



Energy Efficiency tips for hotel staff

Supporting SME-hotels to achieve Nearly Zero Energy status

March 2016



CONTENTS

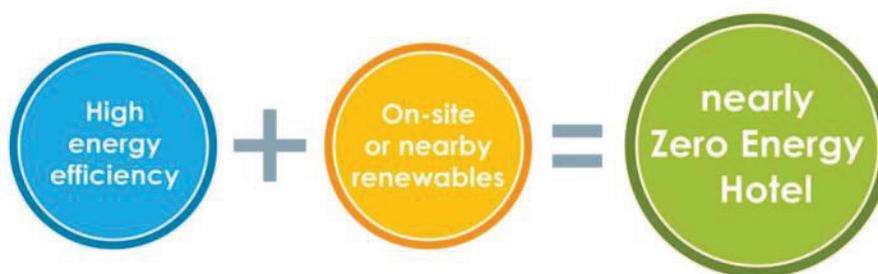
- 1. Introduction.....3
- 2. Engage in your hotel’s action plan4
- 3. Tips and guides5
 - 3.1. Tips for all staff groups 5
 - 3.2. Tips for Reception/Front desk/Back Office..... 5
 - 3.3. Tips for Cleaning staff..... 5
 - 3.4. Tips for Kitchen staff..... 6
 - 3.5. Tips for Housekeeping staff 7
 - 3.6. Tips for Laundry 7
 - 3.7. Tips for Maintenance/Technical staff (General)..... 8
 - 3.7.1. Chillers 9
 - 3.7.2. Air systems..... 10
 - 3.7.3. Electricity Systems..... 11
 - 3.7.4. Boilers 12
 - 3.7.5. Calorifiers 12
 - 3.7.6. Laundry and Kitchen..... 13
 - 3.7.7. Swimming pool and Spas 14
 - 3.7.8. Plumbing and Drainage Systems..... 15
 - 3.7.9. Vending machines 15
 - 3.8. Engaging Guests..... 16
- 4. Page for own notes on tips.....17

LEGAL NOTICE

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein. Reproduction is authorized upon approval and provided the source is acknowledged

1. INTRODUCTION

Within the framework of our hotel’s environmental sustainability policy, we have decided to become a “nearly Zero Energy Hotel”. After renovation measures, our hotel will have a very high level of energy performance. This means a very low or “nearly zero” amount of energy is required to operate the hotel, and this will be covered to a significant degree by renewable sources produced on-site or nearby.



Current thinking indicates that energy efficiency measures and renewable energy sources alone are not enough to achieve nearly zero energy status. Active participation of hotel staff and guest engagement is essential in the quest to reduce energy consumption. Everyone needs to “think” everyday what they can do to save energy.

This is not only fundamental for a successful hotel energy policy; it is inspirational in giving new meaning to the hotel’s business! Energy efficiency is a key element in the hotel’s environmental policy and you, as a member of staff, must actively contribute to your hotel’s efforts for a more sustainable environment and business. The way you carry out your daily work will have a huge impact on the hotels energy consumption.



Engaging you and colleagues actively during the hotel’s operation and maintenance is needed to get the most out of our energy efficiency investments. To assist you, training and associated materials are provided. As part of that, this booklet describes simple actions and practical tips that can be easily applied when you carry out your daily activities at the hotel.

Simply put, how best to carry out your daily activities and assist in maintaining low energy consumption levels – “thinking nearly zero energy” in your everyday working life.

You are also encouraged to help guests understand the hotel's quest for nearly zero energy status and sustainability. As your hotel aspires to achieve nearly zero energy status, you will find many of the guests are knowledgeable, even demanding, in this area. During their stay, guests should be made aware of simple actions they too can take to reduce energy consumption in a pleasant and context sensitive way and without any impact on comfort or cost to them.



This booklet is divided up by staff category. It is extensive is not exhaustive. Add your own tips or thoughts or those of your colleagues in the section at the end of booklet, and be prepared to discuss them with fellow staff, hotel management, section heads and suppliers of specific equipment. All ideas to save energy are paramount to the hotel's environmental action plan.

