="text"/>	<input type="text"/>
July	<input type="text"/>	<input type="text"/>
August	<input type="text"/>	<input type="text"/>
September	<input type="text"/>	<input type="text"/>
October	<input type="text"/>	<input type="text"/>
November	<input type="text"/>	<input type="text"/>
December	<input type="text"/>	<input type="text"/>

Units

- kWh
- MWh
- kcal
- kJ
- ft-lb
- BTU

For the fuel consumption, firstly there has to be selected the main type of fuel used in the company (they can be one or more).

Fuel Consumption

- Butane
- Fuel oil n°1
- Fuel oil n°2
- Gasoil
- Natural gas
- Propane gas
- Other (please specify)

Name:

Density: kg/m³

Caloric value: kWh/kg, or kWh/m³

Other

In the event that the fuel used does not appear in the list, the user will have to select the “Other” option, where it exists the possibility of introducing all the necessary data to perform the fuel consumption calculations.

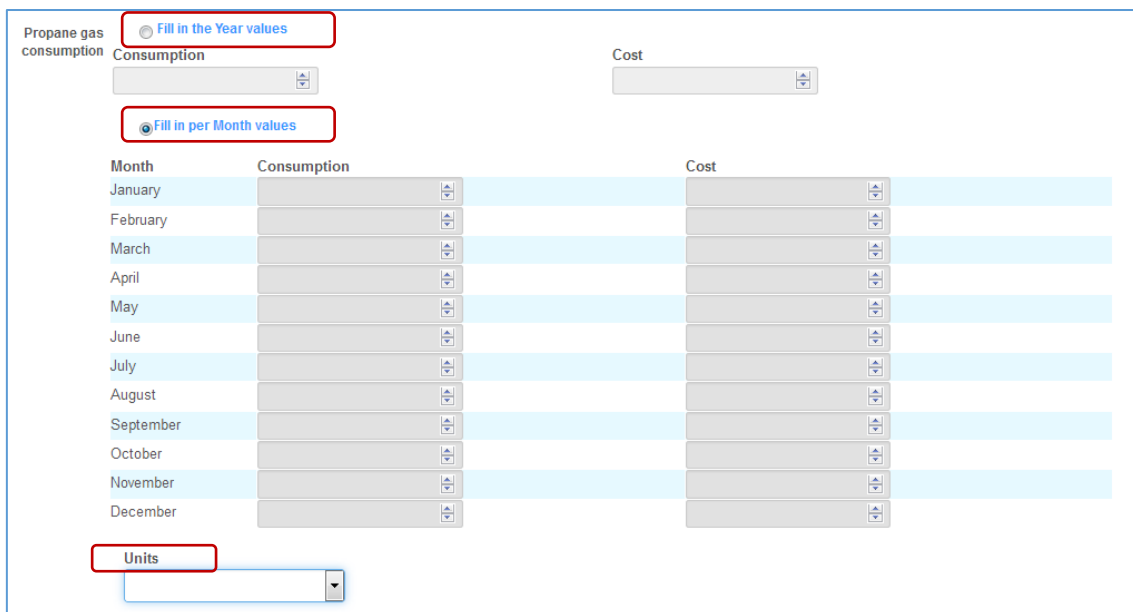
If the “Other” fuel option has been selected, the user is required to introduce the name of the fuel as well as two of the three options that include the density (kg/m³), mass heating power

(kWh/kg) and volume heating power (kWh/m³), depending on the magnitude which the “Other” fuel consumption is measured (mass or volume).

6.2 Questions Step 2



Finally, press the “Next” button and the following window will appear:



Propane gas consumption

Fill in the Year values

Consumption Cost

Fill in per Month values

Month	Consumption	Cost
January	<input type="text"/>	<input type="text"/>
February	<input type="text"/>	<input type="text"/>
March	<input type="text"/>	<input type="text"/>
April	<input type="text"/>	<input type="text"/>
May	<input type="text"/>	<input type="text"/>
June	<input type="text"/>	<input type="text"/>
July	<input type="text"/>	<input type="text"/>
August	<input type="text"/>	<input type="text"/>
September	<input type="text"/>	<input type="text"/>
October	<input type="text"/>	<input type="text"/>
November	<input type="text"/>	<input type="text"/>
December	<input type="text"/>	<input type="text"/>

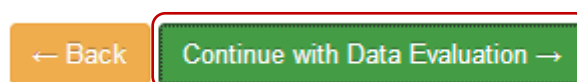
Units

For the fuel consumption part, companies can select the consumption units in energy, volume or weight units and its variants.

Besides, the fuel consumption can be filled in per year or per month. When introducing the information per month, the yearly fuel consumption will be automatically calculated by adding all the different consumptions of the year.

The same happens with the cost of the fuel consumption, which can be introduced yearly or monthly, in the currency previously selected.

When all of the information has been implemented, press the “Continue with Data Evaluation” button.



Here, the companies need to introduce their data relative to their different processes and equipment of the company which are related to water use and energy consumption

6.3 Verification of the sector

Before start introducing numerical data in the tool, the user needs to validate the company's sector.



This step is crucial, as every sector has some specific equipment. The tool considers the information that has been introduced and then proposes the different processes of the equipment.

Food Industry

- Beverages Industry
- Dairy Industries
- Food Processing
- Fish Processing
- Fruit and Vegetable (Canneries, Processors & Packaging)
- Meat Industries
- Sugar Mills and Refineries

Metallurgical Industry

- Cooper Metalworking
- Foundries
- Hydrometallurgy
- Steel Mills

Other Industries

- Automotive Industry
- Chemical Industry
- Electronic Industry
- Industrial Laundries
- Leather Industry
- Metal Recovery Plants
- Natural Stone Manufacturing
- Oil Industry
- Paper Industry and Packaging Industry
- Pharmaceutical and Biotechnical Industries
- Textile Industry
- Other

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6.4 Main Processes

First of all, to answer these questions that belong to the section of efficiency questions we need to define all the processes inside the Company that are related to water use and energy consumption.

It is really important to define all the processes that use water inside the company, even if the company does not have enough information to assess them or the company does not want to answer their efficiency questions

Then, with the list of processes, we need to define the equipment related to each process. With that information, the EMSA builds the “overview table”, where the staff involved in the assessment process will be able to select, one by one, processes and equipment and answer their related efficiency questions.

The following steps represent how to build the “Overview table” and how to answer efficiency questions:



Here, companies should enter what are their main production lines or sections in which their facilities can be divided. Each section could aggregate a main use for energy and water, a production line, a building, etc. They are called “**Main processes**”. The idea is to identify the company’s main energy consumption groups.

These “main processes” are sections that belong to the company and represent big energy consumption units, regarding at their process of energy consumption from the primary energy to final energy.

This information will act as a label that will help to group processes, but it will not affect to the calculations. It has been created so that companies can have a better understanding about in which process and equipment are they introducing data.

In this section, companies should only register the name of the main process by typing it on the screen.

The main idea is to group the processes of the company, to do this the User should introduce names or labels of the main processes of the system. Then, press the “Add another Main Process” to keep completing the list.

They can introduce the name of as many main processes as present in the company.

Which are the Main Processes of your company?

Note: "Main processes" are sections that belong to the company and represent big energy consumption units. Here, you should enter what are your main production lines or sections in which their facilities can be divided. Each section could aggregate a main use for energy and water, a production line, a building, etc.
E.g: boiler room, storage building, production building, waste water treatment plant...

Introduce the names of the Main Processes below:

→

→

Once the user has introduced the principal main processes of the company, press "Next".

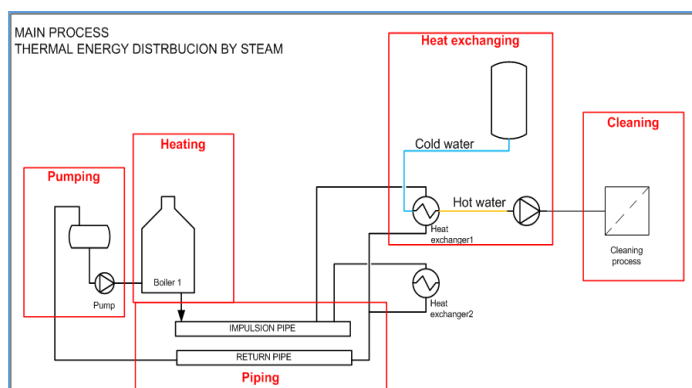
6.5 Set Processes

After selecting the Main Processes of the company, inside of each of them the user should also select the specific processes of the company.



In this section, for every "main process", companies should register their real processes related to water use and energy consumption.

Before describing the procedure of how to introduce data in the tool, it is included an explanatory figure to explain what the EMSA considers as a process.



- Main process: "Thermal Energy Distribution by steam"
- Related processes:
 - o Pumping
 - o Piping
 - o Heating
 - o Heat exchanging
 - o Cleaning

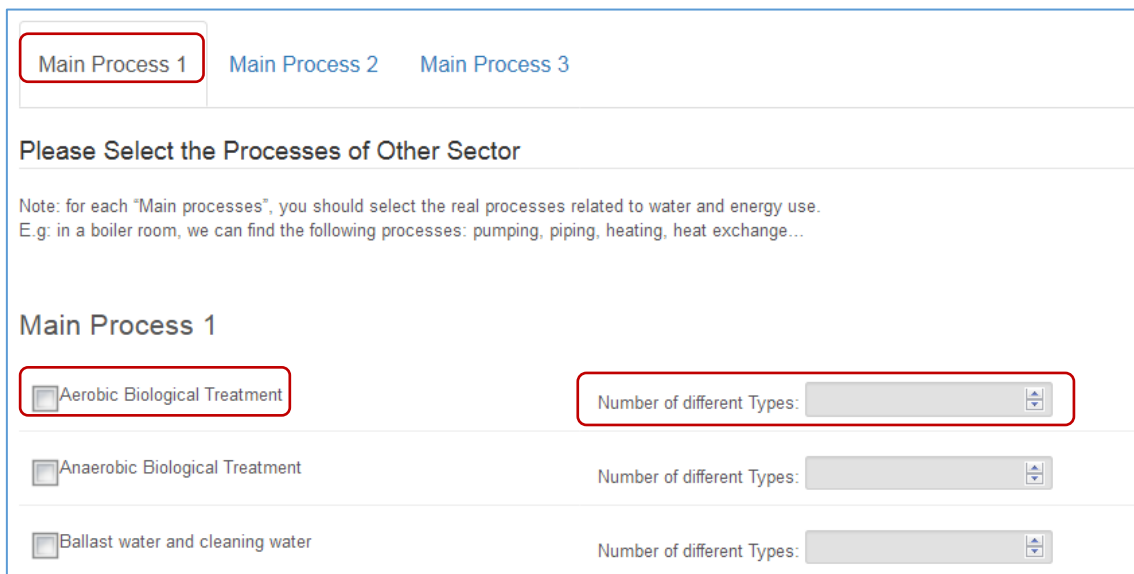
A process is a system (formed by one or more equipment) that uses or consumed energy that can be considered as a single unit, taking into account their piping system until the next point of energy use or consumption. For instance, in a boiler room, we can find the following processes:

- Heating process (boiler, pipes, filter, etc.): converts fuel into thermal energy to produce steam
- Pumping process (pump, pipe, storage, etc.): pump water into the boilers
- Heat exchange units (heat exchanger): converts thermal energy from steam into thermal energy into the working fluid of a process.

The User should select the type process and its quantity.

For each main process, there could be selected different processes.

The upper tabs correspond with the different “Main processes”, selected in the previous step. When finished press the “Next” button.



6.6 Processes Titles



After selecting all the different processes, the tool gives the user the option to name them or to leave them with the default name.

This feature has been created to ease the companies the recognition and introduction of data in the tool.

Main Process 1
Main Process 2
Main Process 3

Please provide Titles for the Processes you have submit at previous step

Note: Give a description name to the processes that you have defined in the previous step. These names will help you to better identify your processes during the EMSA evaluation.

Main Process 1

Decantation Title:

Pumping Title:

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Once the user has finished, press the “Next” button to start including the equipment information.

6.7 Equipment



This selection of the equipment will be the same as in the process part. Depending on the processes selected previously, the EMSA tool will propose different equipment to them.

For each of the processes, it has to be selected the specific equipment and their quantity. In this section, for every “process”, the user should register the related equipment according to the existing procedure that is implemented in the tool.

Main Process 1
Main Process 2
Main Process 3

Please fill the values of the selected Equipment

Note: For each process, you have to select the specific equipment that you want to evaluate and their quantity.
E.g: For the "pumping" process, we can find the following equipment: pumps, piping... For the "heating" process, we can find the following equipment: heater, boiler, pumps (feeding pump), piping...

Main Process 1

Decantation - Decantation A1

<input checked="" type="checkbox"/> BLOWER	Number of different Types: <input style="width: 80px;" type="text" value="1"/>
<input type="checkbox"/> CLARIFIER	Number of different Types: <input style="width: 80px;" type="text"/>
<input type="checkbox"/> COMPRESSOR	Number of different Types: <input style="width: 80px;" type="text"/>
<input checked="" type="checkbox"/> DECANTER	Number of different Types: <input style="width: 80px;" type="text" value="1"/>
<input type="checkbox"/> DISSOLVED AIR SUPPLIER	Number of different Types: <input style="width: 80px;" type="text"/>
<input type="checkbox"/> HANDLING SYSTEM	Number of different Types: <input style="width: 80px;" type="text"/>
<input checked="" type="checkbox"/> MIXER	Number of different Types: <input style="width: 80px;" type="text" value="1"/>

Once the user has finished, press the "Next" button to start including the equipment information.

EMSA tool is prepared if a company has some repeated equipment working at different states, or if it has different kinds of the same equipment. For instance: a company can have different type of pumps in each of the processes, or the same pump working at different pressures throughout the whole company.

6.8 Overview Table



After introducing the data relative to both processes and equipment, there is presented a table that serves as overview of all the information that has been introduced.

It displays the relationships between the main processes, processes and the equipment.

Overview of selected Processes and Equipment

Main Process	Process Type	Equipment
EMSALiteTest	Ballast water and cleaning water - Pumping	PUMPS
		PUMPS
	Cooling - Heating1	PUMPS
		PUMPS
	Cooling - Heating2	PUMPS
		PUMPS
	Fire-fighting systems - HeatExchange2	PUMPS
		PUMPS
	Fire-fighting systems - HeatExchange2	PUMPS
		PUMPS
	Heat Exchange - Boiling2	HEAT EXCHANGER
		HEAT EXCHANGER
	Heat Exchange - Boiling2	PUMPS
		BOILER
		FILTER
	Heating - Cooling2	FILTER
	HEATERS	
	HEATERS	
	ION EXCHANGE	
Heating - Cooling2	PUMPS	
Pumping - Firefighting2	PIPING	
	PUMPS	
Steam generation Boiling - Ballast2	PUMPS	
Steam generation Boiling - Ballast2	PUMPS	

← Back
Results →

Finally, the user should click the “Results” button, in order to see all the results of the assessment. The “Results” tab of the EMSA Lite is explained in the point 8 of this user guide.

7 EMSA PROFESSIONAL ASSESSMENT

The complete EMSA assessment can be performed after an Energy Angel has been assigned to a company and he has granted access to the Company's EMSA page.

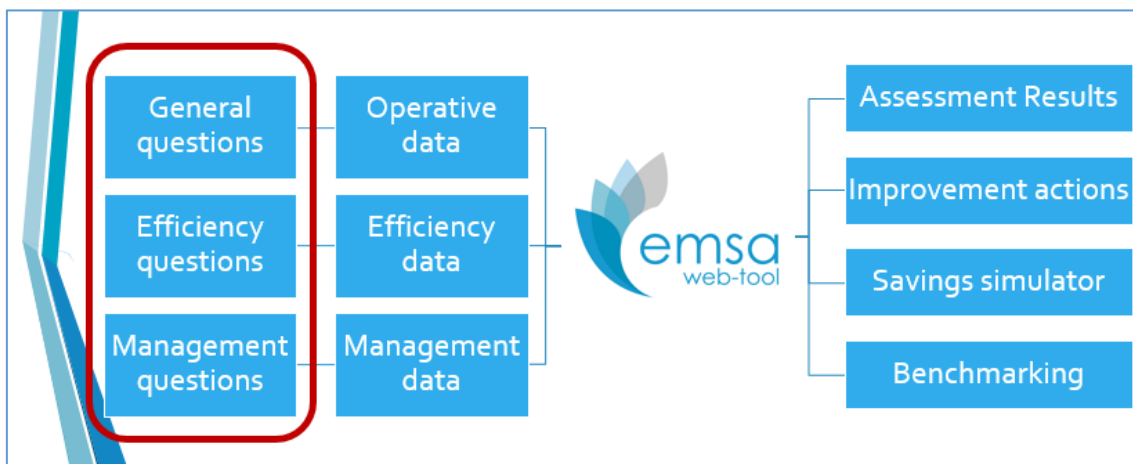
Once they are in contact, and the Energy Angel has the necessary permissions from the company to perform the assessment, the Energy Angel can explain the process to the company and demand the necessary information to start filling in the data in the tool.

The company users can also fill in some of the information on their own to speed up the assessment process, in order to be more independent from the Energy Angel, but taking into account that this process should be supervised and the information will be revised afterwards by the Energy Angel.

The EMSA assessment consists in three differentiated sets of questions:

- General Questions
- Efficiency Questions
- Management Questions

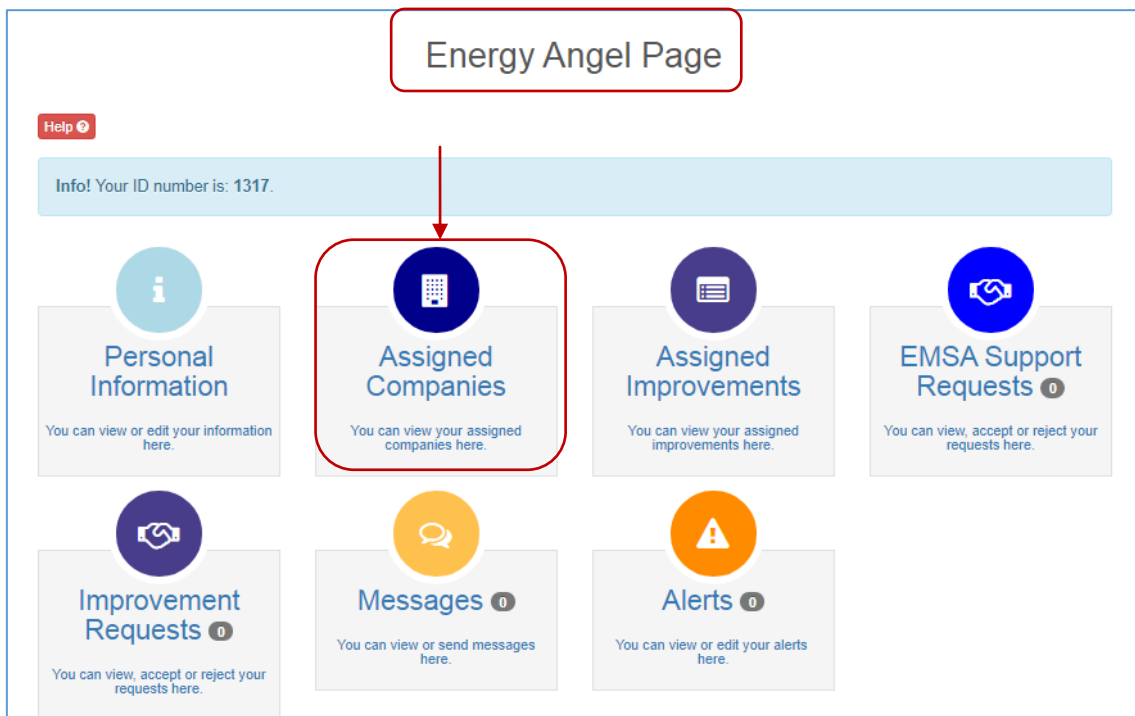
That evaluates the Company from different points of view, which lead to different results regarding energy efficiency, improvement actions and benchmarking options.



7.1 Enter the Company's Page as Energy Angel

In order to perform an assessment for the companies, the **Energy Angel** needs to have granted access to the part of the Company's account where all the information is introduced.

To enter in the Energy Angel's assigned companies go to the *"Assigned Companies"* tab in the Energy Angels Account.



An Energy Angel is able to perform several assessments at the same time. To enter to a certain company, the Energy Angel can choose different options.

An Energy Angel can enter in the Company's page by following these steps:

7.1.1 Enter via “Assigned Companies” Tab

Enter in the “Assigned Companies” tab

Energy Angel Page

Help ?

Info! Your ID number is: 1317.

Personal Information

You can view or edit your information here.

Assigned Companies

You can view your assigned companies here.

Assigned Improvements

You can view your assigned improvements here.

EMSA Support Requests 0

You can view, accept or reject your requests here.

Improvement Requests 0

You can view, accept or reject your requests here.

Messages 0

You can view or send messages here.

Alerts 0

You can view or edit your alerts here.

Select from the list of companies one to assess, and click “Go to Company’s Page”

Assigned Companies

← Back

Please select an account	Company Name	Sector	Country	City	Connection Info		
					Username	Password	Date assigned
<input type="radio"/>	██████████	Other	Spain		██████████480qOEI	██████████	2018-02-07 13:43:46
<input type="radio"/>	██████████	Other	Spain	Burgos	██████████7254j9p	██████████	2018-02-13 11:36:59
<input type="radio"/>	██████████ ██████████	Other	Spain	Burgos	██████████734iCOz	██████████	2018-02-13 11:40:23
<input type="radio"/>	██████████	Beverages Industry	Spain	Burgos	██████████4487GHc	██████████	2018-02-13 12:13:29

→
Go to Company's Page
Login back to my account



*EnergyWater project has received funding from the European Union's Horizon 2020

This will enable the Energy Angel to quick-access to the Company's account. The Energy Angel will not have default permissions unless the company has assigned them for him. It is important to note that if the company does not grant any permission to the Energy Angel, he is not going to be able to access to any data.

With the no permissions, the Energy Angel will see the following screen when he access to the company's account:



To perform the assessment, both company and Energy Angel will work in the "Scenarios" tab to enter information and the "Results" tab to supervise the result of the assessment.

7.1.2 Enter via the Company's Username

Enter in the "Companies" tab

Energy Angel Page

Help ?

Info! Your ID number is: 1317.

Personal Information

You can view or edit your information here.

Assigned Companies

You can view your assigned companies here.

Assigned Improvements

You can view your assigned improvements here.

EMSA Support Requests 0

You can view, accept or reject your requests here.

Improvement Requests 0

You can view, accept or reject your requests here.

Messages 0

You can view or send messages here.

Alerts 0

You can view or edit your alerts here.

In the "Companies" page for Energy Angels, EMSA will automatically create a new username and password that belongs to the assigned Company but contains the login details for the Energy Angel to grant him the access to the Company's account.

Assigned Companies

← Back

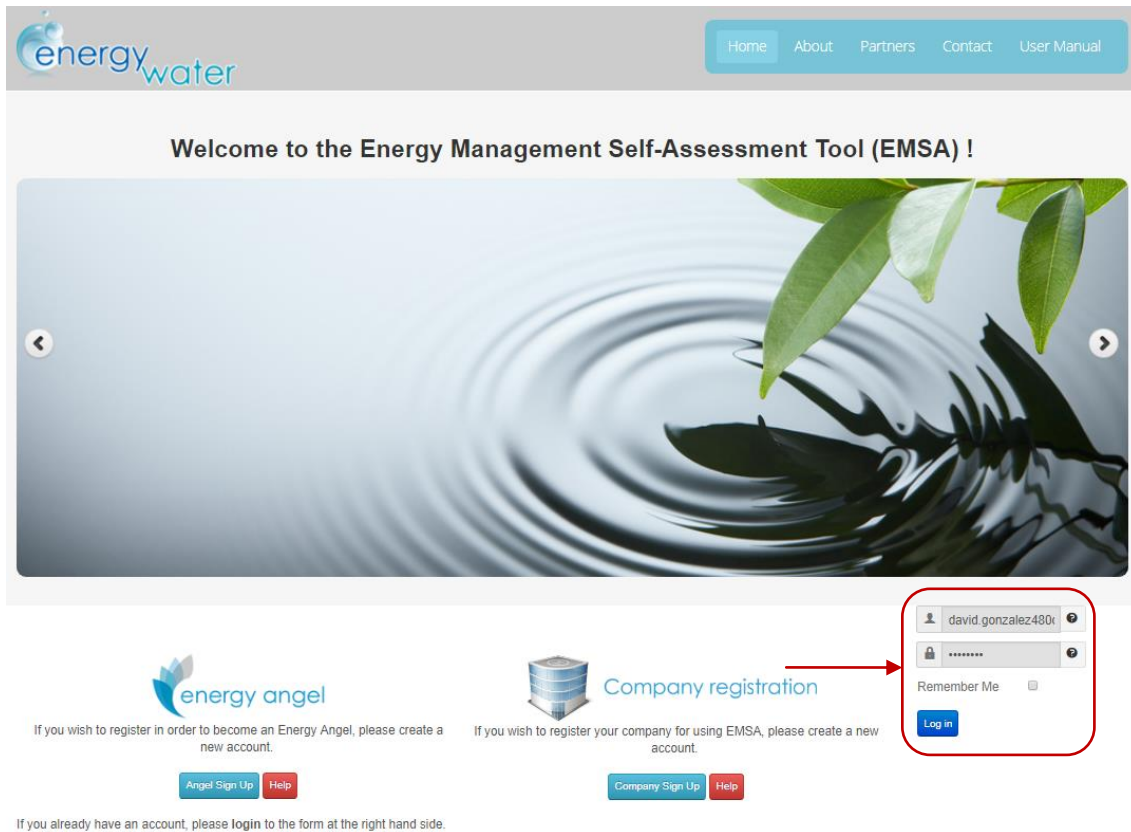
Please select an account	Company Name	Sector	Country	City	Connection Info		
					Username	Password	Date assigned
<input type="radio"/>	██████████	Other	Spain		██████████480qOEI	██████████	2018-02-07 13:43:46
<input type="radio"/>	██████████	Other	Spain	Burgos	██████████7254j9p	██████████	2018-02-13 11:36:59
<input type="radio"/>	██████████ ██████████	Other	Spain	Burgos	██████████734iC0z	██████████	2018-02-13 11:40:23
<input type="radio"/>	██████████	Beverages Industry	Spain	Burgos	██████████4487GHc	██████████	2018-02-13 12:13:29

← Back
Go to Company's Page
Login back to my account

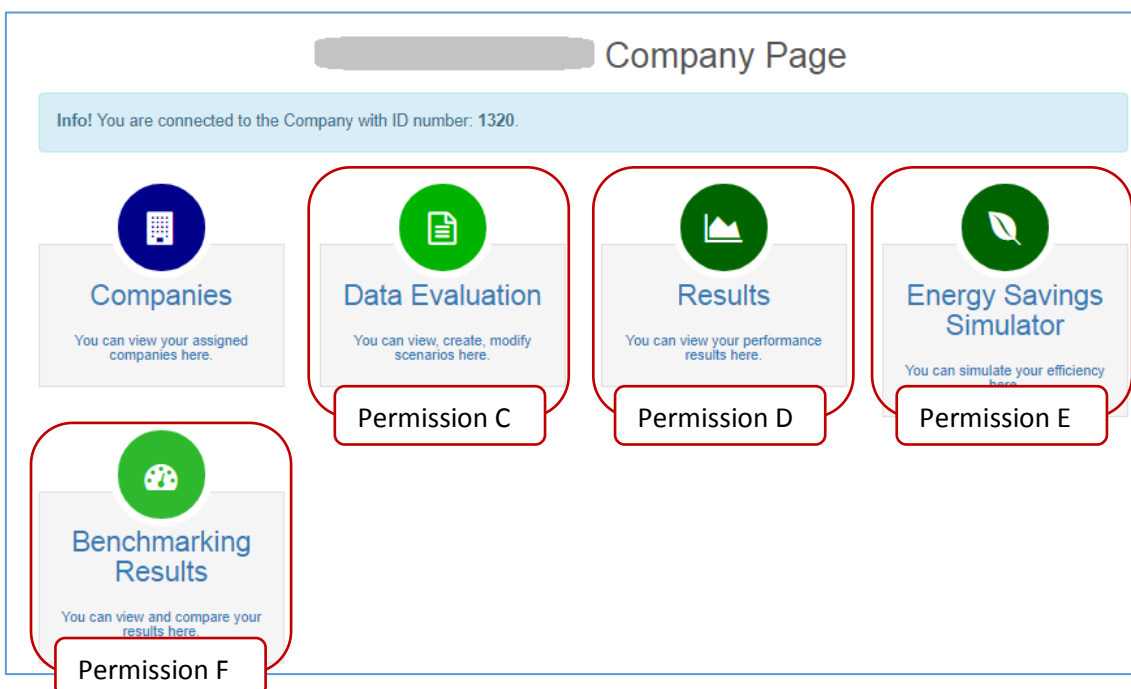


*EnergyWater project has received funding from the European Union's Horizon 2020

If the “Go to Company’s page” link does not work or if the Energy Angel wants to enter to the Company’s page from the EMSA main page, he should introduce this new username and password in the EMSA login textbox.



