RENEWABLE ENERGY SERIES

HOTEL ENERGY SOLUTIONS

Best Practices Guide - Successful Renewable Energy Technologies integration in SME Hotels

Hotel Energy Solutions Official Partners

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BEST PRACTICES GUIDE:

SUCCESSFUL RENEWABLE ENERGY TECHNOLOGIES INTEGRATION CASE STUDIES IN SME HOTELS

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Please cite this publication as

Hotel Energy Solutions (2011), Best Practices Guide: Successful Renewable Energy Technologies Integration Case Studies in SME Hotels, Hotel Energy Solutions project publications

First edition: 2010
Revised version, July 2011

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Hotel Energy Solutions (HES) Project Basics

Full name: Excellence in Energy for the Tourism Industry – Accommodation sector: SME hotels (EETI)
Contract N°: IEE/07/468/S12.499390

Hotel Energy Official Partners

Project Supported by

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BEST PRACTICES GUIDE: SUCCESSFUL RENEWABLE ENERGY TECHNOLOGIES INTEGRATION CASE STUDIES IN SME HOTELS

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Best Practices Guide: Successful Renewable Energy Technologies integration in SME Hotels

Foreword

This report provides examples of best practices in the hotel sector regarding the integration of renewable energy (RE) solutions. It has been produced within the framework of the Hotel Energy Solution (HES) project. Eleven examples of small-to-medium size hotels which have adapted renewable energy technologies are documented.

For each technology, we have attempted to collect information regarding the motivation for investing in renewable energy (as reported by the hotelier) along with the historical background.[1] Also, we have included both the difficulties encountered by the hoteliers and the key factors that helped in the process.

As for the renewable energy solutions in place, they are presented in the following order:

- **Description of renewable energy technologies adapted:** Hoteliers are describing different electricity, heating and cooling systems from the renewable sources deployed by the hotels.

- **Integration of energy efficiency and environmental measures:** Energy efficiency solutions as well as environmental measures taken by the hotels are also described, even though this is not the main subject of this best practice guide[2].

- **Benefits for the hotel:** hoteliers are explaining the economic savings, environmental benefits and social involvement for their hotel guests, staff and local communities.

It is important to stress that the information provided in the datasheets was mainly collected through phone interviews with the hoteliers: the level of details may vary from case to case depending on the information provided.

Notes:

- For this current report, we have targeted small-to-medium size, which have implemented **a "package" of renewable energy solutions**.
- **Existing hotels** were preferred over new constructions because the main challenge which the HES project aims to tackle is encouraging existing hotels to implement actions to reduce their energy consumption by opting for renewable energy production.

[1] It was interesting to note that in many cases, the energy conservation approach was motivated by environmental concerns and by the wish to reduce the hotel's energy costs. Most of the time, the energy conservation approach was only part of a more global environmental policy of the hotel: hoteliers generally reported other environmental actions, such as the reduction of water use and the reduction of waste.

[2] Another guide is planned to address best practices in SME hotels in terms of energy efficiency integration.

Note that annual energy consumption and energy consumption per guest night sold are influenced by a number of factors, including weather conditions and occupancy. The energy consumption data indicated for each hotel should only be used as a guide.

List of successful cases

11 successful case studies are detailed:

1. « Boutique hotel Stadthalle », Vienna (Austria)
2. « Corfu Mare Boutique Hotel », Corfu (Greece)
3. « Decoy Country Cottages », Navan (Ireland)
4. « Hotel Gela », Gela Village Mountains (Bulgaria)
5. « Hotel a Quinta de Auga » , (Spain)
6. « Hotel Elda » Lenzumo di Concei-TN (Italy)
7. « Krägga Herrgard », (Sweden)
8. « Seehotel Wiesler », Titisee (Germany)
9. « Locada Della Ville Nuova », (Italy)
10. « Alle Ginestre Capri », Anacapri (Italy)
11. « Arche eco-hotel », (Austria)

Beta version of the best practice guide on successful cases of RE solutions integration

Hotel Energy Solutions

Boutiquehotel Stadthalle, Vienna, Austria

CASE STUDY

General information on the hotel

Hotel name & type:

- Hotel name: Boutiquehotel Stadthalle
- Type of hotel: City hotel
- Type of business: Private
- Services offered: telephone, radio and cable TV and wireless-internet connection.
- Category: 3***+ star hotel
- Staff number: 14 people

Building characteristics:

- Year of construction: 2008/2009
- Climatic zone: Continental climate
- Size of the building: approx. 1,920m ²
- Number of guest rooms: 44 (another 38 rooms as from November 27th, 2009)

Environmental aspects:

Environmental label: 2008 the Austrian Eco Label for the 4th time; 2008 the European Eco Label; European Union Sustainability Award; en route to the 1st "zero energy balance" hotel

Annual energy consumption per m2: 12,6 kWh/m²

The hotelier's approach

Environmental awareness is such a big issue for us...

"It is in our philosophy to take responsibility for the next generation and to create a better and liveable world."

...that our project has become even more ambitious!

"As of November 27th 2009 we enlarged the hotel with an additional 38-room passive house. This new section is equipped with heat pumps for heating and cooling, controlled room ventilation, centrally controlled airing in the rooms, "rainwater thieves" for toilet flushing and watering the garden, and sensor controlled fittings. A photovoltaic power plant was installed and it produces electricity together with 4 wind turbines. The passive house commodities also serve the "old" building, thus creating a zero-energy-balance-hotel".

