

# Newsletter

## Editorial



Dr. Lara Valentin Carrera

Dear Reader,

As the project coordinator of demEAUmed project, it is an honour for me to present the first newsletter of the project where you can read the most outstanding results and developments achieved in the first 24 months.

These two years have been nothing but a successful collaboration among all the participants of demEAUmed. The consortium has achieved the proposed milestones and deliverables planned in the document of work (DOW) well in time.

If you have the opportunity to come to the region of Costa Brava in Catalonia and visit the city Lloret de Mar you will see the integration of a set of innovative technologies to treat the wastewater of the hotel Samba (project's demo-site). This main achievement has been possible thanks to the excellent work performed by all the partners and their commitment towards the development of the future decentralized wastewater treatment in Mediterranean tourist facilities.

On behalf of the whole demEAUmed's team I hope you enjoy this first newsletter and I warmly welcome you to visit our website to have more information about us and demEAUmed.

## demEAUmed Project Overview

demEAUmed is a European water innovation project which started officially on January 1st, 2014 for over 42 months (2014-2017). Seven countries are establishing this project: Austria, Belgium, France, Germany, Italy, Netherlands and Spain.

The aim of the project is to involve tourist and water industry representatives, policy-makers, research centres and other stakeholders to demonstrate and promote the **Integration of water innovative technologies in tourist facilities** leading to their eventual **market uptake** and **reduction of water consumption, aiming at safe closed water cycles in Euro-Mediterranean tourist facilities.**



Figure 1 Hotel Samba

### Demonstration Site: Hotel Samba

The Demo site of demEAUmed is Hotel Samba, a 3\* hotel chain situated in Lloret de Mar, Spain. It is a large resort with 441 air conditioned rooms, green areas and exterior pools, conference rooms, a bar and a restaurant. It is certified by EMAS and ISO 14001. Its water use is an average of 130 litres a day per each client of the hotel.

# News from demEAUmed project

## Water cycles of Mediterranean tourist facilities: A challenge or an opportunity?

In order to establish an overview of the current water situation of tourist establishments in the Mediterranean area, **Hotel Water Cycle** survey was created. The survey aimed at gathering information about the water cycle in these facilities. It consisted of three parts: **Part A** - general information of the establishment, **Part B** - core questions about the water infrastructure and methods of dealing with the water reuse, greywater and wastewater, and **Part C** - questions about environmental awareness of the respondents. The survey was provided in 10 languages: Albanian, Arabic, Croatian, English, French, Greek, Italian, Slovenian, Spanish and Turkish.

The survey was launched online in July 2014 and by December 2014 the link to the survey was e-mailed to 5269 hotels. Since the response was very low, an outbound call centre was hired to contact tourist facilities directly. However, despite all efforts, the project succeeded in collecting 73 responses only (Fig. 2 left). Nevertheless, based on basic characteristics

of responding hotels, e.g. category (Fig. 2 middle), size (Fig.2 right), presence or absence of pools, it was concluded that the collected responses can be considered a representative sample of Mediterranean hotels.

Detailed results of the responses will be presented in a publication following the analysis of the survey; however, some common conclusions can be made.

**As expected, most frequent water source is municipal network. For the most, hotels monitor water consumption of the entire establishment, and they have at least 1 water saving device installed. All hotels having pools | spa apply some sort of water treatment, conventional approach being the most popular one. In cases when separation of grey and black water is carried out, it is done so for the ease of disposal into municipal sewerage. Only few hotels treat (part of) wastewater on their own premises for reuse purposes.**

