



WE

HOTELS & GUEST HOUSES

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The hotel sector is diverse, comprising hotels, motels, guest-houses, hostels and tourism apartments. Energy is one of the main cost factors, which greatly influences the establishment's profitability. At the same time, energy use is often difficult to control, as guests and staff have a direct influence on the energy consumption. Efficient performance hotels operate sustainably, using energy more effectively than hotel buildings that are simply operating in line with legislation. Efficient performance hotels capitalize on the opportunity to enhance their positioning in the hotel market vis-a-vis both, customers and potential investors. Travelers are increasingly aware of the environmental impact of tourism and like to use hotels that are making an effort to minimize energy consumption and carbon emissions. Investors and owners benefit from the positive financial impact that results from energy saving.

OVERVIEW OF EXAMPLES FOR ENERGY SAVING AND RENEWABLE ENERGY INVESTMENTS IN THE HOSPITALITY SECTOR

GENERAL BUILDINGS

- Building Insulation (exterior walls and roof)
- Efficient windows
- Efficient boilers
- VRF systems or efficient chillers and split systems
- LED Lighting (inside and outside areas)
- Occupancy sensors for lighting systems in halls, utility rooms, common bathrooms, etc.
- Motion sensors on outdoor lighting
- Solar PV
- Solar Water Heaters
- Building energy management system



KITCHEN

- Energy efficient cookers and ovens
- Refrigerators
- Cold storage and walk-in freezers
- LED Lamps (also in refrigerators)
- HVAC
- Heat recovery
- Biogas (from food waste)
- Energy efficient extractor fans

GUEST ROOMS

- Key card systems (to automatically switch off electricity in guest rooms)
- Motors with variable frequency controls in HVAC applications
- Sensors on windows and sliding doors – switching off heating and cooling automatically when open (linked with building energy management system)

LAUNDRY



- Highly efficient laundry machines
- Ozone laundry machines
- Heat recovery from laundry room air extractors

SPORTS FACILITIES

- Efficient pumps for swimming pools
- Efficient Spa boilers

Hotels are among the top five energy consumers in the tertiary building sector. Operating in a 24/7 environment, there is much energy saving potential.

The biggest energy wasters in hotels are:

- Space conditioning (cooling and heating)
- Lighting
- Domestic hot water
- Laundry (if not outsourced)

SPACE CONDITIONING

The ambient air temperature and quality directly influence guest comfort and largely define the guests' experience. Key card systems and window sensors, which enable shut-down of cooling/heating together with a building energy management system minimize losses and maximize savings, while maintaining high guest comfort.

LIGHTING



Lighting represents about 25% of electricity costs in hotels. But effective lighting is essential for safety and comfort in hotels. The financial arguments for implementing a full LED retrofit are compelling and result in two impacts: a substantial reduction in energy bills and a significant increase in the asset value.

DOMESTIC HOT WATER

Domestic hot water is commonly the second largest user, accounting for up to 15% of the total energy demand. Solar Hot Water Heaters can easily cover most hot water needs.

LAUNDRY

Laundry services in general account for roughly 15–20% of the TOTAL energy consumption of a full-service hotel and are also responsible for 16% of a hotel's total water consumption. High efficiency commercial washing machines use 63% less energy and half the water of conventional washing machines. The case for Ozone Laundry Machines: In the least 10 years however, ozone laundries have become popular for diminishing the overall environmental impact of the laundry while achieving significant reductions in energy costs. The process of an ozone laundry involves completion of the wash cycle by using water saturated with ozone, instead of standard tap water. Laundry disinfecting has been traditionally accomplished by bleaching with chlorine at high temperatures along with agitation. This bleach is normally a slow reactant at cold temperatures, so hot water is used in conventional washers to enhance the oxidation reaction of chlorine bleach. Ozone, which carries an electrical charge, does the disinfecting without hot water. Ozone works well in

cold water and reacts very rapidly, dissolving soil on contact. Hot water is unnecessary for most ozone laundry systems. By eliminating the need for hot water (85–100%) and reducing both washing and drying times. **Ozone laundering can generate energy savings of up to 75%.** In addition, they reduce overall water consumption by about 20% and detergent/chemical usage by around 40%.

OTHER QUICK-WIN EXAMPLES FOR HOTELS

- Installing efficient ice makers generate energy savings of 230,400 kWh annually
- Installing water efficient shower roses and a temperature setback system in a mid-size hotel: capital cost of €3,600, generating annual energy savings of 75,035 kWh, delivering annual costs savings of around €6,626.
- Occupation management: Filling north facing rooms first – capital operating cost of €3,200, generating annual energy savings of 182,400 kWh, delivering annual costs savings of around €16,106.
- Installing timers on external lighting: capital cost of €360, generating annual energy savings of 26,280 kWh, delivering annual cost savings of around €2,321.
- Installing timers in hallways: capital cost of €883, generating annual energy savings of 14,717 kWh, delivering annual costs savings of around €1,300.

CASE EXAMPLES:**BIOGAS**

A hotel chain with integrated restaurants catering for a total of 2,000 customers per day piloted the possibility of using food wastes for biogas production. Waste used included plate scraps and food preparation waste. An anaerobic digester was installed in a central location serving outlet restaurants. The result of the pilot showed that approximately 600 pounds of food waste per day produces almost 44 m³ biogas per day, which is equivalent to almost 27 m³ natural gas per day. This amount of gas produced per day is equal to one week's worth of natural gas consumption of an average British household. The biogas, without any cleaning, can also be bottled and used directly for cooking again, vastly reducing the restaurant's need for purchasing cooking gas.

ENERGY CONTROL SYSTEMS

A hotel installed an Energy Control system in the kitchens of one of its properties. Previously, the extractor fan ran 24 hours a day at full speed, using about 220.67kWh/day. The new equipment continuously monitors cooking activity and, based on the conditions, adjusts the following:

- speed of the extractor and supply fans
- adjustment in air conditioning requirements

As a result, energy consumption drop to 105.59kWh/day. Together with the reduction in the need for conditioned air, the hotel's total annual savings are around €6,301 or 42,004kWh/year.

**SOLAR INSTALLATION**

A hotel location planned to reduce its costs associated with heating the outdoor swimming pool for use in the winter, while using the same solar thermal collectors to preheat water for use in indoor showers April through November. The 320m² panel array produced a 35% reduction in annual gas consumption with a 1.8 year RoI.