

Impact Objectives

- Reduce energy costs of industrial processes that use water
- Reduce water consumption in industrial processes
- Identify energy efficiency potential improvement actions for the industrial processes
- Create a network of experts that perform energy diagnostics

A focus on reducing energy costs

The EnergyWater project aims to support Europe's small and medium size enterprises to save energy and water. Project Coordinator Rubén Renilla discusses their work developing a benchmarking web tool and fostering a network of Energy Angels



What are you hoping to achieve through this initiative?

The main objective of the EnergyWater project is to encourage industrial companies to reduce energy costs in industrial water processes up to 20 per cent. In addition to this, the project is intended to identify potential for savings and increase the benchmarking of energy performance using an Energy Management Self-Assessment (EMSA) collaborative web tool that we are building. This will allow manufacturing industries to anonymously introduce their data into the EMSA web tool to discover their ranking in relation to other industries with the same processes. We also hope to strengthen the energy savings market by creating an 'Energy Angels' network which will facilitate contacts with skilled energy managers and auditors, and provide access to support for the implementation and financing of water and energy efficiency projects.

Who will benefit from the research?

The first beneficiary will be the industrial sector along with companies offering energy efficiency services to those industries. Ultimately, the expected impact is to save

up to 26 GWh per year, which corresponds to the energy consumed by 3000 family homes in a year. The project is also expected to reach up to 200 Energy Angels who will work closely with more than 1,000 companies to improve their efficiency and management in terms of water and energy topics. The main objectives of the project will be achieved if EnergyWater helps to develop business opportunities between industry and energy efficiency experts.

Can you tell me about the partners in this project and their contributions?

The consortium created for the project involves 10 European companies. The leader of the project is the Spanish Technological Center of Castilla & Leon (ITCL). From ITCL, the project is led by a group of energy efficiency experts who have expertise working with the industrial sector. This group includes Socamex, SmartFuture SRL, Okavango Energy SAS and The Carbon Trust. Other technical experts are the Cyprus Energy Agency and the Cork Institute of Technology. Also involved are Office International de L'Eau, while The European Water Supply and Sanitation Technology platform, is responsible for communication in the EnergyWater project. Finally, Wings ICT Solutions oversee the development and support of the EMSA web tool.

What are you currently working on?

The project started in February 2016 and will last for 36 months. During the first half of the project the main tasks were to assemble and develop the EMSA web tool, and to create the Energy Angel's Network. We are currently finishing a first version of the EMSA web tool. Once this first version is complete, we will provide courses and workshops to train experts in its use. In parallel to this, the Energy Angels Network is also being set up, and we are working on a communication campaign to introduce the tool to energy experts.

How will the results of the project be communicated?

To disseminate the results different strategies are being planned. There will be several Massive Open Online Courses (MOOC) offered through the Energy Angels Network. In addition, 'knowledge pills' will be developed, to promote the Energy Angels Network and the EMSA web tool. To do so, different short videos will be produced and uploaded to different social media, as well as the EnergyWater webpage.

Benchmark boost for industrial efficiency

Improving the efficiency of processes that use water and energy is crucial to the sustainability of the Europe's industrial sector. The EnergyWater project is aiming to deliver this through an innovative web tool

Two of the key issues facing current industrial process, water usage and energy efficiency, are being tackled in a three-year European Commission H2020-funded programme called EnergyWater. The project's aim is to reduce energy consumption of industrial processes that need water by 20 per cent, whilst at the same time reducing their water use.

EnergyWater's Project Manager Rubén Renilla, Energy Technologies Department Manager at the Spanish Technological Center of Castilla & Leon (ITCL), explains: 'The EnergyWater project will ease the path for industries in accessing information about potential savings and will establish a network of qualified providers with technical and financial skills.' He says that in order to deliver on the objectives of the project they are planning to train 200 industry experts, who will be called 'Energy Angels', to assess up to 1,000 industrial companies using a new energy efficiency diagnostic web tool that the project is creating.

EMSA WEB TOOL

At the heart of this initiative is the innovative web tool, which is being designed to help companies assess their efficiency level and to identify opportunities to reduce their energy consumption. It is based on benchmarking methodologies that will enable companies to compare their performance, identify best practices, and find the most effective improvements to reduce energy consumption.

The Energy Management Self-Assessment (EMSA) web tool will be a free online platform that will support the evaluation of the energy efficiency of a company's own processes relative to water.

This tool allows users to introduce information about their processes and the equipment they use. 'The EMSA tool will evaluate the company's processes

information and return a score that includes energy and water use efficiency, as well as a ranking against peers', Renilla notes. He adds that the EMSA will also allow industries to simulate the impact of performing different efficiency improvement actions in their processes. 'Armed with this information companies can decide and prioritise which actions to implement, and which of them do not have enough economic income to justify the implementation.'

The EMSA acquires knowledge from various standards such as CAF (Common Assessment Framework), EVO (Efficiency Valuation Organisation), ISO 50001 and Carbon Trust's Energy Management assessment tool. From each standard, it

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uses the most relevant information to create a complete and versatile tool. For instance, CAF methodology was developed to identify excellence in management processes and EMSA uses and adapts this methodology to identify excellence in management of industrial processes.

