RELACS

Renewable Energy
for Tourist Accommodation Buildings

European catalogue

Tourist Accommodations of the RELACS Network

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BG Hotel complex "Rodopa"

Banite village, District Smolyan, Bulgaria

1 Contact details

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2 Short description

Hotel complex "Rodopa" is a SPA hotel, built to modern standards in 2008. The building is located in the beautiful Smolyan Village Banite on the foothills of the majestic Rhodopes Mountain and has a rehabilitation and prevention center. The Village of Banite is known for its mineral water, which has 43° C and is the only one in Bulgaria.

The main use of energy in the hotel is the electricity consumption for air conditioning systems. There is potential to use RES in Banite – solar, biomass and geothermal water. Biomass is the most interesting, because there is a forest with high potential of biomass close to the village. Because of that, the hotel management decided to invest in a manufactory for biomass pellets for being used in pellet boilers in the hotels of Banite. The manufactory can produce an amount of approximately 4 000 t of pellets.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Improve comfort

4 Results

The village offers a big potential for the use of biomass. The most efficient way of using biomass is using pellets. As there is no factory for producing pellets near Banite, the hotel management took part in a rural development program to build up such a factory. The main heating in the hotel will be covered by a new pellet boiler. The boiler will provide heating for the rooms and hot water. Another important point is to train the personal in energy efficiency behavior. Due to its proximity to the river Malka Arda, Rodopa would like to install a water source heat pump in the future to support the provision of cooling energy.

Energy savings and comfort improvements have been achieved. The pellets factory will produce more than the hotel needs and will therefore be available for other hotels in the region of Banite.

The expected amount of energy saving is:

- 19 200 kWh/ year;
- 7 000 tCO2 per year;

The total costs for the pellet factory are 500 000 EUR, total costs for the pellet boiler in the hotel are 17 000 EUR.

The putting up of the pellet factory was funded by a rural development program. The installed boiler in the hotel has been privately funded.

5 Repeatability

Pellet boilers can be installed in any other hotel. It is really suitable in the tourist accommodation buildings. The conditions which have to be fulfilled are to have enough place for the storage of the pellets and a technical room for the boiler.

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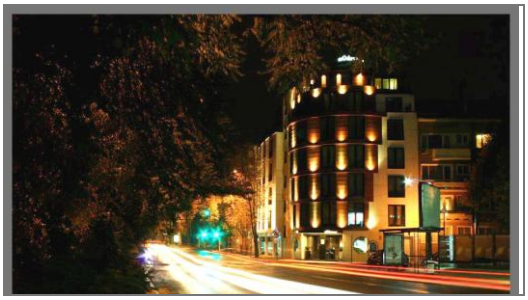
BG mOdus hotel

Varna, Bulgaria



1 Contact details

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2 Short description

As a unique hotel in Varna, Modus is a stylish property with an accent on contemporary interior design. Featuring free Wi-Fi, it overlooks the Sea Garden and offers free bikes to ride along the Black Sea and the beach, 200 meters away.

The hotel is committed to a special environmental approach which includes energy saving, water saving, reduce hotel waste and reduce transport emissions. The measures implemented in the hotel are:

- Using LED bulbs for lighting and heat pump for heating and cooling
- using water saving devices in bathrooms to save 40% without any reducing of comfort;
- using 100% recycled paper for office needs and packaging.
- reducing chemicals and fresheners in daily cleaning of the rooms;
- giving guests the possibility to determine the frequency of changing of bed sheets and towels;
- free bicycles for hotel guests as a green way of moving;
- use only natural cosmetic products;
- Food is coming as much as possible from local producers;
- using bio products where it is possible;

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

An air–water heat pump was installed to provide warm and cool air depending on the season. In common spaces all bulbs are replaced by LED bulbs, which are highly efficient and have a longer lifetime than other types of bulbs. Special devices were installed in the taps for reducing water flow. This optimized the water flow and reduced 40% of the water consumption. Information material for energy efficiency and environmental impact was prepared for guests. The hotel gives its guests the possibility to determine the frequency of bed sheets and towels being replaced. Because of that each guest can reduce his or her own carbon footprint. The hotel has a special personnel training program for energy efficiency.

The achieved savings are:

100 450 kWh/a

65 t/a CO_2

It was also saved paper – 650kg/a which means 11 saved trees.

The total costs for improving energy efficiency at the hotel are approximately 50 000EUR.

The measures were implemented using own resources and a bank loan.

5 Repeatability

Heat pumps can be applied in any other hotel and accommodation building. There are no specific criteria for the installation. Water reducing devices and LED bulbs also can be used in any other hotel without any problems.

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BG Graffit Gallery Hotel

Varna, Bulgaria

1 Contact details

Organisation / Agency:	Graffit Gallery Hotel
Address:	65 Knyaz Boris blv., 9000 Varna, Bulgaria
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Website:	http://graffithotel.com

2 Short description

In the very heart of Varna, there is a small, cozy boutique hotel with a 100-year-old history and a unique design. The unique look of the building, preserved until today, ranks it among the distinguished European architectural monuments. The hotel offers 24 luxuriously furnished and stylishly decorated rooms, a cozy lobby bar and an exquisite gourmet restaurant.

The Graffit Gallery Hotel has installed a building energy management system (BEMS). The accommodation is heated by heat pump central heating which has been recently upgraded.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Others: To improve comfort

4 Results

The hotel is equipped with BEMS. The system controls and regulates the heating, cooling and ventilation system in the hotel. There are energy manager of the hotel, who is responsible for operation of the BEMS. The controlled parameters are temperature, time of switch of and switch on, power of ventilation etc. The HVAC system is heat pumps air to water. The system is modernized and uses waste air from kitchen through heat recovery. The personnel is also trained for energy efficiency behaviour. The responsible person for that is the energy manager of the hotel.

Energy savings of 20% were achieved thanks to the BEMS. Also the comfort has been improved.

The total costs for improving energy efficiency are approximately 150 000 EUR.

All measures installed have been financed privately and by a bank loan.

5 Repeatability

BEMS can be installed in any accommodation building. There are some criteria to be fulfilled : it has to be possible to control the units of the HVAC system. Also it is need to determine a responsible person for the BEMS. A heat recovery system can be installed in all types of hotels.

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BG Hotel Arabela beach

Albena Resort, Bulgaria

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Organisation / Agency:	Hotel Arabella Beach
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Telephone:	+ 359 (0) 700 12 110
E-mail:	gigov@albena.bg
Website:	http://www.albena.bg

2 Short description

Set at the beachfront, hotel Arabella Beach is the best place to enjoy the beautiful sea view in Albena. Offering comfortable accommodation and friendly service, this is an ideal place for couples and families looking for a relaxed holiday.

The hot water is heated by solar collectors. Solar collectors is really suitable because the hotel is only open in summer so that the main need of hot water can be provided by the collectors. The hotel has an outside swimming pool. The pool needs to be heated almost during the whole summer. To reduce the heating needs for the pool, the measure is to cover the pool at night, when the pool isn't used. Water is also a very important natural recourse that has to be saved. To reduce water consumption, water saving devices have been put in all taps.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

Arabela hotel is equipped with solar collectors for hot water to provide additional heating energy for heating hot water. It is possible to cover all needs of energy at very sunny days. It covers 40% of the annual amount of energy needed for hot water. Covering the pool at night reduces the heat loses from evaporation during the night. It is a quite simple and effective way to save energy for pool heating. Water tap devices for reducing the flow is also a simple and cheap way for saving water.

Energy savings and comfort improvements have been achieved. The solar collectors have reduced the energy consumption for heating water by 40%. Covering the pool has reduced the energy consumption by 25 %, and achieved 40% of water saving.

The total costs for improving energy efficiency at the hotel are approximately 25 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Solar collectors for hot water can be applied in any other hotels. It has to be considered that solar collectors can cover up to 50% of your energy needs, and can save the energy produced for less sunny days. To cover the pool is also a very flexible and easy measure. It is suitable for pools which are not used during the night. Water reducing devices can be installed in all accommodation buildings.

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BG Hotel Flamingo Grand

Albena Resort, Bulgaria

1 Contact details

Organisation / Agency:	Hotel Flamingo Grand
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Telephone:	+ 359 (0) 700 12 110
E-mail:	gigov@albena.bg
Website:	http://www.albena.bg

2 Short description

Situated in the heart of the magnificent resort – Albena, the five-star Flamingo GRAND offers exceptional facilities, luxury studios and apartments all combined with an impeccable service. This modern and stylish hotel is ideal for those seeking a high standard of accommodation. Next to the hotel there are many shops, restaurants, bars & other entertainment, the walk to the beach is 150m.

Flamingo Hotel has one of the most advanced solar collectors in Europe. They are installed in an area of 600 square meters. The main purpose is heating water for domestic needs of the hotel. There is also an installation of PV panels on the roof as well as a card energy saver in each room. The pool is covered during the night.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ other

4 Results

PV panels are a well known way for electricity production. They cover part of the electricity needs of the hotel. A card energy saver is a good way for energy saving in the rooms.

105 567 kWh/year energy and 72 t/a CO_2 could be saved.

The total costs for improving the energy efficiency at the hotel are approximately 45 000 EUR.

All measures installed have been privately funded.

5 Repeatability

PV panels can be applied in any other hotel. The main condition is to avoid the shadow from other objects like higher buildings, hills, trees and etc.

Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and save the energy produced on very hot days and keep them for less sunny days. Covering the pool is also quite flexible and easy. This measure is suitable for pools which are not used during the night.

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BG Hotel Gergana

Albena Resort, Bulgaria

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Organisation / Agency:	Hotel Gergana
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Website:	http://www.albena.bg

2 Short description

The owner of the hotel “Gergana” is Albena AD. The hotel was built in 1974 and has 290 rooms with 580 beds. The building has 10 floors. The hotel is open during the summer from May to September. Gergana features a kitchen and a restaurant, a night bar and an outside swimming pool.

The hotel management installed solar collectors for hot water, card energy savers in each room, covered the swimming pool during the night and put up water tap devices for reducing the flow.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☑ Improve comfort

4 Results

Hotel “Gergana” is equipped with solar collectors for hot water to provide additional heating energy for hot water. It is possible to cover all the needs of energy on very sunny days. During the whole year this measure covers 40% of the energy used for hot water. Covering the pool at night reduces heat loses from evaporation during the night. It is a quite simple and effective way to save energy for pool heating. Water tap devices for reducing flow are also a simple and cheap way for achieving water savings.

53 567 kWh/a of energy and 34 t/a CO_2 could be saved.

The total costs for improving the energy efficiency of the hotel are approximately 48 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and can save the energy produced on sunny days for cloudy ones. Covering the pool is also quite flexible and easy. It is suitable for pools which are not used during the night.

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BG Hotel Kaliakra

Albena Resort, Bulgaria

1 Contact details

Organisation / Agency:	Hotel Kaliakra
Address:	Albena Resort, Bulgaria
Telephone:	+359 (0) 70012110
E-mail:	gigov@albena.bg
Website:	http://www.albena.bg

2 Short description

The Kaliakra hotel provides service with a total of 272 rooms, out of which 159 are Standard double rooms, 103 Superior rooms, nine executive apartments and one room for disabled. The hotel has one panoramic and five inside lifts. Also, it features modern energy-saving solar panels and a central air conditioning system (all rooms, lobby, lobby bar, restaurant, Lounge bar are air-conditioned). All rooms are sea view. The hotel is only open at summer from May to September. The hotel has an outside swimming pool.

To reduce heat losses it was implemented heat isolation on the walls. The hot water is heated by solar collectors. Solar collectors are really suitable because as a summer season hotel the main need of hot water can be covered when the efficiency of the collectors is on maximum. The outdoor swimming pool needs to be heated almost during the whole summer. To reduce the heat needs of the pool, the measure is to cover the pool at night, when pool isn't used. Water is also a very important natural recourse that has to be saved. To reduce water consumption water saving devices were put in all taps.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

Hotel “Kaliakra” is equipped with:

- a outside wall heat isolation, which reduces heat and cool losses;
- solar collectors for hot water to produce additional heat. It is possible to cover all needs of energy on very hot days. Annually this measure covers 40% of the energy needed for hot water.
- Covering the pool at night reduces heat losses from evaporation during the night. It is a quite simple and effective way for saving energy for pool heating.
- Water tap devices for reducing flow are also a simple and cheap way for water saving.

154 638 kWh/a energy and 105 t/a CO_2 have been saved.

The total costs for improving the energy efficiency at the hotel are approximately 180 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Wall isolation can be implemented in all type of accommodation buildings. The only restriction can be to keep the originality of the facade. Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and save the produced energy of very sunny days which is not needed. Covering the pool is also quite flexible and easy. It is suitable for pools which are not used during the night. Water reducing devices can be installed in all accommodation buildings.

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BG Hotel Kaliopa

Albena Resort, Bulgaria

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Website:	http://www.albena.bg

2 Short description

Calliope Hotel is located at the beach of Albena resort. It is a 4-floor building with two sectors and a lift. There is a restaurant, lobby bar, pool bar and an outdoor pool. In 2006, the hotel received the award "Three Sheets" on the Scandinavian tour operator My Travel eco hotel. To receive this distinction the hotel management of Calliope has a rigorous program of 50 requirements for environmental protection.

The hot water is heated by solar collectors. Solar collectors are really suitable because Calliope is a summer season hotel and the main need of hot water is during the summer when the efficiency of collectors is at its maximum. The hotel has an outside swimming pool. The pool needs to be heated almost during the whole summer. To reduce those heating needs the pool is covered at night when it isn't in use. Water is also a very important natural recourse which has to be saved. To reduce the water consumption it was put water save devises in all taps. To reduce heat losses it was implemented heat isolation on the walls. Energy saver cards are another implemented measure.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Other

4 Results

Solar collectors are a well known way for heat energy production. It covers part of the heat energy needs of the hotel. Card energy savers are a good way for saving energy within the rooms. Heat wall isolation is putted outside the walls. Covering the pool at night reduces heat loses from evaporation during the night. It is a quite simple and effective way for saving energy for pool heating. Water tap devices for reducing flow are also a simple and cheap way for water saving.

71 500 kWh/a of energy and 49 t/a CO_2 have been saved.

The total costs for improving energy efficiency at the hotel is approximately 100 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Wall isolation can be implemented in all type of accommodation buildings. The only restriction can be to keep the originality of the facade. Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and save the additionally produced energy on very sunny days for cloudy days. Covering the pool is also quite flexible and easy. It is suitable for pools which are not used during the night. Water reducing devices can be installed in all accommodation buildings.

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BG Hotel Laguna Beach

Albena Resort, Bulgaria

1 Contact details

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2 Short description

Hotel Laguna Beach is located on the sea-coast, among beautiful shaped green areas, in the centre of Albena resort. The hotels Laguna Mare and Laguna Garden are close and together they build a beautiful architectural complex. The seven-floor building of Laguna Beach, has a terrace architecture, most of the rooms have sea-view. There are rooms for smokers and non-smokers and there is a specially equipped room for disabled guests as well as 2 lifts.

The implemented measures are solar collectors for heating hot water, card energy savers, covering the swimming pool during the night and heat isolation on the outside of the walls.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ other

4 Results

Vacuum tube solar collectors for DHW have been installed. Card energy savers are used to unlock rooms and to switch on the electricity only when needed. A covering system for the pool and necessary personnel organisation for operating were implemented as well. It was putted 8 cm of heat isolation outside of the walls.

78 000 kWh/a of energy and 53 t/a CO_2 have been saved.

The total costs for improving the energy efficiency at the hotel are approximately 95 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Wall isolation can be implemented in all type of accommodation buildings. The only restriction can be to keep the originality of the facade. Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and save the additionally produced energy on very sunny days for cloudy days. Covering the pool is also quite flexible and easy. It is suitable for pools which are not used during the night. Water reducing devices can be installed in all accommodation buildings.

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BG Hotel Malibu 4*

Albena Resort, Bulgaria

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Website:	http://www.albena.bg

2 Short description

Hotel "Malibu" is situated in the central part of Albena. The hotel is surrounded by green parks. It has two sectors with four and five floors respectively. It has four lifts and an outdoor swimming pool with a children section. "Malibu" has been totally renovated. The distance to the beach is 150m.

The implemented measures for improving energy efficiency are solar collectors for heating hot water, card energy savers, heat isolation on the walls and covering the swimming pool during the night.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

Solar collectors are a well known way for heat energy production. It covers part of the heat energy needs of the hotel. Card energy savers are a good way for energy saving in the rooms. Heat wall isolation is putted outside of the walls. Covering the pool at night reduces heat loses from evaporation during the night. It is a quite simple and effective way for saving energy for pool heating.

45 000 kWh/a energy and 31 t/a CO_2 have been saved.

The total costs for improving the energy efficiency at the hotel are approximately 75 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Wall isolation can be implemented in all type of accommodation buildings. The only restriction can be to keep the originality of the facade. Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and save the additionally produced energy on very sunny days for cloudy days. Covering the pool is also quite flexible and easy. It is suitable for pools which are not used during the night. Water reducing devices can be installed in all accommodation buildings.

RELACS
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BG Hotel Ralitsa Superior

Albena Resort, Bulgaria

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Website:	http://www.albena.bg

2 Short description

The Ralitsa Superior hotel has two main buildings - one is a six floor building with two lifts, and the other one is a five floor building with one lift. There are smoking and non-smoking rooms (251 rooms + 3 apartments). There are two outdoors swimming pools for adults, one indoor swimming pool, two outdoors pools for children and an indoor Jacuzzi. There is an air-conditioned restaurant with a terrace for smokers and a hall for non-smokers, bar and a-la-carte restaurant, lobby bar.

The implemented energy efficiency measures are:

- solar collectors for hot water;
- Card energy saver in each room;
- Heat isolation on the walls
- Covering the swimming pool during the night;
- Creating energy efficiency behaviours of the hotel personnel

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Improve comfort for guests.

4 Results

Hotel “Ralitsa” is equipped with flat solar collectors for hot water to provide additional energy for heating. It is possible to cover all needs of energy on very hot days. Annually it covers 40% of the energy amount for hot water.

Covering the pool at night reduces heat losses from evaporation during the night. It is a quite simple and effective way for saving energy for pool heating. Card energy savers avoid energy consumption in empty rooms. It was designed a special training program for personnel for energy efficient behaviour.

139 000 kWh/a of energy and 95 t/a CO_2 have been saved.

The total costs for improving energy efficiency at the hotel is approximately 105 000 EUR.

All measures installed have been privately funded.

5 Repeatability

Training for energy efficient behaviour of the personnel is really important for improving environmental standards of the hotel. Wall isolation can be implemented in all type of accommodation buildings. The only restriction can be to keep the originality of the facade. Solar collectors for hot water can be applied in any other hotel. It has to be considered that solar collectors can cover up to 50% of your energy needs and save the additionally produced energy on very sunny days for cloudy days. Covering the pool is also quite flexible and easy. It is suitable for pools which are not used during the night. Water reducing devices can be installed in all accommodation buildings.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Arcona Hotel Baltic

Stralsund, Germany

1 Contact details

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Website:	www.baltic.arcona.de

2 Short description

Arcona Hotel Baltic is on the outskirts of the UNESCO historic city of Stralsund, thus it is located central and has also a great traffic connection. There are 132 rooms in the hotel consisting of 127 double rooms and 5 apartments. The hotel has a restaurant, a bar in the lobby as well as a Spa area with a gym and a sauna. Furthermore, it has three rooms for meetings and conferences as well as free WLAN in the whole building.

Arcona Hotel Baltic is open during the whole year and has 24 hour reception.