We were helped by local subsidies

The main reason we decided to go for renewable technologies was that we believed in their great potential. Nevertheless, we were also helped by some local funds for the environment and for energy that allowed us to make our idea a reality.

For more information: www.hotelstadthalle.at

Description of Renewable Energy Technologies adopted

RES – Electricity

PV power plant and 4 wind turbines.

RES-Heating

160 m² solar thermal panels can produce enough hot water for the whole hotel, depending on the weather. Ground source heat pumps.

RES Cooling

Ground source heat pumps.

Integration of energy efficiency/environmental measures

Energy Efficiency

An “instabus” system allows the hotel to manage and control its electrical devices and programme their use only when this is required.

Environmental measures

Rainwater is used to water the garden and to flush the toilets

A green rooftop (made of lavender and rose plantations) removes the need for air-conditioning

Waste prevention and separation policy

Organic waste composting

Bicycle-friendly hotel

Beneficial rates for guests arriving by train or bicycle

Benefits for the hotel

Social involvement

People are increasingly aware of the environmental problems faced, and our hotel gives them an example of how it is possible to have a zero energy building.

Hotel Energy Solutions

Corfu Mare Boutique Hotel, Corfu, Greece

CASE STUDY

General information on the hotel

Hotel name & type: Corfu Mare Boutique Hotel

- Hotel name: Corfu Mare
- Type of hotel: City-Leisure Hotel
- Type of business: Family owned
- Category: 2**
- Staff number: 7

Building characteristics:

- Year of construction: 1983
- Climatic zone: Mediterranean
- Size of the building: 6.900 m3
- Number of guestrooms: 51

Environmental aspects:

- Environmental label: The Hotel will be finished in an estimated time of one and a half months from now. Therefore, we will not have an Environmental label before the hotel's completion.

The hotelier's approach

- Corfu Mare Boutique Hotel was built in 1983 under a different name and ownership. Three years ago Mr.Dimitris Diavatis bought the hotel and one year after (in 2008) decided to re-build the hotel keeping the basic foundation columns which have been reinforced. Having two children he soon understood the importance of sustainable development for future generations. He started researching new technological supplies that would be appropriate for the hotel dimensions and needs with the hotel engineer.

- We were all amazed by the amount of water that was saved using a special deposit in order to gather rain water. With a "good heavy rain" of one day, we are gathering water that can last for 20 days. Even though the water needs in a hotel are tremendous, gathering rain water, desalinating it and warming it up with heating pumps saved us from spending a large amount of money of water and electricity bills. Mother Nature and the company's budget were satisfied together. Even the richest hotelier *cannot* deny the continuation of a green future to next generations.

- Two factors were very important in order to implement the rather easy process. Firstly the favourable climatic conditions of Corfu: meaning many days of sunshine (there are around 300 days of sunshine on the island) and secondly the presence of skilled technicians that made the installations "a piece of cake".

For more information:
manager@corfumare.gr

Description of Renewable Energy Technologies adopted

RET-Heating

The RET that the hotel uses for heating purposes are solar thermal power and heat pumps. Their energy is used to give warm water in the room showers, swimming pool, public toilets and showers of the hotel

Integration of energy efficiency/environmental measures

Energy Efficiency

- Energy saving light bulbs have been installed throughout the hotel. All rooms have key-card operated power switches to stop energy usage when rooms are vacant. The air-conditioning functions only when balcony doors are closed. Ceiling fans are installed for guests who do not wish to use the air- condition. External areas, corridors and public toilets are sensor and timer operated; solar panels have been installed to warm pool water.

- Only environmental cleaning products are used; management policy to agree to use the linen for more than one day has been stated. Rain, collected and desalinate is used to water the plants and throughout the hotel, installation of movement sensors at the public toilet's faucets to avoid the usage of the water in a wasteful manner, re-usage of printed papers for internal documents. Usage of central recycling waste bins at the parking area, usage of on-the-wall dispensers in the rooms (one for the sink, one for the shower) in order to minimize unnecessary amenities and limitation of wastes, thick paper towels at the public bathrooms to avoid excess usage of paper, training of personnel in environmentally friendly initiatives.

- Guests are encouraged to contribute to our green policies by agreeing to change their towels and linen every 2 days, recycling their waste at the hotel's central waste bins, old reusable amenities are donated to charity. The staff is encouraged to "green" their houses too.

- Local plants have been used as a "green fence" to border the hotel from the rest of the neighborhood, local stones have been used at the entrance, in addition to wood for durability and to protect from slippery accidents around the pool as well as better maintenance of the area.

Benefits for the hotel

Economic savings

Since it is the first time we make use of such technology I cannot be 100% sure about the payback time. The benefits from RES are firstly the environmental and secondly the financial effects which can be measured in long term. After 5 years we will have some figures that will justify and pay back the cost in a period of three years.