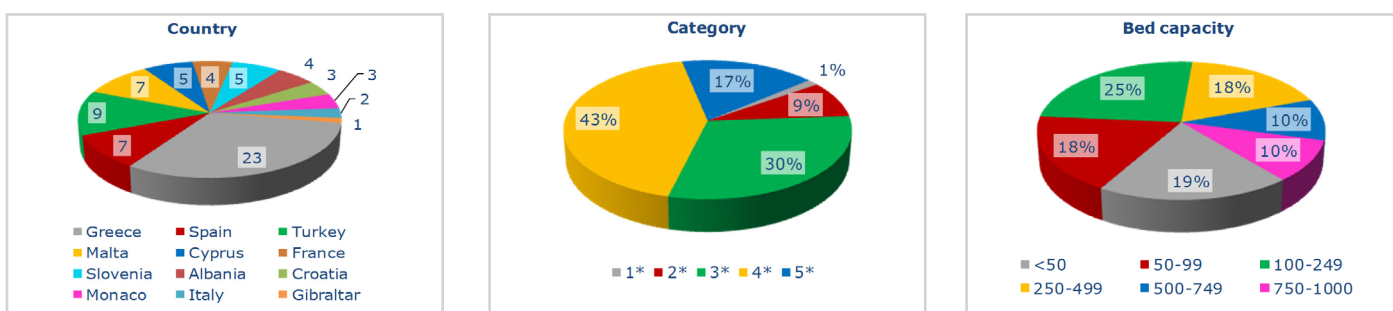


Figure2 Respondents of demEAUmed Hotel Water Cycle Survey (Part A)

Tourism highly depends on water resources, which are in some Mediterranean areas rather limited. It therefore comes as **no surprise that the vast majority of respondents are very environmentally aware** and are either already improving their water infrastructure or willing to do so in the future. This shows a great potential for implementation of new water treatment technologies that are being demonstrated and investigated in demEAUmed project.

## Identifying drivers for water treatment investments at touristic facilities

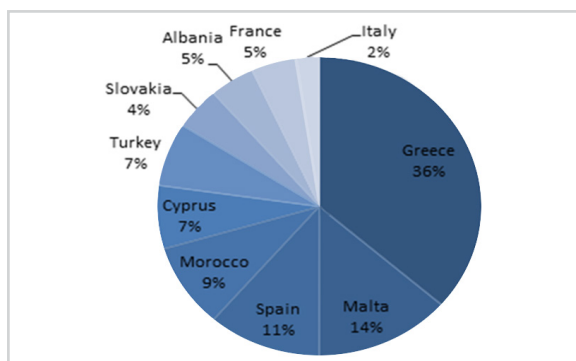


Figure 3 Breakdown of answers per country

To understand the different drives of managers at the touristic facilities to invest in the water treatment technologies, a marketing survey was launched online from June 2015 to December 2015. The survey is available in three languages: English, French and Spanish, and it was sent to around 4000 hotels in the following countries: Albania, Cyprus, France, Greece, Italy, Malta, Morocco, Slovenia, Spain and Turkey.

Limited numbers of complete answers were collected (44), but it gives a first impression of hotel owners' expectations that we are sharing with you. Small hotels (i.e. with less than 50 rooms) represent the majority of answers, with a clear interest on recycling water and improving water quality.

## Priorities expressed in terms of water management at touristic facilities:

**1st** Reducing hotel water consumption

**2nd** Reducing the environmental impact

**3rd** Improving the quality of water (for general indoor usages)

**4th** Treating wastewater

**5th** Improving water quality of pools and spas

The survey highlighted that **minimising water costs** is the main reason why hotel managers/directors would reduce water consumption, followed by reducing the environmental impacts and local problems of water scarcity (a specificity of the Mediterranean region). Water recycling treatment was seen as the most interesting solution as long as the investment does not exceed 10 000€.

The survey will remain available on [demEAUMed website](#) to collect more answers and to update the conclusion. The results will be presented in the second Newsletter at the end of demEAUMed project in June 2017.

## Integrating demEAUMed technologies at the demo site

Eight categories of innovative water treatment technologies together with a monitoring, control and decision support system (DSS) are being integrated and demonstrated in real life situation to reuse water at the demonstration site.

The eight technologies are: 172 NM UV treatment, Electrochemical ozonation, Electrocoagulation-flotation technology (EC-EF), Plimmer technology, Smart air MBR, Solar photo-electro-Fenton process (SPEF), UVOX technology and Vertical Ecosystem.

They are being properly combined to treat and adapt the different water flows to the necessities of the different areas in the resort, while saving fresh water consumption and reducing environmental and socio-economic impacts in a safe way.

More information on the specifications of these technologies is provided on [demEAUMed website](#).

## An interview with demEAUMed advisory board member : *Mona Arnold*



Mrs. Mona Arnold

Mrs. Mona Arnold has 20 years of professional experience in project management (R&D) in national and international projects funded by government organisations, industry and the private sector.

She currently works for the VTT, Technical Research Centre, Finland. She is also a Principal Scientist in Environmental Concepts and Member of WssTP. Mrs. Arnold is a member of the demEAUMed Advisory Board Team along with Mr. Günther Langergraber and Mr. Eduard Fernández Martín.