To save energy the hotel uses energy saving lamps. Furthermore it installed automatic timers and motion detectors.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

Arcona Hotel Baltic has implemented measures like replacing old lamps by energy saving lamps. Furthermore, a technician of the hotel controls the function of the new motion detectors and timers regularly, as well as the water, electricity and oil consumption.

The guests are informed about energy saving behaviour by a flyer. In this, they are for example asked to turn off the lights when leaving the room or to shut down the heater when the windows are open.

5 Repeatability

The measures can definitely be repeated even without high investment costs. Therefore, when buying new electronic devices they should already be as energy efficient as possible.

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Renewable Energy
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DE Biohotel Amadeus

Schwerin, Germany

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Website:	www.schwerin.cc

2 Short description

Biohotel Amadeus is the first and only Hotel in Schwerin which is 100% organic. The hotel offers 12 rooms with good furniture and has a small sauna for their house guests. Furthermore, there is free WLAN and parking for guests.

The location near the old town of Schwerin is perfect to explore the area by food or bike.

The hotel is open during the whole year.

As an energy efficiency measure the Biohotel Amadeus installed an air source heat pump for heating and hot water. Moreover, the hotel uses 100% green electricity.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

In 2009 the Biohotel Amadeus replaced its old gas-fired hot-water-tank by an air sourced heat pump by Ochsner. Information material in the hotel room and on the website keeps guests informed about the energy saving success of Biohotel Amadeus.

Furthermore, the hotel uses only certified green electricity in their building since 2009.

The hotel is labelled by the EHC (eco hotels certified) eco certificate as a Biohotel with a consumption of 7.91 kg CO_2 per guest and night.

By implementing these measures the hotel was able to save about 30% of energy costs.

The financing of the heat pump was supported by the Landesförderinstitut Mecklenburg-Vorpommern with 6000, - €.

5 Repeatability

The measures can all be implemented if they are decently planned.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Brocki's Hotel Stadt Hamburg

Parchim, Germany

1 Contact details

Organisation / Agency:	Brocki's Hotel Stadt Hamburg
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2 Short description

Brocki's Hotel Stadt Hamburg is a family-run business with only breakfast. It is located in the city centre of the county seat Parchim. The small hotel is just a 2 minutes' walk away from the historical centre and is directly located next to the Watergate of the river Elde and the Mecklenburger Seenradweg, a cycle path along the lakes in Mecklenburg. Brocki's Hotel has 16 cosy rooms, including 3 single rooms and 2 family rooms (2 double rooms with a connecting door).

All rooms are comfortably furnished with a desk, a flat screen TV and Wireless Internet (fee required). All rooms have a separated bathroom with shower/WC. The hotel has a breakfast restaurant, which offers drinks at night as well. It is open for the whole year from Monday to Sunday. Visitors can park for free on the attached parking lot. The friendly stuff speaks German and English and is always at your service for planning your stay.

To save water and resources, the hotel introduced suggestions for guests about an environmentally friendly use of commodities, e.g. towels. Furthermore Brocki's Hotel uses LED and energy saving lamps within the whole hotel area to save energy.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

Brocki's Hotel Stadt Hamburg installed LED and energy saving lamps in the whole hotel area in order to save energy. Furthermore, the hotel management developed notes for guests to suggest the rational use of water and resources by reasonable handling of commodities like towels. In addition the hotel offered training for the stuff regarding energy efficiency and environmental issues.

In all the company spent investment costs of about 1000 Euro for implementing these measures. No funding schemes were used.

5 Repeatability

Every accommodation company can save energy even with low financial effort.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Cottage “Haus am Walde“

Borkow, Germany

1 Contact details

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Website:	http://www.fewodabel.de

2 Short description

Enjoy your holiday directly at the Sternberger Seenland in the Cottage ”Haus am Walde“ with its 29 rooms. Travelers can choose between single, double, three- or four bed rooms. The cottage also offers apartments with two rooms including four beds and double rooms (and partly with balcony). There is a breakfast room with buffet and outdoor terrace on the ground floor.

Experience guided trekking tours with the ranger, hiking tours by bike or on the water, a combination of these tours, coach rides and charabanc, “birds-nature-mushrooms” with the nature park ranger, dancing nights, presentations, cooking nights, campfires, tournaments in soccer, volleyball, boccia, dart, archery, minigolf, skat, puzzling, bingo and many more.

As an energy efficiency measure the hotel replaced all lamps in the whole building and on the outside by energy saving lamps. The light outside is also regulated by motion detectors now. Also, water saving measures have been implemented by reducing the flow of water taps and showers.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel installed a wooden carburettor (CO_2 neutral) to heat service and heating water. It mounted outdoor lamps with motion detectors and energy saving bulbs. The latter are used inside the whole hotel now. By reducing the flow of water taps and showers water could be saved. The garden is watered by an own well. Another measure was to reduce the amount of non-recyclable waste by 70% by dividing the waste of guests afterwards in glass, reusable materials, paper, organic and general waste.

5 Repeatability

The measures carried through can definitely be repeated by others if the accommodation uses a heating system based on water.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Die kleine Sonne

Rostock, Germany

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Website:	www.die-kleine-sonne.arcona.de

2 Short description

The Three Star Hotel with breakfast “Die kleine Sonne” is welcoming its guests in the heart of the Hanseatic City of Rostock with its 48 rooms near the city hall and the pedestrian zone. The Hotel is equipped with imaginative design and has very caring service staff. The guests can start an adventurous day in the breakfast restaurant or provide themselves with salty and sweet snacks and drinks at the Kiosk. In the whole building you can find artworks of Nil Ausländer that vitalizes the hotel with the landscape of Mecklenburg- West Pomerania. The rooms are furnished with new energy efficient flat screen TVs and WLAN. The new TVs were procured by the hotel management as an energy saving measures. Furthermore, the hotel implemented measures to decrease water consumption and replaced all lamps by energy saving lamps.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

To save energy and protect the environment all lamps in the whole building have been replaced by energy saving lamps. Furthermore all old TVs got replaced by new, energy efficient flat screen TVs in the beginning of 2012. The water consumption was reduced by using aerators and adjusting the right water pressure.

It is not evaluated yet how much costs could be saved as the measures have been implemented just recently.

5 Repeatability

All those measures can also be implemented in other hotels as there are no special requirements.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Ferienanlage “Schweriner-Seenplatte“

Holzendorf / Dabel, Germany

1 Contact details

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Website:	http://www.fewodabel.de

2 Short description

The holiday resort „Schweriner Seenplatte“ is located in Dabel Holzendorf, 4km from Sternberg in the nature park region „Sternberger Seenland“. The property of 2,5 ha is directly situated at the lake Holzendorf. The 200 m shore includes 3 swimming spots belonging to the hotel. In the park there are banks, lawns for sunbathing and a place for campfires. The houses and apartment all have a terrace or balcony including garden furnishing, a BBQ and a parasol. They are all pointing southwards and have a nice view on the lake. The apartments all have a kitchen, living and eating rooms which are flooded with light because of a big panorama window, 2 sleeping rooms and a bathroom with shower. The houses have 2 levels and 4-6 sleeping rooms, 2-3 bathrooms, a living room and a winter garden with view on the lake.

To save energy the hotel installed a solar power plant and a wooden carburetor to heat service water and the heater itself. Moreover, the sewage treatment was replaced by a full-organic sewage plant with a function to save electricity.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

As an energy saving measure the hotel installed a solar power plant in 2011 with no CO_2 to heat service water and support the heater. The hotel now uses a wooden carburetor (CO_2-neutral) with 4,000 l buffer storage to heat service and heating water when the solar plant does not provide enough energy. Moreover outdoor lamps with motion detectors and energy saving bulbs have been mounted. The latter are used in all apartments and houses as well. As a water saving measure the flow of water taps within the rooms was reduced. To water the garden an own well is used. The sewage treatment was replaced by a full-organic sewage plant with a function to save electricity by providing a draw and pressure balance. Another measure was to reduce the amount of non-recyclable waste by 75% by dividing the waste of guests afterwards in glass, reusable materials, paper, organic and general waste. The rainwater is collected and led to the flower beds. Also the tree and bush cuttings of the 30,000 m² property were stored and dried for the weekly campfire.

The funding programme “Innovationsförderung” of the Federal Office of Economics and Export Control (BAFA) was used.

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5 Repeatability

Yes, the measures can be repeated in other accommodations.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Hostel zum Kukuk

Kukuk, Germany

1 Contact details

Organisation / Agency:	Hostel zum Kukuk
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Website:	http://www.fewodabel.de

2 Short description

The „Hostel zum KuKuK“ is located at the outskirts of the tourist village KuKuK on a 6000 m² property and just 100 m away from the lake Klein Pritzer. The building offers 17 rooms with shower and bathroom. On the ground level there is a lounge with tables and 30 seats. The big guest room has another 40 seats and tables as well as two chill-out zones with couches. Next to the big guest room there is the kitchen. There the guests have everything they need for cooking: refrigerators, stoves, dish washing machines, all devices and equipment for cooking, a microwave, a coffee machine, a boiler and lots of dishes, pans, glasses and cutlery.

To save energy the hotel now uses a wooden carburetor (CO_2-neutral) with 4,500 l buffer storage to heat service and heating water when the solar power plant doesn’t provide enough energy. Also, the sewage treatment was replaced by a full-organic sewage plant with a function to save electricity by providing a draw and pressure balance.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel installed a solar power plant in 2012 to heat service water and support the heater. Furthermore, the hotel now uses a wooden carburetor (CO_2-neutral) with 4,500 l buffer storage to heat service and heating water when the sun is not shining. Moreover, it mounted outdoor lamps with motion detectors and energy saving bulbs. The latter are used in all guest rooms as well. As a water saving measure the flow of water taps within the rooms was reduced. The sewage treatment was replaced by a full-organic sewage plant with a function to save electricity by providing a draw and pressure balance. Another measure was to reduce the amount of non-recyclable waste by 75% by dividing the waste of guests afterwards in glass, reusable materials, paper, organic and general waste. To water the garden, rain water is used out of a 8 m^3 pit.

The funding programme “Innovationsförderung” of the Federal Office of Economics and Export Control (BAFA) was used.

5 Repeatability

The measures are definitely repeatable if enough space is available.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Hotel Ingeborg

Waren, Germany

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Website:	www.hotel-ingeborg.de

2 Short description

Hotel Ingeborg is a seasonal working hotel with breakfast only, which is located centrally in the spa town Waren (Müritz). It has 31 comfort rooms with a minibar, TV, free telephone and wireless LAN. The hotel offers various activities for cyclists and hikers. Furthermore it provides a large and balanced breakfast buffet. The service-oriented company is labelled with the service certificate of Dehoga. Moreover, the Hotel Ingeborg received the Environmental Award of the city of Waren.

The hotel procured new TVs in 2010 to reduce the electricity consumption during operation hours and stand-by. In addition, all refrigerators have been replaced in 2011 as well.

In 2012 the hotel management commissioned the energy agency in Mecklenburg-Western Pomerania with implementing an energy efficiency consultancy to evaluate possible modernisation measures for the heating facilities and the installation of a solar plant.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The purchase of energy efficient devices led to a reduction of electricity consumption and costs. A consultancy report of the energy agency is still in development to show how the building can be created more efficiently by modernization measures and solar plants. By implementing these measures the company was already able to save electricity costs of about 900 Euros per year. For financing the energy consultancy, the Hotel Ingeborg used the support programme of the KfW Bank. Therefore, the costs of 2000 EUR have been supported by 80%.

5 Repeatability

The measures can be implemented by hotels which are willing to invest in saving energy.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Landhotel Rittmeister

Rostock, Germany

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Website:	www.landhotel-rittmeister.de

2 Short description

The Landhotel Rittmeister offers sophisticated gastronomy and an own distillery. The 930 m² sized hotel is located on the outskirts of Rostock and has 17 rooms. Besides to its restaurant the guests can enjoy a sauna, W-LAN and in the future a swimming pool, wellness and 22 additional rooms. The hotel is open during the whole year.

To improve its energy performance the hotel has planned to install a compound refrigeration system with waste heat utilisation for service water and the swimming pool. Furthermore, Landhotel Rittmeister is introducing a ventilation system with heat recovery for the restaurant. These measures shall be implemented in 2013.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Others: Use waste energy

4 Results

The Landhotel Rittmeister is going to install a compound refrigeration system with waste heat utilisation for service water and the swimming pool. The compound refrigerator centralises several decentred cooling devices in order to enable the use of waste heat. This heat is further used to heat service water und the swimming pool. This measure will save up to 25,000 kWh/a, which means an annual saving of 5 tons of CO_2. Therefore, the hotel will save 1.250 Euros and additional 1000 Euros for lower maintenance costs per year. The investment costs for the project were 10,000€. For financing the hotel used KfW-support programmes for energy efficiency.

Another measure to be implemented is a heat recovery system for the restaurant. At the moment the ventilation is not regulated by demand and without heat recovery. By replacing the old system, the ventilation will work only when needed, with heat recovery and full automatic. Unnecessary operation is then not possible any more. This measure will save up to 17,000 kWh/a, which means an annual saving of 3.4 tons of CO_2. Therefore, the hotel will save 850 Euros and additional 500 Euros for lower maintenance cost per year. The hotel spent 12,000 € on this measure. The KfW-support programmes for renewable energies funded a part of this measure.

The new building will have a PV-panel on its roof to save an annual consumption of 9,000 kWh and 5.1 tons of CO_2. This means saved costs of 1,900 Euros per year. The costs for installing the PV plant were 13,000 €. The hotel was financially supported by the BAFA support programme fpr cross-sectional technologies.

Furthermore, the heating pumps will be replaced by pumps that are regulated by demand. This measure will save up to 1,200 kWh/a, which means an annual saving of 0.7 tons of CO_2. Therefore, the hotel will save 750 Euros per year. The implementation will cost 2,000 €.

5 Repeatability

The measures can be repeated if the thermal and electric load curves fit together. A process analysis to identify the load curves is necessary. Furthermore there have to be process analysis on sources for waste heat and heat user as well as on user of electricity out of e.g. PV plants of CHPs.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Landhotel Schloss Teschow

Teterow, Germany

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Website:	www.schloss-teschow.arcona.de

2 Short description

The Landhotel Schloss Teltow is embedded in the gentle hill landscape of the Nature Park Mecklenburgische Schweiz and surrounded by 120 hectares of property. It is located directly at Teterower See within the nature park and at Kummerower See. It has 93 rooms and 18 apartments. The hotel has two restaurants, an own farm shop, an area for conferences and meetings and an event hall of 1400 m². The spa area contains a swimming pool, two saunas as well as massages and cosmetic treatments. Additionally, there is a 27-hole golf course (18-hole championship course and 9-hole course), a library and a kid's club. The hotel also offers WLAN.

The hotel is open during the whole year.

Since 2009 there is a photovoltaic plant on the event hall. In 2012 the hotel replaced the whole lightning of the hotel area by energy saving lamps.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The Landhotel Schloss Teschow has organised trainings for stuff on energy saving measures, waste separation and prevention, sustainability and regional products.

Guiding principle no. 9 of the Arcona Hotel Group was introduced: “I pay attention to the environment. I have a responsible treatment of the existing resources. I know my responsibility towards a safe and clean environment and I will report every source of danger immediately. “

The guests are informed about the energy saving measures of the hotel by public notices about the photovoltaic plant at the event hall and in an information folder at the hotel rooms.

The hotel already managed to save about 20% energy by using energy saving lamps.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Steigenberger Hotel Sonne

Rostock, Germany

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Website:	www.steigenberger.com/Rostock

2 Short description

Steigenberger Hotel Sonne offers 121 rooms and suites in the middle of the Hanseatic City of Rostock. It is located near to the city hall and the pedestrian zone. The Four Star Superior Hotel welcomes its guests with a hearty hospitality and makes them feel like home. The hotel has two more restaurants besides the breakfast restaurant. The wine restaurant has the biggest wine range in Rostock and the Restaurant & Bar SILO 4 at Rostock's City Haven offers an outstanding view and a unique buffet concept. The eight meeting rooms fulfil all requirements ideally for every kind of event. In the spa area you can find a Finnish sauna, a steam bath and a gym. Otherwise you can relax during a soothing massage or beauty treatment. There is W-LAN available in the whole hotel area.

Steigenberger Hotel Sonne replaced all lights by energy saving lamps. Furthermore high-efficient heating pumps of the latest generation were installed. Moreover, the hotel implemented measures to decrease the water consumption and regulates all processes by a GLT system.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

In order to save energy and protect the environment the Steigenberger Hotel Sonne replaced all lighting in the hotel by energy saving lamps. The water consumption was reduced by using aerators and adjusting the right water pressure. The temperature has an upper limit to save costs and energy for heating. The heating system in the whole building is regulated by a central building control system which adjusts the inside temperature with the help of an outdoor sensor. This guarantees sustainable heating.

As the measures have been implemented recently there has been no evaluation of the investment costs yet.

5 Repeatability

The measures can be repeated in other buildings but have to be adapted to the size of the buildings.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

DE Steigenberger Hotel Stadt Hamburg

Wismar, Germany

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Website:	www.steigenberger.com/Wismar

2 Short description

The Steigenberger Hotel Stadt Hamburg is located directly at the scenic marketplace of the old Hanseatic City of Wismar. It has 102 rooms and one suite. It is a non-smoker hotel and has a restaurant, a bar and a beer cellar. Furthermore there is a spa area with a sauna and a steam bath. For conferences and meeting the hotel offers five rooms up to 150 persons. WLAN is available.

The hotel is open during the whole year.

To save water the hotel installed the newest technique. Moreover Steigenberger Hotel Stadt Hamburg uses green electricity.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

Steigenberger Hotel Stadt Hamburg has organised trainings for stuff on energy saving measures, waste separation and prevention, sustainability and regional products.

Guiding principle no. 9 of the Arcona Hotel Group was introduced: “I pay attention to the environment. I have a responsible treatment of the existing resources. I know my responsibility towards a safe and clean environment and I will report every source of danger immediately. “

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Domotel les Lazaristes

Thessaloniki, Greece

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Website:	www.philoxenianet.gr/

2 Short description

The hotel is a modern five-star member of the chain of Domotel hotels, next to one of the most important cultural centers of Thessaloniki, Moni Lazariston, which houses the National Museum of Contemporary Art, the National Theatre of Northern Greece, the School of Fine Arts and the State Orchestra of Thessaloniki.

It is in a nice neighbourhood that is full of life, close to the city center. LesLazaristes offers 74 spacious rooms of which 25 suites, equipped with all modern means for a comfortable stay.

Staying at LesLazaristes is really a special trip into the world of haute cuisine in the restaurant Fred & Ginger and relaxation and wellness in the hotel pool in the Dreamway Spa fitness center.

The hotel offers the possibility of equal access to all services in the entrance, in public spaces and in specially designed accommodation. Rooms for disabled, which is the largest hotel rooms [except the suites] have a specially adapted bathroom and are fully equipped to serve every need.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel is built with the most up to date energy saving measures. The building which is of particular architectural design incorporates bioclimatic features and fixed sunshades integrated harmoniously in the southern and western side. The heating and cooling of all places is made with high efficiency air conditioning variable refrigerant volume (VRV) system and it has hot water (DHW) high efficiency natural gas boilers. Instabus system is installed to control the lighting of public spaces, the hall, the restaurant and outdoor lighting. There are motion detectors in the parking and public areas of staff. It is gradually replacing bulbs with new energy-efficient ones.