2. ENGAGE IN YOUR HOTEL'S ACTION PLAN

- Understand the environmental impact of the hotel industry. Many services provided by hotels are resource-intensive - energy, water, raw materials or even natural landscapes. Different pollutants may result from the hotels' activities, including GHG emissions from energy use, solid waste and sewage, as well as chemical pollution from huge use of disinfectant and detergents. After hospitals, hotels have the highest negative impact on the environment of all commercial buildings!
- Ask for annual indicators about the hotel's environmental footprint and how they compare to targets. This will help raise awareness and maintain enthusiasm for energy savings. Examples of relevant indices are: quantity of energy and water used per annum; quantity of solid waste produced; quantity of carbon emissions resulting from hotel activities.
- Get information about your hotels environmental action plan; objectives and measures taken (or to be taken) to reduce the hotels environmental impact.



Why aim for a nearly Zero Energy Status ?

Tourism & climate
The tourism sector is a significant contributor to worldwide greenhouse gas emissions (transport, energy and resource consumption in hotels, etc.), but is also strongly impacted by the effects of climate change (rising sea levels, extreme weather events, etc.). Nevertheless, the tourism sector holds many opportunities to contribute to climate change mitigation and adaptation.

Buildings & energy
Buildings represent about 40% of the energy consumption worldwide and around 36% of greenhouse gas emissions in Europe. It is widely recognized that buildings, are closely linked to issues of climate change, both in terms of challenges and opportunities to explore.

Contributing to the EU objectives
The European Union calls on radical reduction of greenhouse gas emissions by 2050 (80%-95% compared to 1990 levels). Nearly Zero Energy Buildings (nZEB) are at the forefront of EU policies to achieve 2050 targets. **nearly Zero Energy Hotels** contribute to demonstrating the profitability and sustainability of refurbishments towards the nZEB status.

Hotel BEST WESTERN Ajaccio Amiraute ****
Ajaccio Amiraute
20 route de Sainte, St Joseph
20 090 AJACCIO
FRANCE
+33 (0) 4 95 55 10 00
www.corsica-hotels.fr
amiraute.ajaccio@hotelbestwestern.fr

The hotel BEST WESTERN Ajaccio Amiraute is one of the first European Hotels engaged to becoming nearly Zero Energy.

Learn more about the neZEH European project:
www.nezeh.eu

On the road to becoming a nearly Zero Energy Hotel...

- less energy consumption
- less CO₂ emissions
- better comfort for guests

3. TIPS FOR EVERYDAY USE

Tips are available for most common functions in hotels, and will guide you to implement ‘good housekeeping’ practices to reduce energy use. The objective of the list below is to encourage you and colleagues to “think” energy everyday in the quest to accomplish nearly zero energy status.

1.1. TIPS FOR ALL STAFF GROUPS



- Adjust thermostats to a reasonable temperature for the season concerned (21°C in winter and 26°C in summer).
- Turn off all equipment when not used.
- Keep doors and windows shut when the heating/cooling system is on.
- Turn-off exterior lighting during the daylight hours.

1.2. TIPS FOR RECEPTION/FRONT DESK/BACK OFFICE

- Set energy saving measures in computers so the screen turns off after 5 or 10 minutes without activity. Remove default settings regarding to screensavers.
- Shut down all computers completely at end of day; do not leave them on stand-by.
- Replace old equipment at the end of their life span for more efficient ones.
- Ensure main entrance door is kept closed to avoid loss of heat or cooling.
- Provide relevant information to (arriving) guests on hotels environmental policy and energy action plan as to what they can do to help the hotel save energy.

1.3. TIPS FOR CLEANING STAFF

- Close doors and windows when the heating/cooling system is on.
- Turn televisions off when leaving the room (avoid sleep/stand-by mode).
- Ensure all lights are switched off when leaving the room.
- Inform maintenance of any water leaks.