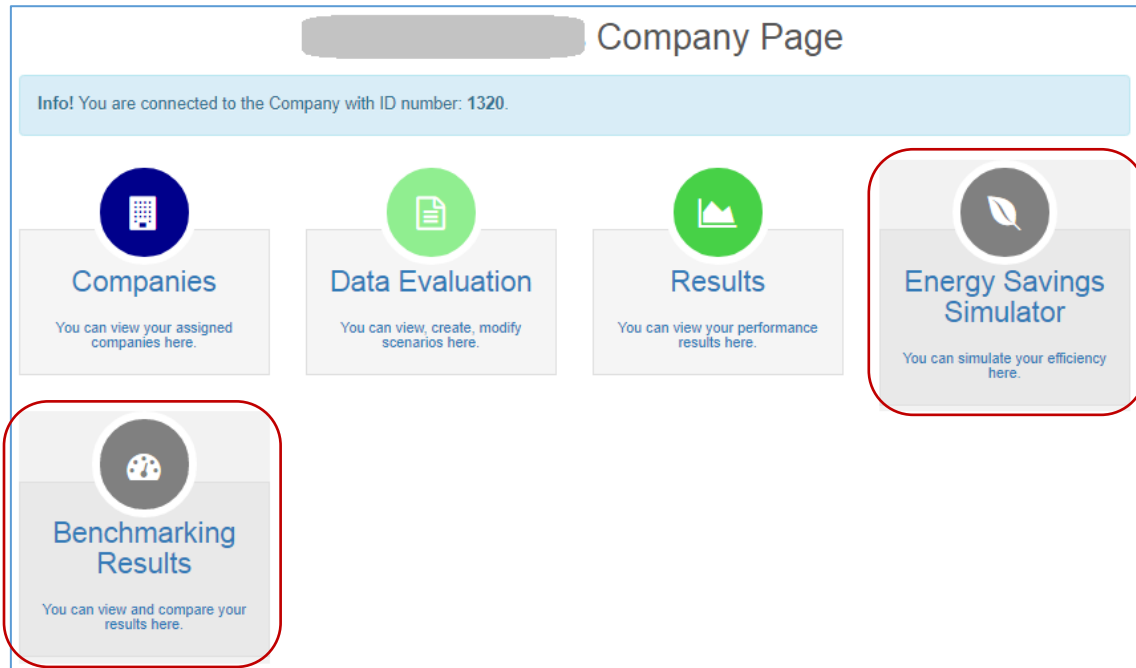
This will enable the Energy Angel to enter in the Company’s page. The Energy Angel will have the permissions the company has selected for them. With all the permissions, the Energy Angel will see the following page:



H2020-EE-2015-3 Market Uptake · Project nº: 696112 · Coordinator: ITCL

The A and B permissions only can be granted to Company's Users, not to Energy Angels.

If the company has not enabled the "EMSA Professional" option, the "Energy Savings Simulator" and the "Benchmarking Results" tabs will appear gray.



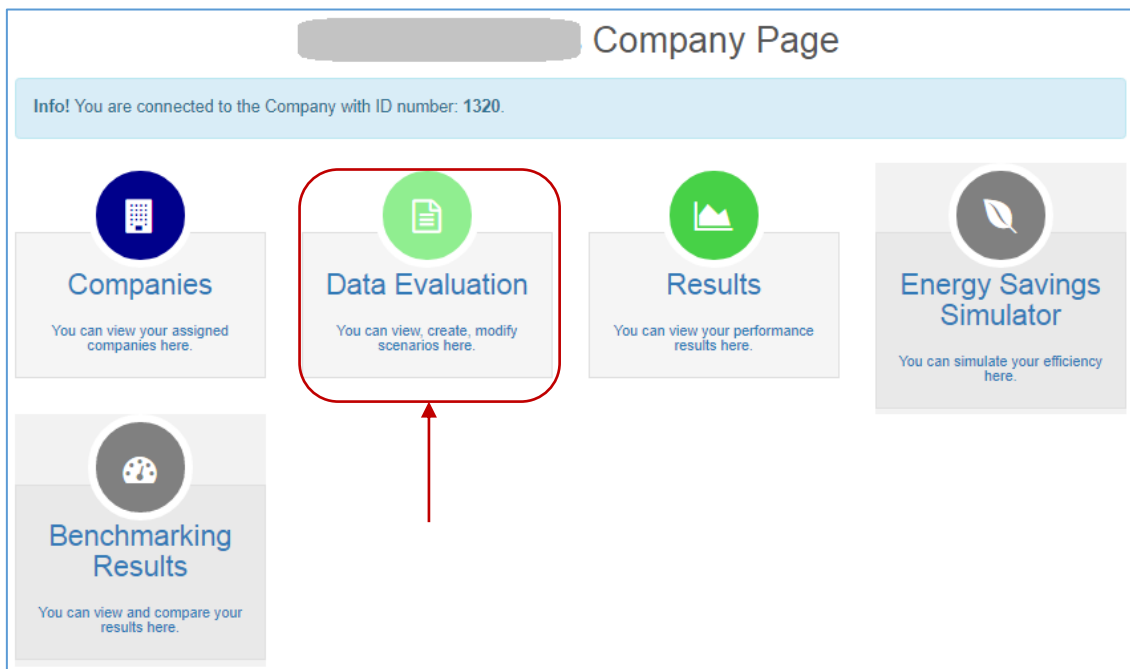
Company Page

Info! You are connected to the Company with ID number: 1320.

- Companies**
You can view your assigned companies here.
- Data Evaluation**
You can view, create, modify scenarios here.
- Results**
You can view your performance results here.
- Energy Savings Simulator**
You can simulate your efficiency here.
- Benchmarking Results**
You can view and compare your results here.

7.2 Creation of a Scenario

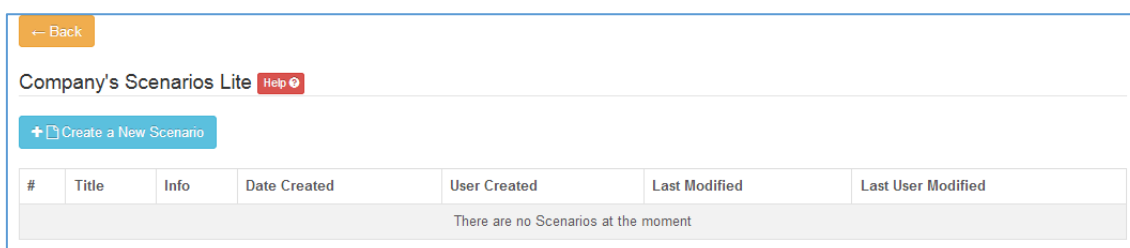
Once the Energy Angel has entered in the company's page, the Energy Angel has to enter in the "Data Evaluation" tab to start the assessment.



This tab is accessible to:

- The Assigned Energy Angel of the company
- The Company's Administrator
- A company's user with the specific permission to create a new scenario

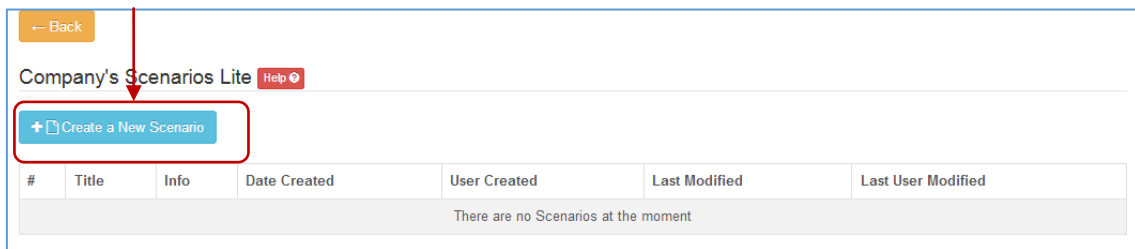
Once we enter to the "Data Evaluation" tab for the first time, the following screen appears:



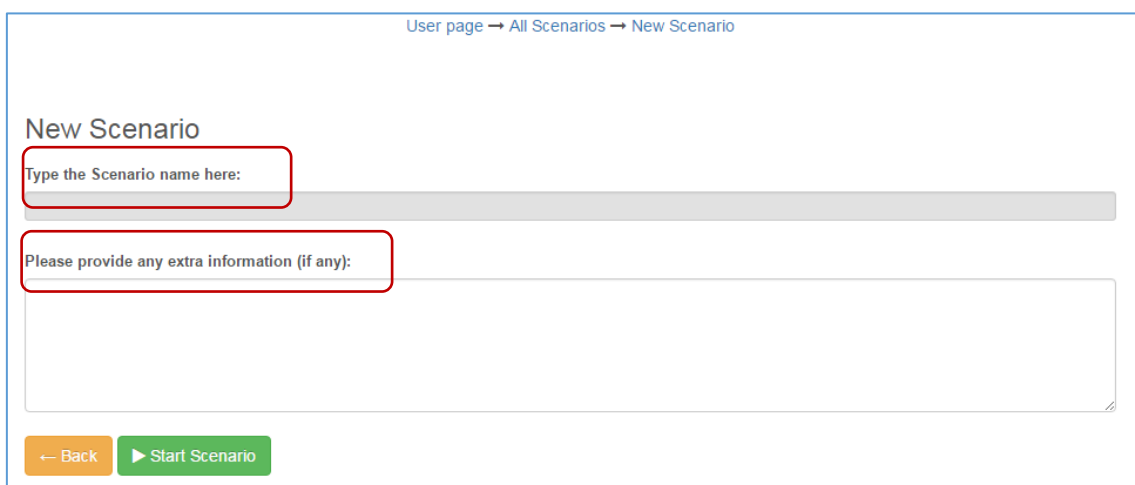
Firstly, in order to start the EMSA Assessment, a "New Scenario" needs to be created. This scenario will contain all the company's information from a certain period of time.

The EMSA methodology considers a period of **one year** as a period which is representative enough to show a Company's Energy Efficiency status.

To introduce the first scenario press the “*Create a New Scenario*” button.

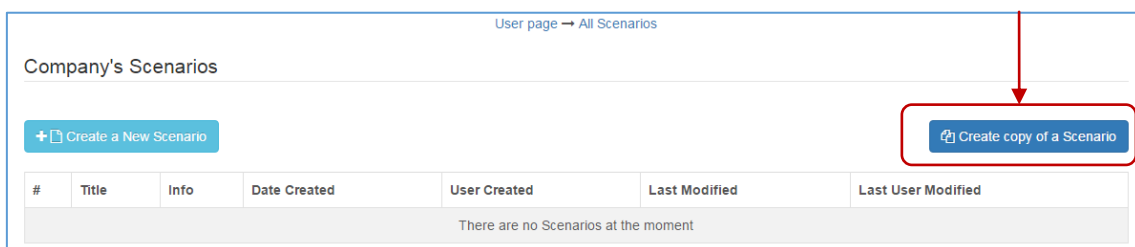


Then we should introduce a name for this new scenario and a brief description if necessary. Finally, to submit this new scenario press “*Start Scenario*”



If there is an existing Scenario and the company wants to start another one, they have the option to create a new scenario from a copy on the basis of a previous one.

The main advantage of this option is that all the information about process, equipment and consumption will be already implemented and the only thing that the user needs to do is update those data that has changed from one scenario to another.



In this case, the information in the New Scenario will be the same as in the old one, so the users will only need to modify the specific information that has changed.

This option has been designed in order to ease the introduction of information. As the EMSA demands a large amount of information, this option will ease the process.

In order to copy a new scenario, firstly, the company needs to select which of the scenarios wants to copy. After selecting the chosen one, they will need to give a name and provide a description for this new scenario in the box below.

In order to save the new copied scenario click in the “Submit” button.

User page → All Scenarios

Create Copy of a Scenario

Please select the scenario which you would like to create a copy

#	Title	Info	Date Created	User Created
<input type="radio"/>	New Scenario	This is a new scenario for the EMSA Assessment	2017-06-06	EMSAcompanytest01 {EMSAcompanytest01}

Type the Scenario name here:

Please provide any extra information (if any):

← Back Submit

When a new scenario has been created, the company can edit its information or delete the whole scenario.

In order to **delete** a Scenario permanently, select the scenario and press the “Delete” Button.

In order to **modify** the internal information of a Scenario, select the scenario and press the “View/Modify” Button.

User page → All Scenarios

Company's Scenarios

+ Create a New Scenario Create copy of a Scenario

#	Title	Info	Date Created	User Created	Last Modified	Last User Modified
<input type="radio"/>	New Scenario	This is a new scenario for the EMSA Assessment	2017-06-06	EMSAcompanytest01 {EMSAcompanytest01}	2017-06-06	EMSAcompanytest01 {EMSAcompanytest01}

← Back View/Modify Delete

To perform a new assessment, the company has to complete three main general sets of Questions that will evaluate the company as a whole:

- **General questions**
- **Efficiency Questions**
- **Management Questions**

The management questions and a part of the efficiency questions are only available in the EMSA Professional.

The company has to select (one by one) the three sets of questions, and answer them with the most accurate information as possible for obtaining the most representative results for the assessment.

Scenario: [Test scenario](#) - Sections

#	Title	Info	Last Modified	Last User Modified	Results
<input type="radio"/>	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-20	Antonio	View
<input type="radio"/>	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-20	Antonio	View
<input type="radio"/>	Management Questions	Data regarding management information of the company	2018-07-20	Antonio	

[← Back](#)
[Edit Data](#)
[Submit Scenario](#)

To modify the information of a section in particular, select the section and then press the “Edit Data” Button.

7.3 General Questions

In this section, Companies need to introduce their data relative to their yearly production, water consumption, electricity consumption, gas consumption and their associated costs, in addition, companies.

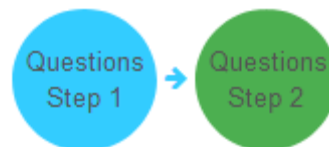
To introduce the general questions, select the “General Questions” section and press the “Edit data” Button.

Scenario: **Test scenario - Sections**

#	Title	Info	Last Modified	Last User Modified	Results
1	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-20	Antonio	View
2	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-20	Antonio	View
3	Management Questions	Data regarding management information of the company	2018-07-20	Antonio	

[← Back](#)
[Edit Data](#)
[Submit Scenario](#)

This set of questions follow the next process:



7.3.1 Questions Step 1

Firstly, the company has to enter the year of the scenario’s data that are going to be introduced, as well as the currency that it is going to be used. There currency can be introduced in Euros (EUR - €), Pounds (GBP - £) or United States Dollars (USD - \$).

Note: Please introduce the cost values excluding the “VAT” taxes.

Select Year and Currency of the specific scenario:

Year:

Currency:
 EUR
 GBP
 USD

For the production part, companies need to select the units of the production of the company, in weight, volume or production units.

Besides, the production can be filled in per year or per month. When introducing the information per month, the yearly production will be automatically calculated by adding all the productions of the twelve months of the year.

Production Fill in the Year values

Production

Fill in per Month values

Month	Production
January	0
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Basic

- 1 unit
- 1K units
- 10K units

Weight

- kg
- Oz
- Tonnes
- Lb

Volume

- m³
- gal
- l

Units

For the water consumption part, companies need to select the consumption units of the company, in volume units (m³, litres or gallons).

Besides, the water consumption can be filled in per year or per month. When introducing the information per month, the yearly water consumption will be automatically calculated by adding all the different consumptions of the year.

The same happens with the cost of the water consumption, which can be introduced yearly or monthly, in the currency previously selected.

Water consumption Fill in the Year values

Consumption

Cost

Fill in per Month values

Month	Consumption	Cost
January	<input type="text"/>	<input type="text"/>
February	<input type="text"/>	<input type="text"/>
March	<input type="text"/>	<input type="text"/>
April	<input type="text"/>	<input type="text"/>
May	<input type="text"/>	<input type="text"/>
June	<input type="text"/>	<input type="text"/>
July	<input type="text"/>	<input type="text"/>
August	<input type="text"/>	<input type="text"/>
September	<input type="text"/>	<input type="text"/>
October	<input type="text"/>	<input type="text"/>
November	<input type="text"/>	<input type="text"/>
December	<input type="text"/>	<input type="text"/>

Units

- m³
- gal
- l

For the electricity consumption part, companies need to select the consumption units of the company in energy units (kWh and its variants).

Besides, the electricity consumption can be filled in per year or per month. When introducing the information per month, the yearly electricity consumption will be automatically calculated by adding all the different consumptions of the year.

The same happens with the cost of the electricity consumption, which can be introduced yearly or monthly, in the currency previously selected.

Electricity consumption Fill in the Year values

Consumption Cost

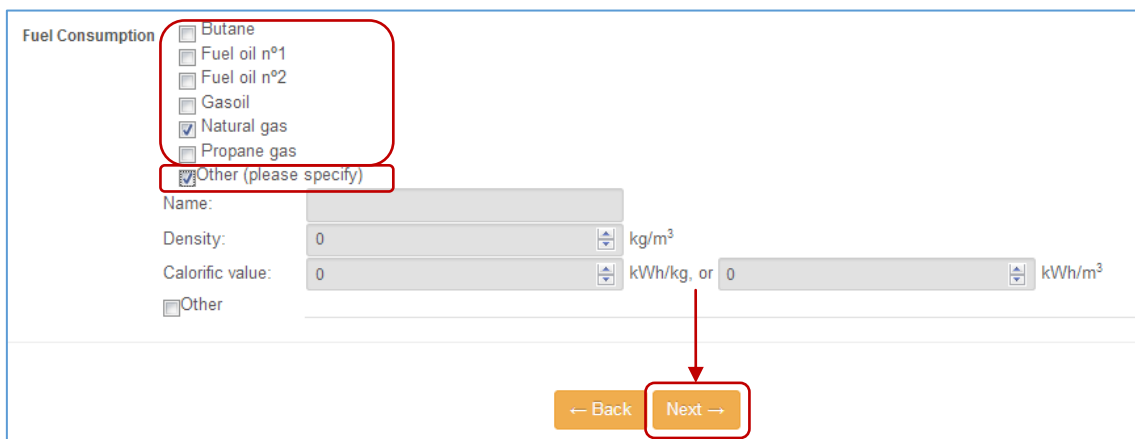
Fill in per Month values

Month	Consumption	Cost
January	<input type="text"/>	<input type="text"/>
February	<input type="text"/>	<input type="text"/>
March	<input type="text"/>	<input type="text"/>
April	<input type="text"/>	<input type="text"/>
May	<input type="text"/>	<input type="text"/>
June	<input type="text"/>	<input type="text"/>
July	<input type="text"/>	<input type="text"/>
August	<input type="text"/>	<input type="text"/>
September	<input type="text"/>	<input type="text"/>
October	<input type="text"/>	<input type="text"/>
November	<input type="text"/>	<input type="text"/>
December	<input type="text"/>	<input type="text"/>

Units

- kWh
- MWh
- kcal
- kJ
- ft-lb
- BTU

For the fuel consumption, firstly there has to be selected the main type of fuel used in the company (they can be one or more).

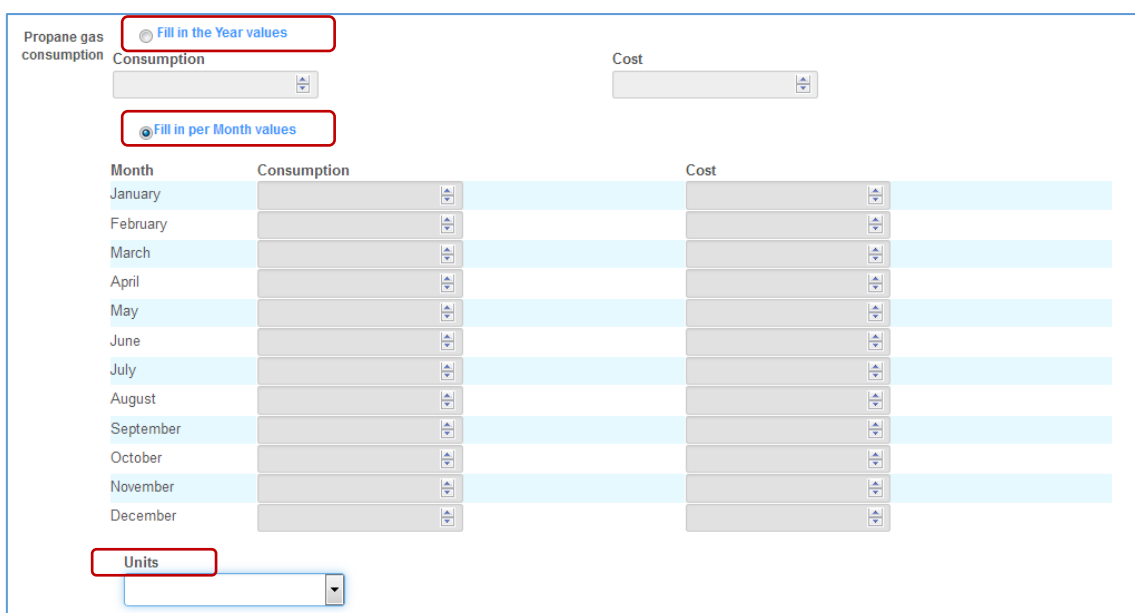


In the event that the fuel used does not appear in the list, the user will have to select the “Other” option, where it exists the possibility of introducing all the necessary data to perform the fuel consumption calculations.

If the “Other” fuel option has been selected, the user is required to introduce the name of the fuel as well as two of the three options that include the density (kg/m^3), mass heating power (kWh/kg) and volume heating power (kWh/m^3), depending on the magnitude which the “Other” fuel consumption is measured (mass or volume).

7.3.2 Questions Step 2

Finally, press the “Next” button and the following window will appear:



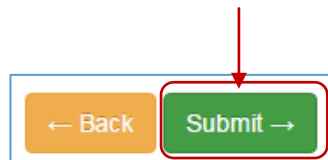
Month	Consumption	Cost
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

For the fuel consumption part, companies can select the consumption units in energy, volume or weight units and its variants.

Besides, the fuel consumption can be filled in per year or per month. When introducing the information per month, the yearly fuel consumption will be automatically calculated by adding all the different consumptions of the year.

The same happens with the cost of the fuel consumption, which can be introduced yearly or monthly, in the currency previously selected.

When all of the information has been implemented, press the “Submit” button.



7.4 Efficiency Questions

To answer the efficiency questions, select the “Efficiency Questions” section and press the “Edit Data” Button.

Scenario: **Test scenario** - Sections

#	Title	Info	Last Modified	Last User Modified	Results
<input type="radio"/>	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-20	Onecompany	View
<input checked="" type="radio"/>	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-20	Onecompany	View
<input type="radio"/>	Management Questions	Data regarding management information of the company	2018-07-20	Antonio	

[← Back](#)
[Edit Data](#)
[Submit Scenario](#)

Here, the companies need to introduce their data relative to their different processes and equipment of the company which are related to water use and energy consumption.

To evaluate energy efficiency, the tool needs numerical data of features and consumptions, these data are required for every process and equipment that the company wants to include in the evaluation process. As an example, features required are:

- For each process
 - Production
 - Energy consumption
 - Water consumption
 - Working hours
 - Etc.
- For each equipment
 - Energy consumption
 - Water consumption
 - Working hours
 - Working conditions: pressure, temperature...

The tool will calculate the difference in percentage between the actual values (introduced during the evaluation process) with respect to the recommended values (reference data from best practices), showing the improvement potential in each process and equipment related to water and energy.

7.4.1 How to enter data in the “efficiency questions” section

First of all, to answer the efficiency question we need to define all the processes inside the Company that are related to water use and energy consumption.

It is really important to define all the processes that use water inside the company, even if the company does not have enough information to assess them or the company does not want to answer their efficiency questions

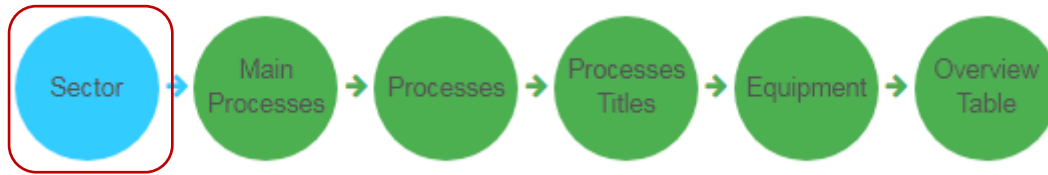
Then, with the list of processes, we need to define the equipment related to each process. With that information, the EMSA builds the “overview table”, where the staff involved in the assessment process will be able to select, one by one, processes and equipment and answer their related efficiency questions.

The following steps represent how to build the “Overview table” and how to answer efficiency questions:



7.4.1.1 Verification of the sector

Before start introducing numerical data in the tool, the user needs to validate the company's sector.



This step is crucial, as every sector has some specific equipment. The tool considers the information that has been introduced and then proposes the different processes of the equipment.

Please Select the Company Sector

Food Industry

- Beverages Industry
- Dairy Industries
- Sugar Mills and Refineries
- Meat Industries
- Fruit and Vegetable (Canneries, Processors & Packaging)
- Fish Processing

Metallurgical Industry

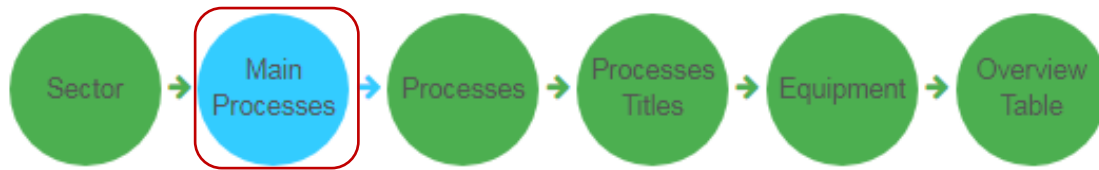
- Steel Mills
- Cooper Metalworking
- Foundries
- Hydrometallurgy

Other Industries

- Chemical Industry
- Paper Industry and Packaging Industry
- Pharmaceutical and Biotechnical Industries
- Textile Industry
- Oil Industry
- Automotive Industry
- Electronic Industry
- Natural Stone Manufacturing
- Leather Industry
- Industrial Laundries
- Metal Recovery Plants

Next →

7.4.1.2 Set Main processes



This is the first step of the efficiency questions. Here, companies should enter what are their main production lines or sections in which their facilities can be divided. Each section could aggregate a main use for energy and water, a production line, a building, etc. They are called **“Main processes”**. The idea is to identify the company’s main energy consumption groups.

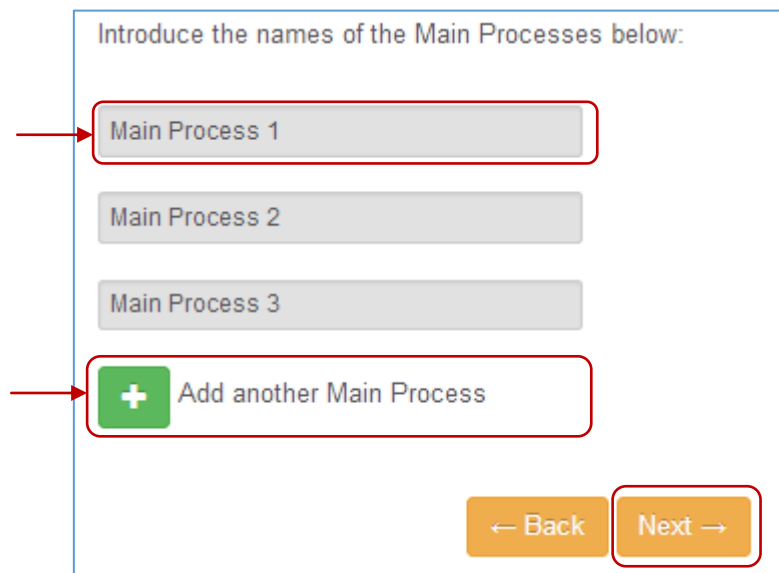
These “main processes” are sections that belong to the company and represent big energy consumption units, regarding at their process of energy consumption from the primary energy to final energy.

