INNOVATION VOUCHERS REPORT IN SPAIN

GREENinMED

GREENinMED

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1. GREENINMED PROJECT

The GREENinMED Project, co-financed by the European ENI CBC MED Programme, seeks to increase the competitiveness of Mediterranean SMEs operating in the hotel industry, by applying innovative solutions to increase the efficiency in water and energy management. The aim is to reduce the consumption levels by 10%, through the new products/innovative solutions.

Five partners from Spain, France and Israel compose the GREENinMED Consortium. The specific objectives of the project are the following ones:

1. Creating a cross-border network to identify and analyse the most important products/services that exist in eco-innovation matters for the hotel industry, in response to its actual needs. GREENinMED, through innovation vouchers, will offer support to finance the necessary consultancy services in order to back up new products/services adopted by tourist SMEs, in order to become more efficient and competitive.

2. Improving eco-innovation ecosystems in water and energy, through financial support in the form of subsidies, allowing Mediterranean start-ups or innovating enterprises to generate new products/services. Likewise, the Project will encourage spin-offs through SME collaboration with joint venture partners.

2. INNOVATION VOUCHERS

Under the framework of GREENinMED project, the Official Chamber of Commerce, Industry, Services and Navigation of Spain (CCI Spain), with the support of the rest of the partners, has selected and awarded 10 innovation vouchers to 10 SMEs. These SMEs were linked to the tourist sector and belonging to the Spanish Mediterranean Region (Catalonia, Region of Valencia, Balearic Islands, Region of Murcia and Andalusia).

Each Innovation Voucher offered advisory and support services to test or implement innovative solutions. The services provided by technology experts from the GREENinMED project are detailed below:

- Water and energy consumption analyses, and a simulation of potential savings achieved if new technological solutions are implemented.
- Testing and trying new solutions to disinfect water and energy circuits (COVID19).
- Advice on the suitability of solutions available to control and reduce consumption.
- Support when designing new solutions applicable to hotel SMEs.
- Analysis of technology supply and feasibility of implemented solutions.
- Other advisory and support services to implement eco-innovative solutions in beneficiary SMEs

From July to September in 2021, the selected SMEs received consultancy services. These companies have received consulting services from technological experts in order to achieve savings in water and energy consumption, through the identification of new solutions that satisfy their real eco-innovation needs.

The technological experts developed a methodology based on an initial recognition of the type of company and the company's facilities that may affect the level of water and energy consumption. The analysis had the aim of developing an analysis of the available sustainable and efficient options for the company.

Firstly, the expert visits the company on site in order to obtain the relevant information for the assessment. Secondly, the expert analyses the company's consumption over the last few months, based on the data provided by the company, in order to provide the appropriate calculations.

Secondly and based on the information gathered and the calculations obtained, the technological expert delivers the final report to the company, which includes both the improvement proposals and the new efficiency measures, as well as the possible percentages of savings and efficiency after the application of the measures.

Finally, the expert explained the full report to the company to solve any doubts the SME would need to clarify.

3. SMEs ANALISYS

After the completion of the 10 Innovation Vouchers, the total results obtained have been analysed, and the following conclusions can be highlighted:

A. SECTOR AND ACTIVITIES

The CCI Spain launched a call for applications with the objective of selecting 10 SMEs with the above-mentioned characteristics. The 10 selected SMEs belonged to the following tourism activities:

- Three yacht clubs/marinas
- Six hotels
- One catering

B. REGIONS

The selected companies were from two Mediterranean regions in Spain: Valencia (eight companies) and Murcia (two companies).

C. YEAR OF CREATION

Two types of companies can be split into two groups: the older ones (created between 1950 and 1990), and the newest (created between 2005 and 2012). We found that the highest level of energy and water efficiency was higher in the most recent SMEs.

D. LOCATION

Eight (8) SMEs were located in coastal areas and two (2) in urban centres. Experts compared consumption levels of each SME, according to the average in each location in order to determine accurately the savings capacity of each one.

E. SIZE

Mainly, the hotels have between 50 and 100 rooms on average, with the exception of one of the companies, which has 253 rooms. Most of them have a restaurant on their premises and two of them have a swimming pool and/or spa.

The yacht clubs have marshes and swimming pools, and one of them has a gym, a spa and a gas station for boats.

F. REVIEW PERIOD

Experts overhauled invoices of the years 2018 and 2019 in order to take pre-pandemic figures, as reference for the actual consumption of the company.

G. FACILITIES

Due to size diversity and beneficiaries' needs, technological experts analysed different parts of the facilities. In most of the companies, all the facilities were analysed globally; however, at the request of some companies, the analysis covers only a part of the facility, depending on the demand of the company.