©Corfu Mare Boutique Hotel

Hotel Energy Solutions

Decoy Country Cottages, Navan, Ireland

CASE STUDY

General information on the hotel

Hotel name & type:

- Hotel name: Decoy Country Cottages
- Type of hotel: Self catering cottages
- Type of business: 8 self-catering cottages
- Services offered: accommodation, spa, catering
- Category: self-catering
- Staff number: 2

Building characteristics:

- Year of construction: restored in 2006
- Climatic zone: Ireland
- Size of the building: 833 sq mts
- Number of guestrooms: 20 bedrooms in 8 houses

Environmental aspects:

- Environmental label: No label currently, in process of applying for the EU flower
- Annual energy consumption per m2: €1.15
- Energy consumption per night sold: €3.29

The hotelier's approach

- I have always been interested in the environment. When we were renovating the old buildings, it was an ideal opportunity to include renewable energy technologies.
- I am very happy with the technologies used so far. I am hoping to add solar panels in 2010 . I would like to have solar panels to reduce the amount of energy I use to heat water and increase my use of renewables.
- Factors that helped in the process: Being able to add the technology at the time of construction made it a viable option otherwise it would not have been feasible.

For more information:
www.decoycountrycottages.ie

Description of Renewable Energy Technologies adopted

RES – Electricity

Use airtricity for all electricity needs. They guarantee that 88% of their electricity is generated from renewable sources. Airtricity is an Irish company that commits to source over 80% of its energy through renewable sources. *More information: www.airtricity.ie*

RES-Heating

All heating and hot water needs met by 2 x ground source heat pumps. These are 2 x 4 KW pumps that utilise the latent energy in the ground to provide 24/7 under floor heat.

RES-Cooling

No cooling used

Integration of energy efficiency/environmental measures

Energy Efficiency

All buildings are very well insulated. All floors have insulation beneath the heating pipes, all windows are double glazed. There is excellent wall insulation and attic insulation also. Low energy light bulbs are used where possible. Clients are encouraged to conserve energy, for example they are encouraged to take showers instead of bathing, to close windows when the heating is on and not to request a towel or linen change midweek.

Environmental measures

Guests are encouraged to conserve water. Water flow from taps has been decreased. Only environmentally friendly cleaning products are used. Our own water source is treated on site. All communications are carried out via email. Guests are encouraged to separate waste and compost food. Recycling facilities are provided.

Benefits for the hotel

Economic savings

My operating costs are much lower than when I was using conventional methods to heat the building. Email has cut down on the amount of time needed for communication, it is efficient and reinforces the green image. My operating costs are approximately half of what they would be if I used conventional methods.

Hotel Energy Solutions

Hotel Gela, Gela village Mountains, Bulgaria

CASE STUDY

General information on the hotel

Hotel name & type:

- Hotel name: Hotel Gela
- Type of hotel: Family Hotel
- Type of business: small
- Services offered: ,Restaurant, SPA center, Russian bath
- Category: 3 stars
- Staff number: 5

Building characteristics:

- Year of construction: 1956
- Climatic zone: mountainous
- Size of the building: 800 m2
- Number of guestrooms: 15

Environmental aspects:

- Environmental label: none
- Annual energy consumption per m2: 162 kw/m2
- Energy consumption per night sold: 26 kw/night

The hotelier's approach

- Motivations of the hotelier, historical background, etc.
- Level of satisfaction regarding renewable energy conservation measures
- Technologies in place, etc.
- Factors that helped in the process:

Description of Renewable Energy Technologies adopted

RES – Electricity

LED lighting lamps with PV charge

RES – Heating

Solar thermal collectors. Type: evacuated tubes. Net absorber area: 16,5m2. The system also supports the heating loads. Biomass wood fuel.

RES – Cooling

None

Integration of energy efficiency/environmental measures

Energy Efficiency

Wall insulation

Hotel Energy Solutions

Hotel A Quinta da Auga, Spain

CASE STUDY

General information on the hotel

Hotel name & type:

- Hotel name: Hotel A Quinta da Auga
- Type of hotel:
- Type of business: Hotel
- Services offered: Hotel, Restaurant, Spa, Conference Centre
- Category: 4*
- Staff number: 37

Building characteristics:

- Year of construction: 2009 (restored 18th century paper factory)
- Climatic zone: atlantic
- Size of the building: 7.000 sqm
- Number of guestrooms: 59

Environmental aspects:

- Annual energy consumption per m2: Our hotel has only been opened for 9 months and with a low occupancy. This is the reason for not having data about consumption.

- Energy consumption per night sold: We are recently opened. This is why data is not relevant.


©Hotel A Quinta da Auga

The hotelier's approach

- An ownership personally convinced to take measures of environmental sustainability and energy saving.

- Long-term hotel saving

- There are no historic studies of cooling and its result is still unknown. When we opened the hotel, teams were not well controlled * A good technical team, an architect and an engineer are factors that helped in the process.

For more information:
www.aquintadaauga.com

Description of Renewable Energy Technologies adopted

RES-Heating

Solar panels for hot water. Geothermal, 8 wells drilled to 130 meters deep. 2 heat pumps: system used for heating and cooling floors. Especially interesting in these old stone buildings due to its thick stone exterior walls that provide them with a large inertia. We have two wells drilled to 130 meter, with this, we get temperature from the Earth (2 ºC more).

RES - Cooling

Heat pumps: system used for heating and cooling floors. Especially interesting in these old stone buildings due to its thick stone exterior walls that provide them with a large inertia.