The hotel management has already a plan of replacing a large part of the lighting and of energy consuming lamps with energy saving ones and is also considering the installation of a small CHP unit (4,7 kW_{el} and 11,5 kW_{th}) to cover the thermal needs for DHW production.

The hotel management relays on personnel training.

Energy saving (kWh/year): - 152.400 kWh_{el}, + 41.000 kWh_{th}

CO_2 saving (tons/year): - 166 tCO_2

Cost saving: ~ 11.000 €/year

The costs of investments for improving energy performance and installing RUE and RES systems are around 75.000 €

5 Repeatability

The implemented measures apart from CHP unit can be applied to many other hotels as they do not require any special conditions. CHP requires connection to the natural gas grid in order to be financial viable.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Philoxenia Bungalows

Thessaloniki, Greece

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2 Short description

Philoxenia complex is situated at the beginning point of Sithonia peninsula and in the settlement Psakoudia and is a summer destination. Philoxenia Bungalows is situated 80 km from the city of Thessaloniki. The bungalow-complex designed according to the most up-to-date standards lays on an 11 acre-wide territory, in a pine forest and merely 150 m from the sea. Eleven two-storied buildings that accommodate the155 recently renovated rooms constitute the complex. 147 of them are double rooms that have the possibility of entertaining third and fourth individual (bunk beds), and 8 are apartments with two separate rooms in each one. All rooms offer shower, A/C, TV-Satellite, refrigerator and hair dryer.

It has applied RUE measures and has installed RES. It plans in the near future to apply more RUE measures and to install more RES.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

It has recently replaced the 2 LPG water heaters for hot water production (RUE) and has already a standalone pv installation of 5kW$_p$ and solar collectors for hot water production (RES). In the immediate plans (already underway) are:

RUE measures : as the replacement of all split units for cooling with new ones with inverters and energy class A, the installation of magnetic contacts on doors and windows of the room to save energy in cooling, and the replacement of electromechanical equipment and upgrading of motors in sewage installation,

and RES : as the installation of new solar collectors for hot water production (RES) and PV installation of 30 kWp.

The hotel management relays on personnel training.

Energy saving (kWh/year) : - 56.000 kWh$_{el}$, -55.000 kWh$_{th}$

CO_2 saving (tons/year) : - 74,83 tCO_2 (-21,3%)

Cost saving: ~ 11.000 €/year

The investment costs for improving energy performance and installing RES systems are about 150.000 €.

Most of the investment will be financed by the national financing program “Green Tourism” (National Strategic Reference Framework). The remainder will be covered by own resources.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Anatolia Hotel Thessaloniki

Thessaloniki

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2 Short description

Anatolia Hotel Thessaloniki is a convenient, elegant and stylish establishment right in the heart of the financial, commercial and nightlife district.

The Anatolia uniquely combines, the dynamic of a modern spa, conference and business hotel with the luxury of a relaxing vacation hotel. It offers elegantly decorated interiors, gourmet cuisine and cocktails at the Aqua Lounge Bar Restaurant and a rejuvenating experience of All Senses Fitness and Health. Club.Services include:Free Wi-Fi internet, Dry cleaning, Room Service, Parking, Secretarial Service, Bussiness Center, Car Rental.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Anatolia Hotel Thessaloniki is fully aware of its ecological responsibility and has taken a series of measures towards reducing the negative effects of it and contributes towards the preservation of the natural environment. It has set goals such as reducing energy and water consumption, providing accurate information on such matters and recycling materials within the hotel. The measures applied are:

- Informing guests of the option to reuse their towels and/or sheets to conserve water and energy.
- Use of electronic devices with certified low energy consumption.
- Energy efficient electrical appliances.
- Autonomous airconditioning with VRV technology.
- Use of power card readers in rooms.
- Gradual replacement of low energy consuming lamps with LED technology lighting.
- Motion detector triggered lights in certain communal areas
- Light dimmers in most communal lighting
- Shower heads and taps using a mixture of air for reduction of water consumption
- Dual function toilet flush
- Recycling of materials such as glass, cooking oil, paper, plastic, aluminium and batteries
- 'Think before you print' policy by reducing paper print-outs
- Installment of new double glazed windows for better insulation
- Use of solar power panels for DHW

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Blue Bay Hotel

Chalkidiki, Greece

1 Contact details

Organisation / Agency:	Blue Bay Hotel
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Fax:	+30 (0) 23740 91646
E-mail:	info@bluebayhotel.com.gr
Website:	http://www.bluebayhotel.com.gr

2 Short description

The first building of the hotel was constructed in 1997, having 22 rooms with fascinating view. The expansion of the hotel was accompanied with the establishment of Blue Bay S.a. in 2000. The year 2008 the hotel was upgraded with new wings and luxury services. The consecutive renovations and new services are the cornerstone principles of Tsapanidis family in order to provide superior services in a cozy atmosphere.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

There are only energy saving lamps in the hotel, photocells for outdoor and motion sensors for exterior walkways, card switches in all rooms and most appliances are energy class A. Measures are taken to save hot water and propane is the fuel for domestic hot water (DHW) and heating of 24 rooms. The hotel manager intends to replace existing boiler with a new one of higher performance and explores the possibility of installing solar panels on the roof of the main building to meet the heating needs of the hotel and for hot water heating 28 rooms.

The hotel management relays on personnel training.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Afrodite Manson

Pieria, Greece

1 Contact details

Organisation / Agency:	Afrodite Manson
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Telephone:	+30 23520 81415
Fax:	+30 23520 22123
E-mail:	info@archontico-aphrodite.gr
Website:	http://www.arhontiko-aphrodite.gr/

2 Short description

The mansion "Venus" is situated in Litochoro Pieria, at the foothills of Mount Olympus and is made in a traditional way in which the stone mansions were built in the area of Litohoro. The exterior of the building is clad with stone chipped in hand like the old days. It is open all year.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Regarding the use of electricity at the hotel there are only energy saving bulbs and the split units are inverter type of high energy class. Finally, the supply of electrical appliances is always made taking into account energy criteria.

The hotel management thoroughly investigates several proposals for energy saving purposes, mainly for both space heating and for hot water production. In this context, immediate plans are to replace the existing fireplace in the living room with fireplace with installed power of 24.000kcal and gradually replacement of window frames to reduce heat loss.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Hotel Lito

Pieria, Greece

1 Contact details

Organisation / Agency:	Hotel Lito
Address:	Plaka Litochorou, Pieria,
Telephone:	+30 (0) 2352 022122
Fax:	+30 (0) 2352 022123
E-mail:	info@hotel-lito.gr
Website:	http://www.hotel-lito.gr

2 Short description

Lito Hotel is located in Plaka Litochoro two hundred meters away from the beach and one kilometer from Litochoro. It offers air-conditioned rooms with views of Mount Olympus and the Aegean. Open during the summer months.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

With regard to energy performance, in 2008, the Hotel management installed solar panels on the roof covering thus half of the needs of hot water and replaced the old burner with a new more efficient one. It saves hot water by installing devices on all shower heads. Regarding electricity, only energy saving bulbs are used, split units are inverter type and of high energy class, and the supply of electrical appliances is always made taking into account energy criteria.

The hotel management continuously investigates measures for energy conservation and entering renewable energy systems.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Sonia Village Hotel

Chalkidiki, Greece

1 Contact details

Organisation / Agency:	Sonia Village Hotel
Address:	Gerakini, Sithonia Chalkidiki
Telephone:	+ 30 (0) 23710 54080
Fax:	+ 30 (0) 23710 54083
E-mail:	info@hotel-sonia.gr
Website:	http://www.hotel-sonia.gr

2 Short description

Hotel Sonia Village in Chalkidiki is a family owned resort located directly on the sea front between the first two peninsulas of Chalkidiki and is a summer destination. The white/blue bungalows are spread amidst colourful gardens in front of a well secluded sandy beach. Hotel Sonia Village is the ideal place, for relaxed vacations in Chalkidiki Greece. A range of delightful culinary choices is presented in buffets, incorporating traditional Mediterranean and Greek cuisine. Twelve buildings that accommodate the 140 recently renovated rooms constitute the complex.

It has applied RUE measures. It plans in the near future to apply more RUE measures and to install RES providing both thermal and electrical energy.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The following RUE measures are intermediate planned: the replacement of all split units for cooling with new ones with inverters and energy class A, the replacement of incandescent bulbs with low energy fluorescent bulbs, the replacement of LPG boilers with new ones more efficient (RUE), and RES installations as: the installation of solar collectors for hot water production and PV installation of 20 kW_p. Replacement of mini bars and TV's in all rooms with more energy efficient ones. The hotel management relays on personnel training.

Energy saving (kWh/year): - 38.000 kWh_{el}, - 55.000 kWh_{th}, -

CO_2 saving (tons/year): - 54,76 tCO_2 (-22%)

Cost saving: ~ 10.500 €/year

The investment costs for improving energy performance and installing RES systems are about 150.000 €.

Most of the investment will be financed from the national financing program "Green Tourism" (National Strategic Reference Framework) and own resources.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Rouga Hotel

Pella, Greece

1 Contact details

Organisation / Agency:	Rouga Hotel
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E-mail:	info@rouga.gr
Website:	http://www.rouga.gr

2 Short description

Rouga consists of 15 traditional stone houses built in a prime location with excellent view. The architecture respects the traditional architecture of the traditional settlement of Old Agios Athanasios and offers high standard accommodation and quality all the year.

The complex is located near the central square of the traditional settlement of Old Agios Athanasios, that was previously abandoned, but now has turned into one of the most beautiful mountain villages with traditional color, beautiful houses and high quality restaurants and evening entertainment.

The surrounding area offers alternative forms of tourism and extreme sports. Skiing in one of the best organized ski centers of Greece, airfield, specially shaped speedway moto-cross. Also, artificial slope climbing ability for flying box, archery, mountain biking, flying with parapente at 1600m altitude and landing on the airfield Panagitsa.

The hotel is orientied to energy-efficiency.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Recently has made a series of energy interventions such as replacing oil boilers for heating and hot water boilers with solid fuel ones (complete disengagement from oil), replacement of conventional fireplace with an energy one for heating space 100 m^2 in the restaurant-cafe-reception, replacement of all the frames with new ones that meet the specifications of KENAK in one of the three buildings of the complex, replacement of all conventional light bulbs with new energy-saving, and finally replacing shower heads for reduction of hot water consumption.

Information on energy saving

Energy saving (kWh/year): -14.980 kWh, -1,3 toe (-13 %)

CO_2 saving (tons/year): - 31,6 tCO_2 (-62,7%)

Cost saving: ~ 6.000 €/year

The investment costs for improving energy performance and installing RES systems are about 150.000 €.

Most of investment will be financed from a national financing program (National Strategic Reference Framework) and own resources.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions. Only the replacement of oil boilers with solid fuel ones can be applied mainly in provincial areas as storage and feeding with solid fuels requires large space which is difficult and costly to be allocated in urban areas.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Traditional Guesthouse Varosi 4 Seasons

Pella, Greece

1 Contact details

Organisation / Agency:	Traditional Guesthouse Varosi 4 Seasons
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Fax:	+30 (0) 6983187397
E-mail:	hotelvarosi@yahoo.gr
Website:	http://www.varosi.gr

2 Short description

The traditional guesthouse "Varosi 4 Seasons" is a three-floor preservable mansion built with stone and wood where the reception area is part of the ancient stone walls of Edessa. It is situated in a prime location next to the waterfalls of Edessa and the old district "Varosi."

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Recently, having made energy interventions has halved oil consumption for space heating and DHW, has installed fireplace for heating common areas and the reception, has installed contacts and magnetic card switches in all rooms and there are only energy saving lamps. It has set as target to substitute part of the consumed electricity with electricity generated by photovoltaic panels and to install solar panels in order to replace part of the thermal energy to produce hot water.

The hotel management relays on personnel training.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Hotel Alfa

Edessa, Pella

1 Contact details

Organisation / Agency:	Hotel Alfa
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Fax:	+30 (0) 23810 24777
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2 Short description

Alfa Hotel is located in the city of Edessa and within walking distance of the city's attractions. It has 30 years of history and is mainly business hotel, open all the year. It was renovated in 2011.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

It has made a series of energy-saving interventions during last year such as : it has installed solar panels with a surface of about 40 m^2 for DHW production (RES), installed thermostatic valves on thermal radiators so as to regulate temperature locally and installed magnetic card switch contacts in all rooms to control electricity consumption (RUE).

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Mykonos Paradise Hotel

Chalkidiki, Greece

1 Contact details

Organisation / Agency:	Mykonos Paradise Hotel
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Fax:	+30 (0) 23990 24041
E-mail:	reservations@mykoniatihotels.gr
Website:	http://www.alkyonis.com/

2 Short description

The Mykonos Paradise & Spa Hotel is approximately 35km. from Thessaloniki center and just 25km from Macedonia Airport, with access to all major archaeological sites of Macedonia.

It offers an outdoor pool with pool bar, roof garden with breathtaking views over Thermaikos gulf, gym and spa. It is situated between the hills of New Kallikratia and the beach.

All rooms at the Mykonos Paradise offer fantastic views over the Aegean Sea and Mount Olympus. The Amfitriti Spa Center, decorated with ancient style, features a heated indoor pool, sauna, jacuzzi, steam room, solarium and provides various types of body treatments and facials.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel is already implementing energy saving measures. The split units in all rooms are inverter type and have installed magnetic card switches and contacts in all rooms. It has installed solar panels on the roof and has achieved approximately 10% fuel savings. The rest DHW is produced by, a very recently installed, low-temperature heat pump. In the immediate plans of the hotel management is to expand the installation of solar panels and to replace all the devices in the rooms with new ones of energy class A.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Akrogiali Boutique Hotel

Chalkidiki, Greece

1 Contact details

Organisation / Agency:	Akrogiali Boutique Hotel
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Fax:	+30 (0) 23740 51970
E-mail:	akrogiali.boutique.hotel
Website:	http://www.hotelakrogiali.com

2 Short description

Akrogiali Boutique Hotel has 18 spacious rooms and is pleasantly situated in the beautiful village Polichrono in Kassandra peninsula of Chalkidiki, which has one of the cleanest and warmest waters in Greece and has been awarded by the European Union's Blue Flag.

The hotel is ideally located only 60 meters from the endless beach. Akrogiali restaurant serves Greek and Mediterranean cuisine with attention to detail and excellent service.

Based in the hotel one can explore the beautiful locations of Chalkidiki and make cruises to Mount Athos.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Since 2000 have been installed solar panels covering nearly all the needs in hot water. In 2005, it has installed washers and dryers, energy class A. In 2010, the roof was waterproofed and insulated resulting in significant reduction of cooling needs. All rooms have card switches and the lighting is done with energy saving lamps in almost the whole hotel. Exterior shades - tents installed in 2011, help prevent solar radiation and also reflect heat.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Flegra Palace

Chalkidiki, Greece

1 Contact details

Organisation / Agency:	Flegra Palace
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Fax:	+30 (0) 23740 61724
E-mail:	info@flegra.gr
Website:	http://www.flegra.gr/

2 Short description

FLEGRA PALACE is a family resort located on the edge of the Kassandra peninsula of Chalkidiki.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel had a major renovation in 2007-2008 aiming beyond the functional and aesthetic upgrades, in saving energy. In this context the roof of the buildings was insulated, the windows were replaced with new low loss ones and card switches and magnetic contacts were installed in all rooms. The lighting was upgraded and only energy lighting bulbs are used. All split units were replaced with new ones of energy class A. In one of the 6 burners that provide DHW, oil was replaced with LPG. Almost 85% of kitchen equipment is operating with LPG.

Flegra Hotel cooperates with a bicycle rental company and provides information to customers so as to encourage its use as an effort to improve the environmentally friendly behaviour. Furthermore, there is a concern for minimizing and recycling waste. The unit is considering replacing the existing boiler with biomass boilers to reduce operating costs while reducing the consumption of natural resources.

The hotel management relays on personnel training.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Regos Villa

Chalkidiki, Greece

1 Contact details

Organisation / Agency:	Hotel Regos Villa
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E-mail:	info@regosvilla.com
Website:	http://www.regosvilla.com

2 Short description

The hotel is located at the enchanting beach of Paradise N. Marmaras, only 110 km from Thessaloniki. It offers 16 spacious apartments with modern amenities and 300 sq. m of garden.

It is a family business hotel and operates from May to October. Vision of the hotel management is the anticipation and implementation of energy and environmental performance of the building and its surroundings.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

All rooms have wooden floors, double glazing and economy lamps, which they aim to replace them with LED bulbs for 90% saving on consumption. The external and communal lighting system is controlled by sensors. It has magnetic contacts and card switches in all rooms. Most of the electrical appliances are energy class A. It saves water in irrigation and showers from private drill equipped with inverter pump. The building has sunshades to help avoid exposure to sunlight. The residues from pruning and clipped plants are recycled directly to the organic waste cage to create compost. It uses environmentally friendly cleaners and recycles at source paper, aluminum, plastic, cans and batteries. The hotel management plans to install solar panels (DHW) and photovoltaic panels and water saving fitments to taps and showers.

Energy saving (kWh/year): -20% in electricity

Cost saving: ~ 2.000 €/year

The investment costs for improving energy performance and installing RES systems are about 18.000 €

All of the investment costs were financed from own resources.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Astoria Hotel

Thessaloniki, Greece

1 Contact details

Organisation / Agency:	Astoria Hotel
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E-mail:	astoria@papcorp.gr, reservation@papcorp.gr, paphotels@papcorp.gr
Website:	http://www.astoriathessaloniki.com/

2 Short description

The hotel ASTORIA of PAP Corp. is addressed to the professional and cultural tourism in Thessaloniki since 1979. It is located in the heart of Thessaloniki, next to the traditional district LADADIKA, the PORT and the commercial road of Tsimiski.

ASTORIA has 97 rooms and had its major renovation in 2009. Apart from the typical apartments in ASTORIA there are 7 family rooms and 8 spa suites. On the first floor, the Restaurant / Bar serves three types of breakfast depending on the preferences of the guests. A rich American breakfast, Continental heavyweight Organic local produce and grab & go. Furthermore, the P.A.P Corp. ASTORIA hotel offers its services to people with disabilities under the Program HAPPY TOURIST.

The hotel owns the **GREEN KEY**, European Signal Environmental Management.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The recent renovation aimed at improving the infrastructure of the building and saving energy resources required for its operation. Included amongst other aesthetic and functional interventions, external insulation and changing frames. It was decided the fuel switching from oil to natural gas. So as to save energy resources, a CHP was installed in operation with an absorption chiller. Mechanical and electrical equipment replacement and expansion took place, which affected the ecological management and distribution of energy load.

The hotel management relays on personnel training.

Energy saving (kWh/year): -130.000 kWh_{el}, + 160.000 kWh_{th}

CO_2 saving (tons/year): - 120 tCO_2

Cost saving: ~ 20.000 €/year

The investment costs for improving energy performance and installing RES systems are about 160.000 €

Most of investment will be financed from own resources.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions. Apart from the CHP which requires connection with the natural gas grid in order to be economically viable.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Hotel Afroditi

Pieria, Greece

1 Contact details

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Fax:	+30 (0) 23520 33565
E-mail:	afrolept@otenet.gr
Website:	http://www.hotel-afroditi.com.gr/

2 Short description

The Hotel is situated in Leptokaryas' Beach, in the seafront and in the shadow of Olympus and is open all year. It consists of two buildings that offer 51 rooms. On the ground floor is a tavern and cafe.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The fuel in the kitchen is propane and oil is used to cover the thermal needs in DWH and space heating. It has already installed solar panels on the roof of the main building, whose performance is so good that the hotel management plans to install large scale solar panels to meet the heating needs of the hotel with a view to completely replace oil. In the hotel there are only energy saving bulbs, and magnetic card switch contacts in all rooms and most of the appliances are energy class A.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Aroma Dryos Eco & Design Hotel

Metsovo, Greece

1 Contact details

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Fax:	+30 (0) 26560 29006
E-mail:	info@aromadryos.gr
Website:	http://www.aromadryos.gr/

2 Short description

AROMA DRYOS is a brand new hotel (~2 years) in the center of Metsovo. It is a stone building which combines traditional architecture with modern amenities. There, guests can enjoy every luxury in a warm and friendly environment with an incomparable view on Pindos Mountains all year.

