Energy and water conservation in Hotel

Ecotels- Also called green hotels, are earth friendly or eco-sensitive hotels that feature innovative and imaginative programmes for conserving natural resources, reducing waste, minimizing pollution, and maximizing sustainability.

ECOTEL CERTIFICATION

Ecotels follow the three R's of environmental conservation - reducing, reusing, and recycling. Ecotel certification requires these properties to strictly adhere to certain criteria, which may be called the five globes that are the cornerstones of environment responsibility.

- ENERGY EFFICIENCY
- WATER CONSERVATION
- SOLID WASTE MANAGEMENT
- ENVIRONMENTAL COMMITMENT
- EMPLOYEE EDUCATION AND COMMUNITY DEVELOPMENT

ENERGY CONSERVATION

Today, we utilize external energy supplies to fulfil many of our basic needs as well as provide comforts, luxuries, and entertainment. The various forms of energy so harnessed include mechanical energy, heat, electricity, light, and

chemical fuels. However, due to indiscriminate use, insufficient energy sources have become a global problem, though. The impact of the crisis differs from country to country. The global energy demand is increasing due to the increase in

population, industrial development, and changing lifestyles. On an average, 80 percent of the energy used worldwide is produced from fossil fuels such as coal and petroleum. These are depleting at an alarming rate.

The hotel industry consumes energy in different forms-electricity, heat petrol, and so on. Each organization invests a huge amount of money to acquire all these sources of energy. For instance, a 500-room, 5-star property with all facilities operating during a power crisis pays an energy bill of Rs 12 lakh per month. It is possible to save
15-20 per cent of this cost by using energy conservation methods. Even if we keep a
modest target of 7 per cent, the hotel can save up to Rs 10 lakh per annum. What's more, the implementation of energy conservation mechanisms will not only help the hotel, but also society and the nation as a whole.

Energy Monitoring

Each and every member of the hotel's staff, therefore, should be made aware of the organization's concern regarding the consumption of energy. Before implementing such a system, it is important to conduct a thorough study of various energy conservation systems practiced in different hotels. All the representatives of the various departments should work together to formulate the guidelines for conserving energy in the hotel. These guidelines should clearly mention the dos and don'ts in order to maintain strict control over the consumption of energy. The following areas are of particular importance:

Guestrooms These account for a major portion of a hotel's total energy consumption. Energy used for air-conditioning, ventilation, and heating changes with weather conditions, but lighting is directly proportional to the occupancy.

Laundry This facility utilizes a large amount of energy for washing as well as 'finishing' processes. The amount of energy consumption within the

department depends largely on the type of equipment in use and, to a lesser extent, the type of fabrics.

Lighting This accounts for 10-25 per cent of the hotel's electricity consumption. Different types of lighting are used in different areas, according to the requirements for illumination there. However, while lighting uses the lion's share of energy, it should be remembered that heating, ventilation, air-conditioning, and other over-sized equipment operate less efficiently.

Tips for Energy Conservation

We shall now look at some general tips for energy conservation in hotels. Passive design strategies can dramatically affect a building's energy performance. These may encompass the building's shape and orientation, passive use of solar energy, and the use of natural lighting.

Natural light Develop strategies to optimize natural lighting. Studies have shown that it has a positive impact on productivity and well-being as well. Consider installing skylights if needed. Clean all the glass panes on the north face periodically to improve natural lighting.

Artificial lighting Install high-efficiency lighting systems with advanced controls, including motion sensors tied to dimmers. Consider the use of timer switch to switch off Ligh1tduring hours when they are unlikely to be used.

Task lighting g reduces the level of general overhead lighting g required. Use trans lucent shades and keep them clean to obtain maxim um illumination. Use light colored paints on the walls and smooth surfaces to maximize the intensity of the available light.
In guestrooms, have a lighting system that is activated only after inserting the key tag into the energy-saver slot. Replace incandescent bulbs with energy-saving CFLs and HPMV or HPSV lamps.

Place light fixtures at the right height Lower the height of fixtures in high-ceilinged areas wherever possible. Install chandeliers and other decorative fixtures only in public areas such as banquet halls, as they consume more energy.

Temperature control Use an energy-efficient heating/cooling system of the proper size in conjunction with a thermally efficient building shell. Maximize the use of light colors for roofing and wall finishes; install high R-value walls and ceilings; and use minimal glassed areas on the east and west exposures. Use draperies and sun films on window panes to cut down on air-conditioning costs.

Use heat-reclaiming equipment in air-conditioning plants. The heat displaced while cooling the air can be used to heal water, which can be used in guestrooms as well as the laundry and kitchens.

Hot-water pipes should be well insulated. Indeed, leakage of both air and water should be avoided. Damaged insulation should be changed as early as possible. Filters should be cleaned regularly. The temperature of the heated water should not exceed the recommended levels for the various areas. For instance, in baths it should be 30•

43°C, in showers 32-35°C, and in sinks 43-49C.

Appliances Minimize the electric loads from appliances and other electrical equipment as well as lighting by ensuring that the removal of the key-tag from its slot invokes the energy-saver settings. Turn off lights and fans in rooms that are physically unoccupied.