This information will act as a label that will help to group processes, but it will not affect to the calculations. It has been created so that companies can have a better understanding about in which process and equipment are they introducing data.

In this section, companies should only register the name of the main process by typing it on the screen.

The main idea is to group the processes of the company, to do this the User should introduce names or labels of the main processes of the system. Then, press the “Add another Main Process” to keep completing the list.

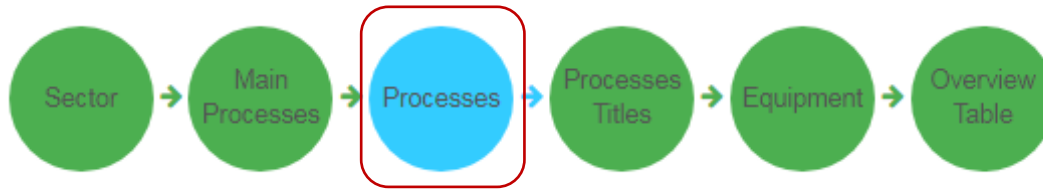
They can introduce the name of as many main processes as present in the company.



Once the user has introduced the principal main processes of the company, press “Next”.

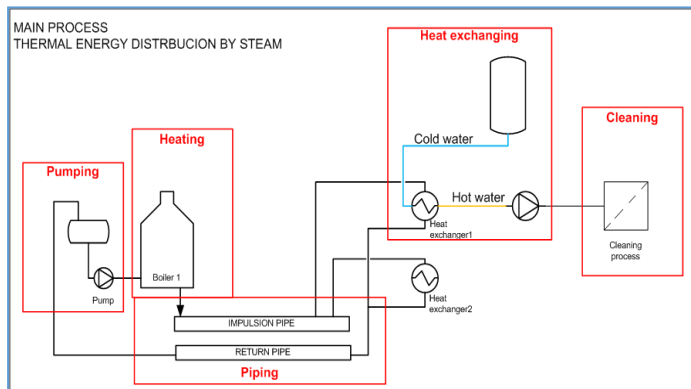
7.4.1.3 Set Processes

After selecting the Main Processes of the company, inside of each of them the user should also select the specific processes of the company.



In this section, for every “main process”, companies should register their real processes related to water use and energy consumption.

Before describing the procedure of how to introduce data in the tool, it is included an explanatory figure to explain what the EMSA considers as a process.



- Main process: “Thermal Energy Distribution by steam”
- Related processes:
 - o Pumping
 - o Piping
 - o Heating
 - o Heat exchanging
 - o Cleaning

A process is a system (formed by one or more equipment) that uses or consumed energy that can be considered as a single unit, taking into account their piping system until the next point of energy use or consumption. For instance, in a boiler room, we can find the following processes:

- Heating process (boiler, pipes, filter, etc.): converts fuel into thermal energy to produce steam
- Pumping process (pump, pipe, storage, etc.): pump water into the boilers
- Heat exchange units (heat exchanger): converts thermal energy from steam into thermal energy into the working fluid of a process.

The User should select the type process and its quantity.

For each main process, there could be selected different processes.

The upper tabs correspond with the different “Main processes”, selected in the previous step. When finished press the “Next” button.

Main Process 1 Main Process 2 Main Process 3

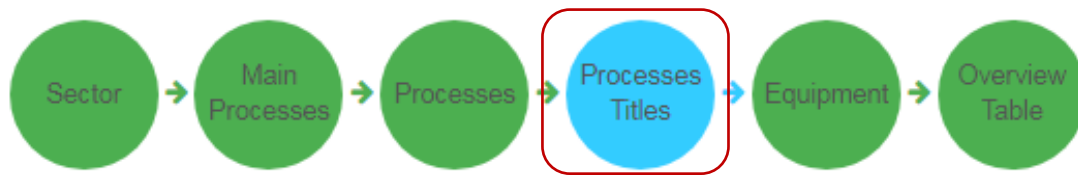
Please Select the Processes of Other Sector

Note: for each “Main processes”, you should select the real processes related to water and energy use.
E.g: in a boiler room, we can find the following processes: pumping, piping, heating, heat exchange...

Main Process 1

<input checked="" type="checkbox"/> Aerobic Biological Treatment	Number of different Types: <input type="text"/>
<input type="checkbox"/> Anaerobic Biological Treatment	Number of different Types: <input type="text"/>
<input type="checkbox"/> Ballast water and cleaning water	Number of different Types: <input type="text"/>

7.4.1.4 Name the Processes



After selecting all the different processes, the tool gives the user the option to name them or to leave them with the default name.

This feature has been created to ease the companies the recognition and introduction of data in the tool.

Main Process 1
Main Process 2
Main Process 3

Please provide Titles for the Processes you have submit at previous step

Note: Give a description name to the processes that you have defined in the previous step. These names will help you to better identify your processes during the EMSA evaluation.

Main Process 1

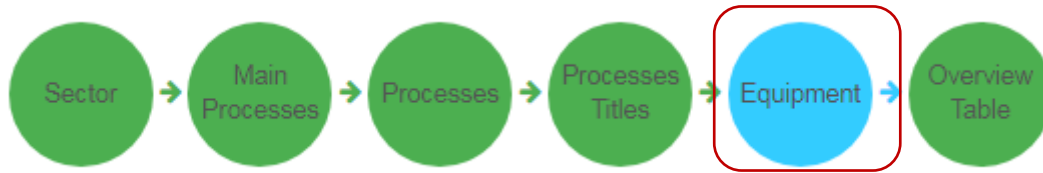
Decantation Title:

Pumping Title:

← Back
Next →

Once the user has finished, press the “Next” button to start including the equipment information.

7.4.1.5 Set Equipment



In general, the introduction of the equipment and completing all its information should only be completed if the company has an assigned Energy Angel.

Due to the complexity of that, it is recommended that users of the company will only introduce this information when the company has contacted an Energy Angel authorised to perform “Service 1: EMSA support”, and this person will guide the user about how to introduce data in the tool.

This selection of the equipment will be the same as in the process part. Depending on the processes selected previously, the EMSA tool will propose different equipment to them.

For each of the processes, it has to be selected the specific equipment and their quantity. In this section, for every “process”, the user should register the related equipment according to the existing procedure that is implemented in the tool.

Main Process 1
Main Process 2
Main Process 3

Please fill the values of the selected Equipment

Note: For each process, you have to select the specific equipment that you want to evaluate and their quantity.
E.g: For the “pumping” process, we can find the following equipment: pumps, piping... For the “heating” process, we can find the following equipment: heater, boiler, pumps (feeding pump), piping...

Main Process 1

Decantation - Decantation A1

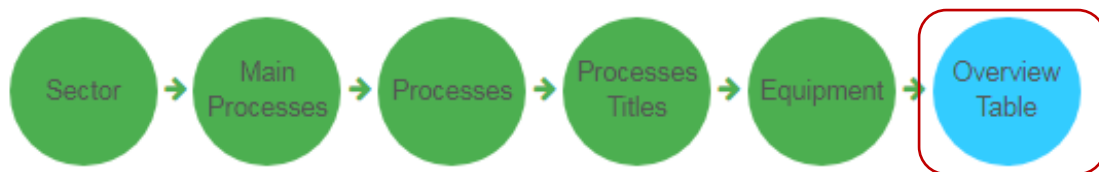
<input checked="" type="checkbox"/> BLOWER	Number of different Types: <input style="width: 80%;" type="text" value="1"/>
<input type="checkbox"/> CLARIFIER	Number of different Types: <input style="width: 80%;" type="text"/>
<input type="checkbox"/> COMPRESSOR	Number of different Types: <input style="width: 80%;" type="text"/>
<input checked="" type="checkbox"/> DECANTER	Number of different Types: <input style="width: 80%;" type="text" value="1"/>
<input type="checkbox"/> DISSOLVED AIR SUPPLIER	Number of different Types: <input style="width: 80%;" type="text"/>
<input type="checkbox"/> HANDLING SYSTEM	Number of different Types: <input style="width: 80%;" type="text"/>
<input checked="" type="checkbox"/> MIXER	Number of different Types: <input style="width: 80%;" type="text" value="1"/>

Once the user has finished, press the “Next” button to start including the equipment information.

EMSA tool is prepared if a company has some repeated equipment working at different states, or if it has different kinds of the same equipment. For instance: a company can have different type of pumps in each of the processes, or the same pump working at different pressures throughout the whole company.

Besides, EMSA is able to incorporate the same equipment several times, as later on each equipment will be characterized in the tool.

7.4.2 Overview Table



After introducing the data relative to both processes and equipment, there is presented a table that serves as overview of all the information that has been introduced.

It displays the relationships between the main processes, processes and the equipment .By clicking in each of the titles, EMSA redirects the user to the questions of the assessment relative to each part.

For instance, to answer the “efficiency questions” of the Decantation process, just click in the name of the process and it will redirect you to the “Process questions”.

The same happens with the equipment questions, to answer them, the user just need to click on its name and the “Equipment questions” tab appears.

Overview of selected Processes and Equipment		
Main Process	Process Type	Equipment
Main Process 1	Decantation - Decantation A1	BLOWER
		DECANTER
	Pumping - Pumpnig A1	MIXER
		PUMPS
Main Process 2	Aerobic Biological Treatment - Aerobic B1	PUMPS
		BLOWER
Main Process 3	Aerobic Biological Treatment - Aerobic C1	PIPING
		BLOWER
		PIPING

← Back
Submit →

7.4.2.1 Edit “Overview table”

There is the option to “Edit” the Overview table if the Company wants to add/delete items from it. To do this, the User should click in the “Edit table” button.

Overview of selected Processes and Equipment

Main Process	Process Type	Equipment
Main Process 1	Decantation - Decantation A1	BLOWER
		DECANTER
	Pumping - Pumpnig A1	MIXER
		PUMPS
Main Process 2	Aerobic Biological Treatment - Aerobic B1	PUMPS
		BLOWER
Main Process 3	Aerobic Biological Treatment - Aerobic C1	PIPING
		BLOWER
		PIPING

By clicking on this button, the setting processes/equipment step-by-step method appears, and the user should go again through it to modify the information required.

To do this, the User can quick navigate through the different step with the “Back” and “Next” button on the top of the screen, but these buttons will not save any change in the Overview table.

To save the changes made, the user should click in the “Submit” button on the bottom on the screen

Overview of selected Processes and Equipment

Main Process	Process Type	Equipment
Main Process 1	Decantation - Decantation A1	BLOWER
		DECANTER
	Pumping - Pumpnig A1	MIXER
		PUMPS
Main Process 2	Aerobic Biological Treatment - Aerobic B1	PUMPS
		BLOWER
Main Process 3	Aerobic Biological Treatment - Aerobic C1	PIPING
		BLOWER
		PIPING

7.4.2.2 Process Questions

After all the processes that the company wants to assess are selected and distributed amongst the main processes in the Overview table, the next step is to complete a questionnaire with numerical and Y/N questions relative to each of the processes selected.

To access this questionnaire the user has to click in the names of the processes presented in the overview table.

There will be asked different questions in order to define completely each of the processes as well as to obtain more customized results.

To answer all the questions, select the correct option or type the answer in the blank boxes and select the units. If the company does not know the data that are being asked, leave the question unanswered.

To save a result, click the “Save” button and the data that has been introduced will be automatically saved. To continue answering more processes, click in the “Submit” button to continua the assessment.



This is an example of the Y/N questions that are required for the pumping process assessment:

Questions	Answer
Is demand fluctuation correctly controlled and optimised by a VSD and an equipment in sequence?	<input type="radio"/> Yes <input type="radio"/> No
Is the pumping system designed to achieve minimum pressure losses?	<input type="radio"/> Yes <input type="radio"/> No
Does your process have any pressure excess where energy can be recovered	<input type="radio"/> Yes <input type="radio"/> No
Has your process incorporated any monitoring systems?	<input type="radio"/> Yes <input type="radio"/> No
Is your processes correctly insulated?	<input type="radio"/> Yes <input type="radio"/> No
Is the equipment cleaned regularly?	<input type="radio"/> Yes <input type="radio"/> No
Have you ensured a correct dimensioning of the installations?	<input type="radio"/> Yes <input type="radio"/> No
Do you regularly maintain the equipment and detect any possible leaks?	<input type="radio"/> Yes <input type="radio"/> No
Do you know the energy consumption of the process?	<input type="radio"/> Yes <input type="radio"/> No

This is an example of the numerical questions that are required for the pumping process assessment:

Do you know the actual water flow?	<input type="radio"/> Yes <input checked="" type="radio"/> No
Real pump flow (average)	<input type="text" value="1200"/> <input type="text" value="m3/min"/>
Which is the production relative to the process?	<input type="text" value="19"/> <input type="text" value="tons"/>
Does the process have water consumption?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Do you know your water consumption?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Is the water consumption estimated, measured or does it correspond to the entire water flow?	<input type="radio"/> Measured <input type="radio"/> Estimated <input checked="" type="radio"/> It corresponds to the entire water flow

When all the questions are completed click the submit button to “Save and continue”.

7.4.2.3 Equipment Questions

After all the equipment that the company wants to assess are selected and distributed amongst the different processes in the Overview table, the next step is to complete a questionnaire with numerical and Y/N questions relative to each of the equipment selected.

To access this questionnaire the user has to click in the names of the equipment presented in the overview table. There will be asked different questions in order to define completely each of the equipment as well as to obtain more customized results.

To answer all the questions select the correct option or type the answer in the blank boxes and select the units. If the company does not know the data that are being asked, leave the question unanswered. To save a result, click the submit button, and the data that has been introduced will be automatically saved.

This is an example of the numerical questions that are required for the pump equipment assessment:

Equipment Pump Questions		
Process	Questions	Answer
P01E01F01	Number of equipment units	<input type="text"/>
P01E01F46	Type of pump	<input type="radio"/> Positive displacement <input type="radio"/> Centrifugal
P01E01F47	Use of the pumping system	<input type="radio"/> Sludge <input type="radio"/> High pressure pumping <input type="radio"/> Condensate pumping (boilers) <input type="radio"/> Heater water feeding <input type="radio"/> Water feeding (previous treatment evacuation) <input type="radio"/> Fire-tube boiler water feeding <input type="radio"/> Wastewater or water wells <input type="radio"/> Drinking water <input type="radio"/> Other
P01E01F02	Type of fluid	<input type="radio"/> Water <input type="radio"/> Wastewater <input type="radio"/> Sludge <input type="radio"/> Other
P01E01F16	Which is the motor's nominal power?	<input type="text"/> <input type="text"/>
P01E01F17	Do you know your energy consumption?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F22	Nominal flow	<input type="text"/>

This is an example of the Y/N questions that are required for the pump equipment assessment:

P01E01F39	Does your process have any holding tanks to equalize the pump flow?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F40	Has this equipment incorporated any monitoring systems?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F41	Is the impeller properly maintained?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F42	Does your pumping system have any bypass loops?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F44	Value of the demand fluctuations/variable loads	<input type="radio"/> Yes <input type="radio"/> No
P01E01F45	Type of control on demand fluctuations/variable loads	<input type="radio"/> Valve Regulation - manual operation <input type="radio"/> Valve Regulation - automatic <input type="radio"/> VSD - manual tuning <input type="radio"/> VSD - automatic <input type="radio"/> Multiple pumps/stages - manual operation <input type="radio"/> Multiple pumps/stages - automatic
P01E01F49	Does the equipment handle any corrosive fluid?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F50	Does the equipment have to handle viscous liquids?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F51	Does the equipment have ATEX restrictions?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F52	Does the equipment have high pressure pumping needs?	<input type="radio"/> Yes <input type="radio"/> No
P01E01F53	Does the equipment have to handle liquid with large solid content (Over 500 mg/l)?	<input type="radio"/> Yes <input type="radio"/> No

To save a result, click the “Save” button and the data that has been introduced will be automatically saved. TO continua answering more processes, click in the “Submit” button to continua the assessment.



7.5 EMSA Management Questions

To introduce the management questions, select the “Management Questions” section and press the “Edit Data” Button.

#	Title	Info	Last Modified	Last User Modified	Results
<input type="radio"/>	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-20	Onecompany	View
<input type="radio"/>	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-20	Onecompany	View
<input checked="" type="radio"/>	Management Questions	Data regarding management information of the company	2018-07-20	Onecompany	

← Back
Edit Data
Submit Scenario

Here, the companies need to introduce their data relative to their internal management aspects relative to the different parts of the company’s operation regarding water use and energy consumption. Then, the following window will appear:

Management Questions Sections			
	Criterion	Sub-Criterion	Score
Enablers	1. Leadership, Strategy and Planning	1.1. Sustainability policy (objectives and goals)	0
		1.2. Sustainability management	0
	2. People, Partnerships and Resources	2.1. Human Resources	0
		2.2. Knowledge management	0
		2.3. Finance management	0
		2.4. Water and Energy	0
	3. Processes	3.1. Processes management and design	0
Results	4. Customers and employees Results	4.1. Internal customers results	0
		4.2. External customers results	0
	5. Social Responsibility Results	5.1. Employees results	0
		5.2. Social perception	0
	6. Key Performance Results	6.1. Internal excellence results; sustainability	0
		6.2. External results; impact to achieve	0
	Enablers	Results	Total
Score	0	0	0

← Back

In this part, there are two different types of Criteria that will be assessed:

- **Enablers:** The enablers criteria include criteria from 1-3. They are focused on how the company approaches their responsibilities in most of the company’s activities.
- **Results:** The results criteria include from 4-6. They are focused in the expected results provided by the strategies implemented in the “Enablers” criteria.

7.5.1 Enablers Criteria

The enablers' criteria are the following:

1. Leadership, Strategy and Planning
2. People, Partnerships and Resources
3. Processes

They are divided in different Sub-Criteria, which can be easily scored by clicking in each of their titles.

	Criterion	Sub-Criterion	Score
Enablers	1. Leadership, Strategy and Planning	1.1. Sustainability policy (objectives and goals)	0
		1.2. Sustainability management	0
	2. People, Partnerships and Resources	2.1. Human Resources	0
		2.2. Knowledge management	0
		2.3. Finance management	0
		2.4. Water and Energy	0
	3. Processes	3.1. Processes management and design	0


The management section score will be calculated by accumulating the evidences' score on each part of a specific sub-criterion (P, D, C, A). Evidences' score is assigned with a numerical value for each part of the PDCA cycle. The principal evidences that an Energy Angel will be looking for, are also presented in the table below.

The User should select the score which better represents the management situation of the company regarding that specific criterion.

For instance, if we introduce information on the "Plan" part of the PDCA in one Sub-Criterion, the user needs to select the closest option to reality, and the EMSA will automatically provide the score of each part of the cycle.

2.1. Human Resources		
Plan	Planning the use of human resources to reach the goals and objectives of the company in water and energy saving plans.	Score
<input type="radio"/>	No planning is performed	0
<input type="radio"/>	A human resources policy is planned to reach the goals and objectives of the company, without including water and energy. ...see more	1
<input type="radio"/>	No human resources policy is documented for water and energy, but there are guidelines (verbal or non-documented) relative to it, in order to reach the goals and objectives of the sustainability policy. ...see more	2
<input checked="" type="radio"/>	Documents concerning human resources planning to reach the goals and objectives of the sustainability policy, in terms of energy and water relative to the whole company, without differentiating between processes. There isn't any responsible assigned to any specific actions. ...see more <i>Evidence: Document referring to a policy of sustainability including water and energy.</i>	3
<input type="radio"/>	Documents concerning human resources planning to reach the goals and objectives of the sustainability policy. Existence of working procedures relative to energy and water processes. There is an employee assigned to perform specific actions. ...see more	4
Help Planning, management and improvement of human resources relative to the execution of the sustainability action plan. In this point, the company's planning about the management of water and energy is assessed through a selection of policies and human resources training.		

If we click in the “see more” option, the tool will display a list of examples and evidences that could match with the criterion requirements.

<p>● No human resources policy is documented for water and energy, but there are guidelines (verbal or non-documented) relative to it, in order to reach the goals and objectives of the sustainability policy. see more </p> <p>Evidence: Existence of verbal guidelines by the senior management.</p>	2
--	---

When all of the information has been implemented, press the “Submit” button.



It is highly recommended that the assigned Energy Angel or Company’s Energy Angel, as an objective observer of the company’s status, would be the person to fill in all of the different sub-criterion.

7.5.2 Results Criteria

The results criteria are the following:

1. Customers and employees Results
2. Social Responsibility Results
3. Key Performance Results

They are also divided in different Sub-Criteria, which can be easily scored by clicking in each of their titles.

	Criterion	Sub-Criterion	Score
Results	4. Customers and employees Results	4.1. Internal customers results	0
		4.2. External customers results	0
	5. Social Responsibility Results	5.1. Employees results	0
		5.2. Social perception	0
	6. Key Performance Results	6.1. Internal excellence results; sustainability	0
		6.2. External results; impact to achieve	0

Each sub-criterion will be scored based in two different points:

- Firstly about the **trend** followed by the results of the process assessed. The score that a sub-criterion will finally achieve will depend on the trend; if it is negative, neutral or positive.
- Secondly, it will also be assessed the degree of **fulfilment of the targets** proposed in the initial strategy planning of the company. Finally, both scores will be added in order to obtain the final score of a sub-criterion.
- EMSA will automatically provide the score of each of the two different points

For instance, below it is presented an example on how to score a sub-criterion.

Management Results Questions						
5.1. Employees results						
Trends	Development of the performance of the employees regarding energy and water processes. Sustainability awareness and motivation of the personnel	<input type="radio"/> No measurement	<input type="radio"/> Negative trend	<input checked="" type="radio"/> Flat trend or modest progress	<input type="radio"/> Substantial progress	<input type="radio"/> Positive comparison with relevant organisations for all results
Score		0	1	2	3	4
Targets	Increase sustainability awareness Increase employees' performance in processes concerning water Increase employees' performance in energy topics Positive results of the employees indicators	<input type="radio"/> No or anecdotal information	<input type="radio"/> Results do not meet targets	<input type="radio"/> Few targets are met	<input checked="" type="radio"/> Some relevant targets are met	<input type="radio"/> Most of the relevant targets are met <input type="radio"/> All the targets are met
Score		0	1	2	3	4
		<input type="button" value="← Back"/> <input checked="" type="button" value="✓ Submit"/>				

When all of the information has been implemented, press the "Submit" button.

It is highly recommended that the assigned Energy Angel or Company's Energy Angel, as an objective observer of the company's status, would be the person to fill in all of the different sub-criterion.

7.5.3 Management Score

The results of the score obtained by the user are available in the summary page after submitting the results in the main section of the management score.

#	Title	Info	Last Modified	Last User Modified	Results
<input type="radio"/>	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-20	Onecompany	View
<input type="radio"/>	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-20	Onecompany	View
<input checked="" type="radio"/>	Management Questions	Data regarding management information of the company	2018-07-20	Onecompany	

← Back
Edit Data
Submit Scenario

Once inside the management section, an overview of the results can be seen in the right part of the section, where if a certain criterion or sub criterion has been assessed will display all the result obtained.

User page → All Company Scenarios → All Question Sections → All Management Questions

Management Questions Sections

	Criterion	Sub-Criterion	Score
Enablers	1. Leadership, Strategy and Planning	1.1. Sustainability policy (objectives and goals)	17
		1.2. Sustainability management	17
	2. People, Partnerships and Resources	2.1. Human Resources	16
		2.2. Knowledge management	16
		2.3. Finance management	11
		2.4. Water and Energy	17
3. Processes	3.1. Processes management and design	18	
Results	4. Customers and employees Results	4.1. Internal customers results	7
		4.2. External customers results	6
	5. Social Responsibility Results	5.1. Employees results	5
		5.2. Social perception	7
	6. Key Performance Results	6.1. Internal excellence results; sustainability	6
		6.2. External results; impact to achieve	7

	Enablers	Results	Total
Score	112	38	150

← Back

At the bottom of the page it appears a summary of the enablers and results score as well as the total score.

7.5.4 Reminder

It is highly recommended that the assigned Energy Angel or Company's Energy Angel, as an objective observer of the company's status, would be the person to fill in all of the different sub-criteria.

7.6 Submit Scenario

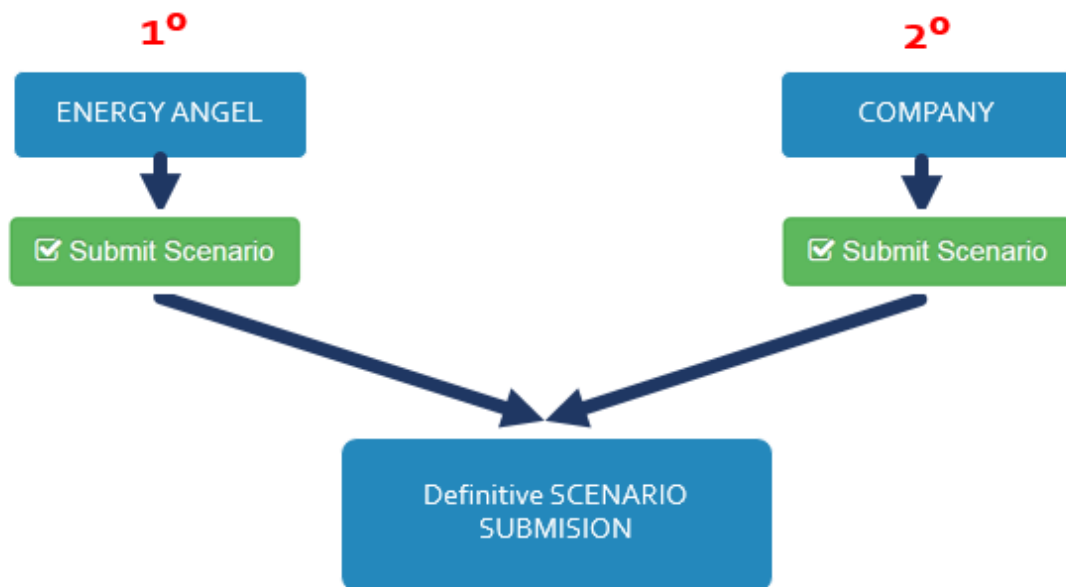
When the Company and the Energy Angel considers that the process of introducing information is completed, they can submit the whole scenario to generate the results that the EMSA is able to provide.

Finishing data input stage means that:

- Company has entered as much information as possible in the tool
- That information has been validated by the Energy Angel
- They both consider that the Scenario is completed

To submit a Scenario, both Company and Energy Angel should agree on the issue that the data introduction phase has been finished and data are correct.

It is because a double-check conformation is implemented to assure that both agree in this part before generating final results



Then, **firstly** the Energy Angel should go to the Scenario main page and select a scenario:

Company's Scenarios Help

+ Create a New Scenario
Create copy of a Scenario

#	Title	Info	Date Created	User Created	Last Modified	Last User Modified	Scenario Status
1	Test scenario	This is a test scenario	2018-07-20	Antonio	2018-07-20	Antonio	Open
2	Scenario 2	This is a test scenario	2018-07-20	Onecompany	2018-07-20	Onecompany	Open

← Back
View/Modify
Delete

Then, click in the “Submit Scenario” button, inside the Scenario page.

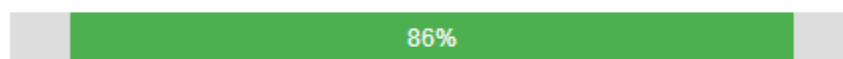
Scenario: **Scenario 2 - Sections**

#	Title	Info	Last Modified	Last User Modified	Results
<input type="radio"/>	General Questions	Questions about production, water, electricity and/or fuel consumption	2018-07-20	Onecompany	View
<input type="radio"/>	Efficiency Questions	Data regarding processes, equipment and features of the company	2018-07-20	Onecompany	View
<input type="radio"/>	Management Questions	Data regarding management information of the company	2018-07-20	Onecompany	

As an double-check conformation, **secondly**, the Company will follow the same procedure

Once submitted the scenario, all the results will be calculated.