It has been awarded by the international quality label **"Green Key"** for the particular sensitivity on environmental protection issues.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

It is completely innovative also in eco-philosophy based on geothermal energy, as it uses it for air conditioning and DHW both in winter and in summer, thus contributing significantly to energy savings as long as it doesn't use any fuel.

Efficient lamps and sensors in public spaces and magnetic card switch contacts in all rooms and all electrical appliances are Energy Class A '. All rooms and the main living room have energy efficient fireplaces. The wooden frames around the hotel provide certified insulation level of 85%. It also has a central wiping unit that saves energy and minimizes noise and dust particles. Finally, it has already begun the recycling process of glass, paper and plastic.

The hotel management relays on personnel training.

Information on energy saving (kWh/year), CO_2 saving (tons/year), cost saving (€/year) due to renewable energy and energy efficiency systems/measures applied.

Energy saving (kWh/year): The energy consumption is 40.000 KWh_{el}/year.

CO_2 saving (tons/year): 20 t (30%)

Cost saving: ~ 21.000 €/year for space heating, cooling and DHW (approximately 4.000 €/year while the cost of oil for the same energy demand would be approximately 25.000 €/year)

The investment costs for improving energy performance and installing RES systems are about 365.000 €

For financing these measures own resources, a bank loan and public incentives were used.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions, except low temperature geothermal energy that requires a large area for drilling purposes.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Hotel Mythos

Pieria, Greece

1 Contact details

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Address:	Elatochori, Pieria,
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Fax:	+30 (0) 23510 82910
E-mail:	info@hotelmythos.gr
Website:	http://www.hotelmythos.gr/

2 Short description

The traditional guesthouse "Mythos" is located in Pieria 'Mountains, just 1 km away from Elatochori and 8 km from the ski resort. Built with wood and stone at an altitude of 870 meters, surrounded by beech, fir and wild chestnut trees, offers 28 spacious rooms, fully equipped and tastefully decorated.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

There is only energy saving bulbs in the hotel, and magnetic card switch contacts in all rooms and most of the appliances are energy class A. The fuel in this kitchen is gas. Oil is the fuel for DHW and for space heating. The Hotel Management is investigating the possibility of installing solar panels and biomass boilers to the hotel' s thermal energy needs and photovoltaic systems to meet the electricity needs.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

GR Hotel Perinthos

Sindos, Thessaloniki

1 Contact details

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2 Short description

Hotel "PERINTHOS", is a 3 star hotel, located on private land, with a large surrounding area, consisting of 70 parking spaces and a garden. It is just 12 km from Thessaloniki away from the noise of the city and close to many attractions as the graves of Alexander, the Vardar wetlands and archaeological sites of Vergina and Dion.

In the main building there are 44 double rooms.ople, On the ground floor is the reception section, the snack-bar, and the lobby.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

It has made a series of energy-saving interventions during last year such as installing solar panels for DHW production, replaced all oil boilers for space heating and DHW with heat pumps that exploit geothermal energy for air conditioning and DHW both in winter and in summer, thus contributing significantly to energy savings as long as they do not use any fuel. Soon it will replace all lighting with LEDs.

Information on energy saving (kWh/year), CO_2 saving (tons/year), cost saving (€/year) due to renewable energy and energy efficiency systems/measures applied.

Energy saving (kWh/year): -282.102 kWh, -26,91 toe (-56%)

CO2 saving (tons/year): -50 tCO_2 (-15 %)

Cost saving: ~ 24.000 €/year

The investment costs for improving energy performance and installing RES systems are about 240.000 €.

For financing the measures own resources and public incentives have been used.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions, except low temperature geothermal energy installations that require a large area for drilling purposes.

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GR Lesse Hotel

Haniotis, Chalkidiki

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Website:	http://www.lesse.gr/

2 Short description

The hotel is located in beautiful Hanioti, 800 meters from the bustling square tis Apoteleitai and has a total of five buildings.

The main building has four suites, family & junior, reception room and main lounge, dining room BUFFET, mini market, kitchen, laundry / ironing, sauna room and storage.

The three buildings independently of each other, incorporate 24 standard rooms and four family rooms (each building).

The fifth building, centrally located in the hotel area hosts the bar and the tavern pool, the toilets, the changing rooms, the storage area and the engine room of pool.

The hotel is open seasonally from April / May to October.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel has its own drinking water wells and makes regular checks for purity from the very beginning.

At the same time it is connected to the municipal drainage grid.

All machines of the hotel, washing, ironing and ovens, pool machinery, boiler and machinery for hot water heating / cooling operate with propane. There are 3 tanks on site.

Collaborates with:

- a company for the collection of used oils
- glass recycling company
- plastics recycling company
- There are recycling bins for, batteries.

The customers are informed by leaflets in the room for the controllable use of towels.

In every room there are external shutters, for energy saving from cooling. In the hotel there are only saving energy bulbs.

The keys of the rooms are magnetic, and there are magnetic contacts in all balcony doors and windows.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

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IT Agriturismo Campo del Pillo

Reggio Emilia, Italy

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2 Short description

The farm holidays “Campo del Pillo” is located in the Appennino Reggiano not far from Castelnovo Monti. It offers 3 mini-apartments with kitchen, sitting room, bedrooms and bathroom and it also provides a swimming pool and a wide garden. Pure-blooded horses and cattles are bred on the farm. As energy efficient measure the hotel installed of a biomass boiler.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The property is interested to install a new biomass heating system.

The energy saving would be around -17% of the previous situation. 1380 kg/CO2/year would be saved.

The biomass boiler estimated costs correspond to 16.000 Euro, to be paid-back in a time of 5 year.

Currently the work identified access to tax breaks for Energy efficiency, which until June 2013 provide for recognition of tax deductions IRES (Corporate Income Tax) of 55% of the costs incurred.

5 Repeatability

A biomass heating system should be installed in places where local biomass is available. That's why on average it makes sense to implement such measure in countryside or in mountain areas having a great availability of biomass to be used for heating issues.

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IT Agriturismo del Cimone La Palazza

Modena, Italy

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2 Short description

The Agriturismo is the result of the restoration of an old country house 1220 mt above sea level and surrounded by a wonderful garden, woods and a wonderful view. The rooms and the little apartments are located in two different buildings (La Capanna dell'Aquila and La Palazza).The restaurant offers very genuine and local food. It is a very peaceful place for a relaxing week end or longer holiday.

La Palazza is a family-managed holiday farm (agritourism) located in the mountain area of the province of Modena, in the countryside outside Fanano Municipality. The main activities of the farm are cattle, sheep and horse breeding, production of cheese and other local biological products, organisation of didactic paths for children and schools and tourism (restaurant and B&B). Ca' Palazza is engaged in the promotion of a sustainable local economy. The choice to convert the heating system from LPG gas to local wood waste fuel is clearly part of this vision. Today this three-building complex is fully heated with local biomass coming from the nearby forest through a small district heating system. The investment proved fully environmentally and economically sustainable.

The Agriturismo uses a special remote control heating system that works with a boiler and wood chips. This system allows to save energy and respect nature. They are studying the possibility to install a photovoltaic system too.

The main objective of the project was to decrease the heating costs for the premises (the structure is made by different buildings: the restaurant, the B&B and private house, the stables). Heating was originally provided by three different LPG-fuelled boilers. In fact, as the area is still not reached by methane piping, the structure relied on an expensive periodic tank-filling service. The alternative was to abandon fossil fuel and turn to wood heat: the structure is surrounded by woods and it was calculated that the material coming from the periodic woods clean-up activities could satisfy the heat demand of the structure. This conversion could decrease heating costs and fully abate the CO2 emission for heating and hot water production for the structure.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The plant is composed by a 85 kW woodchip boiler which is located by the stables, a small scale district heating for the heat distribution, and a woodchip storage tank (32 m3). The owner also bought a movable wood chipper. The facility is installed and operating since 2002.

The heating costs before the boiler replacement where 12.000 € per year, while now they are approximately 4.500 € per year.

The holiday farm got UNI EN ISO 14001 and EMAS certification.

60.000 € investment for:

- 85 kW woodchip boiler
- Small scale district heating
- Heat exchangers for the buildings
- Wood chipper.

5 Repeatability

La Palazza represents one of the first experiences of woodchip heating system developed in the mountain rural area of Modena exploiting the significant local wood waste resources. The family is happy for its new woodchip heating system, not only because they reduced the heating expenses, abated the CO2 emissions and improved the thermal comfort inside the buildings, but also because they increased their visibility as a sustainable touristic premise. They now have included a visit to the woodchip boiler in their educational activities for schools and have become an important reference for installers, designers, public authorities and private citizen interested in investing in wood heating.

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IT Agriturismo Le Fragole

Modena, Italy

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2 Short description

The Agriturismo Le Fragole is situated in the nearby country of Modena, close to the Montale Rangone village. In a green and quite atmosphere, the Agriturismo offers 4 comfortable rooms with private bath and 3 mini-apartments with kitchen and detached entrance from the garden.

For breakfast it is served homemade jam produced with the fruits of the farm.

The heating system is made of a heat pump with air source air-air typology storing up till 2000 lt and it is integrated with solar thermal and photovoltaic systems.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

System of central automation control of thermoregulation and load control system to limit the energy consumption during the period of absence of customers in the rooms.

The percentage savings for an operation of temperature control in such a structure is between 22% and 25%. The CO_2 savings that follows the realisation of this project is estimated at approximately 2.318 tons/year. The primary energy savings is about 8,100 kWh/year, or 0.697 toe/year.

The investment costs are around €11.000,00 + VAT. This measure would lead to a saving of 1.300,00 €/year, resulting in a payback period of about 7 years.

At the moment there are no tax incentives for interventions of this kind.

5 Repeatability

Despite the fact that this project is still in progress, it is absolutely replicable since each accommodation, through BEMS systems, can this way save energy when rooms are not occupied.

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IT Albergo Bertocchi

Reggio Emilia, Italy

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2 Short description

The Albergo Bertocchi is a family managed accomodation located in the heart of the Cerreto lakes area, very close to the slopes and surrounded by a forest. It has 10 well equipped rooms and also provides tourists an excellent restaurant offering traditional food specialities.

The prior identified measure is related with the replacement of the old heating system.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Additionally to the replacement of the heating system, the property is evaluating:

- A PV plant;
- A solar-thermal system on the boiler house;
- Mini-wind power system on the roof.

The cost, energy and CO_2 savings can't be figured out yet as the projects are not finished by now.

5 Repeatability

Energy efficiency projects are still ongoing.

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IT Albergo Eden

Modena, Italy

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2 Short description

The Albergo Eden is on via Emilia Ovest, alongside the junctions for the Autostrada del Sole and Autostrada Brennero motorways. It is only 2 km to Fair Centre and the Old City. It is the ideal base for a relaxed and enjoyable stay in Modena. All The rooms have a private bathroom, air conditioning, external line telephone, mini-safe, fridge bar, and satellite TV, Wi-Fi, Sky channels, internet connection. Additionally the hotel features a lounge, a garage, and a large external car park (for autobus and cars).

The energy for the building is provided by two boilers that provide central heating in the winter and hot water throughout the year. There has also been a heat pump installed recently that provides the air conditioning in the summer months.

The roof of the building is flat with little shading and is considered suitable for a solar photovoltaic or thermal system. There is also the possibility of replacing one or two of the boilers with a cogeneration system or condensing boiler. Installation of thermostatic radiator valves and the tuning of the distribution system should also be considered.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The approaches proposed focused predominantly on the renewal of the thermal power plant. Two new condensing boilers have been considered that are within the Energy Efficiency Class 4. There are also a range of safety procedures that would need to be followed to reduce the buildup of sludge in the system. Thermostatic Radiator Valves would also be installed on all appropriate radiators which would allow the project to obtain tax incentives. The boiler system would also be set up to allow the installation of a future solar thermal plant for the production of hot water.

The CO2 savings once the project has been completed is estimated to be at around 20.001 t/a. Primary energy savings would be approximately 41,870 kWh/year or 6.2 toe/year (tons of oil equivalent). The intervention involves the installation of new heat generators which would allow the possible adoption of renewable energy capacity in the future.

Cost of investments for improving energy performance and installing RES systems.

The installation would cost around €48,000 and result in annual cost savings of €2000, representing around 30% of current energy spend. The payback time would be around 5 years.

The intervention would attract tax breaks of 55% of IRES (corporate income tax).

5 Repeatability

Replacing an obsolete heating system with a new energy efficient one is a measure repeatable for every context/accommodation

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IT Albergo Galli

Modena, Italy

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2 Short description

The Albergo has been managed by the family Galli for a long time. It is located in the centre of the village Pievepelago. The accommodation is opened both in summer and winter season. It also provides tourists a restaurant.

The Albergo has been recently renewed and had implemented energy efficiency measure such as the thermostatic valves in each room, a condensing boiler integrated with a solar thermal system and new high energy efficient lamps.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Two main measures have been evaluated:

- A 19,125 kWp PV system
- Thermal insulation of external walls.

The PV system would allow an energy saving corresponding to 3.6 t/a or 42000 kWh/year. CO_2 savings would correspond to 8.5 t/a.

The investment costs are 55,000 € for the PV system (energy saving of 3200 Euro/year, with a payback time of 8 years). There is also a 55% tax rebate in relation to thermal insulation measures or feed in tariff for PV system.

5 Repeatability

The identified measures have not yet been undertaken. Nevertheless the installation of a PV system depends on several factors (exposition, shading, etc) making it affordable only in case those conditions are present.

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IT Albergo Guerri

Modena, Italy

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Website:	www.albergoguerri.it

2 Short description

The Albergo has been managed by the family Guerry for sixty years. It is located in the centre of the village Sant'Annapelago, in front of the ancient church. The accommodation is opened both in summer and winter season. It also provides tourists a restaurant.

The Albergo has been recently renewed and had implemented energy efficiency investments such as the insulating windows.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

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IT Albergo la vecchia locanda zita

Modena, Italy

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2 Short description

The Albergo locanda Zita is a little but warm accommodation located in the mountain of Modena very close to the Sestola centre. It has six rooms traditionally furnished. The construction was built with local building material. It also has a restaurant that proposes traditional food.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

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IT Albergo Ristorante La Ruota

Reggio E., Italy

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Website:	www.hotellaruota.it

2 Short description

The Hotel La Ruota has 16 rooms and is placed in the centre of Carpineti, a nice town in the Appennino Reggiano and in the heart of Terre di Canossa. The hotel has a very large and comfortable restaurant with local genuine dishes.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Several measures (installation of a smart metre, among the others) have been implemented in order to reduce electrical consumption especially.

A first estimation indicates in hundred thousand kWh energy saving and in several thousand Euros saved due to to simple/no cost improvement measures

Some of the suggested measures are very low cost like switching off the pizza oven in the time frame when not used.

There are several regional/local calls providing subsidies for energy efficiency in SMEs in the Apennine area.

5 Repeatability

The measures are still under evaluation in the property.

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IT Albergo Sciatori

Modena, Italy

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2 Short description

The Albergo Sciatori is located in the heart of the Appennino between the Emilia and Toscana regions. It is in a very green position close to the chair lifts Poggio Scorzatello and Ghiacci. Furthermore the albergo has thirty rooms and provides a restaurant with mountain specialities.

The thirty rooms have been renewed recently with different energy efficiency measures: thermostat and insulating windows.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

During the energy audit several measures were identified:

- Micro-CHP;
- Biomass heating system;
- Insulation external walls.

5 Repeatability

The measures are still under evaluation by the property.

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for Tourist Accommodation Buildings

IT Albergo Sole

Modena, Italy

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2 Short description

The little Hotel is family managed and it is placed in the centre of Fanano, a green and quiet place not far from the ski town. It is an all season destination. The Hotel offers 16 rooms with traditional furniture. The last renovation of the rooms was in 2001. The Albergo Ristorante provides also a restaurant serving typical specialities.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The structure is made of stone and the windows are all fitted double glazing. The heat generator was replaced in 2007 and the new installation was integrated with a solar thermal system.

The hotel manager would like to implement thermal insulation installed on the inside of the property. The property has applied for an assessment of access control with supervision and thermoregulation. The intervention would implement 4 cm of EPS on the inside of walls of the property, to not significantly reduce the useful space within the rooms. Intervention on the outside of the property was not considered possible. The distribution system was also developed to ensure maximum efficiency and emission controls were considered.

The CO_2 savings that follows the completion of the actions listed above can be estimated at approximately 15.108 tons/year. The primary energy savings are about 54,540.59 kWh/year, or 4.69 t/a (tons of oil equivalent). The operation chosen does not adopt systems that provide production from renewable energy.

The initial investment is 42000 € which would result in approximately 54% annual savings which equates to around 1500 €/year. The payback time would be about 5 years.

Currently the work identified access to tax breaks for Energy efficiency, which until June 2013 provide for recognition of tax deductions IRES (Corporate Income Tax) of 55% of the costs incurred.

5 Repeatability

A part from the BEMS system proposal (to be installed in any accommodation), the other measures can be implemented in buildings similar to the one of the Hotel Sole (old, with insulation issues).

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for Tourist Accommodation Buildings

IT Albergo Trattoria Il Cacciatore

Reggio Emilia, Italy

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Website:	www.trattoria-del-cacciatore.com/la-trattoria

2 Short description

The Albergo Trattoria Il Cacciatore is a quite old and typical building of the Appennino in the province of Reggio Emilia. It also provides a very popular restaurant where is possible enjoying local specialities.

The Albergo is equipped with a heat pump. Hot water is produced by solar panels and it is integrated with solar thermal and photovoltaic systems.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The owner of the Albergo is interested in developing a photovoltaic system to be placed on the roof of the building or in a field. Otherwise he is interested in a micro wind plant.

A pitch of the roof of the building is well exposed and has an oriented line (stratum East), although partially occupied by a solar thermal system.

The photovoltaic project would have a capacity of 6.9 kWp nominal. The proposed project was evaluated on the basis of available surface coverage and consumption data provided by the hotel.

The PV system can lead to savings in electricity bills of approximately 1060 € / year, with a simple payback on investment of about 10 years.

The production of electricity is estimated to be about 6900kWh/year with savings of 1.29 t/a (tons of oil equivalent). The primary energy savings that follows will be about 15,000kWh/year, equivalent to 3.02 t CO2/year (tons of carbon dioxide avoided).

The cost of the installation of the photovoltaic system is around 18,700€ excluding VAT rate.

The construction of a solar photovoltaic plant would produce an amount of electricity estimated around one fifth of total annual building.

The PV plant you will use comprehensive rate of 5th Energy Bill.

5 Repeatability

The two renewable energy plants may become a sign of excellence for the organization and allow environmental issues to be made aware to the customers.

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IT Albergo Val di Luce

Modena, Italy

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2 Short description

The Albergo Val di Luce is a family managed accommodation with twenty two rooms. It is located in the centre of the Parco Naturale del Frignano, at the beginning of the Val di Luce, one of the most important nature and skiing area of the Appennino. It is opened all year round and also provides guests a restaurant with typical cuisine.