1.4. TIPS FOR KITCHEN STAFF

- Cook using appropriate pans and pots with respect to the size of the fire.
- When cooking, cover pans and pots to avoid heat losses.
- Turn off stoves ten minutes before finishing cooking to use residual heat.
- Turn off or turn down kitchen equipment when not in use.
- Turn on water only when needed and do not let water run continuously.
- Do not store hot food in cooling chambers.
- Keep fridge doors closed as much as possible and do not open them unnecessarily. This will cause a rise in inside temperature.
- Avoid having several cooling chambers half full. Organize food to fully fit the food in one or two cooling chambers.
- Plan work to limit number of door openings per hour to for example 3.
- Hang a list on the cooling chambers doors with an inventory of the stock inside so it is not necessary to go inside to check.
- Defrost fridges regularly; check the seals on cold rooms and fridges; and keep condensers and evaporators clean. . Inform maintenance of any fridge doors that do not close properly.
- When replacing or buying new, look for energy efficient units such as those that are A rated. If possible, buy A++ units, as they have the lowest electrical running costs.
- Run the dishwasher only at full load to minimise frequency of operation.
- Check operation times of the electric chafing dish heaters. Install a programmable clock to the plug to avoid extra energy consumption during non-serving periods.



1.5. TIPS FOR HOUSEKEEPING STAFF

- When servicing rooms, open curtains to take advantage of natural daylight while working. Close them when leaving.
- Ensure that temperature and fan speed setting are appropriate for the room (in consultation with technical staff).
- Reset thermostats when you have cleaned a room.
- Ensure all windows are closed (unless opened for special reasons).
- Implement free-cooling in summer when possible: Open windows in corridors, communal areas and some rooms when the exterior temperature is lower than the interior set-points.
- Close blinds or curtains in windows and patio doors exposed to sunlight during summer days to avoid room overheating.
- Turn televisions off when leaving the room (avoid sleep/stand-by mode).
- Ensure all lights are switched off when leaving the room.



- Inform maintenance of any water leaks.
- Ensure all power and lighting is off as soon as guests have checked out (unless rooms have automatic access control systems).
- Inform maintenance of leaking taps, running toilets or other equipment defects.

1.6. TIPS FOR LAUNDRY

- Washing linen at a lower temperature and more air-drying can both save money.
- Loads should be weighed (if relevant).
- Run only full loads to minimise frequency of operation.
- Ensure that water temperature and amount of water are in accordance with manufacturer's instructions.
- Turn off lights and ventilation/air-conditioning when laundry not in use.

- Schedule laundry operation during off-peak, low-charge periods.



1.7. TIPS FOR MAINTENANCE/TECHNICAL STAFF (GENERAL)

- Use natural sunlight when possible, although watch out for glare effects on staff.
- Keep lighting systems clean.
- Label switches so they aren't accidentally turned on.
- Install occupancy and daylight sensors so that your lights are only on when required.
- Ensure all external doors close and fit properly and that automatic door-closing mechanisms are well-functioning.
- Ensure all windows fit and close properly; repair damaged handles and catches.
- Use low-energy lighting. Replace tungsten GLS lamps and T12 fluorescent tubes with more energy efficient items such as T5 tubes, compact fluorescent or LED lamps. This could reduce the electricity you consume for lighting by as much as 80%.
- Furthermore, some of the newer bulb types last more than eight times longer than tungsten GLS lamps, and, as they produce less heat, they will put less strain on the cooling required from your air conditioning system.
- Energy consumption monitoring: investigate the possibility of monitoring the energy consumption of specific equipment items.
- Ensure the current regulation of heating/cooling/ventilation equipment is appropriate, and take necessary corrective actions.
- Improve combustion quality by adjusting the λ factor of the boiler burners. Monitor the factor throughout all the year by performing monthly gas analysis.
- Clean the filters from the fan-coil system monthly.
- Ensure that maintenance and service of heating/cooling/ventilation equipment are carried out properly and regularly according to the manufacturer/installer's instructions.