Scenario Calculations



Finding Optimum values and scores

By Submitting a Scenario, it means that:

- The Scenario is completed and it will not be modified again (the EMSA will lock it and it would not be possible to modify it again)
- The Scenario is going to be assessed and the tool will calculate the different Results: (Efficiency, Improvements, Simulation, Benchmarking)

8 RESULTS. EMSA Lite

To see the results of the EMSA Lite assessment, enter in the “Results” tab. The company’s account has a permanent access to this tab. Depending on the permissions granted by the company, Energy Angels and the rest of the users of the company can also have access to it.

Now you are using:

EMSA Lite
EMSA Professional

Company Page Lite

Info! Your ID number is: 792

Information

You can view or edit your information here.

Data Evaluation

You can view, create, modify scenarios here.

Results

You can view your performance results here.

EMSA Support

You can view, add, and manage your requests of Energy Angels here.

Management of Users

You can view, add, remove and edit users here.

Energy Savings Simulator

You can simulate your efficiency here.

Benchmarking Results

You can view and compare your results here.

Improvements Management

You can implement your improvements' plan here.

Messages 1

You can view or send messages here.

Alerts 6

You can view, edit or delete all your alerts here.

The company has to select which scenario’s results they want to display. Once a scenario has been selected, press the “View Results” button.

Only the submitted scenarios will be able to be selected.

Company's Scenarios Results

	Title	Info	Date Created	User Created	Date Submitted	User Submitted
<input checked="" type="radio"/>	EMSA Lite Test		2018-02-19	EMSA Lite Test {EMSA Lite Test}	2018-05-17	EMSA Lite Test {EMSA Lite Test}
<input type="radio"/>	Test 2		2018-05-15	EMSA Lite Test {EMSA Lite Test}	2018-05-15	EMSA Lite Test {EMSA Lite Test}
<input type="radio"/>	EnergyWater EMSA		2018-06-25	EMSA Lite Test {EMSA Lite Test}	2018-07-10	EMSA Lite Test {EMSA Lite Test}

← Back
View Results

The results page is divided in three different sections:

- General Results
- Benchmarking Results
- Efficiency Improvement Actions Results

8.1 General Results

The first page that appears is the “General Results”.

Scenario: EMSALiteTest

General Efficiency Management

EMSA SCORE -

Benchmarking Score -

EFFICIENCY SCORE

MANAGEMENT SCORE

Description	Ratio	Company Performance	Best in EMSA tool	Percentile Rank
Total energy consumption per unit production	kWh/Unit Production	3.73728	0.0001	0
Production water efficiency comparison	m ³ /Unit Production	0.46253	0	0
Energy intensity of water use	kWh/m ³	8.08	0.08531	1.1
Electricity consumption per unit production	kWh/Unit Production	0.037	0.0001	0.3
Fossil Fuel consumption per unit production	kWh/Unit Production	3.70028	0	0

Description	Ratio	Company Performance	Best in EMSA tool	Percentile Rank
Total energy cost per unit production	€/Unit Production	0.40703	0.00963	2.4
Overall unit energy price	€/kWh	0.10891	0.10891	100
Electricity unit price	€/kWh	1	1	100
Fossil fuel unit price	€/kWh	0.1	0.1	100
Water cost per unit production	€/Unit Production	0.10731	0.00047	0.4
Water unit price	€/m ³	0.232	0.232	100
Electricity cost per unit production	€/Unit Production	0.037	0.00963	26
Fossil fuel cost per unit production	€/Unit Production	0.37003	0.00093	0.3

General Ratios

*Optimum is the best value provided by a company

Production energy efficiency comparison (kWh/unit production)

Production water efficiency comparison (m³/unit production)

Energy intensity of water use (kWh/m³)

Production energy cost comparison(€/unit Production)

Energy Cost Comparison(€/kWh)

Water costs comparison(€/m³)

Overall unit energy price

Electricity unit price

Fossil fuel unit price

Water unit price

1. General Ratios Tables

In these tables it is shown a summary of the “Efficiency Ratios”, for both general information of consumption and cost.

Consumption against production				
Description	Ratio	Company Performance	Best in EMSA tool	Percentile Rank
Total energy consumption per unit production	kWh/Unit Production	3.73728	0.0001	0
Production water efficiency comparison	m ³ /Unit Production	0.46253	0	0
Energy intensity of water use	kWh/m ³	8.08	0.08531	1.1
Electricity consumption per unit production	kWh/Unit Production	0.037	0.0001	0.3
Fossil Fuel consumption per unit production	kWh/Unit Production	3.70028	0	0

Cost against production units				
Description	Ratio	Company Performance	Best in EMSA tool	Percentile Rank
Total energy cost per unit production	€/Unit Production	0.40703	0.00963	2.4
Overall unit energy price	€/kWh	0.10891	0.10891	100
Electricity unit price	€/kWh	1	1	100
Fossil fuel unit price	€/kWh	0.1	0.1	100
Water cost per unit production	€/Unit Production	0.10731	0.00047	0.4
Water unit price	€/m ³	0.232	0.232	100
Electricity cost per unit production	€/Unit Production	0.037	0.00963	26
Fossil fuel cost per unit production	€/Unit Production	0.37003	0.00093	0.3

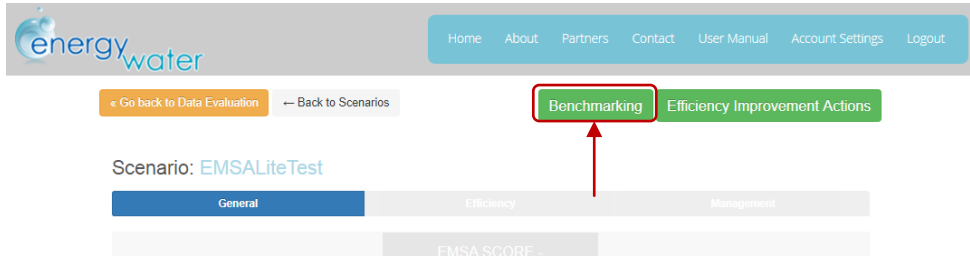
2. General Ratios charts

Finally, there are shown several charts with the company’s information and the optimum values, which are the best values provided by a company.

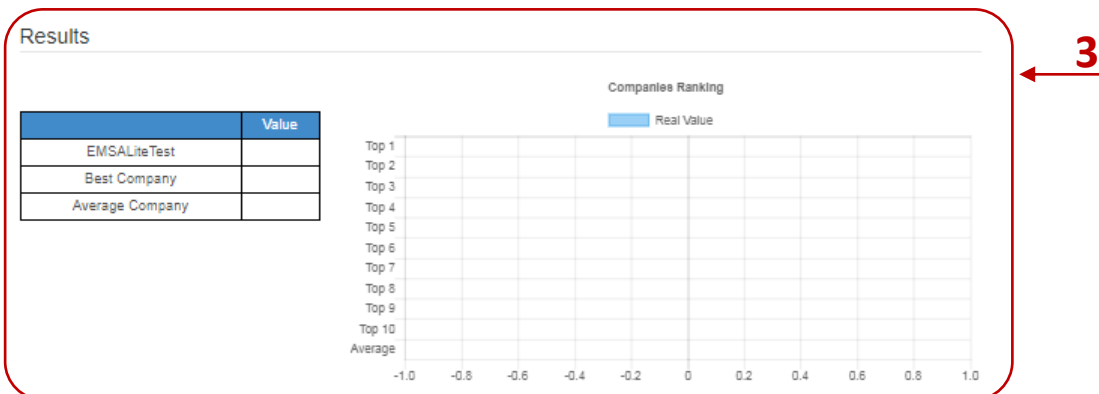
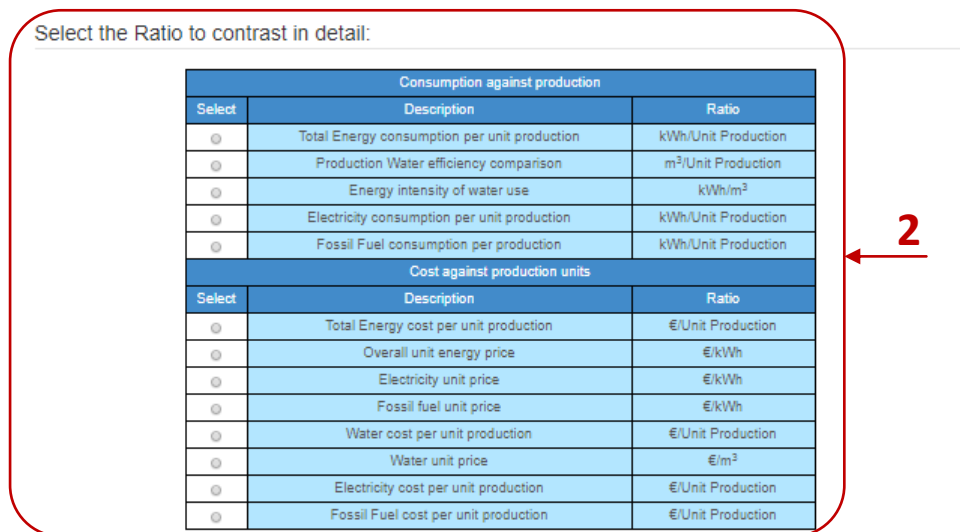
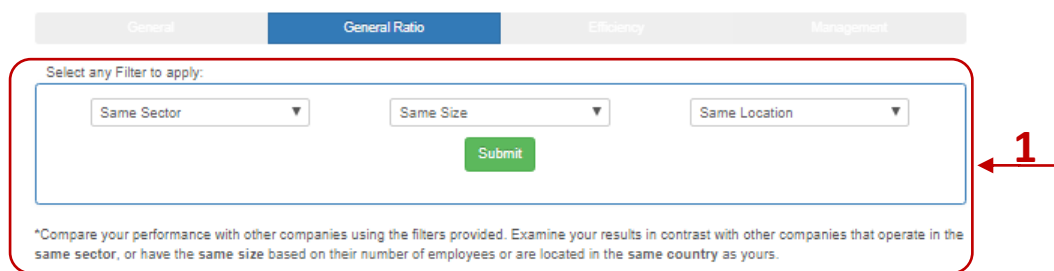


8.2 Benchmarking Results

To enter in the “Benchmarking Results” tab, the user should click the “Benchmarking” button.



Then, the user will see the next page:



1. Filter to apply.

The user can filter with which companies it will be compared.

Select any Filter to apply:

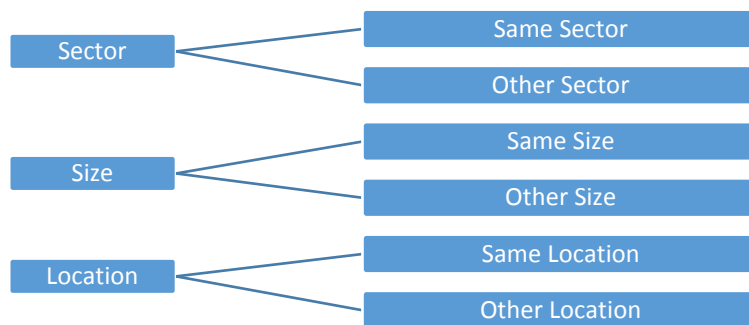
Other Sector ▼

Other Size ▼

Other Location ▼

*Compare your performance with other companies using the filters provided. Examine your results in contrast with other companies that operate in the **same sector**, or have the **same size** based on their number of employees or are located in the **same country** as yours.

The available filters are the following:



2. Ratio to compare

The user can select the ratio to contrast in detail.

Select the Ratio to contrast in detail:

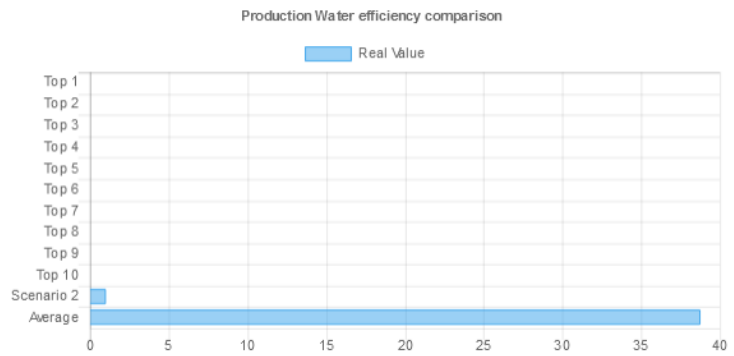
Consumption against production		
Select	Description	Ratio
<input type="radio"/>	Total Energy consumption per unit production	kWh/Unit Production
<input checked="" type="radio"/>	Production Water efficiency comparison	m ³ /Unit Production
<input type="radio"/>	Energy intensity of water use	kWh/m ³
<input type="radio"/>	Electricity consumption per unit production	kWh/Unit Production
<input type="radio"/>	Fossil Fuel consumption per production	kWh/Unit Production
Cost against production units		
Select	Description	Ratio
<input type="radio"/>	Total Energy cost per unit production	€/Unit Production
<input type="radio"/>	Overall unit energy price	€/kWh
<input type="radio"/>	Electricity unit price	€/kWh
<input type="radio"/>	Fossil fuel unit price	€/kWh
<input type="radio"/>	Water cost per unit production	€/Unit Production
<input type="radio"/>	Water unit price	€/m ³
<input type="radio"/>	Electricity cost per unit production	€/Unit Production
<input type="radio"/>	Fossil Fuel cost per unit production	€/Unit Production

3. Results

The user can see the results of the ratio selected against other companies.

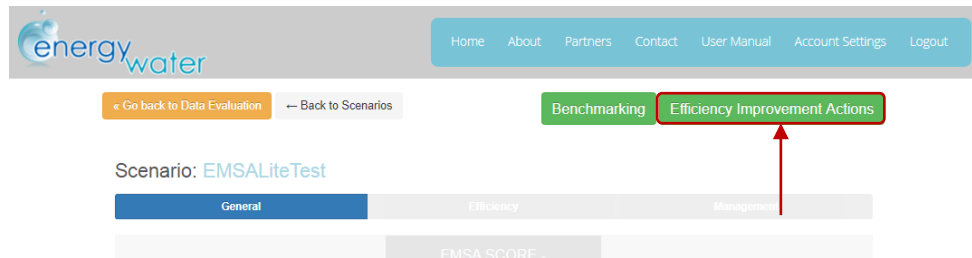
Results

Production Water efficiency comparison	Value
Scenario 2	1
Best Company	0.00033
Average Company	38.80172

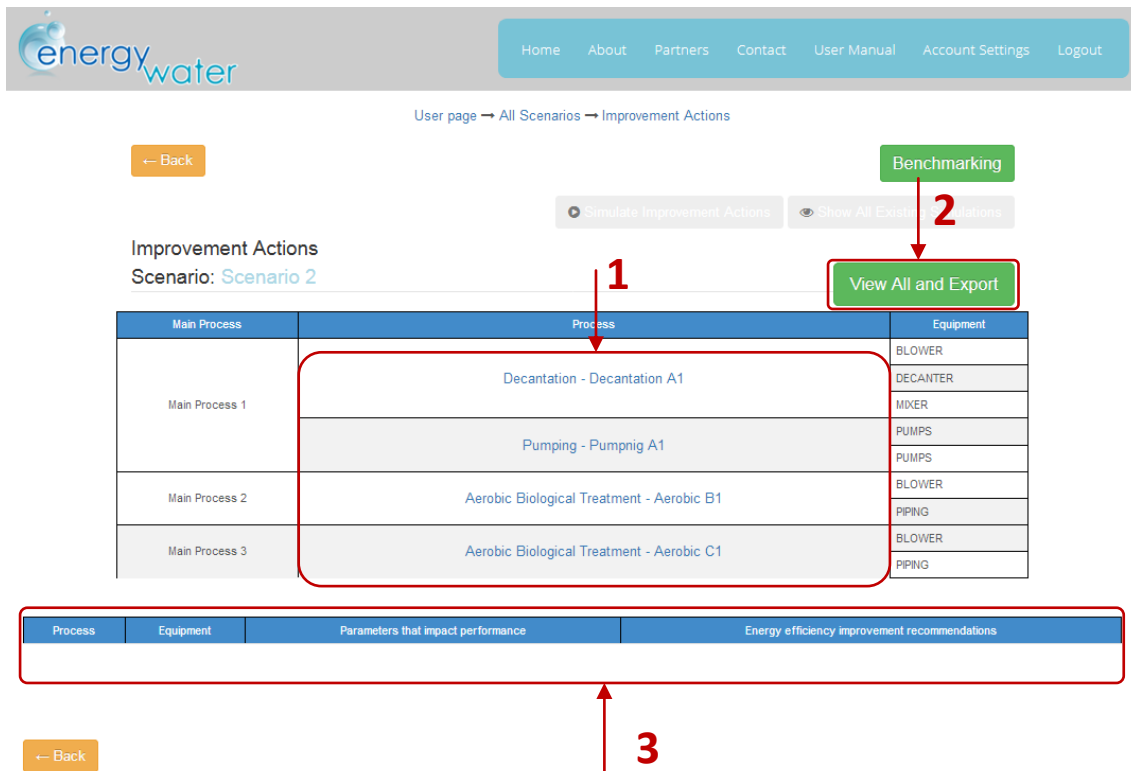


8.3 Efficiency Improvements Actions Results

To enter in the “Improvement Actions” tab, the user should click the “Efficiency Improvement Actions” button.



Then, the user will see the next page:



The user can see the improvements actions recommended by the EMSA Web-Tool.

1. Select the process.

The user can select one of the processes described in the “Data Evaluation” tab.

Main Process	Process	Equipment
Main Process 1	Decantation - Decantation A1	BLOWER DECANTER MIXER
	Pumping - Pumping A1	PUMPS PUMPS
Main Process 2	Aerobic Biological Treatment - Aerobic B1	BLOWER PIPING
Main Process 3	Aerobic Biological Treatment - Aerobic C1	BLOWER PIPING

2. Improvements actions

Once the user has clicked one of the processes, the improvements actions and the parameters that impact performance will appear in the table below.

Process	Equipment	Parameters that impact performance	Energy efficiency improvement recommendations
Decantation	General	<ul style="list-style-type: none"> - Height of the water column - Turbulence in water flow - Pressure - Inflow - Outflow - Particle entrainment - Shape of decanter - Appropriate size floc formation - Optimal dosage of reagents - Type of the tank - Surface hydraulic load and solids loading - Lateral depth of the tank - Flow distribution system (litre/min) - Characteristics of the input system of the mixture in the tank - Placing weirs and its load applied - Removal of foam Key system components - Reagent dosing unit - Agitator - Decanter - Recirculation sludge pumps - Scraper - Drive motor - Diffuser - Speed reducer - Mechanical handling systems - Blade foaming 	<ul style="list-style-type: none"> - Use of high efficiency motors (E34) can provide ongoing savings in the energy consumption of the motor (typically 0-5% saving). - See Pumps and Motors recommendations for guidance on how to improve efficiency. - Ensure decanters are cleaned regularly as part of a continuous maintenance cycle. - Sludge recirculation systems may be introduced to encourage floc formation. - Effective monitoring and measurement of some of the key process parameters via effective controls and sensors will enable more detailed insight into the operation of the decanter which will facilitate process optimisation and energy saving. - If coagulants reagents are needed, proper application of the optimum pH will be needed (which includes alkalinizing, if necessary). Poor mixing at the decanting stage can create inefficiencies further down the line of the water treatment process.
	Pumps	<ul style="list-style-type: none"> - Height of the water column - Water flow to boost - Pressure - Pump efficiency - Piping, valves diameter - Prevalence (H) - Capacity (l) - Water Hardness (°f or mmol/l Ca⁺⁺) - pH - Medium being pumped (e.g. raw water, dosing chemical, polyelectrolyte or sludge) - System flowrate (m³/h) - Operating temperature of the fluid - Nozzle diameter - Total static head (m) <ul style="list-style-type: none"> • Static suction head • Static discharge head • Total system head - Nature and size of any solids present - Single or multiple duty point(s) - Operational hours for different duty cycles 	<ul style="list-style-type: none"> - Consider implementing automated stop start control functionality. A timer could be used to switch off pumps at specified times. Interlocks could also be used so that equipment is switched on only if another device is already running. If the other device is turned off, the interlocked device will also automatically shut down. There are load-sensing devices available that can sense when there is no load on the motor/pump, allowing it to switch off after a suitable time period, saving energy. Examples include level sensors in tank filling applications. - A motor will draw a high current from the supply during starting. To reduce this starting current, it is possible to fit a soft starter device that limits the current to the motor during start-up, and achieves a smoother acceleration profile, extending the life of the pump. - Understanding pump performance characteristics is critical. The starting point is to know the current operating point of the analysed pump and hydraulic system, and the method currently used to regulate the flow. By using a manometer / barometer located before and after the pump, and a flowmeter, the performance curve of the pump can be established, which will facilitate the identification of the best efficiency point (BEP) of the pump. - Use of high efficiency motors (E34) can provide ongoing savings in the energy consumption of the pump (typically 0-5% saving). - Install a variable speed drive (VSD) to match pump flow to real process demand. It is possible to manually change the frequency to adjust the desired operating point, or by implementing sensors with closed loop feedback the pump can change speed depending on system requirements and set points. Manual setting is effective in installations with a fixed flow; automated controls would be preferable for systems with variable flow. Typical energy savings are shown to vary between 30% and 80% when implementing variable speed drives (VSDs). - Ensure your Pumps system has the correct Net Positive Suction Head. The correct NPSH is required to ensure the pump

3. View All and Export

To see all the improvements Actions in the scenario, the user should click the “View All and Export” button.

Then, the user will see the next page:

← Back
📄 Export to Excel
🖨 Print this page
📄 Export to PDF

Process	Equipment	Parameters that impact performance	Energy efficiency improvement recommendations
Decantation	General	<ul style="list-style-type: none"> - Height of the water column - Turbulence in water flow - Pressure - Inflow - Outflow - Particle entrainment - Shape of decanter - Appropriate size floc formation - Optimal dosage of reagents - Type of the tank - Surface hydraulic load and solids loading - Lateral depth of the tank - Flow distribution system (litre/min) - Characteristics of the input system of the mixture in the tank - Placing weirs and its load applied - Removal of foam <p>Key system components</p> <ul style="list-style-type: none"> - Reagent dosing unit - Agitator - Decanter - Recirculation sludge pumps - Scraper - Drive motor - Diffuser - Speed reducer - Mechanical handling systems - Blade foaming 	<ul style="list-style-type: none"> - Use of high efficiency motors (IE3/4) can provide ongoing savings in the energy consumption of the motor (typically 0-5% saving). - See Pumps and Motors recommendations for guidance on how to improve efficiency. - Ensure decanters are cleaned regularly as part of a continuous maintenance cycle. - Sludge recirculation systems may be introduced to encourage floc formation. - Effective monitoring and measurement of some of the key process parameters via effective controls and sensors will enable more detailed insight into the operation of the decanter which will facilitate process optimisation and energy saving. - If coagulants reagents are needed, proper application of the optimum pH will be needed (which includes alkalizing, if necessary). Poor mixing at the decanting stage can create inefficiencies further down the line of the water treatment process.
		<ul style="list-style-type: none"> - Height of the water column - Water flow to boost - Pressure - Pump efficiency - Piping, valves diameter - Prevalence (H) - Capacity (l) - Water Hardness (°f or mmol/l Ca++) 	<ul style="list-style-type: none"> - Consider implementing automated stop start control functionality. A timer could be used to switch off pumps at specified times. Interlocks could also be used so that equipment is switched on only if another device is already running. If the other device is turned off, the interlocked device will also automatically shut down. There are load-sensing devices available that can sense when there is no load on the motor/pump, allowing it to switch off after a suitable time period, saving energy. Examples include level sensors in tank filling applications.

All the improvements can be exported to an Excel or PDF file, or printed.

9 RESULTS. EMSA Professional

To see the results of the EMSA assessment, enter in the “Results” tab. The company’s account has a permanent access to this tab.

Depending on the permissions granted by the company, Energy Angels and the rest of the users of the company can also have access to it.

Company Page

Info! Your ID number is: 1320.

- Information**: You can view or edit your information here.
- Data Evaluation**: You can view, create, modify scenarios here.
- Results**: You can view your performance results here.
- EMSA Support**: You can view, add, and manage your requests of Energy Angels here.
- Management of Users**: You can view, add, remove and edit users here.
- Energy Savings Simulator**: You can simulate your efficiency here.
- Benchmarking Results**: You can view and compare your results here.
- Improvements Management**: You can implement your improvements' plan here.
- Messages** 0: You can view or send messages here.
- Alerts** 6: You can view, edit or delete your alerts here.

The company has to select which scenario’s results they want to display. Once a scenario has been selected, press the “View Results” button.

Only the submitted scenarios will be able to be selected.

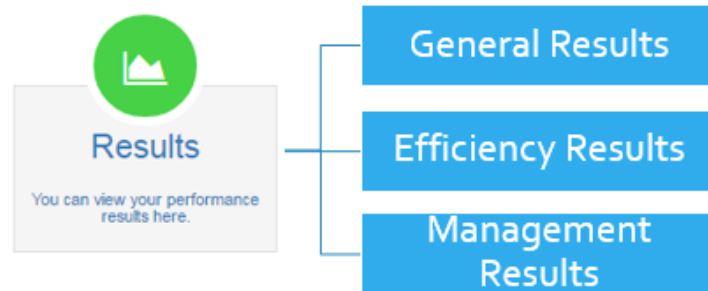
Company's Scenarios Results

	Title	Info	Date Created	User Created	Date Submitted	User Submitted
⊕	Test scenario	This is a test scenario	2018-07-20	[Redacted]	2018-07-20	[Redacted]
⊖	Scenario 2	This is a test scenario	2018-07-20	[Redacted]	2018-07-20	[Redacted]

← Back View Results

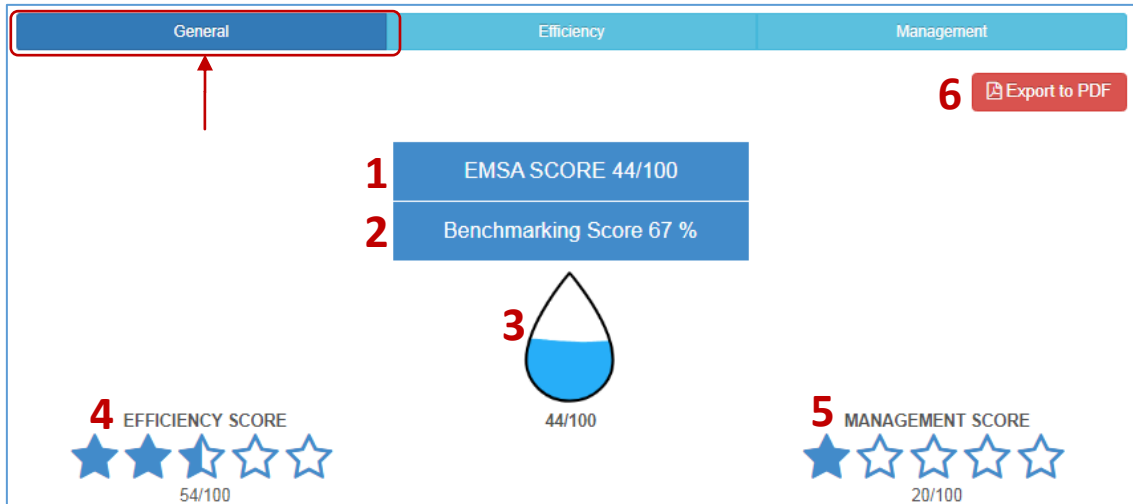
The results page is divided in three different sections:

- General Results
- Efficiency Results
- Management Results



9.1 General Results

The first page that appears is the “General Results”.



In this page it firstly appears:

1. The EMSA score of the company

This is the Final Score of the company, contains both the efficiency and the management score.

2. The benchmarking score. This part will later be displayed in the “Benchmarking Results” tab

Companies will have the possibility to compare themselves in general aspects with other companies of their same sector and in a more specific way by choosing the equipment they have installed. The data will be anonymous and the different companies will only know that they are comparing themselves with a company from the same industrial sector, or with a company that has similar processes as they do.