A new condensing heating system is foreseen to be installed.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The property will soon replace the old boiler with a new condensing one.

Currently the work identified access to tax breaks for Energy efficiency, which until June 2013 provide for recognition of tax deductions IRES (Corporate Income Tax) of 55% of the costs incurred.

5 Repeatability

Even if not yet undertaken, the technology of condensing boiler is absolutely one of the most mature and energy efficient and can be installed anywhere.

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IT Biocampus – Montequestiolo Camping

Modena, Italy

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Website:	www.campeggiomontequestiolo.it

2 Short description

The Biocampus Montequestiolo is located in a spectacular mountainous landscape characterised by kilometres of paths for all walking, trekking and cycling –lovers.

The camping-site offers the possibility of living intense moments in full contact with nature, its colours and silence – Bio campus is a fragile peaceful area, the ideal place for an intense and meaningful holiday. The Camping is closed during the winter season (from November to February).

Special attention is constantly paid to a conscious use of everyday resources: electricity, water and heating gas are available on scheduled hours thanks to timed thermostats. A special role is always played by silence which represents a mirror of everybody's soul.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The property is interested in installing a new solar thermal or a 10 kWp PV system. Furthermore it started a guest-targeted campaign for raising awareness.

The costs for the PV system are 25.000 Euro, 10.000 Euro are roughly planned for the solar thermal plant. For the financing a feed in tariff for the PV system and 55% tax rebate for the solar thermal plant are considered.

5 Repeatability

Even if the projects are ongoing, they can be replicated anywhere there are good conditions for installing solar panels.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Casale Villa Rainò

Palermo, Italy

1 Contact details

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E-mail:	info@villaraino.it
Website:	www.villaraino.it

2 Short description

The Casale Villa Raino' is an ancient Sicilian country house completely restored by the owner in 1996 and offers rooms which are furnished in very personal way. Some of them have wonderful views of the valley. The restaurant offers typical dishes of the regional kitchen and the garden is equipped with a relaxing swimming-pool. All around the house you'll find many natural paths to a have a pleasant walk in the sunny landscapes. The Casale belongs to the Ecoworld hotel chain.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

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IT Consorzio Parco Regionale Laghi di Suviana e Brasimone

Bologna, Italy

1 Contact details

Organisation / Agency:	Consorzio Parco regionale Laghi di Suviana e Brasimone
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E-mail:	parcodeilaghi@cosea.bo.it
Website:	http://www.parks.it/parco.suviana.brasimone

2 Short description

The headquarters of the Consorzio Parco Regionale Laghi di Suviana e Brasimone are set in the woods of Poranceto – Bologna and consist of three separate buildings: the offices, the guesthouse and the Museum. The refurbishment project consisted in the installation of a wood chip-fuel centralized heating system and a small district heating system.

The Consorzio Parco Regionale Laghi di Suviana e Brasimone has obtained significant energy financial savings thanks to the use of local wood fuel. The production of hot water is integrated with a solar heating system.

System features:

- Boiler Power: 30KW
- Thermal storage tank: 3,000 litres water
- Length of district heating piping 500 m
- Integration with Solar thermal collector 3 m2

The adjustment of the district heating network is done via PLC in order to minimize the consumption of electricity and heat losses. The whole system was installed in the year 2006.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Installation of a wood chip-fuel centralized heating system and a small district heating system.

Estimated needs heat to buildings = 68,000 kWh / year

Wood chips (W = 25-30%) consumed in one year = 210 tons (estimated)

Amount of CO2 saved per year = 14 tons

5 Repeatability

The heating system provides excellent performance in terms of sustainability, money and Energy saving. It is nevertheless linked to the local availability of wood chips.

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IT Hotel Alpino

Reggio Emilia, Italy

1 Contact details

Organisation / Agency:	Hotel Alpino, Luciano Nardini
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Telephone:	+39 (0) 522 898113
E-mail:	albergoalpino@libero.it
Website:	www.lunigiana.net/alberghi/alpino.htm

2 Short description

The Albergo Hotel, bar and ristorante Alpino accomodates 32 people in rooms with private bathroom and TV. It is located in the Cerreto area. The restaurant uses typical and local products.

The owner is interested in different RUE and RES measures like thermal insulation, photovoltaic system and solar panels.

The hotel is interested in assessing the possibilities of installing a PV system or a solar thermal plant to be integrated with the wood boiler.

The property is also exploring costs and benefits of an external thermal insulation to be undertaken when soon the external wood shell will be renewed.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Repeatability

The identified measures have not yet been undertaken. Nevertheless the installation of a PV as well as a solar thermal system depends on several factors (exposition, shading, etc) making it affordable only in case the requested conditions are good.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Hotel al Poggio

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel al Poggio, Mrs Bettini Mariarosa
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Fax:	+39 (0) 536 61490
E-mail:	info@alpoggio.it
Website:	www.alpoggio.it

2 Short description

The Hotel al Poggio is situated close to the Cimone skiing area and the Sestola centre. It's a renewed, bright and spacious hotel with many comfortable bedrooms (32 rooms) and several common areas. It provides tourists a swimming pool and hydromassage; furthermore it provides guests a restaurant and a pub.

It's the perfect location for both winter and summer holidays, for both families and groups.

The Hotel can be considered as a good practice in terms of RES and EE implementation. In fact it has invested in a photovoltaic system, a solar heating plant, 2 condensing boilers, insulating windows and a building automation system to monitor Energy consumption.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel management has invested in a photovoltaic system, a solar heating plant, two condensing boilers, insulated windows and a building automation system to monitor energy consumption. There is a feed in tariff used for the PV system.

5 Repeatability

The Hotel can be considered as a good practice in terms of RES and EE implementation. It has implemented low cost measures according to the best conditions for RES.

RELACS
Renewable Energy
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IT Hotel Astor

Modena, Italy

1 Contact details

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Fax:	+39 (0) 59 371250
E-mail:	info@hotelastormodena.com
Website:	www.hotelastormodena.com

2 Short description

The HOTEL ASTOR is situated in Modena near the University and at 5 minutes-distance from downtown. It can be easily reached by bus or by car, from the highway exits Modena Nord and Modena Sud. The hotel is provided indeed with a private parking with video surveillance, other services are Wi-Fi Internet access and a large meeting room. Small pets are also welcome.

The interventions evaluated and proposed are mainly oriented towards reducing the heat loss from heated areas to unheated areas. The automatic operation of the thermal power plant and the efficiency devices already present in the hotel are also considered. It has also been proposed the use of thermo-reflective panels to be installed behind each radiator positioned on the outer wall and the installation of thermostatic valves on all radiators.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The proposal is to allow the boilers to be operated automatically with cascade operation.

What is the rational management of facilities adds up to the benefits you get by going to insulate the floors horizontal line the heated volume, ie the coverage of the ground floor and the floor. The basement ceiling can be insulated to reduce heat loss from the rooms above.

The CO_2 savings that follows the realisation of this project is estimated at approximately 10.765 tons/year. The primary Energy savings is about 39,000 kWh/year or 3.353 toe/year (tons of oil equivalent). The project involves the adoption of measures to correct the operation of facilities already within the building. It also considers the installation of insulation on the structure.

All these interventions simultaneously would ensure an estimated savings of 26% compared with an expenditure of approximately €30,000. The resulting annual savings would amount to about 1700€/year. The payback time would be less than 8 years.

Currently the work identified access to tax breaks for energy efficiency, which until December 2012 provide a 55% tax deduction from the IRES (corporate income tax).

5 Repeatability

Thermal insulation measures can be adopted whenever heating losses are high and can be easily reduced.

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Renewable Energy
for Tourist Accommodation Buildings

IT Hotel Corte Vecchia

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel Corte Vecchia – Montequestiolo Camping
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E-mail:	info@cortevecchia.com
Website:	www.cortevecchia.com

2 Short description

Hotel Corte Vecchia is restored from a traditional 18th Century farmstead and is located only few minutes from Modena and Mirandola. The rooms and junior suites of the hotel are spacious and carefully furnished with style. Seven rooms have hydro-massage bathtubs. It is an all seasons destination hotel and a very comfortable place for short or long stay.

In RELACS project they expressed to be interested in the replacement of the old boilers and chillers and in the installation of photovoltaic and micro-cogeneration systems.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel CorteVecchia, located in San Prospero (MO), has undertaken in Summer 2012 energy efficiency measures related to heating and cooling systems. The old systems have been replaced with – for the cooling issue – an electricity chiller-heating pump (63 kW nominal power) and with – for the heating issue – 2 condensing boilers (54.4 kW each). The whole system is remote sensed. In order to make the system more efficiently working a 1000 l tank has been also installed. The whole system and the tank have been duly insulated.

In addition to the remarkable quantitative results achieved through the implemented measures, the hotel has a “green” approach in terms of sustainable mobility, energy monitoring, use of local products, staff training, and communication towards customers. Finally, despite the heavy earthquakes in May 2012 affecting the hotel (in terms of reduction of customers number), in the near future the ongoing energy efficiency improvement process will be kept alive through interventions on the thermal insulation of a building of the hotel complex.

4,48 TOE/year (- 27% compared to the previous situation)

14,89 t CO_2/year avoided

60.000 Euro roughly.

55% tax rebate on the 2 new heating boilers and 36% tax rebate on the chiller.

5 Repeatability

The implemented measures could be undertaken by any accommodation having old heating and cooling systems to be replaced.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Hotel Europa

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel Europa, Marco Faenza
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E-mail:	faenzamarco1@yahoo.it
Website:	www.hoteleuropa.it

2 Short description

Hotel Europa is located in the historical centre of Modena. It has been managed for years by the family Faenza. The three stars hotel has 67 comfortable rooms with any comfort including air conditioning adjustable independently. It is the ideal stop for both businessmen and tourists.
The property is evaluating measures for reducing heating costs.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

IT Hotel Firenze

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel Firenze
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E-mail:	info@hotelfirenzefanano.com
Website:	www.hotelfirenzefanano.com

2 Short description

The Hotel Firenze is placed in the centre of Fanano, not far from the skiing area. It offers forty-five rooms and four suites. It also provides a hanging gardens, a restaurant-pub and a small gym and wellness centre. It is opened all year round.

Internal thermal insulation to reduce heat loss is considered. Cogeneration is also put forward to generate a low carbon source of heat and electrical power.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The double pitch roof has an southern orientation and is not affected by shading, it was then thought necessary to assess for the installation of a photovoltaic system and/or a solar heating. In addition to what has been proposed to replace the heat generator with a cogenerator with an high efficiency. There would also be simultaneous installation of thermostatic radiator valves and a tuning of the distribution system. The operator also requested the assessment of the NW-SE oriented walls for internal or external thermal insulation.

Of all the possible interventions, the insulating of the solid walls, either inside or outside, is considered to be one of the most significant. Although insulating externally would provide the greatest savings, it is considered to be more expensive and complex. The insulation from the inside by intervening with the application of 4cm EPS would not significantly reduce the useful surface. Doing so would get a percentage of estimated savings of approximately 42% and an expense of 145,000 €. The resulting annual savings would amount to about 1800€/year. The return time will be about 6 years.

The other intervention among those identified that can give a good result both in terms of energy savings and in terms of economic engagement is the installation of a micro- cogenerator. Against an expenditure of about 30,000€ you get a savings of 70% of primary energy with a simple payback time of about 2 years. With this action you can access the tax-free gas and the incentive of net metering.

For improving energy performance and installing RES systems, 145,000 € /30,000€ were invested.

Currently this type of intervention may have access to tax breaks for energy conservation, which until December 2012 to provide for recognition of tax deductions IRES (corporate income tax) of 55% of the costs incurred.

5 Repeatability

The property is still assessing the suggested measures.

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IT Hotel Milano

Modena, Italy

1 Contact details

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Fax:	+39 (0) 59 225136
E-mail:	faenzamarco1@yahoo.it
Website:	www.modenahotel.it

2 Short description

The Hotel Milano is located in the historical centre of Modena, in a 18th century building.

The Hotel offers to its guests 63 comfortable rooms suitable for businessmen and tourists. It also has a restaurant that proposes typical food.

The hotel Milano has undertaken in 2012 major renovations, concerning the building renewal as well as electrical and heating systems.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The Hotel is:

- undertaking a thermal insulation of the building
- replacing the old heating systems with a micro-CHP plant
- replacing all the old lights.

There is a 50% tax rebate on renewal measures. Furthermore the hotel uses the Kyoto regional Fund to finance its measures.

5 Repeatability

According to financial resources availability, the undertaken measures are absolutely repeatable by every accommodation.

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IT Hotel Prato Verde

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel Prato Verde, Lami Giampaolo
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E-mail:	info@hotelpratoverde.com
Website:	www.hotelpratoverde.com

2 Short description

The Hotel is located in Polinago a very small village in Modena district; it is located at 810 metres above sea level and difference between the lowest and the highest temperature is low.

In the Hotel are available 23 double rooms that are furnished with either one double bed or 2 single beds, 10 triple rooms furnished with either 3 single beds or one double bed and one single bed. Moreover, 3 two-room rooms with 4 sleeping accommodations are available for families. Each one is provided with private bathroom that includes bathtub and shower units.

The hotel is provided with a big entertainment hall, which can contain about 400 people. In addition, another smaller room (about 60 people) is available, on request, as a conference room, games room (provided with ping pong table, table football and tables for board games).

There are terraces equipped with a solarium and a garden suitable for weeding receptions and garden parties. There is also a really comfortable and safe place for teams (for junior teams as well) for training camps, the hotel, in fact, is located just near to the sport centre and it has a direct access to the fields.

The hotel has high consumption at electrical level and therefore proposed measures concern the replacement of obsolete electrical appliances and the installation of a PV system.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Repeatability

The property is still evaluating the proposed measures.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Hotel Residence la Pace

Modena, Italy

1 Contact details

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E-mail:	hotelresidence.lapace@gmail.com
Website:	www.lapacehotelresidence.eu

2 Short description

The Hotel & Residence “La Pace” is in the green Cavezzo village centre, closed to the Provice of Mantova, Reggio Emilia and Bologna, all important destinations in the ambit of the enogastronomic journey as for wines and flavours of the Emilia Romagna region. It offers different types of accommodations: 4 double and single rooms and 4 apartments for who wants to stay in Modena, with all the comfort and freedom that a real home can offer.

The accommodation has been recently renewed (2005).

It has been installed condensing boilers with achievement of high energy efficiency.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The property aims to install a 20kWp PV system but has a huge constrain represented by the loan (hard to be achieved).

5 Repeatability

The identified measures have not yet been undertaken. Nevertheless the installation of a PV system depends on several factors (exposition, shading, etc) making it affordable only in case those conditions are present.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Hotel Residence Lo Zodiaco

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel Residence Lo Zodiaco, Uramalala Rakotobe
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Telephone:	+39 (0) 59 8752973
Fax:	+39 (0) 59 4821307
E-mail:	info@residencezodiaco.it
Website:	www.residencezodiaco.it

2 Short description

Residence Zodiaco offers new form of reception, dedicated to those who want to stay in Modena, with all the comfort and freedom that a real home can offer. Not just simple hotel rooms but elegant, comfortable and fully furnished apartments. The Residence provides its guest 61 cosy accommodations, both for short period or long-term stay. In addition to the private apartments, the Residence Zodiaco offers a wide range of common facilities that satisfies every need like a reception, a bar, a minimarket, a garden, a laundromat etc.)

Residence Zodiaco can be actually considered as a best practice. It has considered building shading in the design phase, it has installed a 30 kWp PV system, it has building automation system for energy control/monitoring. Furthermore it makes use of sustainable products both for cleaning and food processing issues.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

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IT Hotel Residence Margherita

Modena, Italy

1 Contact details

Organisation / Agency:	Hotel Residence Margherita
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E-mail:	info@residencemargherita.biz
Website:	www.residencemargherita.biz

2 Short description

The Hotel residence Margherita is surrounded by the green mountains, close to the ski town of Montecreto. The Hotel offers a double service: rooms as hotel and apartments as residence. The accommodation provides a gymnasium, a disco-pub and a wide garden all around. It is opened both in summer and winter season.

The Albergo has been recently renewed and had implemented energy efficiency measure such as the insulating windows.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The property is interested in installing a new high energy efficiency heating system and in possibly insulating the first floor and the roof.

5 Repeatability

The hotel is evaluating the possible measure to give priority to.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Hotel Residence Matilde

Reggio Emilia, Italy

1 Contact details

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Website:	www.residencehotelmatilde.it

2 Short description

Opened during the autumn 2008, this new structure, elegant and comfortable, is located in a panoramic position, near the new sport area with football grounds, beach volley and tennis courts and open air swimming pools. The Residence Hotel Matilde is placed really near Carpineti town centre and near the beautiful Matilde di Canossa square. It has 22 wide and comfortable bedrooms, subdivided into single, double, triple and quadruple rooms, furnished in good taste and with quality, sound proof and provided with LCD TV set, minibar, phone, strongbox, internet connection, private balcony, independent entrance. Some of them are equipped for the exclusive use of persons with disabilities. Other services are provided by the hotel: mini-whirlpool Steam bath finnish sauna Kneipp pool Exciting showers relaxation room. The cuisine offered by the restaurant of the Hotel, is the typical one of Emilia Romagna region. The dishes are very tasty as required by the rural tradition. The ancient recipes, handed on by past generations, are prepared into the kitchen of the Residence Hotel Matilde, using the same methods and attention of the past.

The residence already has a solar thermal system and the property is interested in the installation of a PV plant as well.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The property has a solar thermal system that works with the gas central heating system. The operator has suggested the possibility of solar photovoltaic panels for the production of electricity. The pitch of the roof is well exposed and oriented south, although it is partially occupied by a solar thermal system.

The PV system could lead to savings in electricity bills of approximately 1,900€/year, with a simple payback on investment of about 7.9 years.

The production of electricity is estimated to be about 12,160 kWh/year, or 2.27 toe/year (tons of oil equivalent). Savings of primary energy that ensues will be about 26.441kWh/year equivalent to 5.32 tCO2/year (tons of carbon dioxide avoided).

The cost of the installation of the photovoltaic system is around € 29,600 excluding VAT rate

The plant would benefit of a feed in tariff under the 5th Conto Energia and it would be connected to the grid through a "Net Metering" approach.

5 Repeatability

According to good exposition conditions and available space on the roof, the measure can be implemented by any accommodation.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Il Palazzino

Modena, Italy

1 Contact details

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2 Short description

This beautiful farm house is surrounded by an estate of 26 hectares. 17 of them are planted with typical local products (potatoes, chestnuts, cherries, apples, walnuts). The original building dates back to the year 1867 and much effort has been done to preserve its first surface and furniture. An old, decayed rural building has been recovered and transformed into a 10 rooms (14 beds) building.

The farm house installed a PV system, a biomass plant and a solar-thermal system. A relevant work was also made in the insulation of the roof and the walls.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The production of electricity is ensured by a 20 kWp photovoltaic plant, while an integrated

Biomass-solar heating system with a 750 litres storage covers the needs of warm water.

The plant consists in a fireplace heat exchanger integrated with a vacuum thermal solar System. An emergency gas boiler starts only in case that the heat demand is not covered by renewable resources. Furthermore, a renovation was made using materials such as native stone, wood and original materials reused. The degreaser emissions into the environment are close to zero thanks to the creation of an area that collects and discharges of IMHOFF. Any release of water from the planner plant is absorbed from an area of wetlands, with no discharge into the environment. The rainwater is collected in a warehouse and can be reused in toilets and for irrigating the gardens. Roof and wall are insulated to minimize energy waste.