H. WORK SEASON

Experts distinguished the hotels high season in terms of the area (either coastal or urban hotels). The high season for the coastal hotels is from June to August (3 months), and the same is for the nautical clubs.

4. COMPANY'S COMSUMPTION ANALYSIS

A. WATER CONSUMPTION

Total water consumption data ranges between 1,000m³ and 7,000 m³ per year. Only one (1) of the SMEs has a higher consumption, reaching a total water consumption of 13,333 m³ because of the facilities.

B. ENERGY CONSUMPTION

Most companies exceed the contracted power and they got penalties between 2,000 and 5,000 euros.

FUEL CONSUMPTION

Regarding fuel consumption, seven (7) of the companies use propane gas as fuel for kitchen equipment and domestic hot water, compared to two (2) of the companies that use natural gas. In the vast majority of the companies, it is not possible to distinguish the fraction consumed by the heating/cooling system and the kitchens.

C. ENERGY BALANCE

The cooling system and the kitchen/bar equipment are the most electricity consuming areas. The lowest consumption levels refer, in most of the cases, to the lighting, the air extraction and the domestic hot water. In addition, a large part of the energy consumption is from in the kitchen/bar equipment of the yacht clubs.

5. RESULTS AND CONCLUSIONS

The technological experts proposed a series of improvements measures for future actions, based on the consumption parameters obtained, with the aim of improving the environmental impact and savings levels of the SMEs that received an Innovation Voucher.

The global water and energy consumption of the companies and the potential savings resulting from the proposed measures made it possible to estimate the total savings.

However, estimations for eventual savings took into account factors such as annual occupancy average, price of water average and an estimated consumption in the period considered. In the analysis, two of the companies benefiting from the Innovation voucher could not be included in this analysis because the companies did not have data on the annual occupancy of the facility.

A. WATER SAVINGS

Regarding water savings, after the implementation of the improvement proposals suggested by the experts, 29% of total annual water savings could be possible. In economic terms, an average savings of 31,964 euros per year could be achieved by the SMEs.

TOTAL SAVING THAT CAN BE ACHIEVED	ANNUAL SAVING IN WATER (Litters of water)	GLOBAL CONSUMPTION OF WATER (Litters of water)	TOTAL AVERAGE % OF SAVINGS FOR COMPANIES IMPLEMENTING THE PROPOSED MEASURES	TOTAL ANNUAL ECONOMIC SAVINGS
	10.778.673	37.035.000	29,10%	31.964,10 €

Finally, it should be noted the disparity between the average savings percentages between the companies, so it is necessary to distinguish savings percentages between 10% and 30% and savings percentages around 70%.

B. ENERGY SAVINGS

Regarding energy savings, after the implementation of the proposals, the companies would achieve an average annual saving of 7.8% and an average economic saving of 14,424 euros per year.

TOTAL SAVING THAT CAN BE ACHIEVED	ANNUAL SAVING IN ENERGY (KW/h)	GLOBAL CONSUMPTION OF ENERGY (KW/h)	TOTAL AVERAGE % OF SAVINGS FOR COMPANIES IMPLEMENTING THE PROPOSED MEASURES	TOTAL ANNUAL ECONOMIC SAVINGS
	190.335	2.443.397	7,79%	14.424€

It should be noted that the analysis of total savings in KW/h is less accurate than the water savings because the proposed measures were not specific technologies, but rather good practices in energy management.

As in the case of water savings, the energy savings are estimations and the percentages of savings per company range between 2% and 20%. Finally, some of the proposed energy improvements, such as the installation of solar panels, require a more detailed and in-depth study to determine actual consumption and the installation budget.

After the delivery of the final report of the innovation Vouchers, the beneficiary SMEs declared the following data:

- 40% of the beneficiary SMEs estimated they could obtain energy savings levels between 5% and 10%.

- 50% of the companies estimated similar levels of efficiency in water consumption.
- The remaining participating companies estimated they could obtain water and energy savings of between 1% and 5%.

The lower savings estimations declared by the beneficiary SMEs take into account the limited financial capacity of each beneficiary SME to implement all the improvement proposals suggested by the technological experts.

6. RECOMMENDATIONS

Despite of the difficulty of the standardization of the beneficiary SMEs, certain measures, successfully implemented already in the sector, can help companies reduce the cost of their bills and their environmental impact.

In terms of water, the main improvement proposals offered to the beneficiary SMEs were the following ones: timed and/or electronic faucets, water economizers in showers and faucets, and dual flush cisterns. Depending on the level of innovations implemented by each company, the number of new water-related solutions was lower, since some of them had already carried out water efficiency and water saving actions.