Integration of energy efficiency/environmental measures

Energy Efficiency

Lightning: general lightning with low consumption bulbs.
Kitchen: Titanium electric plates reaching 400 º C but releases heat on contact; induction. Once hot, performance is high achieving significant energy savings. 2 boilers micro (electricity / hot water - pools and health spa) by combustion of gas. Electricity generated goes directly into our own network

Environmental measures

Separation of waste – Paper, glass. Starting composting process of organic matter – We will collect organic waste and place it in a special deposit to obtain natural fertilizer

Hotel Energy Solutions
Eco Ambient Hotel Elda
Lenzumo di Concei – TN, Italy
CASE STUDY


©Hotel Elda ,Ledro

General information on the hotel

Hotel name & type:

- Hotel name: Eco Ambient Hotel Elda
- Type of hotel: Mountain hotel
- Type of business: Private
- Services offered: B/B – Half Board – restaurant – SPA – Free Mountain Bikes – Free wi-fi
- Category: 4 stars

Building characteristics:

- Year of construction: 1949 (last renovation 2007)
- Climatic zone: Mountains, pre Alps (800 msl)
- Number of guest rooms: 17

Environmental aspects:

- Environmental label: none, although they are members of Eco World Hotel, and are preparing the documents for Eco Label
- Annual energy consumption per m2: 40 kWh/m²year/ Casa

For more information: www.hotelelda.com

The hotelier's approach

A bit of history...

The hotel was first opened by Elda in 1949 in her family's old home, in a small village of Trentino Alto Adige Region surrounded by ancient forests and beautiful mountains. The hotel has undergone many changes through the years, but the family who runs it and the location where it is placed have remained unchanged.

...until the first renovations

In 2004 we decided that it was the right time to think about a renovation for the hotel. We were aware about how polluting a hotel could be, despite its small dimensions, as in our case. Therefore, we decided that the new hotel would have to be as eco-friendly as possible. The last big refurbishment was in 2007. That gave the hotel a completely new aspect and a new name; Eco Ambient Hotel Elda. It included an extension to the building (with a few more rooms, a new dining room, a SPA, a reception, and a library, amongst other facilities) and also its insulation.

Our green soul is the engine of our activities

The soul and the roots of the Eco Ambient Hotel Elda are cared for by people who deeply believe that Nature is one of our most precious possessions, and that we are responsible for its preservation for future generations.

We were called "stubborn", but we are now happy with our hotel!

When we started the refurbishment of the hotel, most people told us we were crazy and were wasting our time with "renewable fairy tales". Nevertheless, we really believed in our project, and we persevered with it: we are now completely satisfied with the result we have achieved!

Description of Renewable Energy Technologies adopted

RES – Electricity

Currently none, but the hotel is planning to install 150m^2 of photovoltaic panels.

RES-Heating

We have a floor heating system that uses water at about 35°C, instead of 70°/80°C water as used in conventional heating systems. We also decided to get rid of boilers fuelled by gas and petrol. In fact, we have replaced those with a 150kW pellet boiler. In addition, the pellets used are made of sawdust resulting from wood.
Almost all the floors are wood and so is all the furniture.

RES-Cooling

None. However, the hotel does not need any, due to its geographical position (i.e. in the mountains, 800 metres above sea level).

Integration of energy efficiency/environmental measures

Energy Efficiency

Our wooden building is insulated with more than 14 cm of fibre wood.
Windows are important in insulation and we decided on low emissive windows (Uw = 1.00 W/m2K).

95% of the internal lighting is provided by led and low consumption light bulbs. For external lighting we use led at a right angle to avoid light pollution.

The elevator is a special model that uses less than half the energy of other elevators and doesn't use any oil (normal elevators use around 200 litres of oil every year).

Environmental measures

All the wood we use is strictly FSC certified.

There are two 20,000 litre tanks buried in the garden to collect rain water that we use either for the garden or for our washing machines.

The filter of our swimming pool works by electrolysis (with salt water) and this allows us to avoid any use of chemical chlorine.

All taps have special filters to save water.

Our brochures, business cards, menus, internal communications, etc. are all made with recycled paper and recycled materials.

We recommend people to leave their cars at the hotel and discover our surroundings by foot or by bicycle.

In our kitchen many products are bio and come from local farmers who don’t use pesticides.

Hotel Energy Solutions
Krägga Herrgård, Sweden
CASE STUDY

Hotel Krägga Herrgard,Sweden

General information on the hotel

Hotel name & type:

- Hotel name: Krägga Herrgård
- Type of hotel: Conference hotel
- Type of business: Conference facilities and hotel, weekends and weddings
- Services offered: See above
- Category: Four star
- Staff number: 15

Building characteristics:

- Year of construction: 1840
- Climatic zone: Northern zone 3
- Size of building: There are several buildings. In total, 3,327 square metres.
- Number of guest rooms: 47 rooms

Environmental aspects:

- Environmental label: Svanen and Klimatpositiv.net
- Annual energy consumption per m2: 211 (2008) will be different 2009
- Energy consumption per night sold: 99

The hotelier's approach

A great interest in the environment...

"We have always been interested in environmental issues and decided to make a difference with Krägga when we started working there. The owners of the building have been very helpful and supportive of our decisions, and without them none of this would have been possible. We were able to aim higher with their help. This really shows that communication is a key factor in succeeding!"

...and a climate friendly hotel

"It is with great pride and joy that we can confirm and communicate to our customers, and to the rest of the world, that we have come a long way in our work to make Krägga Herrgård **climate friendly** and it shows that you actually can do business as well as be environmental friendly. It is not only a matter of costs. We have a lot of groups/companies who have a serious interest and genuine concern in environmental issues which helps when we are closing deals."