- Check if there is any deterioration of the building envelope or air leaks. If maintenance or improvement work is required, inform the management of the hotel.
- Improvement of equipment: evaluate opportunities to improve (or even change) technical equipment to gain better energy efficiency and better service. Inform hotel management of these opportunities.
- Install automatic timers, where applicable, to effectively control on/off status of electrical equipment.
- Install electricity meters for monitoring the energy used by major loads.
- Conduct energy audits annually, to indicate the energy use profiles and show significant changes in key areas.
- Regularly calibrate measurement and control devices, such as thermostats and flow meters, according to the manufacturers' instructions.
- Apply continuous/consistent commissioning (i.e. always appoint the same contractor) to maintain operational requirements and system efficiency.
- Post stickers and posters on staff notice boards to draw attention on the significance of energy savings.



1.7.1. CHILLERS

- Optimise the operation of multiple chillers by using a cascade connection in between the multiple chillers and by reducing the chiller's working temperature by shading them.
- Ensure the number of chillers used for a particular cooling demand is determined by a combination of chiller and pump power that gives the lowest consumption.
- Avoid operating chillers under light load conditions.
- Develop time schedules and operation procedures for starting the chillers to reduce maximum demand charges on electricity.



- Do not allow the chilled water supply temperature to fall below the design value (typically 6°C or 7°C).
- In mild seasons, raise the set point of the chilled water supply temperature in accordance with the decrease of the building load.
- Clean condenser and evaporator tubes at least monthly, depending on weather conditions, to optimise the heat transfer rate and reduce power consumption.
- Clean strainers and filters regularly in order to maintain the flow rate, so that the optimal heat transfer in the condenser can be achieved.

1.7.2. AIR SYSTEMS

- Avoid operating the heating and cooling systems simultaneously. This can be a common problem in hotels. Switch off heating when a temperature of 21°C has been reached in winter or 26°C during the summer.
- In addition, set back-of-house temperatures lower than those at front of house.
- Clean air filters located at guest floors, public areas and back of the house monthly, such as by pressurised water jet, to reduce frictional losses and maintain the indoor air quality.
- Clean fan coil units, air handling units, and cooling coils at least annually in order to improve cooling efficiency and indoor air quality.
- Clean air ducts to remove dust and dirt accumulated inside so as to improve system efficiency and indoor air quality.
- Turn off the air conditioning systems in rooms such as the banquet hall, function rooms, and restaurants as soon as the areas are closed.

- Check cooled air ducts for air tightness to avoid air leakage and energy wastage.
- Apply duct-sealing technology if leakage rate exceeds 5%.
- For heat pumps, the speed of cooling/heating is the same regardless how high or low the temperature is set, so adjust thermostats to appropriate temperature to suit required conditions, and do not set too low to over cool function rooms, restaurants, offices, etc.
- During unoccupied periods, the fan coil units in guestrooms may operate with time intervals of fifteen minutes by fan cycling control, as a balance between energy conservation and the prevention of odour and moisture accumulation.
- Adjust outdoor air supply to avoid either under-ventilation or over-ventilation. Over-ventilation is a waste of energy, whilst under-ventilation may compromise the comfort and health of the occupants.
- Outdoor air supply control, such as the demand control method using CO₂ sensors, can be adopted for effective ventilation and energy saving, especially in a large function room or similar space.
- Adopt economising cycles, where applicable, to utilise the cool outdoor air and reduce energy consumption for cooling.

1.7.3. ELECTRICITY SYSTEMS

- Switch off lighting when not required or when the daylight provides adequate illumination.
- Clean lighting fixtures regularly to maintain efficiency of lighting.
- Turn off electrical equipment when not in use, or not required for any prolonged period.
- Choose electrical appliances with high-energy efficiency ratings.
- Check bills especially when energy is being consumed. Consider reviewing your energy contract to pay in relation to hours consumed. If so, relevant arrangements with your energy utility and adopt an efficient load-management system to reduce peak demand.
- Check bills for penalties regarding the consumption of demanded reactive energy. If suitable, install automatic regulator and capacitor banks for power factor improvement.