In terms of energy, the improvement proposals offered to beneficiary SMEs depended on the company's level of innovation. On the one hand, some easy implementing measures, such as movement detectors, intelligent energy management systems and the revision of the contracted power would be convenient. On the other hand, more complex, innovative and costly measures could be possible such as the installation of photovoltaic energy and photovoltaic glass.

TYPE	TECHNOLOGIES/SOLUTIONS RECOMMENDED
	Installation of water economizers in sinks and showers
	Use of timed faucets
	Installation of double discharge cisterns
	Use of electronic taps
	Water management best practices
Energy	Energy Bill review. Contracted power
	Impulsion pumps
	Thermal solar energy
	Reduce direct insolation
	LED lightning
	Movement sensors
	Photovoltaic energy (PV)
	Aerothermal system
	Energy management system
	Efficiency indicators
	More efficient air conditioners
	Sensors for disconnection of in rooms
	Photovoltaic glass installation
	Reactive power compensation
	Monitoring of actual consumption

7. INNOVATIVE SOLUTIONS AVAILABLE IN FRANCE, ISRAEL AND SPAIN FOR WATER AND ENERGY EFFICIENCY

A. FAUCETS

Tap Aerator

- **NEOPERL**, https://www.neoperl.net/en/oem/products/aerators/productlines.html
- **Save water save money,** https://www.savewatersavemoney.com/

Automatic Faucets

- **Presto,** http://www.presto.fr/groupe/technologie-robinetterie
- **Sanela,** https://www.sanela.eu/infra-red-washbasin-taps

Washer Regulator/Restrictor

- **NEOPERL ,** https://www.neoperl.net/en/oem/products/flowregulators/linesfeatures/pcw02washer.html
- **ECPLAZA ,** https://waternymph.en.ecplaza.net/products/water-saving-flow-restrictor-shower-head_3741303

B. TOILETS

High-Efficiency Toilets

- **American Standard,** https://www.americanstandard.ca/bathroom/toilets?Features=WaterSense%20Certified,Water%20Efficient&page=1&plimit=21
- **Ideal Standard,** https://www.idealstandard.fr/accueil.html
- **Dual flush conversion mechanism,** https://www.fluidmaster.com/products/toilet/flush-valves/550dfrk-dual-flush-conversion-system/
- **Vacuum toilet,** https://jetsgroup.com/jets-group/the-highest-standards/vacuum-toilets

Encore Cistern: Environmental Condensate Recovery System

- **Encore cistern,** http://www.encorecistern.com/about-us/

C. SHOWERS

Water-saving showerheads

- **American Standard,** https://www.americanstandard.ca/bathroom/shower-faucets?Type=Shower%20Heads&page=1&plimit=21
- **Hydraw,** https://www.hydrao.com/en/

Water consumption monitoring

- Optishower, https://www.optishower.com/#tech
- Lorenz, https://www.lorenz-meters.de/en/produkte/
- Eddo, https://www.eddo.io/

Controlled Shower

- Hamwells, https://www.hamwells.com/en/homespa/
- Orbital-systems, https://orbital-systems.com/
- Eddo, https://www.eddo.io/

Rapid hot water supply to tap*

- Inamn, https://inman.fr/en/
- Metrica6, https://www.metrica6.xyz/news/

D. COOLING

HVAC Condensate Recovery

- Hyper-logic, https://hyper-logic.com/automated-reclaimed-condensate-system-arcs/

Electro-chemical treatment of cooling tower water and blowdown minimization

- Elgressy, https://www.elgressy.com/solutions/cooling-towers-treatment-est/
- UET, https://www.uet.co.il/product/cooling-tower-system/

E. ENERGY SYSTEMS EQUIPMENT

Heat pump

- Eurevia, http://www.eurevia.com/
- LG, www.lg.com
- Mitsubishi, https://fr.mitsubishielectric.com/fr/
- Nibe, https://www.nibe.eu/
- Vaillant, https://www.vaillant-group.com/
- Daikin, www.daikin.com
- Stiebel Eltron GmbH & Co. KG, https://www.stiebel-eltron.com/en/home.html
- Systemair GmbH, https://www.systemair.com/
- tecalor GmbH, https://www.tecalor.de/de/home.html
- Vivreco, https://www.vivreco.fr/
- Watinyoo, https://www.watinyoo.com/?lang=en
- Danfoss, www.danfoss.com
- Panasonic, www.panasonic.com
- Samsung, www.samsung.com
- De Dietrich, https://www.dedietrich-thermique.fr/