The works started in 2002 and ended in 2006.

The total costs:

Photovoltaic € 20,000

Solar heating € 24,000

Fireplace € 3,500

Boiler control unit € 7,000

Since the reconstruction of the farm the annual savings of electricity and heating are about -70%.

The region Emilia Romagna and the EEC have helped with a funding of € 12,000

5 Repeatability

The integrated refurbishment of il Palazzino has inspired neighbours and visitors in the years.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Incantea Resort

Teramo, Italy

1 Contact details

Organisation / Agency:	Incantea Resort
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Website:	www.incantea.it

2 Short description

The Residence Incantea in Tortoreto (Abruzzo), is a modern and elegant residence located in a unique and enchanting place with apartments provided with any kind of comfort. It has a wonderful swimming pool but it offers also the transfer to the beach. Excursions within the near National Park are organized for clients. The residence is open all the year long. The Residence is a new building operating since 2010. It has:

- solar-thermal collectors,
- light for 99% covered by LED technology,
- rain water used for gathering and for the garden
- a BEMS system with smartcard
- water flow (9 l/min) adaptors in every washbasin/shower,
- pumps running with inverters for a better energy efficiency.

The Resort is also member of ECOWORLD HOTEL.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Since the building is new (open since 2010) it is not possible to compare data with a previous situation without measures implemented. Nonetheless the resort's owner declares to be very satisfied about the low energy costs.

As the resort is member of ECOWORLD HOTEL, they are provided with brochures/information to be disseminated toward guests as well as staff.

The resort has benefited from regional grants about tourism but no specific public incentive related to renewables or energy efficiency measures was given.

5 Repeatability

The measures adopted are absolutely repeatable in other tourist accommodation buildings.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Ostello della Gabellina

Modena, Italy

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E-mail:	ostellodellagabellina@reggioemiliaincoming.it
Website:	www.gabellina.it

2 Short description

The Ostello della Gabellina is a nice stone-made house at 1000 above the sea and all surrounded by the woods of the Parco Nazionale Tosco-Emiliano. The hostel offers 55 beds in very large and comfortable rooms where history and nature are harmoniously mixed. The hostel was a an ancient custom house between the ducats of Tuscany and Modena. Then it became the prestigious hotel of the Cesare Zavattini's family at the beginning of the 20Th century. Nowadays it is the start point of many wonderful walking-paths for the discovery of the natural treasures in Appennino. The hostel is a perfect mix of low price, environmental sustainability, quality and 0 km food.The hostel has an environmental sustainability building, it uses biological cleaning products and makes separate collection of rubbish. Food is very genuine and hand made using 0 km- and bio-products.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Ostello matildico Groppo del Vescovo

Reggio E., Italy

1 Contact details

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Telephone:	+39 (0) 522 817196
E-mail:	info@ostellogroppodelvescovo.it
Website:	www.ostellogroppodelvescovo.it

2 Short description

The hostel Groppo del Vecchio is set between two streams in a wild nature context only 100 mt far from the town centre of Ramiseto and all its services. The Comune of Ramiseto is at the foot of Ventasso Mountain and Alpe di Succiso and it has wonderful views of the valleys of the Parco Nazionale dell'Appennino Tosco- Emiliano. The hostel can host 36 guests in 8 rooms, some of them equipped with kitchen. The hostel has a meeting room and is an all-season destination.

During the RELACS project it has developed the idea of installing a micro hydro turbine and a solar –thermal system for hot water.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The accommodation's location is nearby 2 little rivers having a 3 m jump. Therefore it is suitable for a 5kW micro-hydro turbine. This measure will let the accommodation to reach the electrical autonomy and it will have also an educational value for guests.

It is estimated that 2,95 toe and 8,36 t CO2/year will be saved.

The micro-hydro turbine would cost approximately 25.000 Euro.

There is a local call promoted for accommodations located in the Apennines area.

5 Repeatability

The measure is rather based on the local geographic conditions (presence nearby the accommodation of 2 rivers) and therefore could only be replicated in places having similar patterns.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

IT Rifugio Alpino Marchetti

Modena, Italy

1 Contact details

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Telephone:	+39 (0) 536 71253
E-mail:	rifugiomarchetti@interfree.it
Website:	www.rifugiomarchetti.it

2 Short description

The Rifugio Marchetti is a mountain hut in the Alto Appennino modenese on the Lago Santo (1520 mt above sea level). It is the ideal destination not only for occasional tourist visiting the lake but also excursionist having trekking for some days in that area of the Appennino. From the Rifugio is possible to enjoy a gorgeous view on the lake and the mountains all around. The Rifugio provides 30 beds and electric heating.

The refuge is visited mainly by tourists as well as hikers, in both summer and winter. The present building was constructed using sandstone in 1930 and houses 10 rooms 5 bathrooms for a total of 25 beds. The onsite restaurant has a capacity of 100 people.

The main structure has a range of appliances and equipment that are used in the kitchen of the restaurant and bar area. Electricity is used for heating in the rooms and lighting of the premises. The electricity supply of the refuge comes from a micro-hydropower plant and any extra required capacity is sourced from the grid. The ground floor windows have recently been replaced with double glazing.

The first proposal was to replace the old hydro turbine with a new high efficiency model. The manager of the premises was also interested in the possibilities of raising the output of the hydropower plant and changing the pinch point.

The building was evaluated to consider the possibility of placing an appropriate insulation in the roof and outside walls, replacing windows and doors on the first floor and, on the advice of the property, installing a heat pump; water-water. While believing that a decrease in energy loss must be assessed as a priority intervention compared to the adjustment of the production facilities of electricity, to date the necessary documents in order to make the assessments have not been provided. Instead we were able to deepen the proposed action on hydropower.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The basic idea is to propose two intervention scenarios:

1. The first in which only goes to replace the existing turbine and place the new pipe up of the penstock, already purchased by the operator
2. The second in which the replacement of the turbine is hypothesized with request for an increase of license currently authorized, and burying of a part of penstock to bring the gripping point inside the lake passing under the access road to the shelter.

With data available the only scenario that could be assessed is the changing the turbine currently installed. This intervention does not lead to significant energy savings, or savings in terms of costs, unlike the current situation, will not have the benefit of income from incentives as they are no longer present.

The CO_2 savings that result because of initiatives described above are estimated at approximately 4,76 tons/year. The primary energy savings is about 23,664 kWh/year, or 2.4 toe/year (tons of oil equivalent) which coincides with the renewable energy production estimated at 10883 kWh/year.

An expenditure for the operation of approximately 30000€ is estimated. The resulting annual income would amount to about 2400 €/year (average annual revenue from all-inclusive rate). The payback time would be about 13.62 years.

To highlight that this simulation provides for the total sale of electricity produced by the network system and evaluated micro-hydropower plant inclusive price for 15 years as provided by the Finance Act 2008 as updated by L.23/07/2009 n.99.

5 Repeatability

The measure is rather based on the local geographic conditions and therefore could only be replicated in places having favourable patterns.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

PT Almada Business Hotel

Almada,Portugal

1 Contact details

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Website:	http://www.almadabusinesshotel.com

2 Short description

Opened in April 2010 with the quality stamp of Details Hotels & Resorts , the Almada Business Hotel is a historic landmark in the city of Almada, being the first 4 star hotel of the city.

Being already a reference throughout the South Coast of Lisbon, the Almada Business is a City Hotel characterized by the harmony between good taste and sobriety.

South of the River Tejo, inserted in the new enterprise core with privileged links to Almada and easy access to different means of transport, the Almada Business Hotel is a starting point for exploring the dynamic city of Almada, the Lisbon coast and the touristic area of Caparica.

Main energy efficiency measures refer to retrofitting of all lighting for LED lighting and power compensation units. Building has renewable solar thermal for water heating.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The large building complies with a large number of standards for energy efficiency and renewable energy. It has installed, in construction phase, a solar thermal system for water heating. Results presented will therefore relate only to retrofitting to be made since it is not feasible to define investment costs and reductions from technologies installed during construction. The hotel has already retrofitted one floor level with LED lighting and intends to expand throughout the building. It will install power compensation units also. The simple change to LED lighting will imply that the building changes to the best energy classification according to Portuguese legislation

The new measures allow a saving of roughly 35 000kWh/year, an estimated saving in CO_2 emissions of 18,21 tCO2 and a cost saving of 7452 €/year.

Total cost of investment (for LED lighting and power compensation units) is 6 059€, whichi means the payback time is less than one year for the selected measures.

Only own funding was used for the retrofitting technologies.

5 Repeatability

The measures here depicted are easily replicable on any large building hotel with relevant lighting power installed and uncompensated power factor. These are mature technologies with easy access on the market and the payback time, under these conditions, is very low.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

PT Centro de Lazer São João da Caparica

Almada,Portugal

1 Contact details

Organisation / Agency:	Centro de Lazer São João da Caparica
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E-mail:	reservas@centrolazercaparica.com
Website:	http://www.centrolazercaparica.com/

2 Short description

Find tranquility near the beach and the city center, is one of the guarantees of the Leisure Centre of São João da Caparica, a housing unit with similar functionality to that of a youth hostel in Costa da Caparica.
This pleasant space is prepared with 25 rooms modalities single, double lot, and is intended for all kinds of customers. Prices vary between 15 and 45 €, depending on room type and season rental, and already include breakfast, pool access, Internet and lockers. There are discounts for groups and children up to 12 years.
The Leisure Centre São João da Caparica presents a very varied range of entertainment, where we highlight tennis lessons, surfing and golf. Those interested in a stay that includes water sports, can opt for a special package for accommodation with bodyboard lessons.

Water saving devices were installed in all faucets and showers, information display to staff in order to better use electricity and installation of solar thermal panels is predicted.

3 Objective(s)

- ☑ Decrease accommodation building operative cost
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

One of the main cost categories for this installation is natural gas use and a very simple solution was available to reduce water use and subsequent fuel for heating. Water saving devices were installed. There was no specific information for staff and this has been displayed specially in what regards electricity use during peak hours. Has it is a place with a good available area for solar thermal for water heating, studies were developed and it is expected that this investment will ocuur in the medium term

All the measures come up to a total of 13 500 kWh reduction in energy consumption and 5 tons/year of CO_2 savings. The conjunction of measures allows for yearly saving of roughly 1 938€.

Already implemented energy saving measures, together with the installation of solar thermal panels amount to a total 12 600€. Most of this cost relates to the solar systems since the other measure are irrelevant in costs terms. For instance, the water saving devices were acquired with a protocol with a municipality and only installation cost was necessary.

It is expected that all investments will be made with own funding or using normal credit lines especially for the solar thermal if deemed necessary. In the case of the water saving devices it was possible to depict collaboration with the municipality which significantly lowered costs.

5 Repeatability

For small/medium sized units with no major acclimatization units, which is quite often in southern regions of Portugal, the measures depicted are easily implemented and achieve relatively high return on investment. These would be the first options for units that have possibility to use natural abundant resource as the sun and that have limited investment capacity (for instance for insulation intervention on façades and windows)

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for Tourist Accommodation Buildings

PT Centro Thalasso Costa da Caparica

Almada,Portugal

1 Contact details

Organisation / Agency:	Centro Thalasso Costa da Caparica
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Website:	http://www.thalassocaparica.com/

2 Short description

The Thalasso Center of Costa da Caparica has a total area of 1000 m^2, which includes Pool with Hydro Course, Hydrotherapy and Physiotherapy in water, Whirlpool with 180 jets with / without algae, Algae Wrap remineralizing or slimming, jet submarine, jet Shower, Sauna, Relaxation Room, Gym, Massage and Esthetics rooms. From the age of 12 anyone can attend the Thalasso Centre.

In this unit, a cover of the swimming pool and retroffiting of lighting from T8 to T5 standard were envisaged

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The measures evaluated and defined include a cover of the heated swimming pool for when it is not in use and replacement of lighting from T8 bulbs with 36W to T5 lamps with 28W.

The energy saved with the measures depicted (on a large part due to the installation of the pool cover) amount to 30 400 kWh/year which means a saving of 11,22 tCO_2/year and a cost saving of 1 651 €/year.

Total cost of investment is 4 600€ (3 600€ for the pool cover)

Only own funding to be used in the measures depicted

5 Repeatability

Any accommodation with heated swimming pool and T8-lamps can introduce easily these measures. It can be said that this is a difficult case for the pool cover since it is a Spa pool with irregular area and vertical structures. In normal pools the cost effectiveness should be even higher.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

PT Hotel Praia do Sol

Almada,Portugal

1 Contact details

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E-mail:	hotelpraiadosol@netcabo.pt
Website:	http://www.hotelpraiadosol-caparica.com/

2 Short description

Hotel Praia do Sol has 54 rooms, decorated to provide maximum comfort during leisure or business visits. Guests may also enjoy a centre for therapeutic massages, bar with a snooker table, internet spots and meeting rooms. The hotel is located in a Pedestrian Zone, in the main commercial and service area of Costa da Caparica, about 200 metres from the beach.

Main measures implemented were fuel switching (from diesel to natural gas for water heating), and the start of retrofitting to energy saving bulbs in interior lighting for bathrooms. It is also envisaged the installation of power factor compensation units.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The hotel has switched fuel source, reducing costs, increasing efficiency and lowering CO2 emissions. It has also informed staff on energy sound behaviour with good results in efficient use of lighting and avoiding peak hours. The hotel intends to install power compensation units in order to reduce energy costs and improve use of electrical infrastructure.

The energy saved is estimated at 2000 kWh/year for the combination of solutions. The CO_2 savings are far more extent especially because the fuel switch has a stronger impact in emissions than in energy saving. They are estimated at roughly 6,4 tons/year. Cost savings are estimated to amount 1 300€/year

The total costs of the technologies and solutions envisaged amount to 8 580€

Only own resources were used in this case

5 Repeatability

There is certainly a possibility for repeatability for similar installations that have still potential for changes in fuel and changes for efficient lighting. These are standard technologies fully developed in the market and there should be no obstacle to implement these in any country.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE A hotell

Karlskrona, Sweden

1 Contact details

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E-mail:	thomas@ahotel.se
Website:	www.ahotel.se

2 Short description

A hotell –is a comfortable 3 star hotel in central Karlskrona with 50 rooms at affordable prices. Just outside the hotel there are restaurants and shopping. Among many points of interest there are the Naval museum and the World Heritage Site “The naval city of Karlskrona”. Karlskrona is a town of islands. Karlskrona’s archipelago in the Baltic Sea is very beautiful. The Admiralty Church from 1685 is Sweden's largest wooden church.

3 Objective(s)

☑ Decrease the energy consumption

☑ Improve energy behaviour of personnel

☑ Improve energy behaviour of guests

4 Results

Since the hotel rents the spaces they have only influence of the consumption of electricity. At the energy audit they received advice how to, by simple measures reduce their electricity consumption by changing equipment for light and also by improve staff and guests behavior by information and training.

RELACS
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for Tourist Accommodation Buildings

SE Blekinge turism

Karlskrona, Sweden

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2 Short description

Blekinge Turism is the official organisation for tourism in Blekinge.

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SE Böda Hamns Camping

Löttorp, Sweden

1 Contact details

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Fax:	+46 (0) 485 224 57
E-mail:	info@bodahamnscamping.se
Website:	www.bodahamnscamping.se/

2 Short description

Böda Hamns Camping is beautifully situated close to Böda bay by the Baltic sea with a shallow beach for children. Camping site and cabins. Open May–September. Restaurant, canoes for hiring.

3 Objective(s)

☑ Decrease accommodation building energy consumption

☑ Staff training

4 Results

The camp site has 60 m^2 solar plant installed which preheat the hot water. The main heating of water is oil. The manager is interested in alternative solutions such as pellets, increased solar plant, recycling of waste water etc.

5 Repeatability

The installation of solar is ideal for a campsite which has their peak season when the solar panel has the highest production possibly. Even if the present solar plant is old, it is definitive a best practice that can be implemented in similar companies.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Carlskrona GK

Nättraby, Sweden

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Website:	www.carlskronagk.com

2 Short description

Carlskrona GK is a golf club located on Almö in Blekinge archipelago. There is a camping site, also for caravans and recreation vans, 4 cabins and a house with 12 beds. The golf club has a swing studio where you can develop your golf all year round, and a jetty and restaurant on the 18th green.

3 Objective(s)

- ☑ Monitoring the energy consumption each month
- ☑ Annual evaluation of the energy consumption
- ☑ Reduce the energy consumption
- ☑ Implement renewable energy sources
- ☑ Improve energy behaviour of personnel
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Reduce the environmental impact of transports

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Elite Stadshotellet Växjö

Växjö, Sweden

1 Contact details

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Website:	www.elite.se/sv/hotell/vaxjo/stadshotellet

2 Short description

Elite Stadshotellet Växjö is a classic hotel with contemporary comfort with 163 rooms. The hotel is situated in the centre of Växjö, by the city square, and only 100 meters from the railway station and bus station. A bus to the airport stops just outside the door.

The hotel is heated by district heating (biofuel). The main measures adviced to the hotel is to train the personal in energy behaviour and include energy saving mesures at internal meetings. Regular energy monitoring should be used. Implement an incentive systems to encourage staff in energy saving measures The attic needs more insulation, in order to reduce heat losses in winter time and to reduce heat radiation to the third floor in the summer. Time control with night reduction and heat recovery should be considered for the ventilation systems. Run ventilation during night time in hot days to reduce the temperature especially in public areas.

3 Objective(s)

- ☑ Decrease the energy consumption
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel and guests
- ☑ Renewable energy

4 Results

The hotel is heated by district heating (bio fuel) so the CO2 emissions caused by heating is very low. The hotel is monitoring their energy consumption on annual and monthly basis. A part of the ventilation has recovering on heat on the ventilation system.

5 Repeatability

The implemented measures can be applied to many other hotels as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Getnö Gård - Lake Åsnen Resort

Ryd, Sweden

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Website:	www.getnogard.se/

2 Short description

Getnö Gård is a privately owned nature preservation area, 15 km² in size, with its own archipelago located in the middle of the beautiful Lake Åsnen. Getnö Gård is surrounded by a birdlife protection area and nature reserves. It offers wildlife, adventures for anglers, canoe and kayak enthusiasts, birdwatchers and nature lovers. It also provides nature camping from May to September, some cottages all year round. There is camping space for larger groups, e.g. scouts as well.

3 Objective(s)

☑ Reduce the energy consumption

☑ Renewable energy

☑ Improve energy behaviour of personnel and guests

4 Results

The management is monitoring the energy consumption on yearly and monthly basis and there has been a reduction of 20%.

The accommodation has improved the insulation, optimized the fridges and optimized the system for lighting. The management is planning for solar heating and PV during 2013.

5 Repeatability

The implemented measures can be applied to many other hotels, campsites and resorts as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Halens Camping och Restaurang

Olofström, Sverige

1 Contact details

Organisation / Agency:	Halens Camping och Restaurang
Address:	Box 126
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Website:	www.halenscamping.se

2 Short description

The camping is close to Olofström nature reserve. It is beautifully located on the eastern shore of Halen, the largest lake in Blekinge. It has about 100 camping lots, large house with 92 beds. Activities to do are: outdoor life, canoe hiring, boat hiring, bicycle hiring. It is only 1 km to the centre of Olofström and contains the restaurant Halen Krog..

The owner and the management at the camping and hostel are working with different energy efficiency issues. There is already active work going on and a gradual decrease in energy use is already achieved through simple measures, mostly connected with length of periods in operation and behavioural issues.