If a company has a 100% score in the benchmarking, it means that from the Benchmarking database, that company has the best results in both the efficiency and management assessment. However, there may be more efficient companies that have not introduced their data in the tool.

3. A water drop that displays in a more visual way the EMSA score

This is a visual help to display the EMSA Score

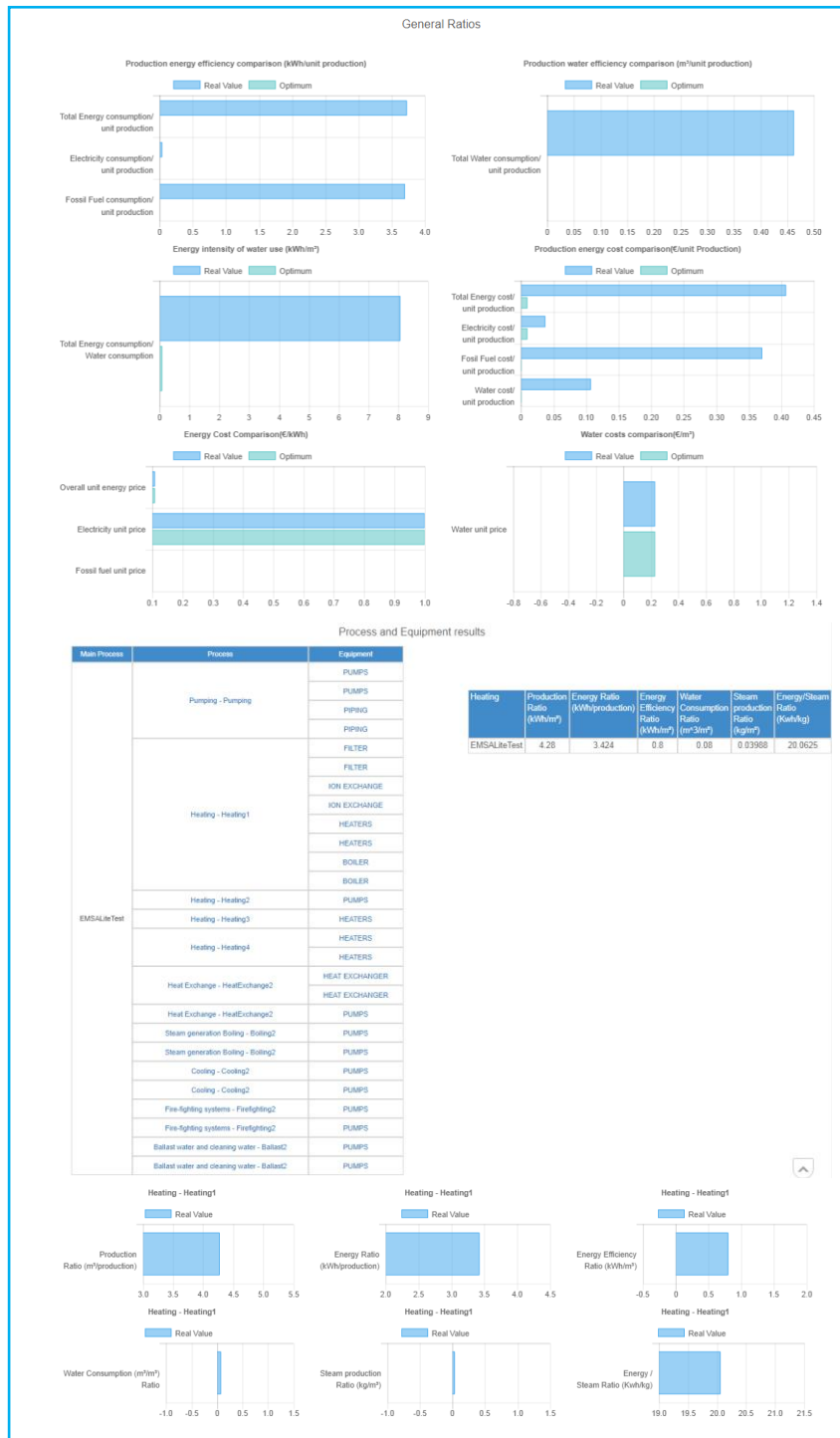
4. The efficiency score in a numerical and a graphic way

Although the efficiency part is presented in depth subsequently, here it is presented a summary. In this part is displayed visually and numerically the score obtained in the efficiency part, that contains the global, process and equipment questions.

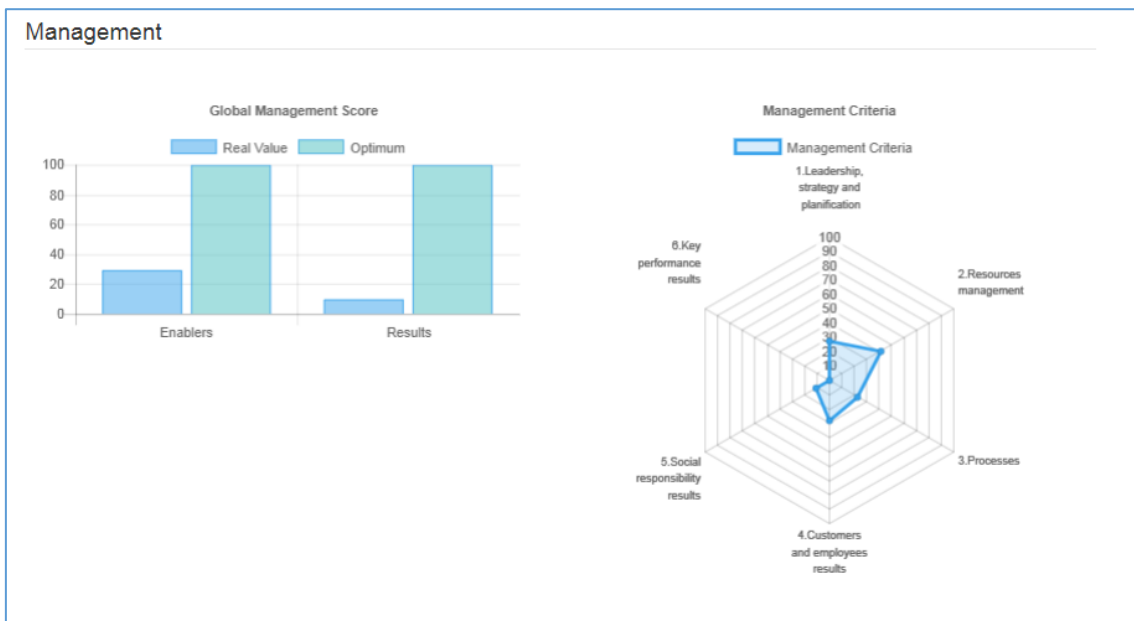
5. The management score in a numerical and a graphic way

This part is also explained in detail in a posterior tab, but there it is presented a summary of the score obtained in the management part. It is represented in both numerical and graphical way.

If the user descends in the EMSA tool, it is shown a more complete summary of the “Efficiency Ratios”, for both the general information and the process and equipment ones.



Finally, if the user keeps on descending in the tool, it is shown a summary of the “Management” part giving an overview of the results obtained.



6. Export to PDF file

The user can export the results to a PDF file and download it.

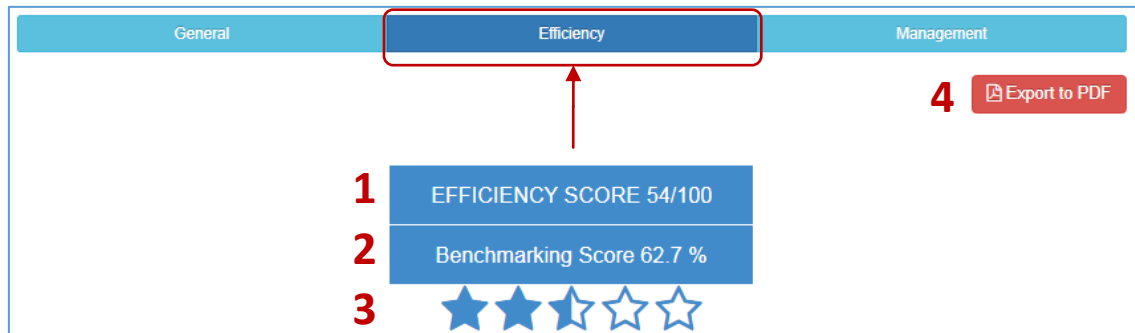
← Back Home

Your download will start in a few seconds, if it doesn't start automatically please click the button below

Export to PDF

9.2 Efficiency Results

The next tab appearing is the “Efficiency Results” section.



In this page it firstly appears

1. Efficiency score of the company

This score involves both the global questions (that are relative to the whole company), as well as the process and equipment selected by the company. All of the information is assessed depending on the information introduced in the tool and the degree of accuracy.

2. Benchmarking score of the efficiency part. This part will later be displayed in the “Benchmarking” tab

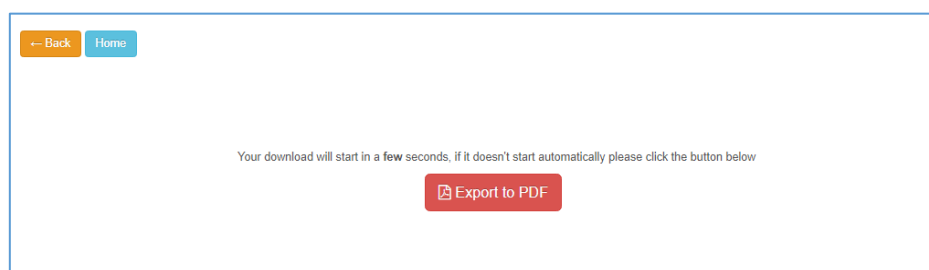
Companies will have the possibility to compare themselves with other companies of their same sector in the operation of their processes and in a more specific way by choosing the equipment they have installed. The data will be anonymous and the different companies will only know that they are comparing themselves with a company from the same industrial sector, or with a company that has similar processes as they do.

3. A list of that display in a more visual way the efficiency score by being more or less filled depending on the score obtained.

This is a visual help to see in an instant the score of the efficiency part and the maximum score obtainable by the user.

4. Export to PDF file

The user can export the results to a PDF file and download it.



9.2.1 Global Ratios

Descending in the tool, it is shown a summary of the global ratios calculated previously in the scenarios questions. This data concerns the whole company, and it comes from the “General Questions” that have been implemented with data concerning all the different processes and equipment of the company.

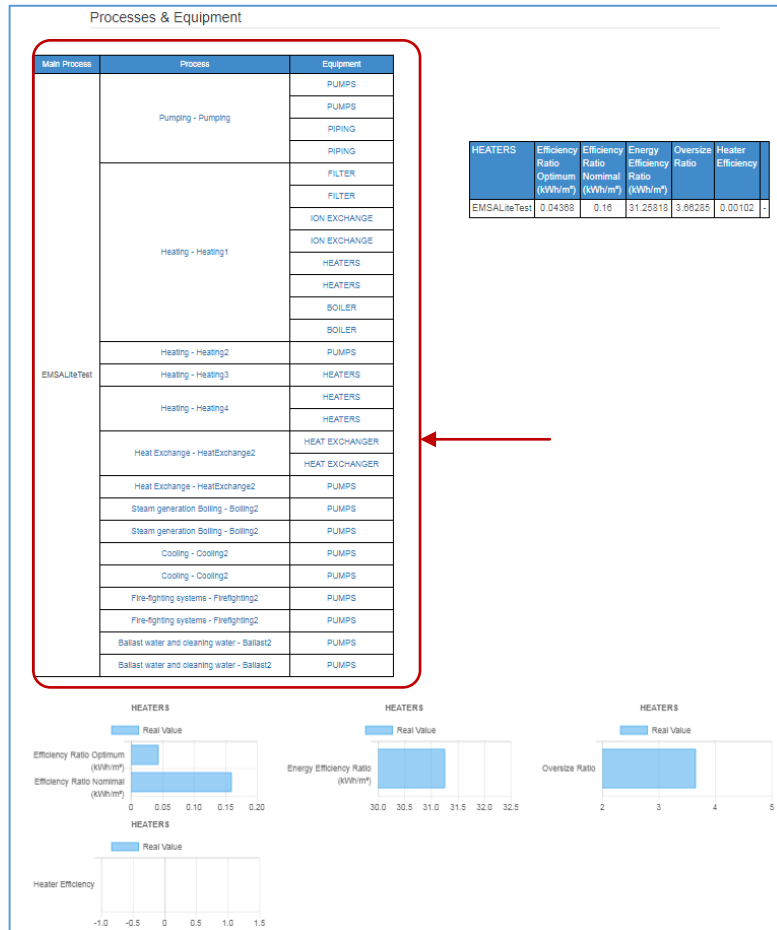


Depending on the data introduced in the “General Questions” there will be calculated different ratios for the company, depending on the sector, the production and the water consumption amongst others. In this first part, there will be shown the consumption of the processes assessed against the production of the company.

Then, there is also presented the cost against the production units. In this case, there are presented the ratios referring to the cost of the energy required in a global scale. It is also displayed the real value of the company, the optimum ratio of similar companies and the percentile rank depending on other companies from the same sector.

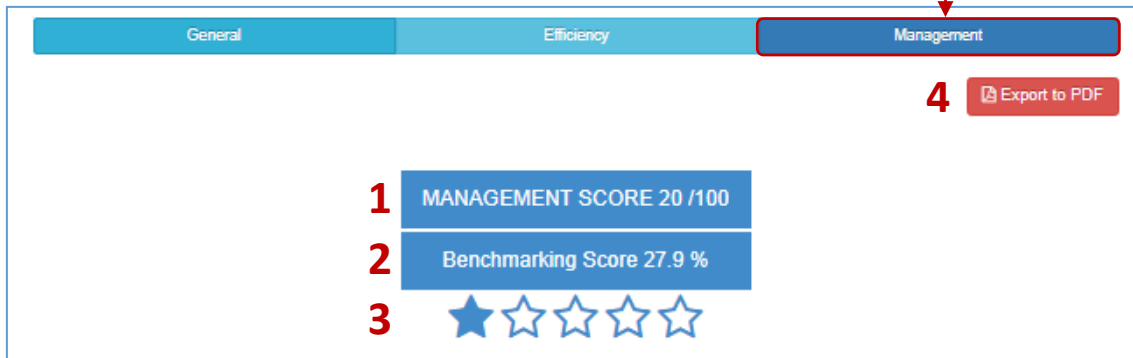
9.2.2 Processes & Equipment

Descending in the tool, it is shown a summary of the process ratios calculated previously in the scenarios questions, showing their main energy efficiency indicators, and comparing them with the optimum value according to the benchmarking and benchlearning database. The user should click in the process or equipment whose results he wants to see.



9.3 Management Results

Finally, in the last tab we can find the “Management Results” section.



In this page it firstly appears

1. Management score of the company

This score involves all the questions that have been asked in the management part. This score takes into account both the enablers and results criteria that have been answered previously.

2. Benchmarking score of the management part. This part will later be displayed in the “Benchmarking” tab

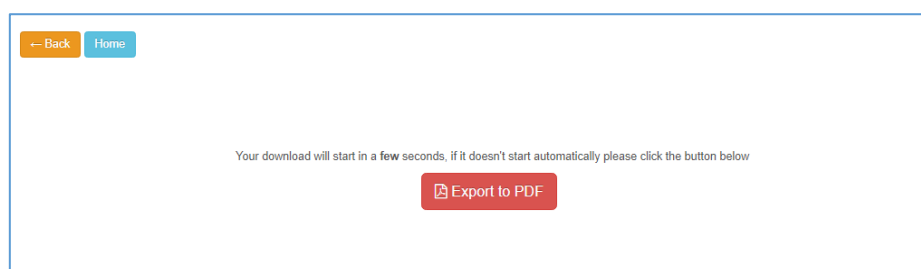
Companies will have the possibility to compare themselves with other companies in their management level. In all of the cases, the data will be anonymous and the different companies will only know that they are comparing themselves with a company from the same industrial sector, or with a company that has similar processes as they do.

3. A list of that display in a more visual way the Management score by being more or less filled depending on the score obtained.

This is a visual help to see in an instant the score of the management part and the maximum score obtainable by the user.

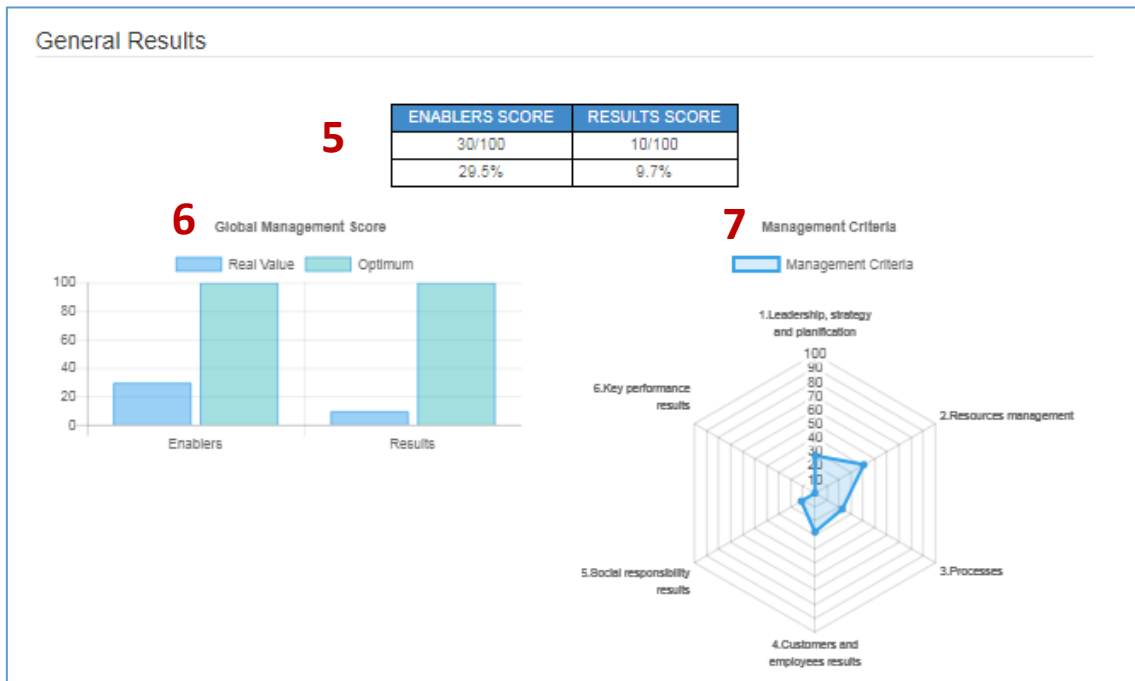
4. Export to PDF file

The user can export the results to a PDF file and download it.



9.3.1 General Results

Descending in the tool, it is shown a summary of the management part giving an overview of the results obtained.

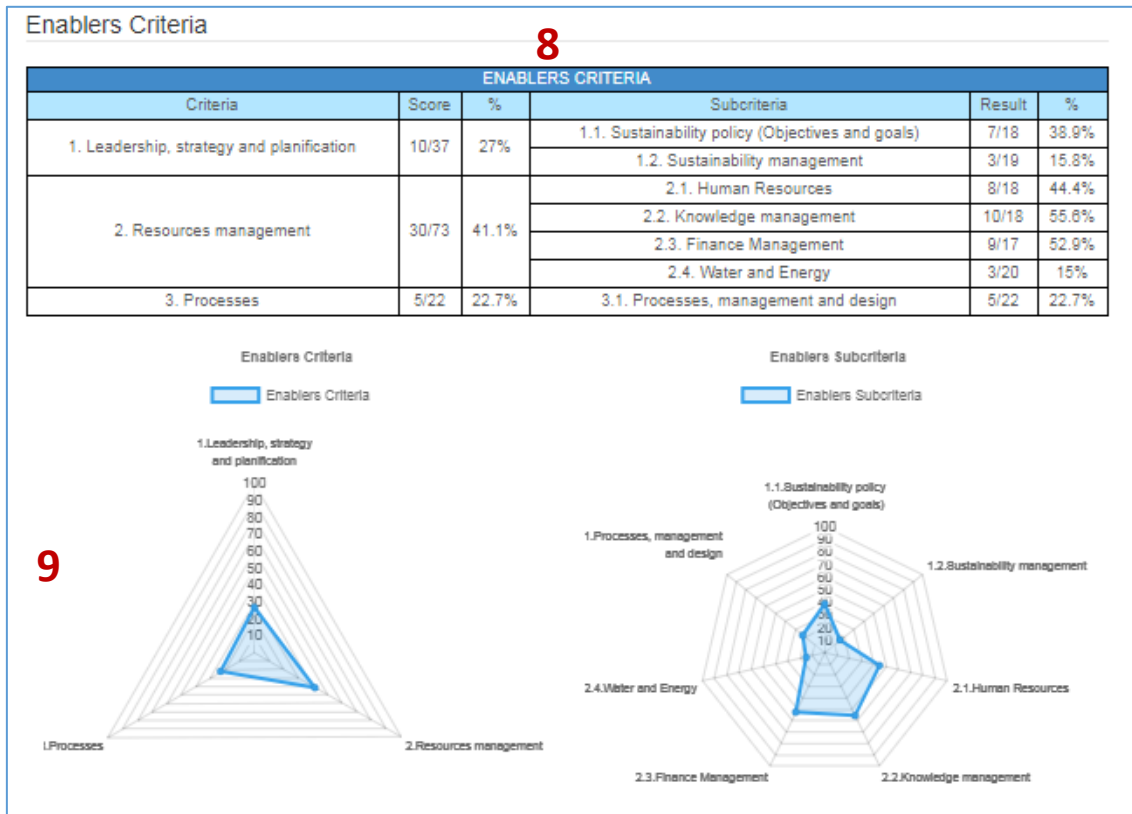


The data displayed by the tool is the following:

- Global results of the “Enablers” and the “Results” Score. This table displays the score obtained against the maximum score achievable. It also shows the score in a percentage form.
- Global results of the Enablers and the Results Score in a graphic way comparing them with the maximum score achievable.
- A spider web diagram that displays the score obtained in all of the criteria assessed. It shows the score of all the criteria at the same time, to help companies to identify their strengths and weaknesses and identify those strategies or procedures performed in the company that need to be improved

9.3.2 Enablers Criteria

Descending in the tool, it is shown in more detail the scores obtained in the **enablers criteria**.

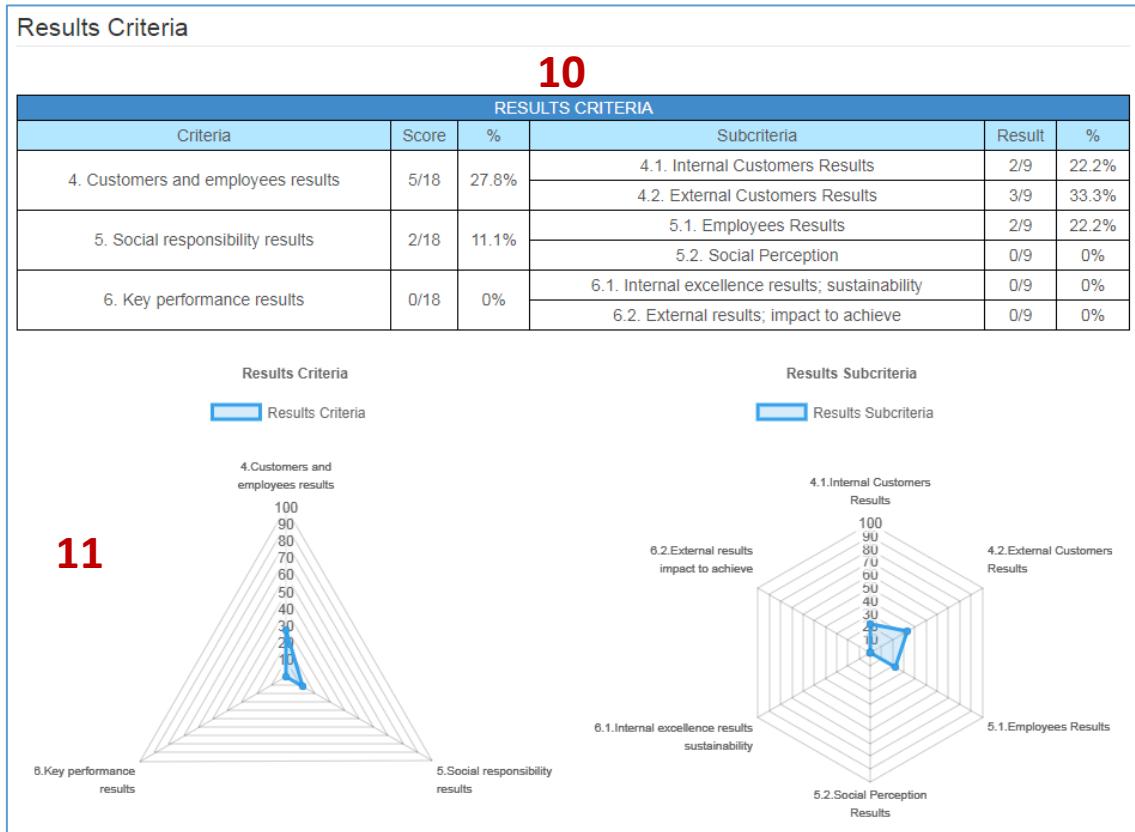


The data displayed by the tool is the following one:

8. Global results of the Enablers Criteria. This table displays the score obtained against the maximum score achievable. It also shows the score in a percentage form. Additionally, there are presented the same results for all the related sub-criteria.
9. A spider web diagram that displays the score obtained in all of the enablers sub-criteria assessed. It shows the score of all the sub-criteria at the same time, to help companies to identify their strengths and weaknesses and identify those strategies or procedures performed in the company that need to be improved

9.3.3 Results Criteria

Finally, descending more in the tool, it is shown in more detail the scores obtained in the **results criteria**.



The data displayed by the tool is the following one:

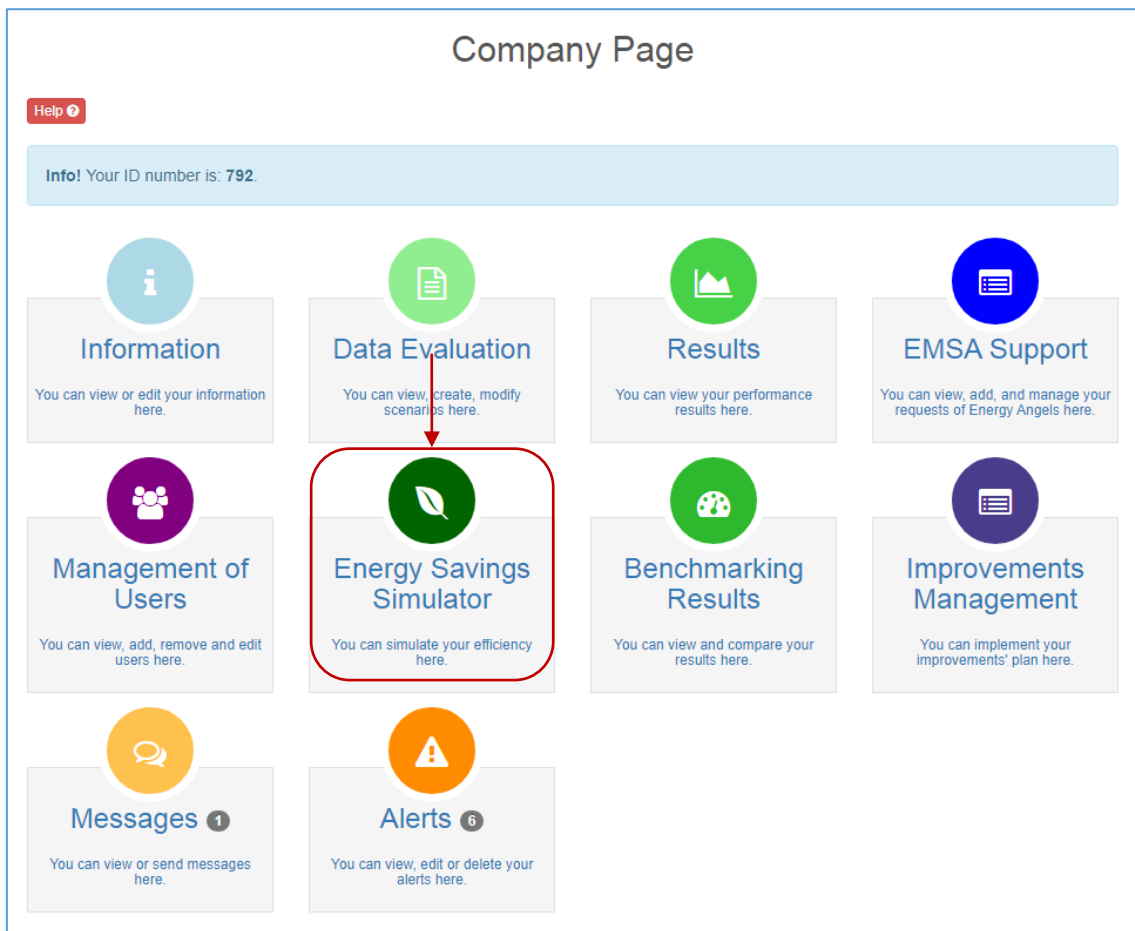
10. Global results of the Results Criteria. This table displays the score obtained against the maximum score achievable. It also shows the score in a percentage form. Additionally, there are presented the same results for all the related sub-criteria.
11. A spider web diagram that displays the score obtained in all of the results sub-criteria assessed. It shows the score of all the sub-criteria at the same time, to help companies to identify their strengths and weaknesses and identify those strategies or procedures performed in the company that need to be improved

10 ENERGY SAVINGS SIMULATOR

The main goal of the “Energy Saving Simulator” module is to calculate the impact in the company’s consumption if they decide to implement a certain selection of improvement actions.