Our staff is also committed

"Partners like the Nordic Eco Label Svanen, the owners of the building (Krägga Properties AB) and our environmental consultant Jan Ohlsson (at +klimatpositiv.net) have been of great help in the process. By communicating every step of this work to the entire staff of Krägga we have benefited from the staff's commitment and hard work in making this project possible".

For more information: http://www.kragga.se

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Description of Renewable Energy Technologies adopted

RES – Electricity

All electricity bought by the hotel is produced by hydropower and delivered by Elkraft Inc. This is proven and certified by Elkraft Inc.

RES-Heating

All heating is provided by heat pumps that extract heat and cold from the ground, thus reducing the amount of kWh by half. The payback time for this investment is approximately five years.

RES-Cooling

Cooling will be provided in the near future by the previously installed heat pumps. By reversing these we will extract cold from the ground.

Integration of energy efficiency/environmental measures

Energy Efficiency

- In the process of labelling Krägga as a ”Svanen” certified hotel, the management has made over 50 changes in its daily work. This included changing all lighting to low energy light bulbs and reducing water consumption by installing new more efficient showerheads.

Environmental measures

- Krägga Herrgård has reduced its emissions of carbon dioxide by at least 50 tons a year thanks to the installation of heat pumps and by only buying electricity produced by hydropower. In addition to this, Krägga Mansion compensates CO2 emissions for travel and transportation of food and other items to and from the Mansion by buying EU tradable emission permits to the extent of being neutral and even overcompensating emissions by 15%.Krägga Herrgård has implemented the continuous work of reducing CO2 into its daily agenda, involving all of the staff in this important work. Krägga Herrgård is today a certified “climate positive” hotel www.klimatpositiv.net.

Krägga Herrgård is also certified by the Nordic Eco label, Svanen. The Nordic Ecolabel logo is well known: 67% of the people in Nordic countries understand the logo. So the label is a cost-efficient way of communicating that you are a company which takes responsibility for the environment through environmentally-friendly products.

- By studying our rooms and the products we have in them we have smarter solutions for our guests; these reduce waste and the cost per guest and room, etc.

Benefits for the hotel

Economic savings

In the end, working smarter and being more climate friendly is about cost savings. By sorting our waste we pay less because it’s more expensive not to do anything at all. The installation of heater pumps has made an annual saving of approximately 40,000 Euros per year, and 45,000 kWh per year. We are now in the process of evaluating the savings resulting from the changes to low energy light bulbs, for example.


©Hotel Krägga Herrgard,Sweden

Hotel Energy Solutions
Seehotel Wiesler,
Titisee, Germany
CASE STUDY


©Seehotel Wiesler

General information on the hotel

Hotel name & type:

- Hotel name: Seehotel Wiesler
- Type of hotel: Mountain Hotel
- Type of business: Private (family run)
- Services offered: Hotel, Restaurant and Spa
- Category: 4 star hotel
- Staff number: 24

Building characteristics:

- Year of construction: 1970; extension of the building and spa annexion in 1984; renovations in 2003 & 2009
- Climatic zone: Black Forest, Germany
- Size of the building: 6.900 m²
- Number of guestrooms: 40 and 3 suites

Environmental aspects:

- Environmental label: EMAS, viabono
  Annual energy consumption per m2: 104 kWh/m²
- Energy consumption per night sold: 39 kWh

The hotelier's approach

A story of close cooperation...

The hotel is provided with wood chips from regional forestry enterprises and the local sawmill, which meets the management's efforts to strengthen the economy of the regional nature park 'Black Forest'. In this context there is also close co-operation with local suppliers, cultural associations, the ‚Nature park', craftspeople and small farms

...that also helps the Black Forest environment

The independence from oil and gas help to save money and save the environment of the Black Forest.

For more information:
http://www.seehotelwiesler.de/02_hauptseite/02_frameset.htm

Description of Renewable Energy Technologies adopted

RES - Electricity

54 m2 Photovoltaic Panels installed and a computer system for monitoring and managing the current demand of energy.

RES - Heating

Modern wood-chip heating system with a cyclone for flue gas cleaning, heat recovery from cooling system

RES - Cooling

Electricity for cooling is from hydro power plants.

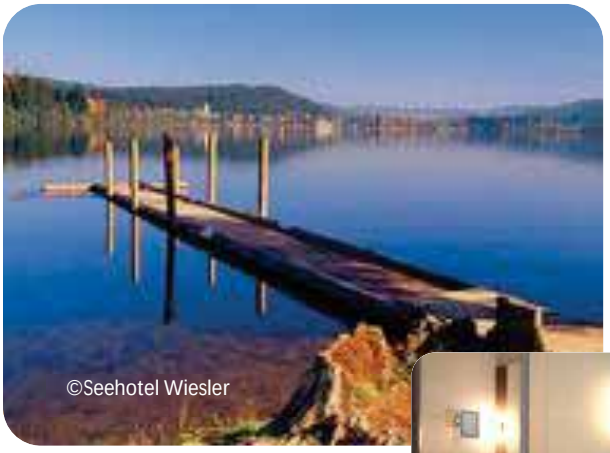
Integration of energy efficiency/ environmental measures

Energy Efficiency

The power-maximum was reduced by 25 % by means of the installation of a computer system monitoring and managing the current demand of energy, energy saving bulbs and fluorescent lamps are used, staff is regularly trained from external consultant.