In this newsletter, we had an interview with Mrs. Arnold on the applications of demEAUMed project and its technologies:

**Q: demEAUMed focuses on a case study in the Mediterranean region. Will it be possible to transfer the gained practices and technologies to other regions which face water pressures?**

**A:** Certainly. demEAUMed's case study relates to the hotel and restauration sector, a sector which is present all over the world. Thus, the learnings and demonstrations of this project are translatable into any other region in the world facing water pressure.

**Q: What are the biggest challenges to the implementation of demEAUMed technologies?**

**A:** The biggest challenge I see still is the economy. Water is still a quite cheap commodity and the installation on a water reuse system is not easily justified from a business point of view, not even in moderately water scarce areas. Furthermore, the public perception and safety issue is of outmost importance in the area of application which is the hotel sector.

**Q: Do you see some synergies of demEAUMed technologies with technologies developed by other EU projects?**

**A:** There are several projects dealing with water reuse or technological processes for water recycling, with a different application area though. A new combination of process chains can be sought, as well as looking into the application areas studied in the other projects, where demEAUMed's technologies could be beneficial in the future.

Also, questions related to public perception and risk assessments related to water reuse are cross cutting issues that can be communicated and bring synergies between various water projects.

## An interview with demEAUMed scientific and technical manager: *Dr. Gianluigi Buttiglieri*



Dr. Gianluigi Buttiglieri

### Q: What are the achieved milestones during the first period of the project?

A: The project is on the track with the main technical and scientific activities. First of all, a part from the questionnaires presented before, a representative part of all hotel inlet and outlet waters was characterized, under summer and winter conditions, to get a comprehensive hotel water cycle identification, quantification and characterization. The eight demEAUMed technologies have been tested, at pre-demonstration level, to define the most appropriated operational parameters and system design for the scaling-up and they were demonstrated to be fully capable to treat hotel greywater and wastewater. Moreover, an acquisition system was defined for the technologies and new water counters and water quality measurements equipment were installed. Finally, several demEAUMed technologies have been already placed at the demonstration site and are fully working in real conditions.

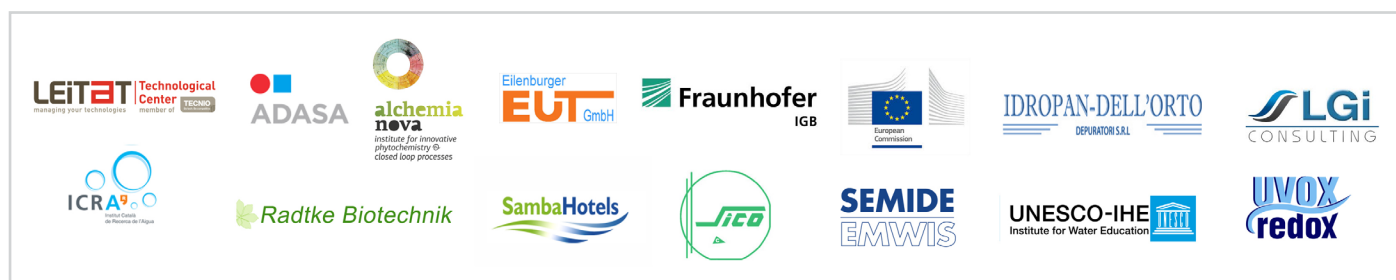
### Q: What is the status of the installation of demEAUMed technologies? And when will they be fully operating?

A: The installation of demEAUMed technologies is being finalised. Most of the technologies for greywater treatment and alternative swimming pool water disinfection are already fully operational; others will be fully operating by March 2016.

### Q: Can the eight technologies be implemented in single use or in integration with each other?

A: The technologies are being tested in order to maximise their efficiency and also to minimize the carbon footprint of the whole water treatment system. Additional activities of the project on integrated water management, environmental and socio-economical assessment, will, in fact, help in demonstrating the benefits of demEAUMed project in comparison with the current non-closed-loop water Mediterranean Resorts, without any treatment. Additionally, legal issues are being identified, including recommendation for existing and future water quality regulations.

The majority of demEAUMed technologies can be implemented also singularly. Some of them will be also compared for the same water treatment, in terms of efficiency and other environmental and economic parameters, to define which the best conditions are for each of them. Even though it is unlikely that all of them can be integrated at the same time in a real hotel, all the synergies between them will be searched and highlighted.



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