To access to the “Energy Savings Simulator” module, the User should enter in the “Energy Savings Simulator” tab. The company’s account has a permanent access to this tab.

Depending on the permissions granted by the company, Energy Angels and the rest of the users of the company can also have access to it.



The screenshot shows the 'Company Page' interface. At the top, there is a 'Help' button and an 'Info' bar stating 'Your ID number is: 792.'. Below this, there are ten main modules arranged in a grid:

- Information**: You can view or edit your information here.
- Data Evaluation**: You can view, create, modify scenarios here.
- Results**: You can view your performance results here.
- EMSA Support**: You can view, add, and manage your requests of Energy Angels here.
- Management of Users**: You can view, add, remove and edit users here.
- Energy Savings Simulator**: You can simulate your efficiency here. (This module is highlighted with a red box and a red arrow points to it from the 'Data Evaluation' module above it.)
- Benchmarking Results**: You can view and compare your results here.
- Improvements Management**: You can implement your improvements' plan here.
- Messages** (1): You can view or send messages here.
- Alerts** (6): You can view, edit or delete your alerts here.

When the user clicks on it, a new screen appears where the user can select on which scenario they want to see the related improvement actions. **In the list there will be only the submitted scenarios**

Company's Simulator Scenarios

All Scenarios [Saved Simulations](#)

All Scenarios

	Title	Info	Date Created	User Created	Date Submitted	User Submitted
<input type="radio"/>	EMSALiteTest		2018-02-19	EMSALiteTest	2018-05-17	EMSALiteTest

[← Back](#) [View Scenario](#)

Then, once the scenario has been selected, the tool provides a direct access to their improvement actions related.

10.1 Improvement actions

The first thing that the EMSA displays is a table with the processes and equipment included in the scenario. The user should click in the process or equipment whose results he wants to see. Then, if the user descends in the EMSA tool, it is shown a list of available improvement actions that the assessment methodology has identified for a certain submitted scenario. In this module there are three main parts:

- Existing simulations
- Simulate Improvement Actions
- Improvement actions
 - Efficiency improvements
 - Management improvements

[← Back](#) [Simulate Improvement Actions](#) [Show All Existing Simulations](#)

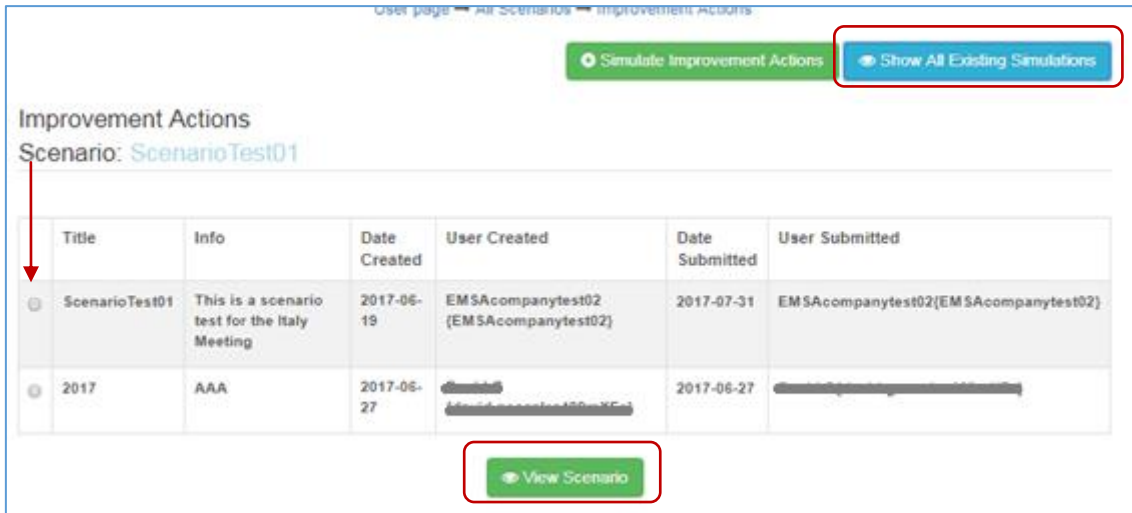
Improvement Actions
Scenario: [EMSALiteTest](#)

[Efficiency](#) [Management](#)

Main Process	Process	Equipment
	Pumping - Pumping	PUMPS
		PUMPS
		PIPING
		PIPING
	Heating - Heating1	FILTER
		FILTER
		ION EXCHANGE
		ION EXCHANGE
	HEATERS	
	HEATERS	

10.1.1 Existing simulations

In the top of the screen, before calculating any simulation, there is the option to load a previous simulation through the button “Show All Existing Simulations”. This table could be folded/unfolded to hide/show its content.



	Title	Info	Date Created	User Created	Date Submitted	User Submitted
⊖	ScenarioTest01	This is a scenario test for the Italy Meeting	2017-06-19	EMSAcompanytest02 (EMSAcompanytest02)	2017-07-31	EMSAcompanytest02(EMSAcompanytest02)
⊖	2017	AAA	2017-06-27	EMSAcompanytest02 (EMSAcompanytest02)	2017-06-27	EMSAcompanytest02(EMSAcompanytest02)

If we want to load a simulation, click on the existing simulation and the “View” button.

The objective is to show the list of the saving simulations that the user wants to save, to do this, later in the “Simulation” screen we will see a “Save” button to do so.

On each simulation, we will be able to View/modify or Delete it.

If we click in the “View” button, in the following tables we will load the selection of improvements that the user did for that simulation. If not, we will have to make a selection of improvement whose impact we want to simulate.

10.1.2 Improvement actions

In the “improvement actions” table there are two tabs: efficiency and management. In this tabs there will be shown all the improvements/recommendations that the EMSA has identified during the assessment process, for each process and equipment, identifying what actions belongs to each process/equipment.

1. 1st tab → Efficiency improvements

In this tab, there will be the following tables

- Table with all processes and equipment
- Process Improvements Actions
- Process Recommendation Actions
- Equipment Improvement Actions
- Equipment Recommendation Actions

Efficiency		Management
Main Process	Process	Equipment
	Pumping - Pumping	PUMPS
		PUMPS
		PIPING
		PIPING
	Heating - Heating1	FILTER
		FILTER
		ION EXCHANGE
		ION EXCHANGE
		HEATERS
		HEATERS
	BOILER	
	BOILER	
	PUMPS	

The user should select the process or equipment, and all the improvements and recommendation available will appear in the four tables below.

Process Improvement Actions	
Improvement Description	Select actions

Process Recommendation Actions	
Recommendation Description	Select actions
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied	

Equipment Improvement Actions	
Improvement Description	Select actions
Check pump working conditions and design, heater efficiency could be improved	<input type="checkbox"/>
Check pump working conditions and design, heater efficiency could be improved	<input type="checkbox"/>

Equipment Recommendation Actions	
Recommendation Description	Select actions
*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied	
An economizer is recommended for heating power over 4 MW	<input type="checkbox"/>
Thermal losses should be minimized by a proper insulation.	<input type="checkbox"/>
Fume temperature should be as low as possible according to the design limits.	<input type="checkbox"/>
As a general rule, heater should never work below a 30% of its nominal capacity.	<input type="checkbox"/>
Fume temperature should be around 240°C for a normal efficiency and 140°C for high efficiency heaters.	<input type="checkbox"/>

2. 2nd tab → Management improvements

In this tab, there will be presented the improvement actions related to the management areas of the company, regarding the 6 management criteria.

Improvements					
Category	Criterion	Sub-Criterion	Label	Improvement Description	Select actions
Enablers	1. Leadership, Strategy and Planning	1.1. Sustainability policy (objectives and goals)	General	Develop basic documented procedures for planning, developing and assessing the goals and objectives of the sustainability policy. Define global sustainability indicators and the way to implement the necessary corrective actions.	<input type="checkbox"/>
			Plan		
			Do		
			Check	Examine and monitor the information relative to the goals and objectives of the company, regardless if they involve water and energy topics.	<input type="checkbox"/>
		Act			
		1.2. Sustainability management	General	Contemplate guidelines for planning, developing and assessing sustainability management. Define a global sustainability indicator and the way to implement the necessary corrective actions.	<input type="checkbox"/>
			Plan		
			Do		
	Check				
	2. People, Partnerships and Resources	2.1. Human Resources	General	Develop basic documented procedures for planning, developing some basic training in water and energy topics for the human resources of the company. Define a global human resources indicator and implement the necessary corrective actions.	<input type="checkbox"/>
			Plan		
			Do		
			Check	Examine and monitor the activities performed by the employees, regardless if the training involves water and energy topics.	<input type="checkbox"/>
		Act	Review and analyse the key performance results and propose corrective actions to them, regardless if the actions are being documented.	<input type="checkbox"/>	
		2.2. Knowledge management	General	Develop basic documented procedures for planning and developing the knowledge management in water and energy topics for the company. Define a global indicator and implement the necessary corrective actions.	<input type="checkbox"/>
			Plan		
			Do		
			Check		
		2.3. Finance management	General	Perform and document financial investments in water and energy topics for the company. Perform a documented budgetary control. Create at least a global financial indicator and review short and long term saving plans.	<input type="checkbox"/>
			Plan		
			Do		
	Check		Calculation of financial indicators that can affect directly or indirectly to the financial management.	<input type="checkbox"/>	
	Act				
	2.4. Water and Energy	General	Contemplate guidelines for planning, developing and assessing the water and energy management. Define a global indicator and propose the necessary corrective actions.	<input type="checkbox"/>	
Plan					
Do					
Check		Verify the correct functioning of resources management, regardless if it involves water and energy topics.	<input type="checkbox"/>		
Act					
3. Processes	3.1. Processes management and design	General	Develop at least some basic diagrams for the processes of the company. Perform basic verifications and maintenance on the processes concerning water and energy.	<input type="checkbox"/>	
		Plan			
		Do			
		Check			
Act					
Results	4. Customers and employees Results	4.1. Internal customers results	Trends	Perform immediate corrective actions about internal customers vision of the company. Send satisfaction surveys, analyse their results and act according to the results obtained. Perform immediate corrective actions about internal customers vision of the company. Send satisfaction surveys, analyse their results and act according to the results obtained.	<input type="checkbox"/>
			Targets	Create working procedures, constant communication with the internal customers, perform periodic revisions of indicators related with water and energy. Examine closely their own targets. Send satisfaction surveys and analyse them.	<input type="checkbox"/>
		4.2. External customers results	Trends	Perform basic corrective actions about external customers vision of the company. Send satisfaction surveys, analyse their results and act according to the results obtained.	<input type="checkbox"/>
			Targets	Create working procedures, constant communication with the external customers, perform periodic revisions of indicators related with water and energy. Examine closely their own targets. Send satisfaction surveys and analyse them.	<input type="checkbox"/>
	5. Social Responsibility Results	5.1. Employees results	Trends		
		Targets	Measure the employees targets by creating a communication plan or by sending surveys about the image of the company or their perception.	<input type="checkbox"/>	
	6. Key Performance Results	6.1. Internal excellence results; sustainability	Trends		
			Targets		
		6.2. External results; impact to achieve	Trends		
			Targets		

Users should select on which improvement they are interested and, with this selection, they could simulate the savings impact. To do this, the user should click the “**Simulate improvement actions**” button.

← Back
▶ Simulate Improvement Actions
👁 Show All Existing Simulations

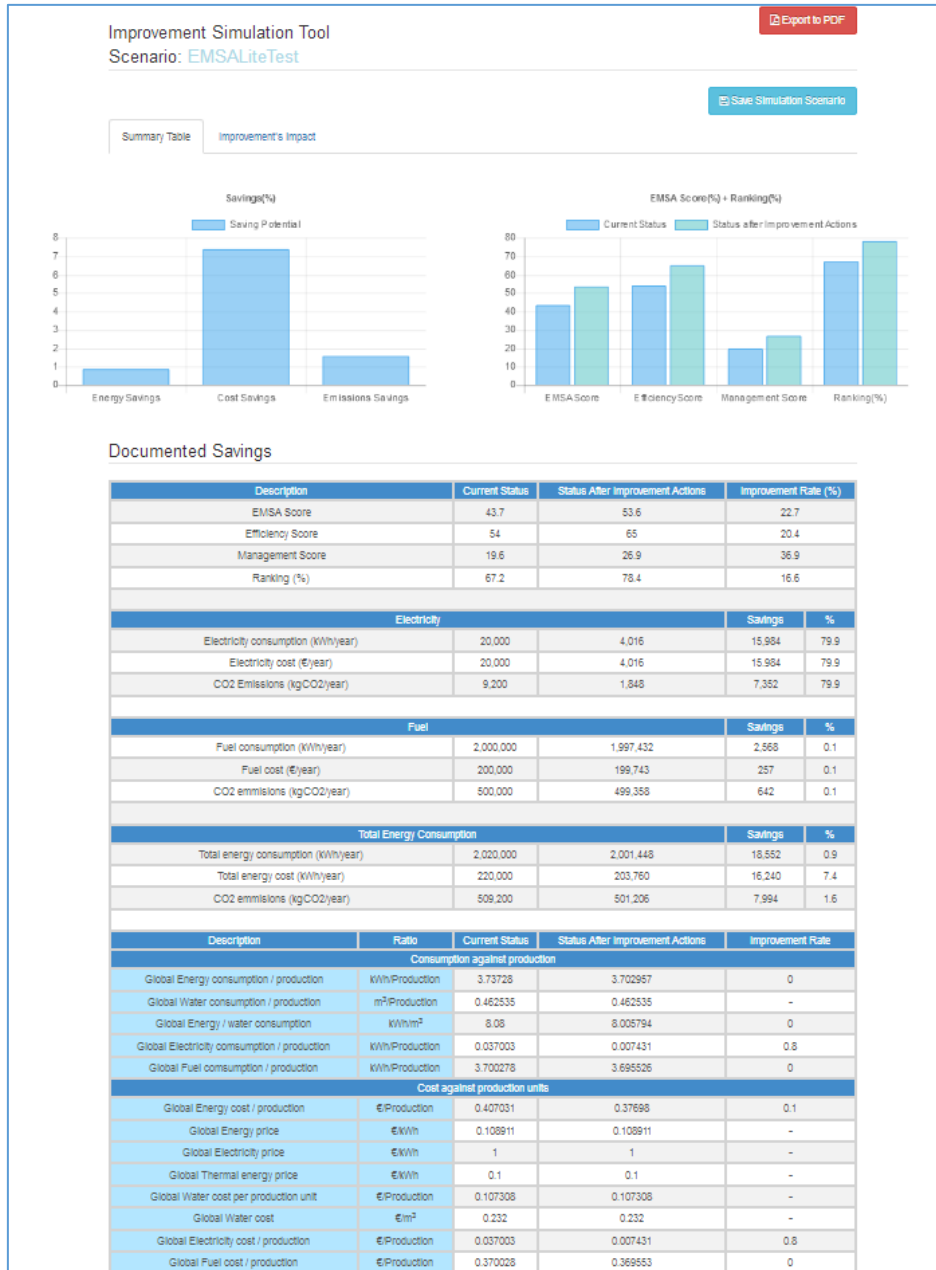
Improvement Actions
Scenario: EMSALiteTest

Efficiency
Management

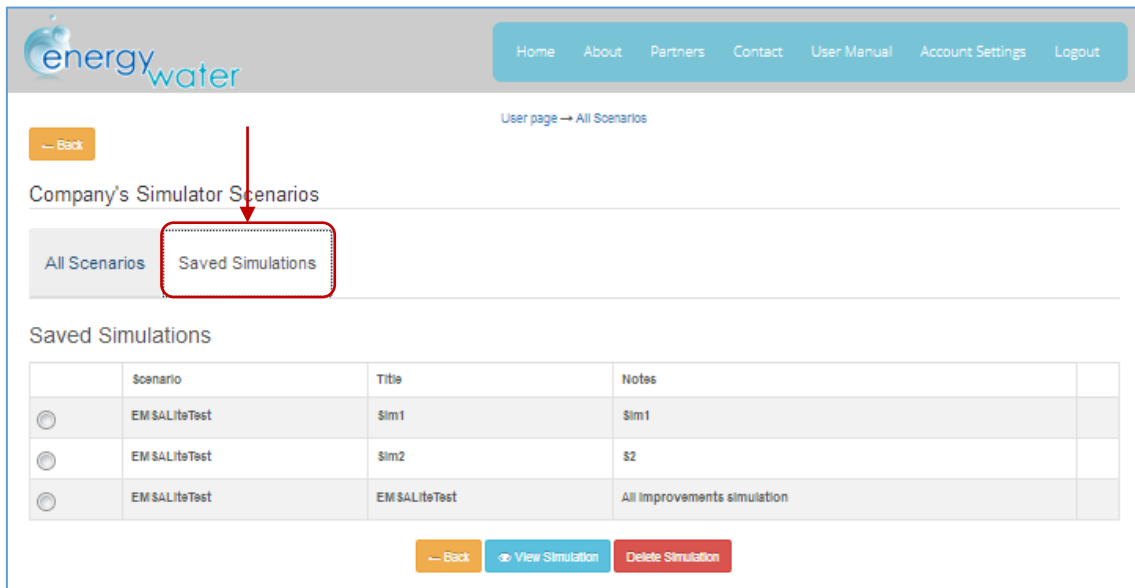
Main Process	Process	Equipment
	Pumping - Pumping	PUMPS
		PUMPS
		PIPING
		PIPING
	Heating - Heating1	FILTER
		FILTER
ION EXCHANGE		
ION EXCHANGE		
	HEATERS	
HEATERS		

10.2 By clicking on “Simulate improvement actions”

When we click on “Simulate improvement actions”, the next page will appear:



The user can save the new simulation in order to access to them in the future by the welcome screen of this module (Energy Savings Simulators). We must identify each simulation with an ID and also ask for a descriptive name given by the user before going to that page.



The screenshot shows the 'Company's Simulator Scenarios' page. A red arrow points to the 'Saved Simulations' tab, which is highlighted with a red dashed box. Below the tabs is a table of saved simulations.

	Scenario	Title	Notes
<input type="radio"/>	EM \$ALiteTest	Sim1	Sim1
<input type="radio"/>	EM \$ALiteTest	Sim2	\$2
<input type="radio"/>	EM \$ALiteTest	EM \$ALiteTest	All Improvements simulation

At the bottom of the table, there are three buttons: 'Back', 'View Simulation', and 'Delete Simulation'.

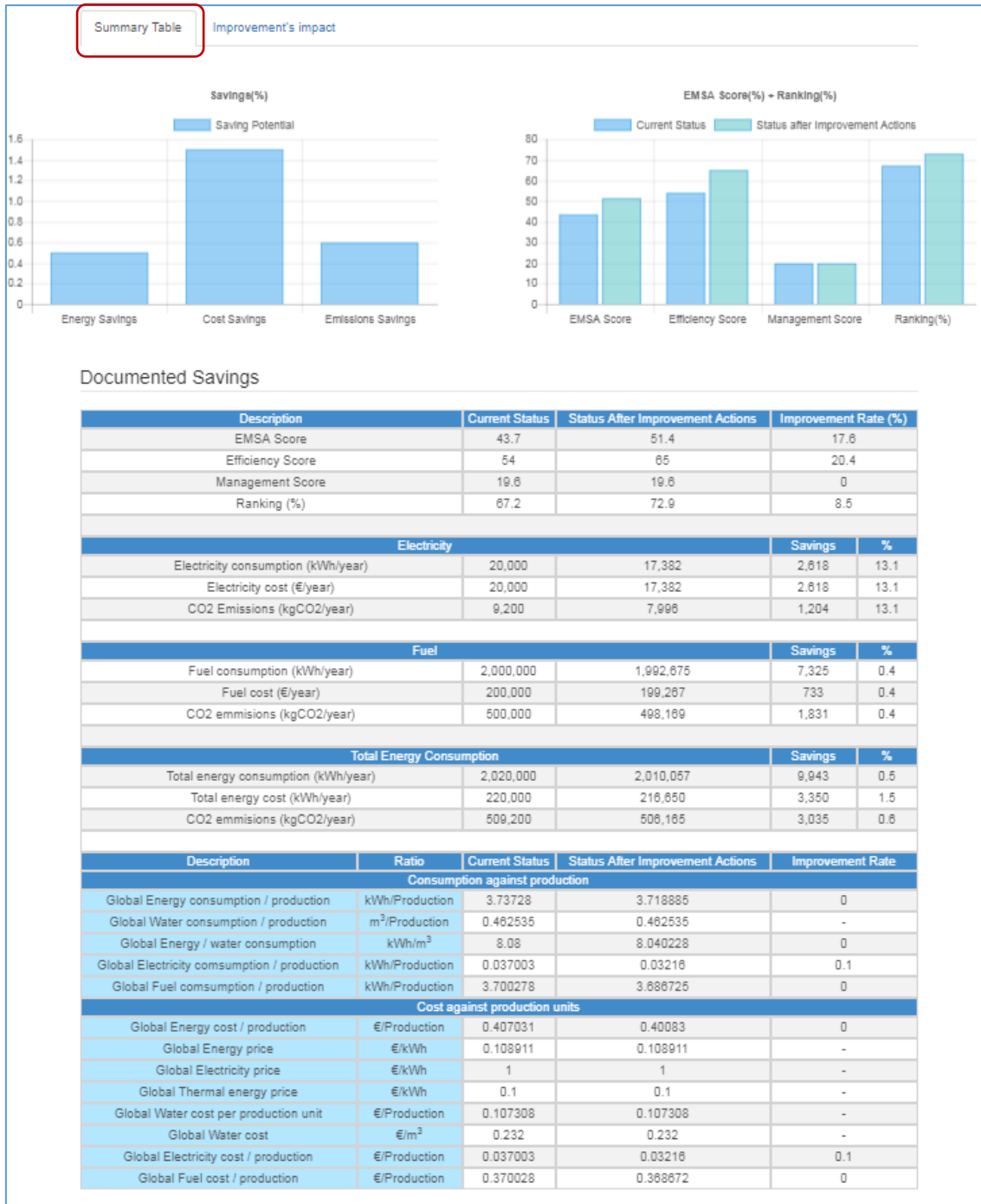
For each simulation, the EMSA creates a virtual scenario. On it, instead of the real values of the scenario, the tool is going to substitute them with the recommended value, but only in the selected improvement actions.

Then, two tabs appear:

- Summary table
- Improvements' impact.

10.2.1 Summary table

Here, the tool presents the summary table of the **selected** improvement actions' impact if all of them were implemented. To do this, there is a summary table comparing before/after scenarios and the improvement rate.



10.2.2 Improvements' impact

In this tab, the tool will show the impact of the selected improvement actions through different data such as total consumption, savings (energy, cost, CO2 emissions) and general KPIs

The user should select those improvements that they are willing to implement, and, that selection will be used to make the requests of the EA's network services. This will be done by the **"Improvements Management"** module.

Summary Table
Improvement's Impact

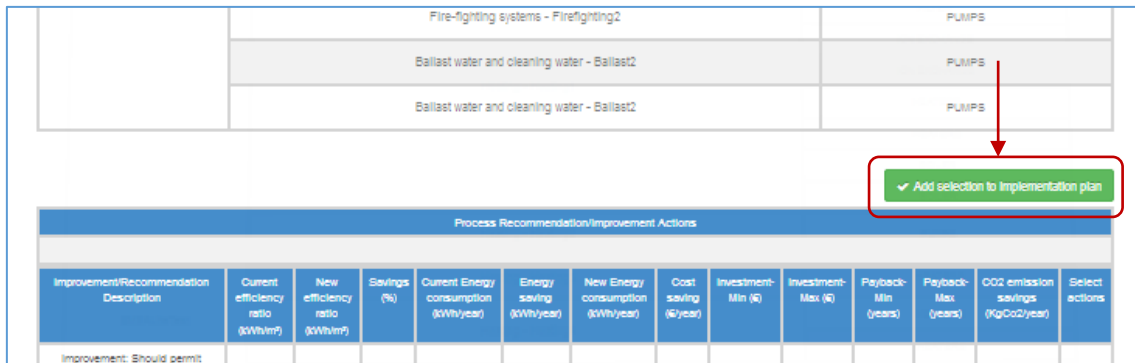
Main Process	Process	Equipment
EMSALiteTest	Pumping - Pumping	PUMPS
		PUMPS
		PIPING
		PIPING
	Heating - Heating1	FILTER
		FILTER
		ION EXCHANGE
		ION EXCHANGE
		HEATERS
		HEATERS
	Heating - Heating2	BOILER
		BOILER
	Heating - Heating3	PUMPS
	Heating - Heating4	HEATERS
	Heat Exchange - HeatExchange2	HEATERS
	Heat Exchange - HeatExchange2	HEATERS
	Heat Exchange - HeatExchange2	HEAT EXCHANGER
	Heat Exchange - HeatExchange2	HEAT EXCHANGER
	Steam generation Boiling - Boiling2	PUMPS
	Steam generation Boiling - Boiling2	PUMPS
Cooling - Cooling2	PUMPS	
Cooling - Cooling2	PUMPS	
Fire-fighting systems - Firefighting2	PUMPS	
Fire-fighting systems - Firefighting2	PUMPS	
Ballast water and cleaning water - Ballast2	PUMPS	
Ballast water and cleaning water - Ballast2	PUMPS	

✓ Add selection to Implementation plan

Process Recommendation/Improvement Actions													
Improvement/Recommendation Description	Current efficiency ratio (\$/Wh/m³)	New efficiency ratio (\$/Wh/m³)	Savings (%)	Current Energy consumption (\$/Wh/year)	Energy saving (\$/Wh/year)	New Energy consumption (\$/Wh/year)	Cost saving (\$/year)	Investment-Min (\$)	Investment-Max (\$)	Payback-Min (years)	Payback-Max (years)	CO2 emission savings (KgCO2/year)	Select actions
Improvement: Should permit maintenance access (cleaning, inspection, etc.) ...see more	0	0	0	0	0	0	0	0	0	0	0	0	<input type="checkbox"/>
Recommendation: Heating													

If the user has a special interest on implementing some high-impact actions and keep track of it, he should select the improvements he wants, and click in the “Add selection to implementation plan” button.

Later, those improvement will appear in the “Improvement Management” module.