Environmental measures

In autumn 2003 the hotel replaced its oil/gas heating with a modern wood-chip heating system with a cyclone for flue gas cleaning. With a heating output of 180 kW, the installation covers the hotel's total need for heating and warm water, including those of the spa area.



Hotel Energy Solutions
Locanda della Valle Nuova
Italy
CASE STUDY


©Locanda della Valle Nuova

General information on the hotel

Hotel name & type:

- Hotel name: Locanda Della Valle Nuova
- Type of hotel: Agro tourism/ Farm inn
- Type of business: private
- Services offered: B&B, Dinners, Swimming pool, Riding
- Category: Agro Tourism 5 stars
  Staff number: 3

Building characteristics:

- Year of construction: 1920s
- Climatic zone: Mediterranean template
- Size of the building: 250 m2

Number of guest rooms: 6

Environmental aspects:

- Environmental label: No
- Annual energy consumption per m2: 1,2000 : 250
- Energy consumption per night sold: 10 KW*

For more information:
http://www.vallenuova.it/en/locanda/ambiente.htm

** This also includes the riding arenas and stables that are part of a different business that works year round, pumps for the water, some emergency and security lights that are on year round. It's difficult to have the real details just for the inn's consumption.*

The hotelier's approach

From the city to the country…

In the late 70s my parents: an architect who mainly designed hotels, from the building itself to the furniture, and a housewife and mother with a great interest in horticulture and gardening, decided to leave Milan and start a new life as organic farmers. They already owned a tiny farm but, since they wanted to breed cows (the best producers of natural fertilizer as well as fascinating animals), they needed more land. They started looking for the farm of their dreams, a difficult task since most agricultural areas were already seriously polluted or devoted to highly chemical agriculture.

Organic farming was only starting to be known in that period and the beginning was not easy. Luckily we moved to one of the leading areas in Italy for organic farming (Le Marche), but organic beef (that is what they wanted to produce) was not easy to sell. New cow sheds were built (according to IFOAM criteria, there was no national Italian regulation on organic agriculture and breeding back then), where our cows and calves could roam free, not tied in the same spot all their lives as per the "traditional" method. The ground was not deeply ploughed and the soil was respected by only breaking the surface before sowing. People tended to think that these two townies were nuts and regarded their innovations and the new machines they brought as clear symptoms of their condition.

After 13 years we finally moved to Urbino and a few years later we all (I was old enough to share family decisions by then) decided to share all of this with more people than the friends who used to visit us in our bit of heaven. In 1999 the Locanda opened its doors to our first guests.

The Italian state provides a contribution for the production of solar energy called "Conto Energia": http://www.energiebauitalia.it/The-Conto-energia.489.0.html?&L

Description of Renewable Energy Technologies adopted

RES – Electricity

We installed photovoltaic panels in 2009 and these will cover 100% of the inn's needs.

RES - Heating

We have solar collectors for providing hot water in the summer and a high output wood stove for hot water and heating when the solar energy is not enough. We also have a gas burner for emergencies.

RES - Cooling

We installed fans in the rooms and air conditioning in the kitchen. They are powered through the electricity that we produce.

Integration of energy efficiency/environmental measures

Energy Efficiency

We only use low energy consumption light bulbs and higher appliances (washing machine, dryer, etc.). We also inform our guests about how they can help protect the environment, for instance, we encourage them to change their towels and bed linen every 3-4 days, to recycle cans, plastic and paper, not to waste water and to make sure the lights and ceiling fan are off when leaving their rooms. When we renewed the inn back in 1999 we insulated the walls and roof and installed double glazed windows. We're thinking of installing an electric key to automatically switch the lights off in the bedrooms because it's difficult to convince some guests that leaving the lights and ceiling fan on when not in the room is not a good idea.

Environmental measures

We use solar collectors and a high output wood stove to produce hot water and for heating (the wood comes from our approx. 30 acres of woods, when pruning and cleaning). The Locanda uses externally provided sources of energy only for the cooking. We have dual flush toilets and reducers on every tap and shower, we use kitchen water to water our flowers and plants.

We wash the linen and towels twice a week (once a week for the apartments) and ask our guests to use water consciously. We use appliances that help us reduce not only electricity use but also water use. We only operate our washing machine and dishwasher when full, they are A+ appliances. The dishwasher operates at different temperatures and we always use the lowest one possible (depending on the kind of dishes we're washing and whether they are very dirty or not). The washing machine uses preheated water (heated through our solar collectors) and calculates the amount of water needed for the weight and kind of linen and we always use the lowest possible temperature and shortest program for the result we need.