1.7.4. BOILERS

- Service your boiler regularly. This could help you save up to 10% of your annual heating costs.
- Adjust the air-fuel ratio at change of each season. Improve combustion quality by adjusting the λ factor of the boiler burners. Monitor the factor throughout the year by performing monthly gas analysis.
- Check boilers daily for leakage of diesel fuel oil, and for emission of carbon monoxide and smoke due to incomplete combustion.
- Consider installing meters at the gas/diesel input in each boiler to be able to measure the exact consumption in each boiler.
- Properly line steam pipes with insulation to reduce heat loss to environment, and also to maintain the system efficiency.
- Periodically, check the pipes insulation and repair them if necessary.
- Repair steam pipes as soon as possible in the event of steam leakage.
- Ensure the chemical water treatment system is checked monthly by the appointed contractor to prevent rusting and scaling of the internal walls and tubes of the boiler, to maintain the efficiency of heat transfer.
- Maintain an optimum air-fuel ratio, and avoid excessive flue temperature.
- For condensing boilers or low temperature boilers, try to run it at the lowest temperature possible. They are designed to work more efficiently at partial loads. In contrast, for standard boilers, don't try to reduce the temperature below 70°C. These boilers are designed to work at full loads. Moreover, letting this boilers to work at low temperatures will deal with an increase of the condensates, which will eventually erode the fireside.
- An additional boiler should be only turned on when the capacity of operating boiler(s) is insufficient. Turn the boilers off overnight.
- Return condensate from the laundry and kitchen equipment may be utilised, e.g. to preheat feed water.

1.7.5. CALORIFIERS

- Do not overheat hot water, check the heat accumulator's thermostats and don't let the temperature go over 65°C and under 60°C. A temperature of 60°C is ideal: it provides comfortable hot water and is hot enough to kill legionella

bacteria.

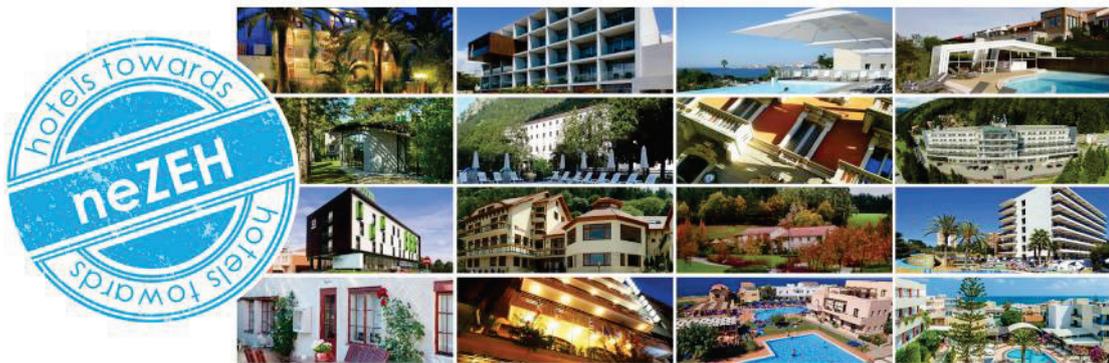
- Consider fitting spray water taps, as they use less hot water and energy.
- Properly line calorifiers and hot water pipes with insulation, to reduce heat loss to the environment, and also to optimise the energy use.
- Check calorifiers and hot water pipes quarterly and repair as soon as possible in the event of water leakage.
- Maintain the hot water supply temperature in the range of 50 to 60°C for guestrooms, public spaces and other general washing purposes. In order to avoid problems with Legionella, consider installing mixing valves.

1.7.6. LAUNDRY AND KITCHEN

- Ensure the gas equipment in kitchens is checked at least quarterly by a competent contractor to avoid leakage of gas, and emission of carbon monoxide and smoke to the environment, due to incomplete combustion.
- Ensure steam pipes of the steam ovens, dryers, washing machines, etc. are properly lagged with insulation to reduce heat loss to the environment, and also to maintain the efficiency of equipment.
- Ensure all steam traps operate properly and all traps are leak-free.
- Consider using variable-speed extraction systems to reduce the energy waste by adjusting the fan speed to the rate of extraction required.
- Plan so that all washing machines are working at full load.
- Remove lime deposits regularly from spray nozzles, tanks and heater coils in dishwashers.