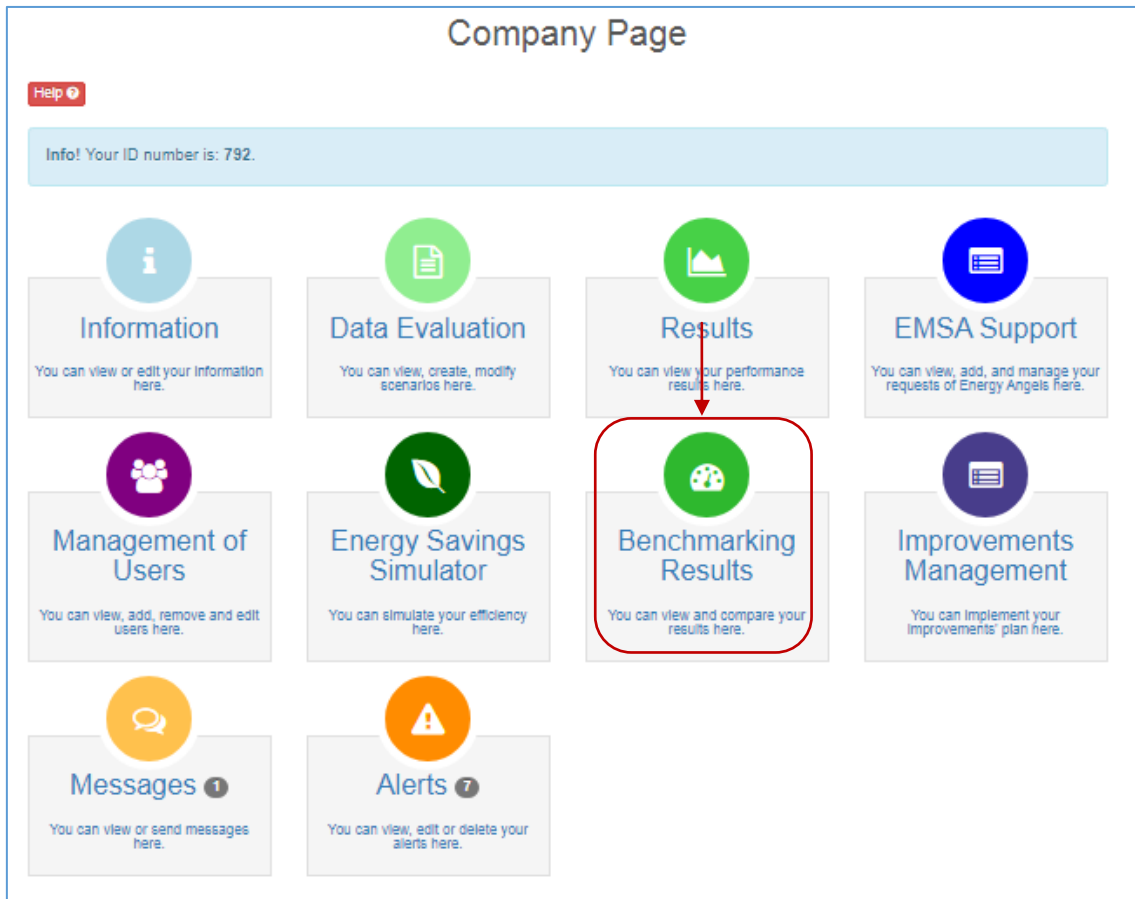
The screenshot shows a table with three rows of energy improvements. The first row is 'Fire-fighting systems - Firefighting2' with 'PUMPS' in the second column. The second and third rows are 'Ballast water and cleaning water - Ballast2' with 'PUMPS' in the second column. A red arrow points from the 'PUMPS' cell in the second row to a green button labeled 'Add selection to Implementation plan'. Below this is a table titled 'Process Recommendation/Improvement Actions' with the following columns: Improvement/Recommendation Description, Current efficiency ratio (kWh/m²), New efficiency ratio (kWh/m²), Savings (%), Current Energy consumption (kWh/year), Energy saving (kWh/year), New Energy consumption (kWh/year), Cost saving (€/year), Investment-Min (€), Investment-Max (€), Payback-Min (years), Payback-Max (years), CO2 emission savings (Kg/CO2/year), and Select actions. The first row of this table contains the text 'Improvement: Should permit'.

When the user clicks on it, he will be redirected to the “Improvements Management” module. The Energy Angel assigned to the improvements added to the implementation plan will be the same as the one assigned to the company.

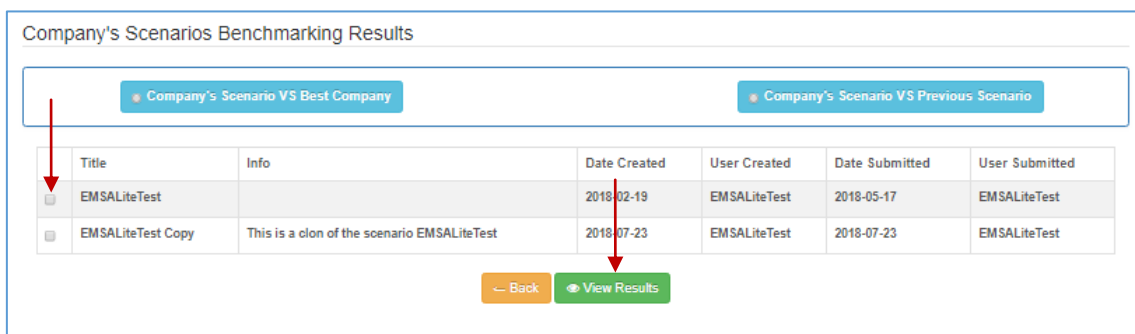
11 BENCHMARKING

To access to the Benchmarking module, the User should enter in the “*Benchmarking*” tab. The company’s account has a permanent access to this tab.

Depending on the permissions granted by the company, Energy Angels and the rest of the users of the company can also have access to it.



Then, the tool proposes two ways of making the benchmarking comparison:



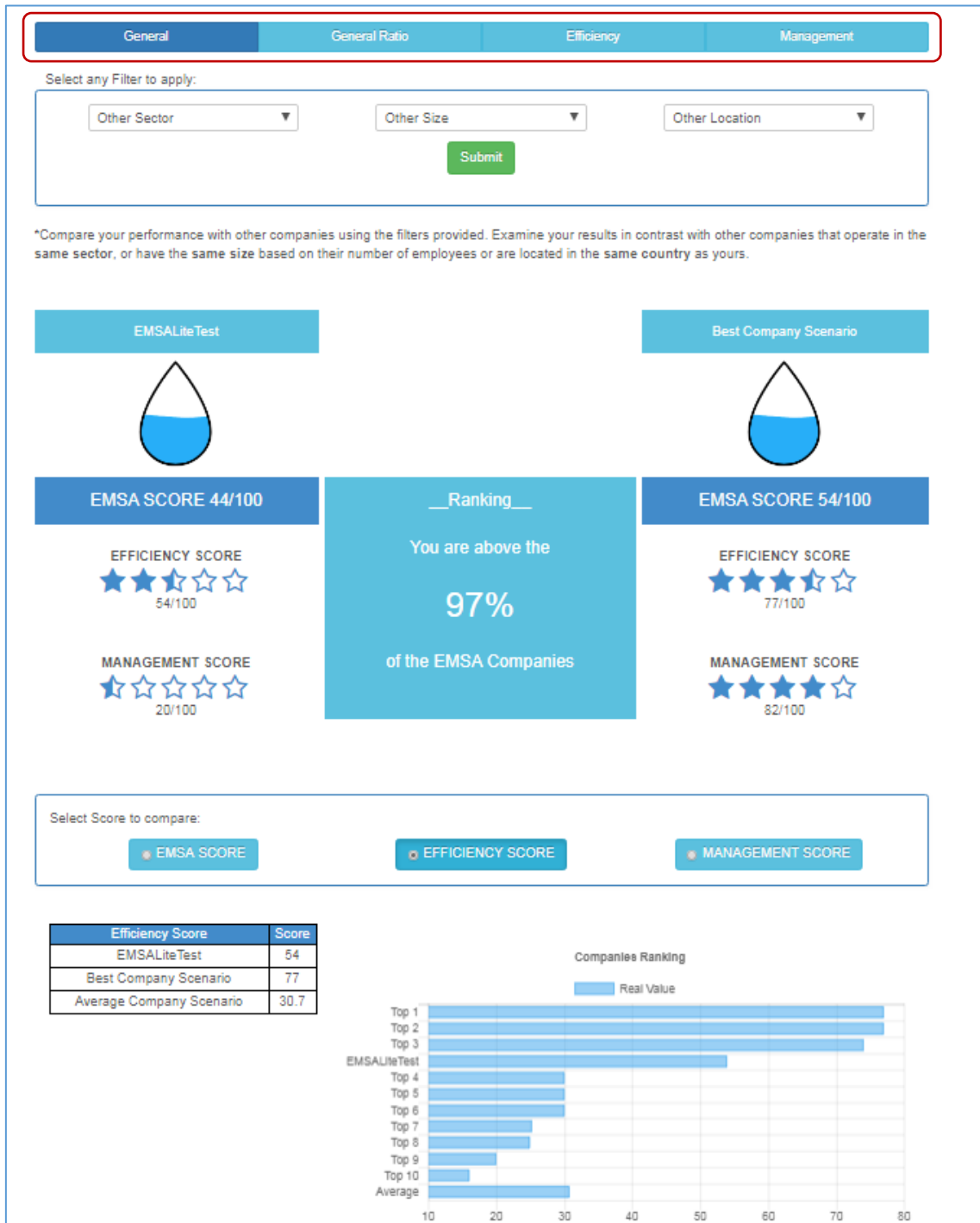
	Title	Info	Date Created	User Created	Date Submitted	User Submitted
<input type="checkbox"/>	EMSALiteTest		2018-02-19	EMSALiteTest	2018-05-17	EMSALiteTest
<input type="checkbox"/>	EMSALiteTest Copy	This is a clon of the scenario EMSALiteTest	2018-07-23	EMSALiteTest	2018-07-23	EMSALiteTest

In the first option, people should select ONE scenario to compare with the best companies across Europe, in the second option, people should select TWO scenario to compare one against the other.

The company has to select which scenario's results they want to display. Once a scenario has been selected, press the "View Results" button.

Only the submitted scenarios will be able to be selected.

After that, a screen with the Benchmarking result appears:



In the first half of the screen we can see four different tabs, one for every type of benchmarking results that EMSA displays:

- General Results
- General Ratio Results
- Efficiency Results
- Management results

On every tab, the first thing to do is select the type of filter that the User wants to apply to make the benchmarking comparison. To do this, the following filters are available:

- **Sector:** All sectors/Same sector
- **Company size:** All sizes/Same size/SME's/Large companies
- **Location:** All EU countries/Same country

In case the User changes the values of the filters, click on the “Submit” button to apply the selected filters and refresh data.

Select any Filter to apply:

Other Sector ▾

Other Size ▾

Other Location ▾

Submit

*Compare your performance with other companies using the filters provided. Examine your results in contrast with other companies that operate in the **same sector**, or have the **same size** based on their number of employees or are located in the **same country** as yours.

Another function similar to every tab is the ranking diagram. On it, the Company can select a specific indicator to be compared (select only one value at the same time), and a graph will display a summary table with the main reference indicators and their ranking position according to the benchmarking database.

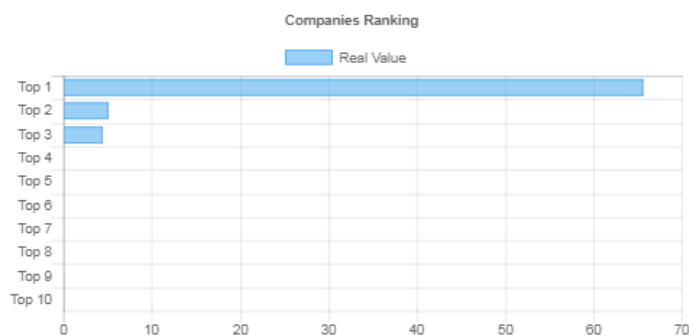
Select Score to compare:

EMSA SCORE

EFFICIENCY SCORE

MANAGEMENT SCORE

EMSA Score	Score
EMSACompanyTest02	
Average Company	
Best Company	



In the following points there will be explained the different benchmarking tabs and their related functionalities.

11.1 General Benchmarking

In the general benchmarking the following aspects will appear:

General
General Ratio
Efficiency
Management

Select any Filter to apply:

Other Sector ▼

Other Size ▼

Other Location ▼

Submit

*Compare your performance with other companies using the filters provided. Examine your results in contrast with other companies that operate in the same sector, or have the same size based on their number of employees or are located in the same country as yours.

EMSA Lite Test

EMSA SCORE 44/100

EFFICIENCY SCORE
★ ★ ★ ★ ☆
54/100

MANAGEMENT SCORE
★ ☆ ☆ ☆ ☆
20/100

Best Company Scenario

EMSA SCORE 54/100

EFFICIENCY SCORE
★ ★ ★ ★ ☆
77/100

MANAGEMENT SCORE
★ ★ ★ ★ ☆
82/100

__Ranking__

You are above the

97%

of the EMSA Companies

Select Score to compare:

EMSA SCORE
 EFFICIENCY SCORE
 MANAGEMENT SCORE

Efficiency Score	Score
EMSA Lite Test	54
Best Company Scenario	77
Average Company Scenario	30.7

Companies Ranking

Here, we can see two type of companies to be compared:

- On the left side, there are the Company's data related to the submitted scenario that the User wants to compare
- On the right side, we can see the reference data that the EMSA use to compare the submitted scenario. That reference data can have two origins:
 - o "Best Company", the best company appears when we select the **Company's scenario vs. Best Companies** method of comparison, and that best company are the company with the highest EMSA score inside the Benchmarking database.
 - o "Previous scenario" the previous scenario appears when we select the **Company's scenario vs. previous scenario** method of comparison, and that previous scenario is a company's scenario that the User needs to select at after selecting the way of comparison.

In that screen, the indicators compared have been explained in the previous points and belong to the Results section of the tool such as:

- EMSA Score
- Efficiency Score
- Management Score

In that part, the most important indicator is the "**Benchmarking Score**" that is presented in the middle of the two compared items.

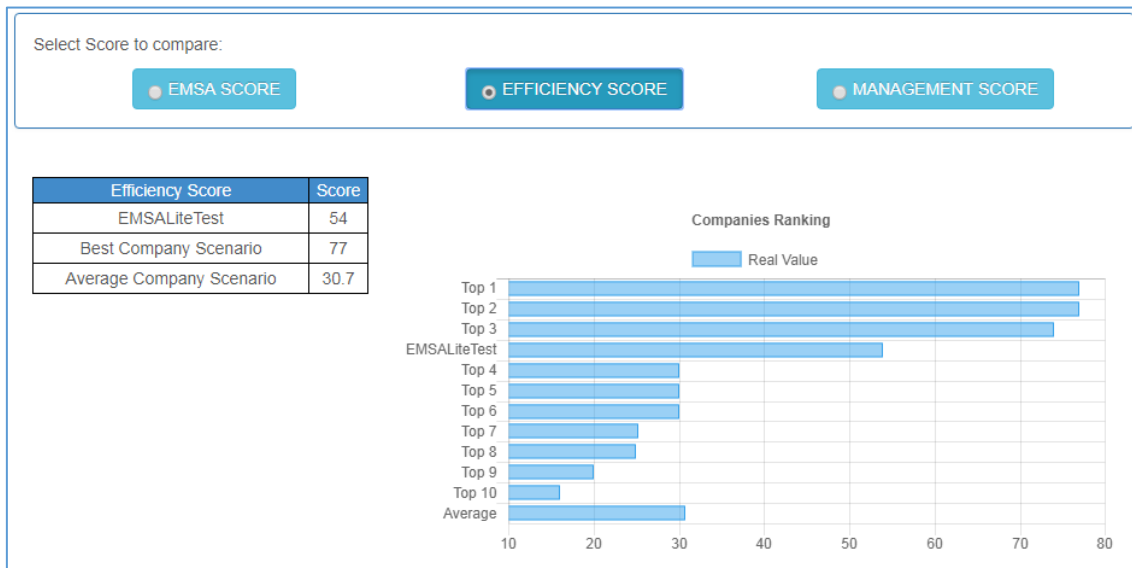
The benchmarking score shows the global position of a company compared to industrial companies across Europe inside the benchmarking database. It shows how close a company is from the top position (100%), regarding EMSA Score, that joins efficiency and management criteria in a single score number.

If a company has a 100% score in the benchmarking, it means that from the Benchmarking database, that company has the best results in both the efficiency and management assessment. However, there may be more efficient companies that have not introduced their data in the tool.

For instance, if a company has a benchmarking score of 75%, it means that, for that specific criterion, that company is above the 75% of the companies inside the benchmarking database.

In the second part of this tab, we can find the ranking diagram, on it, we can compare the main general results of a company's scenario, which are the following:

- **EMSA Score**
- **Efficiency Score**
- **Management Score**



By selecting one by one those indicators, we can see a summary table where the EMSA displays the company's value, the average value and the best value, and that information are also presented in the raking diagram, where we could see the ranking of the following items:

- Top 10 best companies
- Position of the actual company
- Position of the average company

The actual company will be positioned inside the graph depending on their ranking value (over/below the average, on the top10, etc.)

If we are doing a comparison with the previous scenario, only the actual scenario data and the previous scenario data will be shown.

11.2 General Ratio Benchmarking

In the general ratio benchmarking the following aspects will appear:

General
General Ratio
Efficiency
Management

Select any Filter to apply:

Other Sector ▼

Other Size ▼

Other Location ▼

*Compare your performance with other companies using the filters provided. Examine your results in contrast with other companies that operate in the same sector, or have the same size based on their number of employees or are located in the same country as yours.

Scenario: EMSALiteTest VS Best

Select the Ratio to contrast in detail:

Consumption against production		
Select	Description	Ratio
<input type="radio"/>	Total Energy consumption per unit production	kWh/Unit Production
<input type="radio"/>	Production Water efficiency comparison	m ³ /Unit Production
<input type="radio"/>	Energy intensity of water use	kWh/m ³
<input type="radio"/>	Electricity consumption per unit production	kWh/Unit Production
<input type="radio"/>	Fossil Fuel consumption per production	kWh/Unit Production
Cost against production units		
Select	Description	Ratio
<input type="radio"/>	Total Energy cost per unit production	€/Production
<input type="radio"/>	Overall unit energy price	€/kWh
<input type="radio"/>	Electricity unit price	€/kWh
<input type="radio"/>	Fossil fuel unit price	€/kWh
<input checked="" type="radio"/>	Water cost per unit production	€/Production
<input type="radio"/>	Water unit price	€/m ³
<input type="radio"/>	Electricity cost per unit production	€/Unit Production
<input type="radio"/>	Fossil Fuel cost per unit production	€/Unit Production

Results

Water cost per unit production	Value
EMSALiteTest	0.10731
Best Company	0.00428
Average Company	1.00845

Water cost per unit production

Real Value

Rank	Company	Value (€/Production)
Top 1		~0.05
Top 2		~0.08
Top 3		~0.12
Top 4	EMSALiteTest	0.10731
Top 5		~0.15
Top 6		~0.20
Top 7		~0.25
Top 8		~0.30
Top 9		~0.35
Top 10		~0.40
Average		1.00845

Here, the User can see the results of the main energy efficiency ratios indicators according to the “General questions” and the “Efficiency questions” about process and equipment data.

The user can select an indicator (one by one) in the summary table.

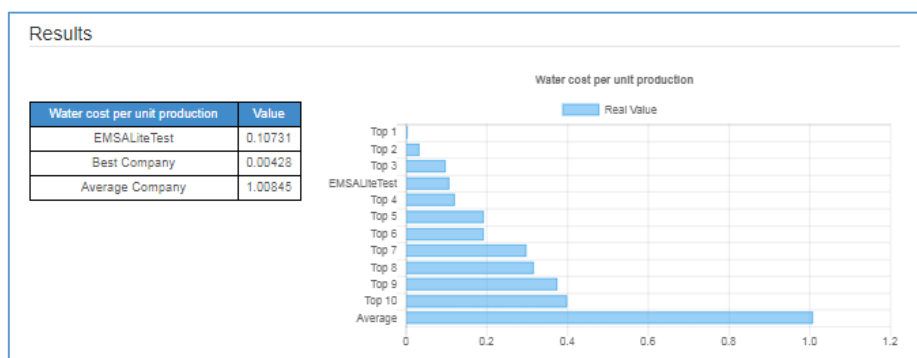
Select the Ratio to contrast in detail:

Consumption against production		
Select	Description	Ratio
<input type="radio"/>	Total Energy consumption per unit production	kWh/Unit Production
<input type="radio"/>	Production Water efficiency comparison	m ³ /Unit Production
<input type="radio"/>	Energy intensity of water use	kWh/m ³
<input type="radio"/>	Electricity consumption per unit production	kWh/Unit Production
<input type="radio"/>	Fossil Fuel consumption per production	kWh/Unit Production
Cost against production units		
Select	Description	Ratio
<input type="radio"/>	Total Energy cost per unit production	€/Production
<input type="radio"/>	Overall unit energy price	€/kWh
<input type="radio"/>	Electricity unit price	€/kWh
<input type="radio"/>	Fossil fuel unit price	€/kWh
<input checked="" type="radio"/>	Water cost per unit production	€/Production
<input type="radio"/>	Water unit price	€/m ³
<input type="radio"/>	Electricity cost per unit production	€/Unit Production
<input type="radio"/>	Fossil Fuel cost per unit production	€/Unit Production

By selecting one by one those indicators, we can see a summary table where the EMSA displays the company's value, the average value and the best value, and that information are also presented in the raking diagram, where we could see the ranking of the following items:

- Top 10 best companies
- Position of the actual company
- Position of the average company

The actual company will be positioned inside the graph depending on their ranking value (over/below the average, on the top10, etc.)



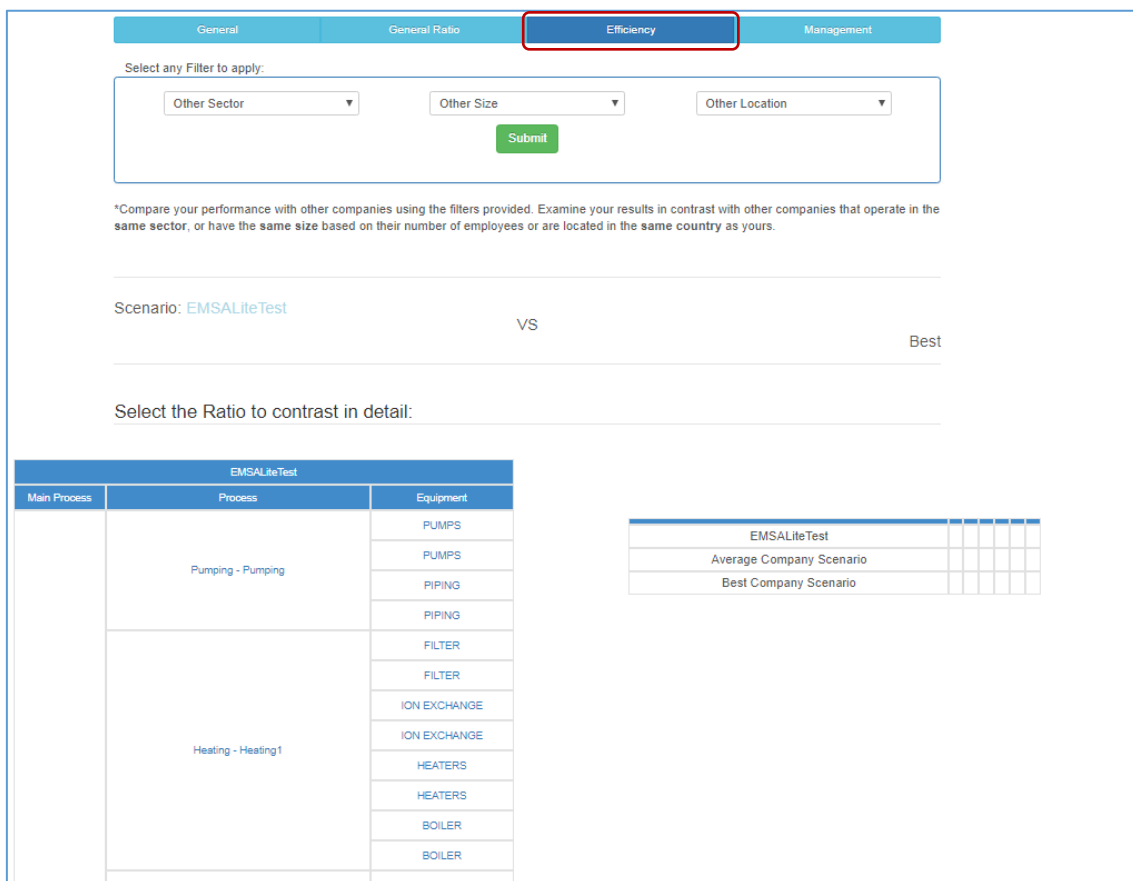
If we are doing a comparison with the previous scenario, only the actual scenario data and the previous scenario data will be shown.

11.3 Efficiency Benchmarking

The “Efficiency Benchmarking” tab is different if the comparison is with the best company or with the previous scenario.

11.3.1 Best Company

In the case of best company comparison the following aspects will appear:



Select any Filter to apply:

Other Sector Other Size Other Location

Submit

*Compare your performance with other companies using the filters provided. Examine your results in contrast with other companies that operate in the same sector, or have the same size based on their number of employees or are located in the same country as yours.

Scenario: **EMSA LiteTest** VS Best

Select the Ratio to contrast in detail:

EMSA LiteTest		
Main Process	Process	Equipment
Pumping - Pumping		PUMPS
		PUMPS
		PIPING
		PIPING
Heating - Heating1		FILTER
		FILTER
		ION EXCHANGE
		ION EXCHANGE
		HEATERS
		HEATERS
		BOILER
		BOILER
Heating - Heating2		PUMPS

EMSA LiteTest									
Average Company Scenario									
Best Company Scenario									

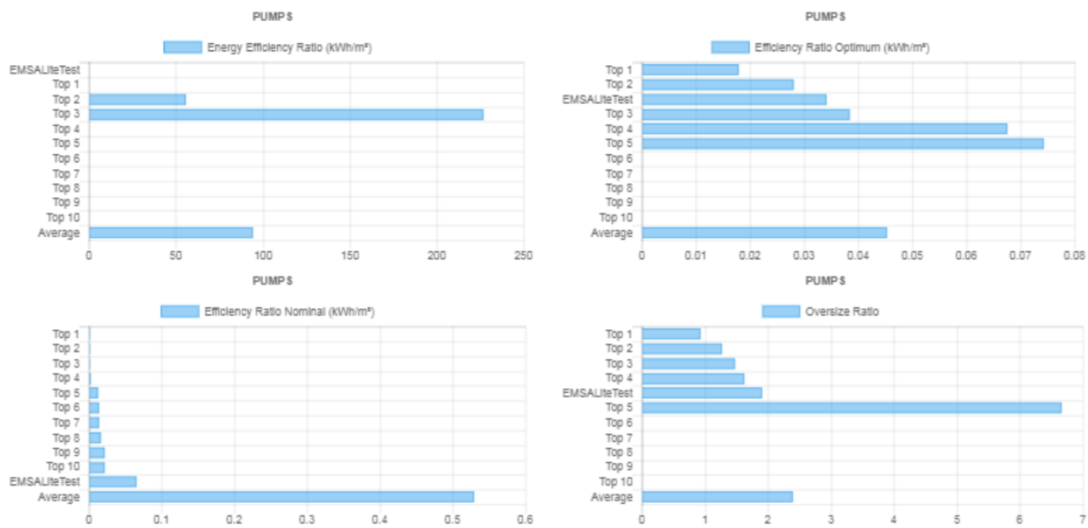
By selecting one by one the processes and equipments, we can see a summary table where the EMSA displays the company’s value, the average value and the best value of the main energy efficiency indicator calculated on EMSA evaluation, and that information are also presented in the rankings diagrams, where we could see the ranking of the different relevant parameters in the process or equipment selected.

Select the Ratio to contrast in detail:

EMSALiteTest		
Main Process	Process	Equipment
	Pumping - Pumping	PUMPS
		PUMPS
		PIPING
		PIPING
	Heating - Heating1	FILTER
		FILTER
		ION EXCHANGE
		ION EXCHANGE
		HEATERS
		HEATERS

PUMPS	Energy Efficiency Ratio (kWh/m ³)	Efficiency Ratio Optimum (kWh/m ³)	Efficiency Ratio Nominal (kWh/m ³)	Overize Ratio	
EMSALiteTest	0.00066	0.03406	0.065	1.90826	-
Average Company Scenario	94.23495	0.0452	0.52971	2.38965	-
Best Company Scenario	0.03567	0.0179	0.00041	0.92389	-

Results:



11.3.2 Previous Scenario

In the case of previous scenario comparison the following aspects will appear:

The screenshot shows the 'Efficiency' tab in the software interface. At the top, there are navigation tabs: 'General', 'General Ratio', 'Efficiency' (highlighted), and 'Management'. Below the tabs, the scenarios are identified as 'Scenario: EMSALiteTest' and 'Scenario: EMSALiteTest Copy' separated by 'VS'.