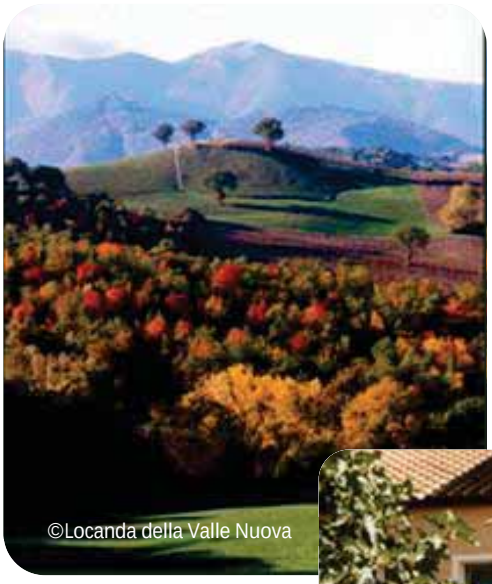
- We recycle or reuse all our waste (and buy locally and unpackaged whenever possible to reduce wrappings).
- We use the minimum possible amount of chemicals for cleaning and washing.
- We use eco labelled soaps whenever possible.
- We wash and iron all the linen, this way we have control over the products used for the washing and avoid transport of the linen.
- We do not use chemicals in our garden and we plant essences that do not need special watering.
- We have drip irrigation and only water our garden during the coolest hours.
- Our organic farm (where hunting is forbidden), garden, woods and hedges provide a perfect environment for wild animals and biodiversity.
- We produce organically most of the food we serve at the Locanda, we buy almost all the rest locally, also organic (this way we also reduce the wrappings and waste).
- We always buy locally and we always keep in mind energy consumption, water consumption and ethics when buying products and equipment.

Benefits for the hotel

In Italy electricity costs about 0,18 euros per Kw,(-2160 euros per year) the Conto Energia program from the Italian State assures a contribution of approximately 0,40 euros per Kw (+4800 euros per year). We do not have details of our savings through the energy saving measures because we never operated without them. We've only used the photovoltaic panels since the end of 2009 season so the only details we have about the renewable energy technologies are the details already provided: we used to pay about 2,200 euros a year for our electricity bills but we won't pay for it anymore as we produce our own. In addition we will gain about 4,800 euros a year through the "Conto Energia" program. This means a plus of approximately 7,000 euros per year.

We're installing a further 50 Kw of photovoltaic during 2010 for farm use and for our house and to offset the carbon that the Locanda still produces. The Locanda only uses gas for cooking (approximately 1,000 m2 per year), a car to do the shopping (not much since we get most of the food we serve from the farm, about 3,000 km per year) and a little tractor for cutting the lawn.

Our waste production is reduced to the minimum (we buy a lot in bulk packages, do not buy over-packaged products and produce our own food and we also use most of our "natural" waste to feed our animals and recycle all the rest). The new photovoltaic panels will produce the electricity needed for 12 normal households and we will sell the electricity to the national electrical system. We've never calculated our CO2 emissions but we believe that they will be more than covered by the renewable energy we will produce.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Hotel Energy Solutions
Alle Ginestre Capri
Anacapri, Italy
CASE STUDY

General information on the hotel

Hotel name & type:

- Hotel name: Alle Ginestre Capri
- Type of hotel: Seaside B&B
- Type of business: Family run
- Services offered: Breakfast, and holiday house
- Category: n/aStaff number: n/a

Building characteristics:

- Year of construction: 2001/2002 (building); 2004/2005 (RE-T)
- Climatic zone: Mediterranean climate
- Size of the building: 50m2 (B&B)+50m2 (holiday house)+90m2 (private house)

Number of guest rooms: 3 rooms (max 6 guests)

Environmental aspects:

- Environmental label: no
- Annual energy consumption per m2: 8,524kWh

Energy consumption per night sold: not possible to determine.

The hotelier's approach

These new technologies pay for themselves in the short run!

I used to install electrical systems and when, in 2004, we decided to open our B&B, I was already familiar with the RE-T we adopted and I was aware of the benefits they allow in the medium and short term. My wife and I were already convinced those systems would pay for themselves in a short period and we were right, as in less than 5 years we have become net producers of energy.

Since we have switched to renewable, we have halved our energy bill!

The small isle of Capri, where we are settled, is not connected to the electrical grid. Furthermore, gas can only been supplied through gas cylinders. This system is way too expensive, but since we produce our own renewable energy we have halved our electricity consumption

Local authorities should facilitate RES implementation, particularly in tourist areas

We are happy with our choice, but we must say that we were at an advantage because of our previous knowledge of RE-T and also our decision not to ask for any subsidy. Although legislation on renewable energy already exists, local authorities do not do enough to promote the benefits offered by renewable energy sources. Therefore, the majority of people here simply stick to the expensive, inefficient systems they already know. In addition, those who ask for any RE-T subsidy at a national (or regional) level have to wait a long time to get help. This is highly discouraging for potential investors who do not have an adequate initial capital, especially in a typical tourist place, with a lot of potential for RES!

Description of Renewable Energy Technologies adopted

RES – Electricity

Description of the Renewable Energy Technologies adopted by the hotel for its electricity needs.

RES - Heating

3 Solar Thermal panels 2m^2 each (for a total of 6m^2) with a 300 litre storage tank.

Air-water heat pump with a 300 litre storage tank for water heating and air-air heat pumps for heating.

RES – Cooling

Air-air heat pumps in each room for cooling

Integration of energy efficiency/environmental measures

Energy Efficiency

During the refurbishment of the building in 2004, we insulated it and at the same time installed double glazed windows and replaced conventional lamps with energy saving ones.

Benefits for the hotel

Economic Savings

With our RE-T we have halved our energy consumption and we now spend around 200€/month! Furthermore, we have very little maintenance costs!

Environmental Benefits

Our solar panels and heat pumps help minimize the use of the main power plant on our isle. This is a great benefit for the environment .