www.nezeh.eu



1.7.7. SWIMMING POOL AND SPAS

- Ensure sand inside the backwash chamber is replaced annually to maintain water filtration efficiency.
- Use a pool cover to reduce evaporation in summer and heat loss in winter.
- Consider installing a thermal pool/spa cover when not in use to prevent constant heat loss or water evaporation if your hotel has an outdoor or indoor pool, or a hot tub.
- Verify that heaters are functioning properly by regularly checking water temperature.
- Control large water jets on a timer so that they run, for example, only 20 minutes every hour as opposed to continually.
- Control smaller water features, such as water curtains designed for guests to play in with timer switches that can be activated by customers on-demand. Timer switches should be extremely robust.
- Control the hours of operation for water slides instead of running them all day.

1.7.8. PLUMBING AND DRAINAGE SYSTEMS

- Consider reducing the operation hours of the hot water recirculation pump, leaving its enabling by demand only a couple of hours a day during the night. It can also be switched off when the hotel is not open.
- Investigate the possible use of recycled wastewater, condensate water and rainwater for heat rejection in small refrigerating plants.

1.7.9. VENDING MACHINES

- Consider upgrading to modern machines with improved insulation and more efficient cooling units.
- Consider adding controls with infrared sensors to reduce lighting of machines when no one is around.



4. ENGAGING GUESTS

For the hotel's energy efficiency policy to be fully successful and to accomplish neZEH goals, guests should be encouraged to contribute actively during their stay. Make them aware that sustainability is high on the agenda and that the hotel cares for the environment. Most will be happy to learn that the hotel is committed to reducing its impact on the environment.

One way to inform guests is to make the hotels environmental philosophy and policy easily available to them, describing the actions being taken to reduce its negative impact on the environment and that a reduction in energy consumption is a key element of the hotel environmental strategy. This should be available at Reception.

Guests should be informed about simple actions they can take everyday to limit waste of energy and improve the environmental-friendliness of their stay; most likely in their room either as a leaflet or when using specific facilities. Information about this could be displayed as part of the information provided by the hotels on the hotels TV channel or simply leaving reminders around guests' rooms. Here are 8 simple actions to reduce energy consumption:

Help us save electricity. Did you know that by avoiding waste of electricity you contribute to the preservation of our natural resources and landscapes?

- Please turn off the air-conditioning when you leave your room
- Please switch off all lights when you leave your room
- Please avoid "sleep mode" for televisions

Help us save energy use for heating and cooling. Did you know that over half the energy consumed in the hotel is used for space heating and cooling and that much is often wasted?

- Please close windows and doors when the heating/cooling system is on.
- Please keep the room temperature reasonable (recommended indoor temperature setting for winter is 21°C and for summer 26°C).

Help us save water. Did you know that water is a precious resource for humanity and by using it sparingly you will contribute to its preservation?

- Please consider taking a shower instead of a bath
- Please do not leave water running continuously
- Please inform cleaning staff you are willing to keep your towels for more than one day.
- Please inform staff in case of water leaks.

5. PAGE FOR OWN NOTES ON TIPS

neZEH TEAM



Project Coordinator

Technical University of Crete, School of Environmental Engineering
Renewable and Sustainable Energy Systems Lab, Greece