- Frisquet, www.frisquet.com
- SDEEC, www.sdeec.fr
- Nextherm, http://nextherm.fr/
- Atlantic, https://www.atlantic.fr/
- Sanden, http://www.sanden-europe.fr/en/
- Leviathan Dyanmics, https://www.leviathan-dynamics.com/fr/t

Condensing boiler

- Vaillant, https://www.vaillant-group.com/
- Baxi, https://www.baxi.co.uk/
- Bosch, https://www.bosch.com/
- Viessmann, https://www.viessmann.com/com/en.html
- Frisquet, https://www.frisquet.com/
- Atlantic, https://www.atlantic.fr/
- Vergne, https://www.vergne-innovation.eu/
- Ferroli, https://www.ferroli.com/int
- Riello, https://www.riello.com/corporate/it
- Unical, https://www.unical.fr/
- Saunier Duval, https://www.saunierduval.fr/particulier/
- Ariston, https://www.ariston.com/

Combined heat and power

- Dalkia, https://www.dalkia.fr/fr
- Siemens, https://www.siemens-energy.com/global/en/offerings/power-generation/power-plants/combined-heat-and-power.html
- GE, https://www.ge.com/
- Viessmann, https://www.viessmann.com/com/en.html

F. ENERGY MANAGEMENT SYSTEM

Energy management system

- Courtois Energie Conseil, https://www.courtoisenergies.fr/
- Beebryte, https://www.beebryte.com/
- Comwatt, https://www.comwatt.com/
- EcoCO2, https://www.ecoco2.com/
- Ecotec, https://www.eauxdemarseille.fr/Le-Groupe/Les-societes-du-groupe/Energie-electricite
- Gridpocket, https://www.gridpocket.com/en/
- Inovadea, https://www.inovadea.com/en/solutions-en/
- SENR, https://www.senr.fr/
- TEC Lab, http://my-orchestra.com/fr/
- Inovadea, https://www.inovadea.com/

- **Unigrid Solutions, https://unigridsolutions.com/**
- **WIT, https://www.wit.fr/**
- **Schneider Electric, https://www.se.com/ww/en/**
- **Entelec, https://www.entelec.eu/fr/**
- **Siemens, https://new.siemens.com/global/en/products/buildings/automation/desigo/building-management.html**
- **GE, https://www.ge.com/**
- **SMEG, https://www.smeg.mc/en**

G. LIGHTINING

Low Energy Lighting

- **Augier, https://augier.com/**
- **Lacroix group, https://fr.lacroix-group.com/**
- **RAGNI SA, https://www.ragni.com/**
- **Vinci Energies, https://www.vinci-energies.com/**
- **StarLED, https://www.starled.fr/**
- **Philips, https://www.philips.com/global**
- **Celux, https://www.celuxiluminacion.es/**
- **Arditi, http://www.arditi.com/en/**
- **Lumi'in, http://www.lumi-in.fr/**

H. PHOTOVOLTAIC AND THERMIC ENERGY INSTALLATION

Hybrid solar panels

- **DualSun, www.dualsun.com**
- **Abora, https://abora-solar.com/**
- **DanSolar, http://dansolar.dk/en/international/**
- **FotoTherm, http://www.fototherm.com/**
- **SoLink, https://www.solink.it/**
- **Tergys, https://tergys.com/en/**

Photovoltaic glass

- **Onyx Solar, https://www.onyxsolar.com/**
- **Via Solis, http://www.viasolis.eu/**
- **Photowatt, http://www.photowatt.com/**
- **Megasol, https://megasol.ch/**
- **Britesolar, https://www.britesolar.com/**
- **Polysolar, https://www.polysolar.co.uk/**

Solar Domestic Hot Water

- **Eco Power Europe, https://www.ecopowereurope.com/**

- **Paw GmbH & Co. KG, https://www.paw.eu/**
- **Giordano Industries, www.giordano.fr**
- **KYRIAZIS SA, https://e-kyriazis.gr/**

I. ENVELOPE

Sun shading devices

- **Somfy, www.somfy.fr**
- **Colt international, https://www.coltinfo.co.uk/**
- **Tryba, www.tryba.com**
- **Bubendorff, https://www.bubendorff.com/**
- **Roto Franck, https://www.roto-frank.com/fr/**
- **Paralu, https://www.paralu.fr/**

GOOD PRACTICES IN WATER AND ENERGY MANAGEMENT

For more information on possible best practices in water and energy management, check the Benchmark of technologies of the GREENinMED project. The GreeninMed project compiled a list of technologies combining water and energy for the hospitality industry that have great potential and are easy to replicate in smaller SMEs.

The Benchmark of technologies is available on the following link:

https://www.enicbcmed.eu/greeninmed-updates-its-catalogue-sustainable-technologies-hospitality-industry