Hotel Energy Solutions

Arche eco-hotel, Austria

CASE STUDY

General information on the hotel

Hotel name & type:

- Hotel name: Biolandus Arche Hotel
- Type of hotel: mountain hotel (located at an altitude of 930 ms on the sunny side of Saualpe)
- Type of business: family-run hotel
- Services offered:
  - Bio-Ernte products
  - apartments built of loam/mud
  - wellness products
  - Alpine hut
  - llama-trekking
  - sports: horse-riding, hiking, cave-hiking
  - special offers for children

- Category: 3 stars, Staff number: 2 to 5

Building characteristics:

- Year of construction: 1985
- Climatic zone: Ilyric
- Size of the building: 1,100 m²
- Number of guest rooms: 16

Environmental aspects:

- Environmental label: Eu Flower, Austrian eco-label for tourism (this label is the result of collaboration between the Federal Ministry of Economics and Labour and the Federal Ministry for Agriculture and Forestry, the Environment and Water Management.

- It represents a national instrument aimed at promoting quality and environmental awareness in the Austrian tourism and leisure industry). Green Cap (food award).

- Annual energy consumption per m2: 170.45kWh
  Energy consumption per night sold: 1.64kWh

A small start, but respect for nature has always been our leitmotiv

Ours is a family-run hotel which started business in 1985 with only 2 beds. Since then, we have grown and now have 30 beds. Nevertheless, we have always had a focus on the environment while developing our structure. Our eco-concept was developed in 1990 and since then it has been rigorously implemented and improved. The eco-concept is mainly based on high quality in biological food. Biolandhaus Arche was a pioneer in this field and the regional association "Norische Wirte (norische innkeepers - www.norischeregion.at)) was founded in 1992 based on its model. Biolandhaus Arche was also co-partner in the foundation of European Biohotels (www.biohotels.info), a voluntary co-operation/platform of 14 Austrian hotels (to be expanded to Germany and Italy) and bio-farmers (Bio-Ernte) which cooperates closely with other associations aiming at a biological and ecological development.

We were the first Eco-tourism hotel in Austria

Our eco-tourism project/business encompasses the three aspects -environmental, economic and social- of sustainable development (see sections below for more information). The attention we pay to energy management in our hotel is a reflection of both our sensitivity to environmental issues and an obligation we have decided to fulfil as a holder of the Austrian Eco-label for Tourism.

We have been rewarded for our efforts

High credibility has been achieved by sticking resolutely to the concept. Biolandhaus Arche has proved that it is possible to be successful with ecotourism even in remote areas, far from the mainstream, as Biolandhaus Arche is the most heavily booked hotel in the local community

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Integration of energy efficiency/environmental measures

Energy Efficiency

Use of thermo-electric heating (1 wood-burning stove and 2 tiled stoves: efficiency: 90%); insulation of hot-water pipes.
In accordance with the stipulations of the European Eco-Label, 80% of continuous lights are equipped with energy-saving bulbs. Our guests are explicitly asked to save electricity and energy. Our Carinthia eco hotel in Austria was built in the 1980s and the brick walls are insulated with Heratekta, a multilayer panel made of expanded polystyrene and a wood-wool layer. The roof has been insulated with 20 cm of Isoflock or Isocell (made of recycled paper) and wood wool slabs which are plastered with loam.

Environmental measures

As a holder of the Austrian Eco-label for Tourism, Biolandhaus Arche fulfils the following mandatory criteria of environment protection:

- energy management: use of thermo-electric heating (1 wood-burning stove and 2 tiled stoves: efficiency: 90 %; as well as solar heating (20 m²)); insulation of hot-water pipes;
- sewage management: hotel-owned biological sewage-plant; avoidance of any chemicals (formaldehyde-free)
- mobility at destination: promotion of public transport, bicycle rental, horse-riding, free shuttle-service between hotel and the local station.
- waste recycling and disposal: our motto is: avoid is better than dispose!; primarily recycled products; no non-returnable-bottles or canned drinks.
- F&B-sector/cooking: use of Bio-Ernte products from local farmers, no instant meals or microwave

In addition, Biolandhaus Arche strongly supports the Carinthian cattle-breeding association, aiming at protecting local cattle from extinction and is also actively involved in the protection and preservation of natural trails and spring water.

Naturally-treated solid wood rooms are furnished lovingly and are formaldehyde-free. Windows, doors and walls are painted with Auro natural colours. Wooden floors and linoleum floors are covered with woollen rugs. Natural textiles and health beds. Sleeping areas are radiaesthetically arranged.


©Arche Hotel Austria

Description of Renewable Energy Technologies adopted

RES - Heating

20m^2 Solar Thermal Panels

Thermo-electric heating (1 wood-burning stove and 2 tiled stoves: efficiency: 90%); Using wood for heating purposes is an active contribution to sustainable development, because it's a renewable resource. The timber growth rate in Austria is higher than the timber harvest rate, the forests are growing. We don't own a woodlot but our region is densely wooded.

Benefits for the hotel

Economic Savings

Thanks to the “Biohotels”, “Norische Region” and “Austrian Ecolabel for Tourism”, we have some shared marketing activities (PR-activities, brochures, web, fairs, sponsoring).

Social involvement

For hotel guests: hotel-library has information on ecological behaviour, flora and fauna and tradition and culture of the region; seminars on acupressure, dietary habits, meditation and more.

For local community: As a member of the regional association Norisch Region, Biolandhaus Arche is actively involved in the preservation of cultural and natural heritage by applying specific programmes (e.g. LEADER+).

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