We recommend the campsite and to hostel to change the electrical heating system for hot water into a solar and pellets system. Furthermore we recommend the old air/air heat pump to be replaced by new heat pumps and to optimize the central heating with a new control system which would allow a central reduction of temperature in the parts temporary not in use.

3 Objective(s)

- ☑ Monitoring the energy consumption on annual basis
- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel and guests

4 Results

The owner and the management at the camping and hostel are working with different energy efficiency issues. There is already active work going on and a gradual decrease in energy use is already achieved through simple measures, mostly connected with length of periods in operation and behavioural issues.

Solar plant is planned for season 2013. There is a plan for change the oil boiler into a pellets boiler.

The energy consumption is reduced by 15%.

5 Repeatability

The implemented measures can be applied to many other campsites as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Hanöhus hotell

Sölvesborg, Sweden

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E-mail:	fastighet@gepefek.se
Website:	www.hanohus.se

2 Short description

Hanöhus is located close to the sea and has 231 beds in 102 rooms and cottages. It has a playroom, a gym, a relaxation area with sauna and whirlpool etc. as well as a restaurant located ten meters from the sea for up to 450 guests eating and dancing. There are lots of activities to do.

The recommendation to the hotel is to replace the electrical hot water boilers by solar and pellets. Replace the heating with oil by heat pumps or pellets. Replace direct electricity heaters with heat pumps and monitor and optimize the running system of ventilation and heating.
Change lighting equipment with daylight and motion sensors in lounge and similar areas.

3 Objective(s)

☑ Decrease energy consumption in accommodation facility

☑ Improve the environmental image of the hotel/accommodation facility

☑ Improve energy behaviour of personnel and staff

4 Results

The hotel is monitoring the energy consumption on annual and monthly basis, and the energy audit was a good start for the hotel to start the energy efficiency work.

5 Repeatability

The implemented measures can be applied to many other campsites as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Klinta Camping i Köpingsvik AB

Köpingsvik, Sweden

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E-mail:	henrik@klinta.se
Website:	www.klinta.se

2 Short description

Klinta Camping is situated in Köpingsvik along one of Öland's finest sandy beaches, only a few kilometers from the city of Borgholm. Klinta Camping has approx. 400 lots for tents, caravans and recreation vans. Bicycles for hire, kayaks for hire, tennis, beach volleyball, boule etc.

The energy consumed during the season is electricity and oil. Klinta Camping is recommended to change the oil heating into solar and pellets, and also got some valuable advice how to save water in the service houses.

3 Objective(s)

- ☑ monitoring the energy consumption on annual basis.
- ☑ Reduce the energy consumption
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel and guests

4 Results

The energy consumed during the season is electricity and oil. Klinta Camping is recommended to change the oil heating into solar and pellets, and also got some valuable advice how to save water in the service houses. The energy audit was a good start for the campsite to start the energy efficiency work.

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Renewable Energy
for Tourist Accommodation Buildings

SE Kolbodabaden Turist- & Konferensanläggning

Ljungbyholm, Sweden

1 Contact details

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2 Short description

The Camping has 100 camping lots and holiday flats in ground level and is open all year round. Furthermore there are three swimming pools,a sauna, canoes for hiring and team building. RThe Camping also has a restaurant. The place is a ten minutes walk away from the bathing place in Kalmarsund.

The campsite has solar heating for the swimming pools, pellets boiler and air heat pumps. Furthermore the energy consumption is monitored in detail by the manager on monthly and annual basis.

3 Objective(s)

☑ Improve the environmental impact of the hotel/accommodation facility

☑ Improve the environmental image of the hotel/accommodation facility

☑ Improve energy behaviour of personnel and guests

4 Results

The manager of the campsite as monitored the energy consumption many years on monthly and annual basis, and has a broad control of the energy demand of the company. The swimming pools are heated by solar, pellets and air heat pump and the light indoors and outdoors are low energy bulbs. The recommendations to the campsite are to cover the swimming pools during night time and to optimize the running of the heating system.

The energy consumption has decreased by 20%.

5 Repeatability

The implemented measures can be applied to many other campsites as they do not require any special conditions.

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SE Lundegård Camping och Stugby

Köpingsvik, Sweden

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Website:	www.lundegard.se

2 Short description

Large camping with a wide choice of spacious camping plots. 50–100 cabins of different size. Private beach area and children´s pool 50-250 metres away. Restaurant, sauna, bike park etc. the campsite has a new built playhouse with high energy performance. The play house is built as entertainment for children and to raise the standard of the campsite. The playhouse has a heated area of nearly 1000m2 and has climbing, playing and adventure tools especially for children in the age up to 12-13 years old.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel

4 Results

Total energy supply by external sources at the play house is estimated to 50 kWh/m2. This is only 60% of the requirement according to Swedish regulation for new buildings. (90 kWh/m2). The remaining need for energy (in total 123 MWh/year) is supplied by recovering heat from passive sun, people and the ventilation system, due to a very well energy measures in the building. The new building has recycling system for exhaust ventilation with heat pumps, and two air-water heat pumps. The building has integrated floor heating at the entrance and the restaurant/café for higher comfort and to dry wet floor if needed (no shoes are permitted in the play house). 400 mm thick insulated walls and floor, 300 mm insulation in roof and 3-glaze windows.

The energy audit was a good start for the hotel to start the energy efficiency work.

5 Repeatability

The implemented measures can be applied to any other accommodation when building new buildings, the extra costs will pay back by reduced energy costs.

RELACS
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SE Ödevata FiskeCamp

Emmaboda, Sweden

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2 Short description

In Småland between fabulous lakes and magical forests Ödevata Fishing Camp is located. Activities: peace and relaxation combined with fishing, canoeing, sauna, swimming, sunbathing and hiking in nature and “Book with a professional fishing guide”. The main building has 15 rooms. There are cabins, Bed & Breakfast as well as hostel standard, and a group of up to 30 people can rent the entire main building. The plant is of a high standard; many of the rooms have their own toilet and shower.

The owners engaged in a very ambitious work for environmental friendly tourism which is visible at the accommodation. Therefore, there are very good incentives for further energy efficiency.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility

☑ Improve the environmental image of the hotel/accommodation facility

☑ Improve energy behaviour of personnel and guests

4 Results

The main part of the accommodation is heated by wood chips and they have a clear strategy to optimize and reduce the energy consumption, both technical solutions and non-technical solutions.

Still there are some measures to do: at the energy audit they are recommended to train the staff in energy efficiency behavior. The running of the heating can be optimized further. Furthermore whenever refurbish the buildings ensure to choose energy efficiency solutions whenever possible. PV plant or solar heating is two solutions that should work fine at Ödevata.

5 Repeatability

The implemented measures regarding non technical solutions can easily be applied to many other campsites as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Saxnäs Turism & Fritid AB

Färjestaden, Sweden

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2 Short description

KronoCamping Saxnäs is situated just north of the Öland Bridge and by the water of Kalmarsund, close to the beach. The camping site has camping pitches of 100–150 m2, mobile homes of 20–32 m2, cabins and modern service buildings. The total pool area is 2,500 m2, with two pools of 12 x 25 meter, and a children's pool, 9 m in diameter. There are many places of interest on Öland as well as on the mainland, with the beautiful city of Kalmar. We offer you the unique opportunity to bring your horse on vacation. Öland has a long holiday season, from April to October. The countryside in spring is filled with migratory birds and unique flowers in a historical setting. During the summer there are lots of events, usually under a clear blue sky. Next to the campsite is Saxnäs golf course.

3 Objective(s)

- ☑ Monitor the energy consumption un annual and monthly basis
- ☑ Reduce the energy consumption by 25%
- ☑ Improve the environmental impact of the hotel/accommodation facility

☑ Improve the environmental image of the hotel/accommodation facility

☑ Improve energy behaviour of personnel and guests

4 Results

The campsite has optimized the running of the heating system and the lighting system. Furthermore a system for pay cards for using the hot water is installed which will reduce the consumption. The system will be up and running during season 2013. Separate meters for electricity have reduced the electricity consumption during pre-season and late season when caravans uses electrical heaters. Solar heating for the swimming pools has reduced the energy consumption.

5 Repeatability

The implemented measures can easily be applied to many other campsites as they do not require any special conditions.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

SE Sonjas camping i Löttorp AB

Löttorp, Sweden

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2 Short description

Sonjas camping i Löttorp is located in northern Öland, always one of the places with most sun in summer in Sweden. It offers camping and cabins from May to September. Here are some of Öland's best and longest sandy beaches. It is a five star camping and cabins ground. There is also a restaurant with pizzeria, snack bar and café. Also, the camping has a pool area with two pools, one of which is a small baby pool and a dog shower. Guest have good opportunities for walking and cycling in the beautiful nature, attractions e.g. iron age village. Sonjas Camping was awarded by the Campsite of the year 2011.

The camp site has solar heating and air heat pumps for the swimming pools. It also installed motion sensors for the light, low energy solutions of light, water saving equipment etc. The management at Sonjas Camping has been working with energy efficiency during along time, which is very visible.

3 Objective(s)

☑ Decrease accommodation building operative costs

☑ Decrease cost of heating/cooling

☑ Improve the environmental impact of the hotel/accommodation facility

☑ Improve the environmental image of the hotel/accommodation facility

☑ Improve energy behaviour of personnel and guests

4 Results

The long running work with energi efficiency is visible at the campsite, having solar heating, heatpumps and energi efficient lighting, water saving etc. Still there are some measures that could be done, at the energy audit and Sonjas Camping are advised to change oil heating into biomass, possible PV plant etc.

5 Repeatability

The implemented measures solutions can easily be applied to many other campsites as they do not require any special conditions.

RELACS
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for Tourist Accommodation Buildings

SE Tingsryd Resort

Tingsryd, Sweden

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2 Short description

Tingsryd Resort is a year round four star family campground with large camp sites, modern cottages, a full service restaurant and a new conference/ event centre, all overlooking beautiful Lake Tiken. We have new convenient amenities including public bathrooms, sauna, Jacuzzi and laundry room of high standard. We have a wide selection of cottages in all price categories – mobile homes, self-catering cottages, camping cottages and a scout cottage. Tingsryd Resort is known for its many children's activities and family friendly atmosphere, in the middle of nature – close to everything! Enjoy the natural beauty of Småland at its best, where you are surrounded by Sweden's rich, old world culture, its traditional red wooden cottages, lush pastures overflowing with wildflowers, thick woodlands and many large and small lakes. Exploit the many activities offered at the resort from swimming, boating, fishing, hiking and biking to horseback riding, crazy golf, volley ball and much more. A short walk into the town of Tingsryd provides shopping and dining opportunities and short drives around Småland will bring you to gorgeous golf courses and world famous glass factories.

The resort has a clear strategy regarding energy efficiency and has a heat plant (geo-) for parts of the accommodations. Still there are more measures to do; energy efficiency training for staff, LED

or low energy lamps for lighting, day light sensors, motion sensors for lighting and monitoring of electricity meters for the guests are some examples.

3 Objective(s)

- ☑ Monitoring the energy consumption on annual and monthly basis
- ☑ Reduce the energy consumption by 25%
- ☑ Increase the share of renewables
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel and guests

4 Results

The resort has installed a heat pump for heating parts of the accommodation, improved the insulation, optimized the lighting and optimized the running of the heating system. There is a clear strategy for reducing energy, but there are still measures to do. Even if the number of buildings has increased the energy consumption is the same, so per m2 the energy consumption is reduced.

5 Repeatability

The implemented measures solutions can be applied to many other resorts if the circumstances permit it.

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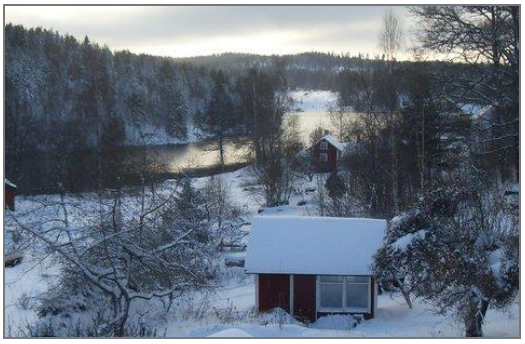
SE Villa Rosenäng Turistlägenheter och Rum

Rimforsa, Sweden



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2 Short description

Villa Rosenäng Turistlägenheter och Rum is a small hostel with environmentally friendly energy sources like sun, wind and wood pellets, which are improved year by year. It offers holiday flats of different sizes as well as a rowing boat and canoes for hiring, bicycle and life wests to borrow. Fishing permits are sold. The wonderful nature with 250 lakes and nature reserves provide a lot of activities all year around. Some of them are training courses in craft, photo, vegetarian cooking, build your own solar plant etc..

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel

RELACS
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UK 2 Danby Cottages

Forest of Dean, United Kingdom

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2 Short description

No. 2 Danby Cottages is a self-catering former forester's cottage in the heart of The Forest of Dean. It is a 3 bedroom cottage and is specially designed to accommodate those with limited mobility. The living room is located in a new, well insulated timber framed extension, with a log burning stove and extensive glazing for maximum solar gain.

The original solid walls have been insulated with 100 mm insulation material and then plastered over. Modern double glazed windows with wood frames are fitted throughout the cottage. The property is heated via oil fired central heating; the owners were anxious to reduce oil consumption and so this system is now supplemented by solar thermal panels. A solar photovoltaic (PV) system was installed in order to provide electricity.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

Insulation is installed on the solid walls, in the cavity walls, in the loft and under the floor. Unusually, it is a timber-framed building with concrete cladding; internally the lath and plaster was removed from the walls and 100mm foil board backed insulation material was applied before plastering over. In 2011 a 1.95 kWp solar PV system was installed in order to generate electricity and in 2010 solar thermal panels were installed to supplement the oil fired central heating. The cottage is also fitted with modern double glazed windows, AAA appliances and energy saving lightbulbs. There is also a guide available for visitors to detail what they can do to help reduce their environmental impact during their stay.

Since installation of the solar PV panels in 2011 the system has generated a total of £878.97 in Feed-in Tariff (FIT). On top of this, there have been noticeable energy savings and comfort improvements.

The total cost for insulating the building was around £6,000. Investment in renewable technologies was in excess of £15,000 for both the solar thermal and solar PV.

All measures have been installed via private finance. The solar PV panels are eligible for the FIT scheme.

5 Repeatability

The solar thermal and PV systems can easily be installed on any suitable roof, or other appropriate surface or ground area, although there are restrictions in listed buildings and conservation areas.

Insulation work to the modern extension is easily integrated into any new building or extension, and it is possible to exceed Building Regulations standards and aim for best practice. The wall insulation applied to the original building may be suitable for some older properties, but most buildings would require standard internal wall insulation or external wall insulation; again there are likely to be restrictions in listed buildings and conservation areas.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Avon Reflections B&B

Worcestershire, United Kingdom

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2 Short description

Avon Reflections was built as a family home in the early 1970's. Steve and Caroline offer you a warm welcome to their riverside B&B on the village green in Fladbury, with their riverside garden, where you can watch the leisure boats navigate the lock, enjoy the stunning views, or observe the local wildlife.

Avon Reflections has loft and cavity wall insulation, double glazed windows and low energy lightbulbs throughout. Solar photovoltaic (PV) panels help generate electricity for the bed & breakfast. The accommodation is heated via gas central heating which has been recently upgraded.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Improve comfort

4 Results

Avon Reflections is equipped with cavity wall insulation, loft insulation and modern double glazed windows. The main heating is a new condensing gas boiler supplemented by a multi-fuel boiler. There is energy saving lighting throughout. In 2011 a 4kW solar photovoltaic (PV) system was installed to generate electricity for the guesthouse. Due to their proximity to the river the Curtis's would like to install a water source heat pump in the future to help provide hot water.

Energy savings and comfort improvements have been achieved. As a result of the solar panel installation, the guesthouse has seen a particular drop in the grid electricity usage.

The total cost for improving energy efficiency at the guesthouse is approximately £20,000.

All measures installed have been privately funded. The solar PV system receives the Feed-in-Tariff payments.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Cavity wall insulation can likewise be installed in any currently uninsulated cavity walls; however, most properties built before around 1930 have solid walls. Double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Upgrading heating boilers and installing low energy lighting should be possible in any tourist accommodation building.

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Renewable Energy
for Tourist Accommodation Buildings

UK Badgers End

Coleford, United Kingdom

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2 Short description

Badgers End is a 19th century cottage set in idyllic rural countryside at the end of a country lane, elevated, looking towards Welsh Mountains. The property sleeps 4 people.

The property is fully double glazed, the loft is insulated and energy saving lightbulbs are fitted throughout.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☑ Others: To improve comfort

4 Results

Over the last 6 or 7 years the energy efficiency of the cottage has been improved by the installation of loft insulation and fitting of energy saving lightbulbs throughout. All windows throughout the property are double glazed. The heating is powered by an oil fired boiler and a log burner helps to heat up the lounge area.

The loft insulation was installed free of charge through a grant from the government. All other measures have been privately funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Installing low energy lighting should be possible in any tourist accommodation building and log burners can easily be used in many properties to reduce reliance on expensive heating fuels such as oil.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Birdwood Villa Farm

Gloucester, United Kingdom

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2 Short description

Birdwood Villa Farm is a Bed & Breakfast located in the Severn Valley near Gloucester. The villa is the home of Gordon & Marilyn King and family and is set on a 60 acre arable farm. The Kings are keen to help the environment by saving on electricity and recycling as much as possible.

Birdwood Villa Farm produces most, if not all, of the power for its farm and guesthouse from solar photovoltaic (PV) panels with any excess being sold back to the national grid. Solar thermal panels also provide most of the hot water for the guesthouse.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

44 Solar photovoltaic (PV) panels, rated at 7.8kWp, have been installed to the guesthouse and surrounding barns. Solar thermal panels installed were installed 8 years ago to provide hot water for the guesthouse.

The total cost for the installation of the panels was £33,000.

The installation was paid for from their own resources. The Kings receive Feed-In-Tariffs from the solar PV and sell any excess produced back to the grid. The use of these technologies has also dramatically reduced their energy bills.

5 Repeatability

The solar thermal and PV systems can easily be installed on any suitable roof, or other appropriate surface or ground area, although there are restrictions in listed buildings and conservation areas. Although most properties do not have space for 7.8kWp PV panels, an average South facing roof should easily fit 2 to 4kWp PV panels.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Broadway Manor Cottages

Broadway, United Kingdom

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2 Short description

Broadway Manor cottages is a collection of 5 self-catering Cotswold holiday cottages located in a private rural setting in the peaceful and extensive grounds of a Cotswold manor house dating back to the 16th century, in the beautiful village of Broadway. All cottages are located in the Cotswolds Area of Outstanding Natural Beauty surrounded by picturesque and peaceful countryside.

The Cottages are double glazed, have the recommended depth of loft insulation, and are equipped with energy saving lightbulbs. Where applicable vaulted roofs are lined with insulation boards and in some cases the solid walls are dry-lined with insulating boards to reduce heat loss. In 2007 a solar thermal system was installed.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ other

4 Results

The majority of the cottages' windows are double glazed; in addition, the glass in the rooflight windows in The Rafters has been replaced with glass that has a better thermal efficiency reducing heat loss. In 2009 insulation was added to the loft areas. In the case of vaulted roofs, these are lined with insulation boards and some of the walls are dry-lined with insulating boards to reduce heat loss.

The cottages are all heated via gas central heating, and all of the boilers have been replaced recently. To supplement this system, in 2007 a solar thermal system was installed. All bulbs are energy saving lightbulbs. Guests are actively encouraged to be energy efficient.