World Tourism Organization



Network of European Regions for a Sustainable and Competitive Tourism



Federation of European Heating, Ventilation and Air-conditioning Associations



Agency of Braşov for Energy Management and Environment Protection, Romania



Creara Consultores S.L., Spain



ENERGIES 2050, France



Energy Institute Hrvoje Požar, Croatia



Istituto Superiore sui Sistemi Territoriali per l'Innovazione, Italy



Sustainable Innovation, Sweden

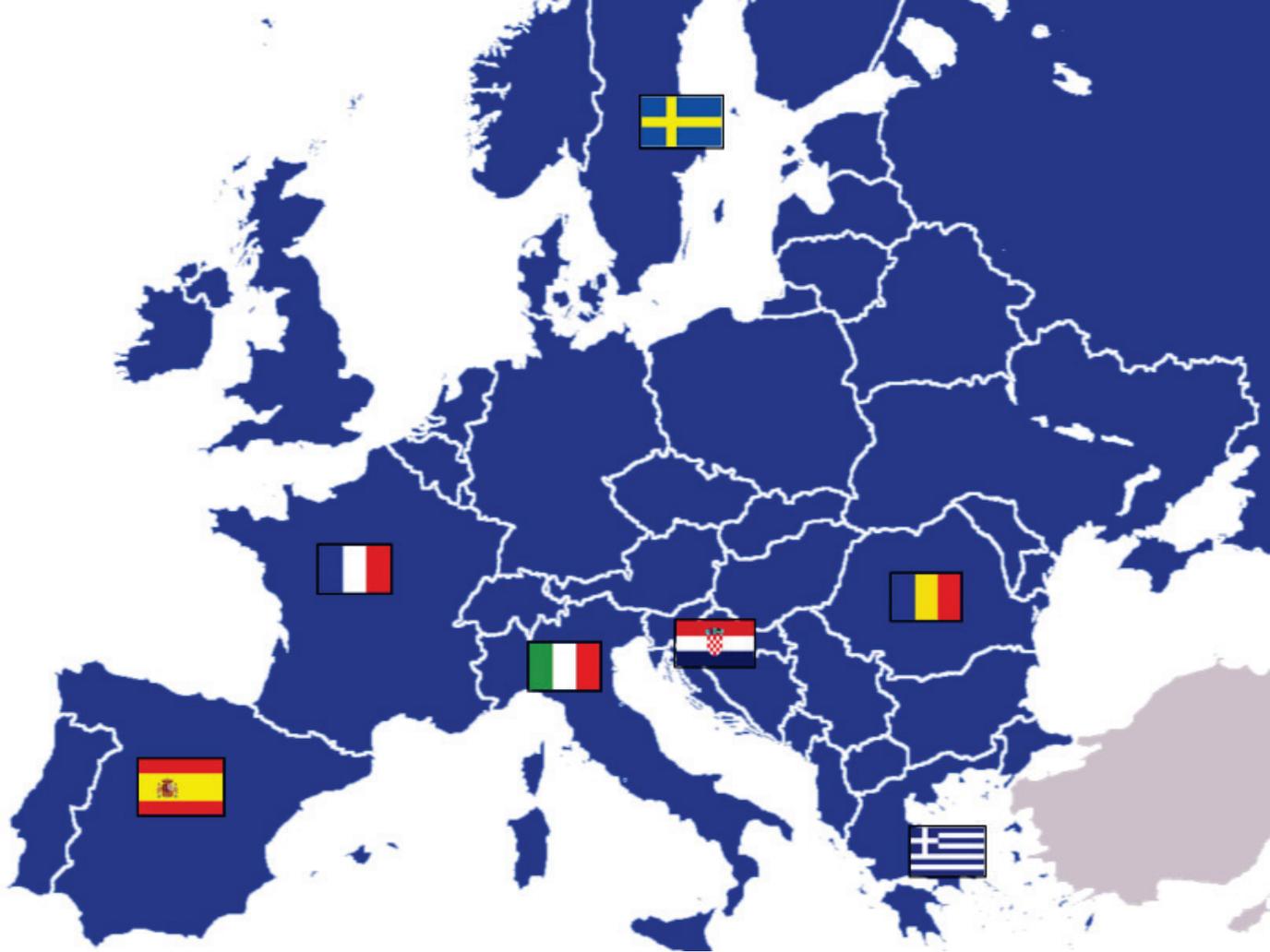
CONTACTS

PROJECT COORDINATOR:

Technical University of Crete, Renewable and Sustainable Energy Systems Lab
Ms Stavroula Tournaki • stavroula.tournaki@enveng.tuc.gr • +30 28210 37861 • www.nezeh.eu

AUTHORS:

Nigel Claridge (Sustainable Innovation AB), Ignacio Guerrero (CREARA), Maria Frangou (ENV/TUC)
info@nezeh.eu



www.nezeh.eu



Co-funded by the Intelligent Energy Europe
Programme of the European Union