The first version of the EMSA methodology has been validated with collaboration from 20 European industrial companies. 'A first diagnosis of these companies has been performed, so the evaluation method can be examined and improved', Renilla adds. 'Once the refined structure and contents of the EMSA methodology are created, this will be adapted to fit the EMSA web tool.' The EnergyWater project team are now looking at organising workshops across Europe to

present the tool to energy efficiency experts and train them in its use. 'These experts will be allowed to use freely the EMSA web tool to help their clients to identify energy and water efficiency improvement projects.'

A CORE OF ENERGY EXPERTS

At the same time as the team is developing the EMSA web tool, they are also setting up the Energy Angels network of energy efficiency experts. These Energy Angels will work closely with the companies to improve their efficiency and management in terms of water and energy topics by performing the assessment. 'The Energy Angels Network encompasses Energy Service Companies, energy managers and auditors, technology suppliers and other energy efficiency

specialists, who will help companies remove market barriers and increase energy efficiency within industry', Renilla says. Planning is now underway for the Energy Angels to continue operating once the EnergyWater project is completed, in addition the EMSA web tool will be looked after by the Network, so it can be used as a commercial tool within Europe's industrial sector.

'Initially, the Energy Angels Network will comprise entities directly contacted by project partners, but the list of Energy Angels will be continuously updated in the EMSA web tool', Renilla explains. 'Membership to this network will be open for any entity offering energy efficiency services operating in Europe that fulfils the requirements described in the Energy Angels' user manual.'



ITCL - Technological Center of Castilla & León (Spain)

He says that the Energy Angels Network will be promoted through different channels to help reach out to new members who can assist in the future.

BENEFITS OF BENCHMARKING

At present, it is possible for companies to measure their own energy efficiency and water usage but because of confidentiality issues it is difficult for them to compare their performance to the rest of the industry. In Europe it is possible to consult BREF (Best Available Techniques Reference Document) which are classified by industry sectors, but Renilla notes that this information is 'not always easy to compare with regards to processes, and does not provide information about the performance of the company against the rest of the industry'. For this reason he sees it is essential to define an industry's performance against its sector, or other companies with the same technology. 'This allows clarification of the real energy and water potential savings, thereby helping companies deciding where to invest or to continue improving, and analysing the reasons of being more or less competitive.'

The methodology employed by EnergyWater will be incorporated in the EMSA web tool that, along with the creation of a database associated with it, will enable companies to carry out benchmarking and benchlearning experiences in industrial efficiency water processes. 'This will make it possible for companies to anonymously compare their results and establish a ranking that will highlight the most efficient firms and those who employ excellence in water management', Renilla says.

PILOT COMPANY VALIDATION

To ensure that the EMSA web tool delivers accurate information it is being tested with 20 pilot companies to authenticate the results. In selecting the pilot companies, the

project team chose companies that were representative of the industrial sectors and industrial processes that will benefit from the work. 'As many different processes are being used to test the functionality of the tool, the quality of the performance will increase substantially as well as the performance of the EMSA web tool and the services offered,' Renilla observes. 'The data and knowledge acquired from the pilot companies will be part of an anonymous database, and it is going to be used as the base for the benchmarking and benchlearning tools.'

To protect the companies involved, all the information is anonymous. Each company can only access their own benchmarking results and their rank position. The process that a new company follows to use this information starts when they enter their own data into the EMSA web tool. Doing this allows them to characterise the efficiency of their processes that consume water and energy, and makes it possible to be ranked against other companies. Having access to companies to test the EMSA web tool means the project team can validate the process and methodologies developed before spreading this knowledge throughout the rest of the European industry, says Renilla: 'This collaboration is of great importance to enable us to offer a targeted service to the companies. The involvement of the pilot companies in this project is essential.'

'The most important aspect of EnergyWater is that it helps industries to access information and data about the real and best processes and practices, and so they can continue improving their efficiency,' Renilla concludes. This project is delivering tools that support companies understand their real situation and gain access to experts to help make improvements, ultimately building trust within the sector in regards to energy and water efficiency.

Project Insights

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PARTNERS

Carbon Trust (UK) • Clean Technology Centre, Cork Institute of Technology (Ireland) • Cyprus Energy Agency • European Water Supply and Sanitation Technology platform (WssTP) (Belgium) • Office International de l'Eau (France) • Okavango Energy SAS (France) • SmartFuture S.r.l (Italy) • Socamex (Spain) • Spanish Technological Center of Castilla & Leon (ITCL) • WINGS ICT Solutions (Greece)

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SCIENTIFIC COORDINATOR BIO

Rubén Renilla Collado is an Industrial Engineer who specialised in Thermo-Energy and received a second Masters in Industrial Management Engineering. He has been a Senior Researcher during more than eight years leading the energy efficiency department at ITCL, Spain. Renilla's activity has been focused on projects to improve energy efficiency at different industrial facilities, including the efficiency of industrial refrigeration control systems and developing an expert control system to improve dynamically energy efficiency. This technology is based on the Industry 4.0 philosophy.



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