All equipment should be maintained and kept clean for the highest possible efficiency. Computer modelling is an extremely useful tool in optimizing the design of electrical and mechanical systems as well as the building shell.

Alternative sources Consider alternative energy sources such as photovoltaic and fuel cells, which are now available for new products and applications. Renewable energy sources provide a great symbol of emerging technologies for the future.

Use solar energy that is abundantly available naturally and save on electricity costs. Solar energy can be used for lighting and heating water.

Cooking fuel Biogas can be used to cook staff meals. A biogas plant may be installed and the organic waste generated in the hotel can be used for the production of biogas.

Transport Provide guests with bicycles, walking maps, and information on public transportation. Small solar-powered vehicles can be used to ferry guests within the
property's premises.

CONSERVATION

Water is the most basic component of all life on earth. The, enrichment 0f water with chemicals waste has become a universal problem, however. Since freshwater shortage

is a reality, effective water management procedures are essential for the success of any establishment.

General Tips for Water Conservation
Let us now look at some general guidelines for water conservation.

Toilets Employ a dual plumbing in the design to use recycled water for flushing toilets or a grey-water system that recovers rainwater or other non-potable water for on-site irrigation. Minimize wastage of water by using ultra low-flush toilets, low-flow showerheads, and other water-conserving fixtures. Low-flushing WCs require a maximum of 6 liters of water, as compared to traditional WCs that require 10-12 litres. Automatic flushes activated by infra-red sensors are ideal for use in public-area urinals. These alone can bring about a 30 per cent reduction in total water usage.

Use aerated water taps and water-flow restrictors. Aerated taps mix air bubbles into the water, providing white, sparkling water that gushes out at a higher pressure. Thus, the amount of water used is less and at the same time, since the water comes at pressure, it is more effective in cleaning. Aerators in taps may reduce the consumption of water from 200 liters per shower to 110 liters. In general, showers use less water than baths, hence some guestrooms may be planned to have shower cubicles instead of baths.

Excess water storage should be avoided, especially hot water, which loses heat easily

in annulated pipes and tanks. Instead, use re-circulating systems for centralized distribution of hot water. Install point-of-use water-heating systems only for more distant locations.

Waste management Use recycled wastewater for horticultural purposes, flushing toilets, and air-conditioning through separate pipe systems. A sewage treatment plant should be installed for recycling wastewater generated by the hotel.

Rainwater harvesting Replenish ground water by rainwater harvesting. The total daily water requirement of a hotel is approximately 250 kiloliters a day. This comes to about 90 million litres a year. This includes both freshwater use (around 80%) and grey-water reuse (around 20%) for horticulture. By using rainwater harvesting, nearly

25 percent of the water used within the premises is saved and an unaccounted-for amount of storm water from surrounding areas is directed through proper channels into rainwater-harvesting wells to recharge theground water.

Horticulture Use timer-controlled sprinkler systems and self-closing nozzles on hoses. The sprinkler system may be timed to operate during the early morning or late evening hours, when the sun is not at its peak. This minimizes the evaporation of water.

Alternatively, use the drip-irrigation method for watering plants in the gardens as well. Plants need water only at the roots. In drip irrigation, pipes with small openings are spread out along the ground near the plants. Water from these openings irrigates only the roots and does not drench the whole plant.
Switch to drought-resistant, indigenous plants. Replace mowed landscaping with native groundcover species.

Table 29.1 presents some statistics on the unintentional wastage of water.

Table 29.1 Unintentional wastage of water

Activty	**Wasteful Method**	**Quantityof water used in**	**Water saving method**	**Quantityof water required**	**Quantity of water saved**
Brushing teeth	Running tap for 5 minutes	45	Tumbler/glass	0.5	44.5
Washing hands	Running tap for 2 minutes	18	Half-filled bowl or basin	2	16
Shaving	Running tap	18	Shaving mug	0.25	17.75
Shower	Letting the shower run while soaping and staying too long under the shower	90	Wet down, turn shower off, soap up, and rinse off	20	70
Flushing toilet	Using traditional large-capacity cistern	13.5 or more	Dual-system - short flush for liquid waste; full flush for solid waste	4.59	4.5 or more
Watering plants	Running hosefor 5 minutes (at low pressure)	120	Watering can	5	115
Washing floor	Running hose for 5 minutes (at full pressure)	200	Mop and bucket	18	182

WASTE MANAGEMENT

This is an integral part of ecotel operations. The waste generated by the property should, as far as possible, be recycled.

Linens and other textiles Condemned bedlinen, towels, and curtains should be reused for making dusters, face cloths, scarves, swab cloths, waiter's cloths, and so on.

Garbage reuse and recycling Segregation of wet and dry garbage should be adopted for recycling, reusing, and recovering waste. Provide recycle baskets for newspaper, white paper, glass, aluminums, cardboard, and plastic in guestrooms-make recycling as easy as possible.

Leftover cooking oil may be sold to manufacturers of soap. Leftovers from guest plates and other food wastes can be recycled in a compost bin or vermin-compost pit to procure manure or in a biogas plant to obtain biogas as fuel.

Sewage A sewage treatment plant is an effective way of recycling wastewater generated in the hotel. The recycled water thus produced may be used in gardening and for
flushing toilets.