1 Instructions:

Compare two same Process types:
 1st Step: Choose a process from Scenario 1 in order to display a green label ❶ to the right of the process.
 2nd Step: Choose a same type of process from Scenario 2 in order to display a green label ❷ to the right of the process.
 In case you want to choose another type of process or a type of equipment, start from Scenario 1.

Compare two same Equipment types:
 1st Step: Choose an equipment from Scenario 1 in order to display a green label ❶ to the right of the equipment.
 2nd Step: Choose a same type of equipment from Scenario 2 in order to display a green label ❷ to the right of the equipment.
 In case you want to choose another type of equipment or a type of process, start from Scenario 1.

You cannot compare two different process types or two different equipment types. You cannot compare a process with an equipment.

2 Select Process/Equipment to compare:

Scenario 1			Scenario 2		
EMSALiteTest			EMSALiteTest Copy		
Main Process	Process	Equipment	Main Process	Process	Equipment
	Pumping - Pumping	PUMPS		Pumping - Pumping	PUMPS
		PUMPS			PUMPS
		PIPING			PIPING
		PIPING			PIPING
	Heating - Heating1	FILTER		Heating - Heating1	FILTER
		FILTER			FILTER
		ION EXCHANGE			ION EXCHANGE
		ION EXCHANGE			ION EXCHANGE
		HEATERS			HEATERS
		HEATERS			HEATERS
		BOILER			BOILER
		BOILER			BOILER

1. Instructions

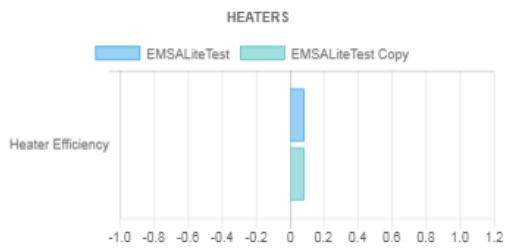
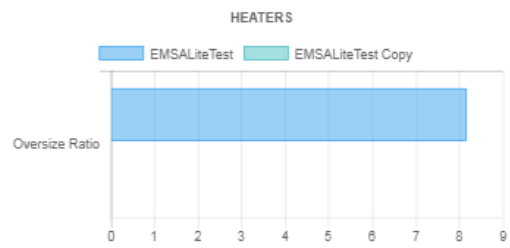
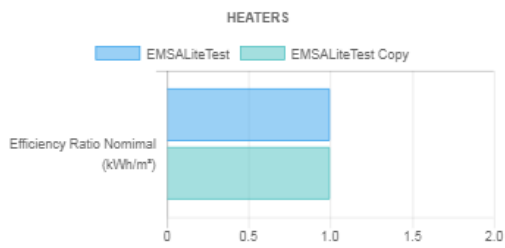
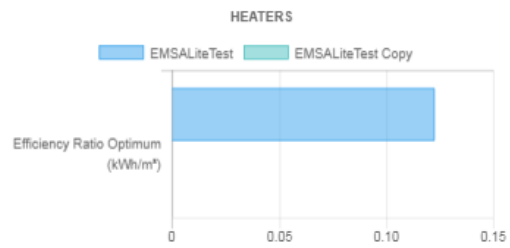
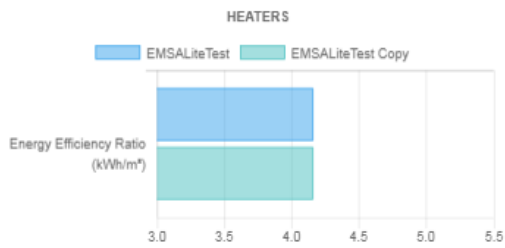
On the top of the screen will appear the instructions for selecting the processes and equipments to compare.

- In the tables will appear a summary table of the equipments and processes of the scenarios. The company's scenario will be located at left and the previous scenario at right.

By selecting one by one the processes and equipments, we can see a summary table where the EMSA displays the company's value, and the previous scenario value. We could see the comparison of the different relevant parameters in the process or equipment selected.

Results

	Process / Equipment	Energy Efficiency Ratio (kWh/m ³)	Efficiency Ratio Optimum (kWh/m ³)	Efficiency Ratio Nomimal (kWh/m ³)	Oversize Ratio
EMSALiteTest	ION EXCHANGE	4.15929	0.12241	1	8.16925
EMSALiteTest Copy	HEATERS	4.15929	0	1	0

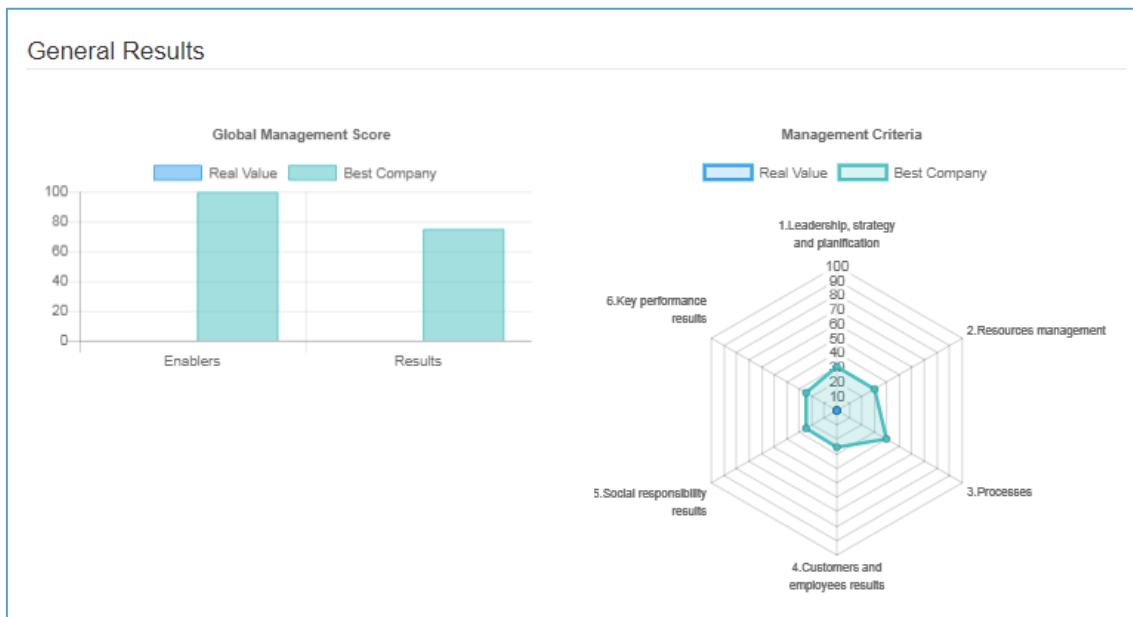


11.4 Management Benchmarking

The “Management Benchmarking” tab is different if the comparison is with the best company or with the previous scenario.

11.4.1 Best Company

In the case of best company comparison the following aspects will appear:



Here, the User can see the results of the enablers and results criteria according to the “Management questions”.

There, the graphs displays both the real value of the Scenario selected and the reference value according to the comparison method selected.

On the top of the screen, different graphs will display the energy indicators, divided by categories such as:

- Global management Score
 - Enablers
 - Results
- Management Criteria
 - Criterion 1
 - Criterion 2
 - Criterion 3
 - Criterion 4
 - Criterion 5
 - Criterion 6

Then, the same scores are in a summary table, where we can select them (one by one) and compare them in the same way as it has been explained in the previous points.

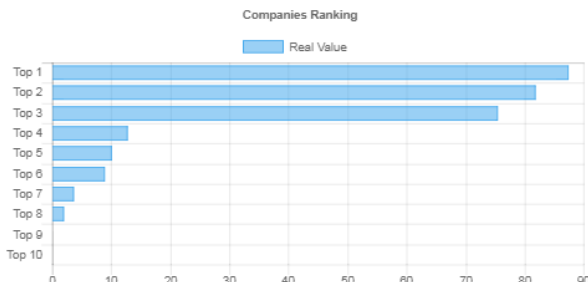
Select Criterion to Compare:

Select	Criteria
<input type="radio"/>	Management score
<input type="radio"/>	1. Leadership, strategy and planification
<input type="radio"/>	2. Resources management
<input type="radio"/>	3. Processes
<input type="radio"/>	4. Customers ans employees results
<input type="radio"/>	5. Social responsibility results
<input type="radio"/>	6. Key performance results

Ranking Results:

Management Score	Score
EMSACompanyTest02	
Average Company	
Best Company	

Companies Ranking



Rank	Real Value (Score)
Top 1	88
Top 2	82
Top 3	75
Top 4	15
Top 5	10
Top 6	8
Top 7	5
Top 8	3
Top 9	2
Top 10	2

11.4.2 Previous Scenario

In the case of previous scenario comparison the following aspects will appear:



Here, the User can see the results of the general scores and both the subcriteria and criteria results according to the “Management questions”.

There, the graphs displays both the real value of the Scenario selected and the previous scenario value according to the comparison method selected.

11.5 Explaining the “Benchmarking database”

The “Benchmarking Database” is the basis of the comparison methodology that the EMSA uses to provide the Benchmarking Score. To do this, it has the following features:

Categories/filters

Through different categories and filters, companies are able to see their status inside the global industrial sector and in detail by size, sector or country. The filters used are the following:

1. Sector
 - Same sector
 - All industrial sectors
2. Size
 - Large companies
 - SME's
 - All sizes
 - Same size
3. Location
 - Same country
 - All Europe

Type of information to compare

In the Benchmarking database appear all information displayed in the Results Section of the EMSA, recording the best company for every indicator. The main indicators are:

- General results
 - EMSA Score
 - Efficiency Score
 - Management Score
- General questions
 - Indicators
- Efficiency questions
 - Process
 - Equipment
 - Efficiency Score
- Management questions
 - Global management score
 - Criteria
 - Sub-criteria

Components

To build the **Benchmarking database** the EMSA carries out the following automatic tasks:

- Create an anonymous identity for every company registered in the EMSA
- Assign to that anonymous profiles their Scenario results of the most recent submitted scenario (all results)
- Identify their ranking position on every type of information that we are able to compare and every category.
- Identify the “average” company → a virtual company that has the average value of the results of all the companies in the database
- Update database: control what values are updated is a key aspect for the quality of the benchmarking process. In general, the rule is update the corresponding value anytime that a new company gets a better score/ratio. There will be created a log where all the updates are recorded so that the Network Administration were able to supervise them and validate that the process is being done properly.

General rules for benchmarking:

- It will be possible to compare those fields where ratios/indicators are available, in the rest, the EMSA will provide a “Information not available” message
- If there is enough information to generate results, but not enough to make benchmarking, the tool will provide a generic benchmarking database average values in order to encourage companies to see the capacities of the benchmarking module, but clearly indicating that those values doesn't belong to the company (The EMSA is just giving them generic data to test the benchmarking options and engage them to introduce more information).
- The reference data in the benchmarking database must have the MEASURED label whenever possible, but the data we are going to compare can be measured/estimated/calculated, so we should always indicate the origin of the data.
- The more data are in the EMSA, the more powerful will be the benchmarking module, so this module will be easy to modify and to add new categories/filters and make different groups as it grows during the EnergyWater project life.

12 IMPROVEMENTS MANAGEMENT

We should distinguish the “Improvements Management” functionality from the “Energy Angels: EMSA support” service.

This new functionality aims to manage the proposed improvement actions identified during the assessment, which the Company wants to implement, with the Energy Angels that provide the different services where Companies need support to implement it.

To do this, the main functionalities are:

- Provide a complete list of available “improvement actions” identified in the different submitted scenarios
 - In the list there should appear all the available improvements in the company, regardless the scenario that they belong.
 - Each improvement/recommendation identified should have a unique ID to identify its origins (main process → process → equipment...), as we cannot make two simultaneously requests for the same improvement action in the same equipment.
- The user will select some “improvement actions” that the company wants to implement and transfer them into an “implementation plan”
- For every “improvement action” inside the “implementation plan” there is a technical sheet where the User can keep track of its development in terms of status, Energy Angel associated, etc. To do this, select what services do the company wants, and the tool will provide a list of Energy Angels that are validated in those services.
 - The company must select the services to provide to that improvement action
 - The EMSA shows those EA that are validated in that services selection
 - The company select one or more EA
 - The EMSA sends a request to the EA with some information
 - If the EA accepts the work, both the EA and the company are able to see the contact details of each other and they can get in contact to ask for a budget and continue the implementation process.

12.1 Improvements Management → Welcome screen

When we click on the “Improvements Management” module, a welcome screen appears with the **implementation plan**.

Implementation Plan

Implementation Plan
Completed Actions
✔ Add Improvements

View Details
Delete

Improvement Actions

Process Improvement Actions

Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	Select Action
EMSA/iteTest	EMSA/iteTest	Heating	Heating1	Regular inspection searching for erosion, corrosion, leaks, scaling, fouling.	In progress	<input type="radio"/>
EMSA/iteTest	EMSA/iteTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.	Pending	<input type="radio"/>
EMSA/iteTest	EMSA/iteTest	Heating	Heating1	Consider installing measurement equipment in all the main parameters that affect the energy efficiency from the heating process, such as energy consumption, water flow, production.	Pending	<input type="radio"/>

Equipment Improvement Actions

Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description	Status	Select Action
EMSA/iteTest	EMSA/iteTest	Pumping	Pumping	PUMPS	TYPE2	Efficiency lower than expected, there are possibilities for improvement. (E.g. Replacement of pumps, operation at BER) To be revised by Energy Angel.	Pending	<input type="radio"/>
EMSA/iteTest	EMSA/iteTest	Pumping	Pumping	PUMPS	TYPE2	Installing high efficiency motors. Replacement of existing low efficiency motors.	Pending	<input type="radio"/>
EMSA/iteTest	EMSA/iteTest	Pumping	Pumping	PUMPS	TYPE2	Check pumps working conditions and design, pump efficiency could be improved.	Pending	<input type="radio"/>
EMSA/iteTest	EMSA/iteTest	Heat Exchange	HeatExchange2	PUMPS	TYPE1	Installing high efficiency motors. Replacement of existing low efficiency motors.	Pending	<input type="radio"/>

Recommendations

Process Recommendation Actions

*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied

Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	Select Action
EMSA/iteTest	EMSA/iteTest	Heat Exchange	HeatExchange2	Heating nominal capacity should be adjusted to all possible heat demand in the process	Pending	<input type="radio"/>

Equipment Recommendation Actions

*Recommendation = aspects identified as recommendations could run into improvement actions. The Energy Angel should study in detail to determine the best saving measures that could be applied

Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description	Status	Select Action
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Management

Improvements

Scenario Name	Category	Criterion	Sub-Criterion	Label	Improvement Description	Status	Select actions
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In this screen are shown the list of all the improvements actions identified in the company, regardless the scenario that they belong, without redundancy. There are three different types of improvements:

- Improvement Actions
- Improvement recommendations
- Management improvements

The user can add more improvements by clicking in the “Add Improvements” button.



Once the user has clicked this button, he will be redirected to an “Available Improvement Actions” screen where all improvements are displayed.

← Back

Available Improvement Actions
Scenario: [Meat Industry](#)

Search for a particular improvement action or recommendation

You can search here by process or equipment type, process or equipment name, improvement text etc.

✓ Add selection to implementation plan

Improvement Actions

Process Improvement Actions				
Main Process	Process Type	Process Name	Improvement Description	Select actions
EDAR	Aerobic Biological Treatment	Bombeo	Perform a correct dimensioning of the facilities, do not oversize them. This process extrapolates to evaporators, condensers, cooling towers, compressors, heat exchanger, piping...	<input checked="" type="checkbox"/>
EDAR	Aerobic Biological Treatment	Bombeo	Install the necessary equipment to perform accurate measurements of the energy consumption.	<input type="checkbox"/>
EDAR	Aerobic Biological Treatment	Bombeo	Install the necessary equipment to perform accurate measurements of the water flow.	<input checked="" type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Optimize pumping configuration with the best possible pipe diameter, valves and accessories configuration.	<input checked="" type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Use pumps operating as turbines to recover pressure energy that otherwise would be wasted.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Install measurement equipment in the main consumption points of energy and water.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	In order to reduce heat losses and pressure drops the system should be insulated. A complementary option is to install electronic valves and other control equipment.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	The system should be cleaned regularly.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Perform a correct dimensioning of the installations, do not oversize them. This process extrapolates to evaporators, condensers, cooling towers, compressors, heat exchanger, piping...	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Regular leak inspection.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Install the necessary equipment to perform accurate measurements of the energy consumption.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Install the necessary equipment to perform accurate measurements of the water flow.	<input type="checkbox"/>
EDAR	Pumping	Trat_Biologico	Install the necessary equipment to perform accurate measurements of the water consumption.	<input type="checkbox"/>
EDAR	Sludge Treatment	Trat_de_lodos	Perform a correct dimensioning of the facilities, do not oversize them. This process extrapolates to evaporators, condensers, cooling towers, compressors, heat exchanger, piping...	<input type="checkbox"/>
EDAR	Sludge Treatment	Trat_de_lodos	In an anaerobic digestion, sludge is stabilized and biogas is generated, that can be used to produce electricity by means of cogeneration. Biogas from anaerobic digestion can also be used for heating in the thermal conditioning.	<input type="checkbox"/>

The companies will select the ones that they are interested in, and those selected improvement actions will be moved to the “Implementation plan” tab.

To avoid mistakes when they want to edit this selection, in this preliminary list there is a column indicating if this improvement action is already in the “improvement plan” or not.

View Details Delete

Improvement Actions

Process Improvement Actions						
Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	Select Action
EMSALiteTest	EMSALiteTest	Heating	Heating1	Regular inspection searching for erosion, corrosion, leaks, scaling, fouling.	In progress	<input checked="" type="checkbox"/>
EMSALiteTest	EMSALiteTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.	Pending	<input type="checkbox"/>
EMSALiteTest	EMSALiteTest	Heating	Heating1	Consider installing measurement equipment in all the main parameters that affect the energy efficiency from the heating process, such as energy consumption, water flow, production.	Pending	<input type="checkbox"/>

Then, when a company selects an improvement action and click on “View Details”, a new screen for that improvement’s details appear. On that new screen, the Company could do the following things:

1. Change the status (manually)
2. Select EA services for that improvement according to the services selected
3. Send request to the Energy Angels
4. There is an option if the company implements an improvement action without the Energy Angels’ Network.

Implementation Plan

Improvement Action Selected:

Improvement Actions

Process Improvement Actions						
Scenario Name	Main Process	Process Type	Process Name	Improvement Description		Status
EMSA/InTeTest	EMSA/InTeTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.		Pending

I have implemented this improvement action without the Energy Angels' network.

Change status: Select Status: ▾

Already Selected Energy Angel

Energy Angel Name	Type of Energy Angel	Sector	Spoken Language	Country	City	Accreditations	Qualifications	Fields of Expertise	E-mail	Telephone
Remove Selected Angel										

Replies to Requests:

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel
❌	Declined	ITCL	R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System implementation	Decarbonation, Equalization	2018-06-08	2018-06-11		

Send Request
Decline Request
Send Message to Energy Angel

Select Energy Angel!

Show all Services
 Service 1: EMSA tool support
 Service 2: Energy audits and consultancy
 Service 3: Implementation and innovation support
 Service 4: Provider of financial advice

You can search for an Energy Angel here by type, activities, qualifications, fields of expertise etc.

Submit Selection

Please select your preferred Energy Angel:

#	Type of Energy Angel	Spoken Language	Country	City	Activities	Qualifications	Fields of Expertise	Services
<input type="checkbox"/>	WINGS		Greece	Athens				Service 1, Service 2, Service 3, Service 4

12.2 Change the status

In order to facilitate the improvements management, the company can change the status of each improvement implementation manually, on the drop-down menu shown in the next picture:

Implementation Plan
Improvement Action Selected:

Improvement Actions

Process Improvement Actions

Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status
EMSALiteTest	EMSALiteTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.	In progress

I have implemented this improvement action without the Energy Angels' network.

Change Status:
 Select Status:
 Select Status:
 In progress
 Done
 Paused
 Cancelled

Already Selected Energy Angel

Improvement action status

- **Pending:** the “pending” status is automatically given when a new improvement action arrives to the implementation plan
- **In progress:** an improvement action is automatically “in progress” when the company sends the first request for a service to an Energy Angel.
- **Done:** the “done” status should be manually set by the company when they consider that the implementation is completed
- **Paused:** the “paused” status should be manually set by the company when they consider that they have a huge delay or an interruption.
- **Cancelled:** the “cancelled” status should be manually set by the company when they consider that the improvement should be cancelled, but this doesn’t mean that the improvement should be deleted from the table.

12.3 Select an Energy Angel

By default the Energy Angel assigning to the improvement will be the same as the one assigned to the company for “EMSA Support”, if the company wants to change to another Energy Angel with other skills more suitable to the improvement to be implemented, the user of the company should remove the current Energy Angel and select a more suitable one. Even if the Energy Angel is removed, he will still have all the permissions he had, but he will not be in charge of implementing the improvement.

Implementation Plan
Improvement Action Selected:

Improvement Actions

Process Improvement Actions					
Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status
Scenario 2	Main Process 1	Decantation	Decantation A1	In order to reduce heat losses and pressure drops the system should be insulated. A complementary option is to install electronic valves and other control equipment	Pending

I have implemented this improvement action without the Energy Angels' network. Change Status:

Already Selected Energy Angel

Energy Angel Name	Type of Energy Angel	Sector	Spoken Language	Country	City	Accreditations	Qualifications	Fields of Expertise	E-mail	Telephone
Itcl	Freelance	Automotive Industry	Bulgarian, English, Maltese, Spanish	Spain	Burgos		Engineering Management degree	Aerobic, Biological Treatment, Filtration, Heating, Pumping	canastos.porzeus@gmail.com	947268471

Remove Selected Angel

Replies to Requests:

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel
There are no Requests from Companies at the moment											

Final Acceptance
Final Rejection
Send message to Energy Angel

The company can search for an Energy Angel for each improvement even if the improvements already have one already assigned, then the company should remove the actual Energy Angel and replace it with the new one. To remove an already selected Energy Angel, the company user should click in the “Remove Selected Angel” button.

If the company removes an Energy Angel, the next warning message will appear:

You are going to delete a Company User

Evitar que esta página cree diálogos adicionales

Aceptar

In order to confirm the decision, a last confirmation message will appear:

Are you sure you want to delete the selected User?

Evitar que esta página cree diálogos adicionales

Aceptar
Cancelar

Finally, the Energy Angel will be removed from that specific improvement.

Select Energy Angel!

Show all Services

Service 1: EMS&A-tool-Support

Service 2: Energy Audits and consultancy

Service 3: Implementation and Innovation support

Service 4: Provider of financial advice

freelance

You can search for an Energy Angel here by type, activities, qualifications, fields of expertise etc.

Submit Selection

Please select your preferred Energy Angel:

#	Type of Energy Angel	Spoken Language	Country	City	Activities	Qualifications	Fields of Expertise	Services
<input type="checkbox"/>	Freelance	English, Spanish	Spain	Benavente	Energy audits, Energy efficiency studies, Energy saving measures implementation	Architect, Certified Energy Audit courses		Service 1, Service 2,
<input type="checkbox"/>	Freelance	Bulgarian, English, Maltese, Spanish	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Engineering Management degree	Aerobic Biological Treatment, Filtration, Heating, Pumping	Service 1, Service 2, Service 3, Service 4,

Submit Selection

Once the company has chosen the Energy Angel he wants, the user should click in the “Submit Selection” button to send a request to a new one. Then, the company has to wait the Energy Angel’s answer. Once he Energy Angel has analyzed the request, he will decide whether to accept it or not.

Replies to Requests:

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel
<input type="radio"/>	Declined	ITCL	R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Decantation, Equalization	2018-06-05	2018-06-11		-
<input checked="" type="radio"/>	Accepted	Itcl	Automotive Industry	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Aerobic Biological Treatment, Filtration, Heating, Pumping	2018-07-25	2018-07-25		Please type your message here: <input style="width: 100%; height: 20px;" type="text"/>

Final Acceptance
Final Rejection
Send message to Energy Angel

In this image is shown how is seen the two options, a declined requests and an accepted one.

Replies to Requests:

Status	Angel Decision	Angel Name	Sector	Country	City	Activities	Fields of Expertise	Request Date	Reply Date	Angel Message	Message to Angel
<input type="radio"/>	Declined	ITCL	R&D activities	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Decantation, Equalization	2018-06-05	2018-06-11		-
<input checked="" type="radio"/>	Accepted	Itcl	Automotive Industry	Spain	Burgos	Energy audits, Energy efficiency studies, Energy Management System Implementation	Aerobic Biological Treatment, Filtration, Heating, Pumping	2018-07-25	2018-07-25		Please type your message here: <input style="width: 100%; height: 20px;" type="text"/>

Final Acceptance
Final Rejection
Send message to Energy Angel

In general, companies can accept or decline the Energy Angel acceptance, as they have the last word in term of selecting an Energy Angels to do the implementation. If a company accepts or denies an Energy Angel, the state of the request will appear in the “request” tab as Declined.

12.4 Improvements without the EA Network

In the case that the company has implemented the improvement action without the Energy Angels' Network, the company user should mark the tick and change the status to "Done".

Improvement Actions						
Process Improvement Actions						
Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	
EMSALiteTest	EMSALiteTest	Heating	Heating1	Consider installing measurement equipment in all the main parameters that affect the energy efficiency from the heating process, such as energy consumption, water flow, production.	Pending	

I have implemented this improvement action without the Energy Angels' network.

Change Status:

Then, the next page will be shown:

Archive Improvement Action
Improvement Action Selected:

Improvement Actions						
Process Improvement Actions						
Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status	
EMSALiteTest	EMSALiteTest	Heating	Heating1	Consider installing measurement equipment in all the main parameters that affect the energy efficiency from the heating process, such as energy consumption, water flow, production.	Pending	

Please give us a brief description of the way on implementing this improvement (who applied the implementation, when did the implementation complete, what are the reasons to not contact the energy angels network)

Add your description here:

All the information that the company can provide here will be very useful to improve the Energy Angels' network and the EMSA Web-Tool.

12.5 Completed Improvements

The “completed improvements” tab is reserved for those improvement actions that are completed, that is to say, those improvement actions that have the “Done” Status.

The objective is to have a different view of the completed actions and their impact and not to overload the “Implementation plan” tab with actions that don’t need to be managed.

To do that, when a company sets the “done” status of an improvement action, it shown the next page:

Energy Angel Rating

Improvement feedback			
Expected yearly savings	<input type="text" value="0"/>	Electricity	kWh
Duration of Implementation	<input type="text" value="0"/>	Days	
Energy angel service feedback			
Feedback	Rating		
Initial approach	★★★★		
Explanation of the procedure	★★★★		
Technical skills	★★★★		
Personal treatment	★★★★		
Fulfilment of deadlines proposed	★★★★		
Rigor and professionalism	★★★★		
Overall impression	★★★★		
Comment:			
<div style="border: 1px solid #ccc; padding: 5px;"></div>			
<input checked="" type="checkbox"/> Submit Feedback			

The company should answer some question about the implementation process and, if the questions are answered, the “improvement action” can be stored as completed in this tab and the benchmarking and benchlearning databases are updated with this new information.

Implementation Plan
Completed Actions

Improvement Actions

Process Improvement Actions

Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status
EMSALiteTest	EMSALiteTest	Heating	Heating1	Install the necessary equipment to perform accurate measurements of the energy consumption.	Done

Equipment Improvement Actions

Scenario Name	Main Process	Process Type	Process Name	Equipment Type	Equipment Name	Improvement Description	Status

Recommendations

Process Recommendation Actions

*Recommendation = aspects identified as recommendations could run into improvement actions, The Energy Angel should study in detail to determine the best saving measures that could be applied

Scenario Name	Main Process	Process Type	Process Name	Improvement Description	Status

In order to see all the completed actions, the company user should click on the “Completed Actions” button in the “Improvement Management” tab.