Energy savings and comfort improvements have been achieved.

All measures installed have been privately funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Insulation of sloping ceilings should also be possible in many buildings, although it is likely to reduce room height slightly unless major work on the roof itself is planned. Double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Upgrading heating boilers and installing low energy lighting should be possible in any tourist accommodation building.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Brymbo B&B

Chipping Campden, United Kingdom

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2 Short description

Brymbo Bed and Breakfast is a comfortable farm building conversion, set in tranquil surroundings in the beautiful Cotswold countryside. All accommodation is on the ground floor with full central heating; supplemented by an open log fire in one of the sitting rooms. Other rooms offer panoramic views of the countryside.

Over 25 years in total, the B&B has been fitted with double glazed windows, a new condensing oil combination boiler, loft insulation, internal wall insulation and energy saving light bulbs.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☑ Improve comfort

4 Results

The B&B has modern double glazed windows and energy saving lightbulbs throughout. The main heating is a new condensing oil fired boiler and the living room is heated by a log fire and the wood is gathered locally. The loft and walls have been insulated. Information is provided at the B&B in order to encourage all guests to be energy efficient whilst staying at Brymbo B&B

Energy savings and comfort improvements have been achieved.

Energy efficiency improvements have taken place over 25years have ranged in cost from relatively low for replacing the light bulbs and higher for the insulation.

All measures installed have been privately funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Installing low energy lighting should be possible in any tourist accommodation building and log burners can easily be used in many properties to reduce reliance on expensive heating fuels such as oil.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Cotswold Four Pillars Hotel

South Cerney, United Kingdom

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Website:	http://www.cotswoldwaterparkhotel.co.uk

2 Short description

The Four Pillars Hotel at Cotswold Water Park is a luxury, contemporary hotel built in 2007 to modern building standards. With plenty of insulation, best practice glazing and a fully controllable heating system, the Four Pillars Hotel aims to provide luxury accommodation whilst minimizing its carbon footprint and fuel bills. In 2001 the Cotswold Four Pillars Hotel incorporated the aim to achieve a Green Tourism Business Scheme (GTBS) Award as one of their 6 annual objectives and they were successful in achieving a Silver GTBS Award. Next time they hope to achieve Gold!

The walls and roof of the Hotel are fully insulated, and there is double glazing throughout. The hotel is currently fitted out with a mixture of energy efficient lighting and older, less efficient lighting which is being continually improved. The hotel is heated by a modern gas heating system with a range of controls to ensure rooms are kept at an appropriate temperature.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

The insulation and glazing of the hotel was incorporated at the construction stage of the hotel in 2007. Currently, the lighting is a mixture of energy efficient and less energy efficient lighting however the older lighting is currently being replaced, to include the use of LEDs. A major element of reducing energy consumption at the hotel is the active participation by all the staff. Looking forward, the hotel is looking to install boiler and voltage optimisation devices in order to help improve energy efficiency as well as considering the use of a biomass boiler.

Most of the measures installed at the Four Pillars Hotel were incorporated at the construction stage. Recent behavioural changes have been the key to recent savings and these are free.

All measures have been installed via private finance.

5 Repeatability

Most of the building elements and heating system contributing towards the energy efficiency of the hotel were incorporated at the construction stage, and it is not only possible but highly recommended to attempt to minimise energy use at this stage. The main efforts since construction focus on replacement of lighting with LEDs, which should be possible in any building (care should be taken to ensure compatibility with transformers) and on staff behavioural change which should be possible in any tourist accommodation building.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Cotswold Yurts

Stroud, United Kingdom

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2 Short description

There are 4 yurts located in the secluded Woodside of Westley Farm available to hire. Each yurt is carefully located at the edge of its own secluded glade taking advantage of the sunny aspect, the valley views and the beauty of the ancient woodlands and flower rich hay meadows. All yurts contain a double bed. You can hire a yurt from March to October.

Heating is provided by individual wood fuel stoves in each yurt. The farm on which the yurts are located has a supply of solar panels which generate electricity, which is used by yurts. The yurts are constructed of a wooden frame and covered with a similar material to marquees and large tents. There is a layer of insulation which can be attached to the inside of the walls.

3 Objective(s)

- ☐ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Other

4 Results

Individual wood fuel stoves heat each individual yurt; visitors are encouraged to operate these themselves from a provided supply of wood which has been collected locally from the surrounding woodland. Solar photovoltaic (PV) panels present on the farm provide any electricity needed in the yurts and any other appliances are communal. In the colder seasons a layer of silk is added to the inside of the yurt which acts as insulation. Visitors are encouraged to think more about resources used by actively providing their own heating.

Due to the type of accommodation – most of the measures installed into the yurts were incorporated at construction stage.

As mentioned above all measures were incorporated at construction stage. All measures have been privately funded.

5 Repeatability

The yurts are a unique style of tourist accommodation ‘building’ and all of the measures installed here would be appropriate for other yurts and other static tent-type structures.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Little Treaddow Framhouse B&B

Hereford, United Kingdom

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2 Short description

Little Treaddow Farmhouse is located in rural South Herefordshire overlooking the Welsh mountains. The building is a 400 year old former Malt house offering 2 guest rooms.

Over the past 18 months, the farmhouse has been fitted with a mixture of double and triple glazed windows, a new condensing oil boiler, loft insulation and energy saving light bulbs.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ other

4 Results

The farmhouse is equipped with modern double glazed windows, and triple glazed windows can be found on the exposed road side of the building. The main heating is a new condensing oil fired boiler and the main living room is heated by a wood burner for which the wood is gathered locally. The loft is fully insulated and there is energy saving lighting throughout. The owners have recently acquired planning permission for a wind turbine which will generate electricity for the accommodation.

Energy savings and comfort improvements have been achieved.

All energy efficiency measures have been installed in the past 18 months and have cost approximately £12,000.

All measures installed have been privately funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Double or triple glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Installing low energy lighting should be possible in any tourist accommodation building and log burners can easily be used in many properties to reduce reliance on expensive heating fuels such as oil. The planning permission for the wind turbine would have only been granted where a suitable location has been identified, whilst the owners will also be considering the wind resource and how much electricity can be generated in order to make the installation financially viable. Due to the cost, potential planning restrictions and the feasibility of installing a wind turbine, this is only repeatable where there is a good wind speed with no obstructions, an acceptable location that is not too close to buildings and sufficient access and cable availability to minimise costs.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Lyons Hall Granary

Herefordshire, United Kingdom

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2 Short description

Lyons Hall Granary is a beautiful 19th century red brick and stone Granary attached to the owners' own home which can sleep 5 people. It provides guests with an ideal base to explore the surrounding countryside. Lyons Hall Granary is a true 'eco house' for anyone interested in environmental and sustainable living with a wind turbine, solar thermal and photovoltaic (PV) panels.

The original internal solid walls of the granary have been insulated, modern double glazed windows are fitted and energy saving lighting is present throughout the granary. The accommodation is off the electricity grid and so a wind turbine and solar panels generate electricity used in the building. The property is heated via oil fired central heating; supplemented by solar thermal panels.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

Insulation is installed, internally, on the external solid walls, in the loft and under the floor. In 2006/7 a 2.5kWp wind turbine and 1.75kWp solar PV system was installed in order to generate electricity. Lyons Hall is completely off the grid in regard to electricity and any excess electricity generated is stored in a battery. The system is also backed up by a diesel generator. Following this theme, 30 evacuated solar thermal tubes were installed to supplement the oil fired central heating. The cottage is also fitted with modern double glazed windows and energy saving lightbulbs.

Together the wind turbine and PV panels generate more electricity than is consumed. On top of this, there have been noticeable energy savings and comfort improvements.

A lot of money has been spent to improve the energy efficiency of Lyons Hall Granary

The wind turbine was installed with the help of a 20% grant and the solar PV with the help of a 50% grant. All other measures have been privately financed. The wind turbine is currently registered to receive Feed-In-Tariff payments.

5 Repeatability

Loft insulation should be possible wherever there is an insufficiently insulated loft with good access, whilst underfloor insulation is most appropriate where suspended timber floors are present or there is access via a basement. Solid wall insulation is often possible on older, solid-walled properties (generally those built before around 1930), although insulating internally can reduce the size of rooms and will have an impact on door frames, window reveals, skirting boards and electrical sockets and switches. PV should be possible on most unobstructed South facing roofs, although restrictions may apply in listed buildings and conservation areas. Planning permission for the wind turbine would have only been granted where a suitable location has been identified, whilst the owners will also be considering the wind resource and how much electricity can be generated in order to make the installation financially viable. Due to the cost, potential planning restrictions and the feasibility of installing a wind turbine, this is only repeatable where there is a good wind speed with no obstructions, an acceptable location that is not too close to buildings and sufficient access and cable availability to minimise costs.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Oatfield Country Cottages

Forest Of Dean, United Kingdom

1 Contact details

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2 Short description

Oatfield Country Cottages is a collection of five award winning, luxury self-catering country cottages which can sleep 18 adults or more. The cottages have been beautifully converted from the linked historic 17th Century farm buildings, with rear lawned gardens backing onto farm fields and courtyards with cottage gardens to the front.

Oatfield Country Cottages have had loft insulation installed; this is either in the form of standard loft insulation or sloping ceiling insulation. All ‘white good’ appliances have recently been replaced and energy saving lighting is installed throughout the cottages.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☐ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☑ Improve comfort for guests

4 Results

The cottages have all had loft insulation installed either in the loft itself or, if this was not possible, on the sloping ceilings. The appliances installed are all of a high energy rating and energy saving light bulbs are present throughout. Guests are encouraged to think about their energy use when staying at the cottages.

The costs range from under £10 for the light bulbs to approximately £10,000 for the insulation.

All energy efficiency improvements have been self-funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Insulation of sloping ceilings should also be possible in many buildings, although it is likely to reduce room height slightly unless major work on the roof itself is planned. Upgrading white goods to the most efficient options (A, A+, A++ or A+++) and installing low energy lighting should be possible in any tourist accommodation building, and staff behavioural change which should be possible for any tourist accommodation business.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Railway Cottages & Apartments

Moreton-in-Marsh, United Kingdom

1 Contact details

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Website:	http://railwaycottages.net/

2 Short description

Railway cottages are a collection of stables converted into self-catering holiday cottages and apartments. They are located in the heart of the Cotswolds, centrally positioned in the picturesque town of Moreton-in-Marsh. These five properties can sleep from 2 to 8 people or if all 5 properties are booked then a maximum of 25 people.

All cottages are fitted with energy saving light bulbs, are fully insulated, including the solid walls, floors, loft and sloping ceilings, and all properties are double glazed.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☑ Increase comfort

4 Results

The wall insulation, 270mm of loft insulation and double glazing were installed when the stables were converted into the self-catering properties. LED lightbulbs have been fitted where possible and a motion sensor is used in order to turn the lights off when the properties are empty. The properties are all heated by gas central heating.

The majority of the energy saving measures were installed at the conversion stage. Additionally the energy saving light bulbs cost approximately £10 each.

All installed measures were privately funded.

5 Repeatability

Significant insulation works such as those installed at Railway Cottages should be easily achievable at the time of conversion or major renovation, but would cause significant disruption at other times. Low energy lighting such as LEDs and motion sensors on lights should be achievable for any tourist accommodation building.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK The Old Stables

Cirencester, United Kingdom

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2 Short description

The Old Stables is a tasteful barn conversion, built in Cotswold stone. The cottage is grade II listed, with ornamental tallet steps, exposed beams and pine wood doors, situated in the shadow of a grade II listed manor house. The Old Stables is situated on the outskirts of Cirencester and sleeps up to four people.

The internal walls of the granary, the one cavity wall and the loft have been insulated. Energy saving lighting is present throughout the granary. Solar photovoltaic (PV) panels help to provide electricity for the accommodation.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☑ Increase comfort in the accommodation

4 Results

Insulation is installed, internally, on the solid walls, in the loft and in the one cavity wall. In 2011 a 4kW solar PV system was installed in order to generate electricity. The cottage is also fitted with energy saving lightbulbs. The owner is going to start providing guests with information on how to reduce their energy use during their stay.

The Solar pV panels cost £14,000 to install.

All measures have been privately financed. The solar panels are currently registered to receive Feed-In-Tariff payments.

5 Repeatability

Loft insulation should be possible wherever there is an insufficiently insulated loft with good access, whilst cavity wall insulation can be injected into most uninsulated cavity walls. Solid wall insulation is often possible on older, solid-walled properties (generally those built before around 1930), although insulating internally can reduce the size of rooms and will have an impact on door frames, window reveals, skirting boards and electrical sockets and switches. PV should be possible on most unobstructed South facing roofs, although restrictions may apply in listed buildings and conservation areas. Installing low energy lighting should be possible in any tourist accommodation building, and staff behavioural change which should be possible for any tourist accommodation business.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Tintern Old Rectory

Chepstow, United Kingdom

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2 Short description

Nestled within the village of Tintern, in the heart of the Wye Valley Area of Outstanding Natural Beauty, the Old Rectory is a period home with fantastic views. The old rectory has 4 double bedrooms.

The Old Rectory is double-glazed, equipped with energy saving lightbulbs and has the full recommended 270mm of loft insulation. The property is heated via an oil-fired boiler; this is supplemented by a log burner in the living room area.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

The loft insulation has been topped up to the recommended depth of 270mm. All windows are double glazed. Energy saving lighting is present throughout.

The cost of installing energy saving light bulbs is approximately £10 per bulb. The total cost of energy improvements for the Old Rectory is approximately £9,000.

All improvements have been privately funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Installing low energy lighting should be possible in any tourist accommodation building and log burners can easily be used in many properties to reduce reliance on expensive heating fuels such as oil.

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for Tourist Accommodation Buildings

UK Upper Middle Road Farm B&B

Brecon, United Kingdom

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2 Short description

Upper Middle Road Farm is a former Wheelwright's cottage which has been added to and improved to provide a comfortable, warm bed and breakfast. The farm has 2 rooms with great views overlooking the Black Mountains, Mynnedd Troed and the large garden and fields. All meals are freshly home-cooked with a traditional Welsh flavour using mainly produce from the farm and garden to reduce their food mileage.

The cottage has replaced the existing oil fired boiler with a log burning batch fired boiler to provide hot water and central heating. Solar thermal panels also provide hot water. To generate electricity, one of the barn roofs has solar photovoltaic (PV) panels. The cottage has cavity wall insulation where possible, double glazing and energy saving lightbulbs throughout.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☑ Improve energy behaviour of personnel
- ☐ Others

4 Results

The biomass boiler and solar thermal panels were installed 5 years ago to provide hot water and central heating. Wood fuel for this stove is gathered locally. In 2010 3.6kW solar photovoltaic cells were installed on the roof of the barn to generate electricity for the cottage. With regard to insulation, the one cavity wall is insulated and there is a high standard of insulation in the loft. Modern double glazed windows have been fitted throughout the cottage. Energy saving lighting is present throughout the building.

By installing the biomass boiler the Kelleher's have calculated they are saving approximately £1080 a year. Their electricity usage from 2010 to 2011 has dropped by 1543 kWh which equates to a total saving of £221 per annum. For the past 12 months the panels have generated 3015 kWh and the FIT's have made £1,438.

The cost for improving energy performance in the property varies largely form small costs for lightbulbs to approx. £14,000 for the biomass boiler.

Feed-In-Tariffs payments are received from generating electricity via the photovoltaics. Any excess electricity generated is sold back to the grid. The Kelleher's also received a 50% grant for the boiler installation form the Welsh government in conjunction with the forestry commission. All other funding has been from own resources. The use of these renewable and energy efficient technologies has also dramatically reduced their energy bills.

5 Repeatability

Cavity wall insulation can be injected into most uninsulated cavity walls, whilst double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Installing low energy lighting should be possible in any tourist accommodation building and solar thermal and PV systems can easily be installed on any suitable roof, or other appropriate surface or ground area, although there are restrictions in listed buildings and conservation areas. Replacing standard central heating systems with biomass options can be disruptive and costly, but the long term reductions in running costs and the potential to earn payments from the Renewable Heat Incentive make these boilers a feasible option for many rural tourist accommodation businesses, particularly for larger buildings and those that are off the gas grid.

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Renewable Energy
for Tourist Accommodation Buildings

UK Viewpoint Holidays

Lydney, United Kingdom

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Website:	http://www.viewpointholidays.com/

2 Short description

The Coach House is a spacious Edwardian self-catering holiday home,which can sleep up to 12 people. The fantastic garden offers complete privacy, a gravelled terrace and a stone-built barbecue for outdoor meals. The garden is bounded by Mork Brook, a delightful stream descending by a series of waterfalls to the River Wye. All profits from this business are donated to support the local Art Centre.

The coach house has loft insulation fitted at the joist (ceiling) and the rafter (roof) level. In 2010 both solar photovoltaic (PV) and solar thermal panels were installed. There is energy saving lighting including LED lights throughout the accommodation.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☑ Improve the environmental impact of the hotel/accommodation facility
- ☑ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Although the main heating is LPG fired central heating, in 2010 solar thermal panels were installed in order to provide hot water. Solar photovoltaic panels were also installed in 2010 to generate electricity to be used in the accommodation. The loft insulation has been fully installed at the joist and rafter level. Energy saving lighting is present throughout with LED bulbs replacing halogens in the conservatory.

Although there are no savings figures available considerable energy savings have been made.

The total cost for energy efficiency improvements made is estimated to be about £30,000.

All installed measures were privately funded, however the solar PV panels are eligible to receive Feed-In-Tarrifs.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Installing low energy lighting should be possible in any tourist accommodation building and solar thermal and PV systems can easily be installed on any suitable roof, or other appropriate surface or ground area, although there are restrictions in listed buildings and conservation areas.

RELACS
Renewable Energy
for Tourist Accommodation Buildings

UK Whitehill Farm

Monmouth, United Kingdom

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2 Short description

Whitehill Farm is a working stock farm with beef cattle and sheep in the Monmouthshire countryside. There is a self-catering converted barn which can sleep 6 and has a large south terrace to enjoy the magnificent panoramic views or you can enjoy the choice of 2 double bedrooms with bed and breakfast accommodation.

The farm has energy saving lighting throughout, including the replacement of the halogen down-lighters with very low energy LED lights. The accommodation is fully insulated in the loft and the old farm building has internal wall insulation.

3 Objective(s)

- ☑ Decrease accommodation building operative costs
- ☑ Decrease cost of heating/cooling
- ☐ Improve the environmental impact of the hotel/accommodation facility
- ☐ Improve the environmental image of the hotel/accommodation facility
- ☐ Improve energy behaviour of personnel
- ☐ Others

4 Results

Low watt LED light bulbs have replaced the 20 halogen down lighters in the lounge and kitchen, the rest of the lighting throughout is also energy saving. The internal walls of the old farm building have been insulated and redecorated. The loft is insulated and all windows are double glazed.

The energy saving light bulbs cost around £10 per bulb whereas solid wall insulation costs vary dramatically from £4,000- £9,000 depending on the size and type of walls to be insulated.

All installed measures were privately funded.

5 Repeatability

Loft insulation can be installed in any other tourist accommodation building that has an accessible loft space with insufficient insulation currently in place. Solid wall insulation is often possible on older, solid-walled properties (generally those built before around 1930), although insulating internally can reduce the size of rooms and will have an impact on door frames, window reveals, skirting boards and electrical sockets and switches. Double glazing can be installed in most properties, although options may be restricted in listed buildings or conservation areas. Installing low energy lighting should be possible in any tourist accommodation building

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