BSc. H&HA – V Semester Accommodation Management (BHM 314)

**MODULE MATERIALS – ENERGY AND WATER CONSERVATION**

**Chapter Outline:**

1. Energy conservation in hotels
2. Water conservation
3. Energy and Water Management Plan
4. **Energy Conservation in Hotels**

The hotel industry consumes energy in various forms i.e., in the form of electricity, heat, gasoline etc. and a huge amount of money is being invested to acquire all these sources of energy.

Electricity Conservation.

1. Use natural light as far as possible.
2. Keep window glasses clean to maximize natural light.
3. Use light or bright color finishes for walls.
4. Harvest solar energy to reduce electricity bills.
5. LED lights are the most energy efficient. LED lamps use at least 75% less energy, and last 25 times longer, than traditional incandescent light bulb.
6. Shades should be chosen wisely to maximize light intensity. For example : a spot light or a piano light will accentuate a painting better than any other light fixture.
7. Keep shades and bulbs clean.
8. Fixtures should be placed at proper height and space to ensure sufficient light reaches the intended surface.
9. Turn off all lights/fans of a room when it is physically unoccupied.
10. Lights connected to time switches help in switching on and off the lights automatically.
11. Infra red sensors in public areas ensure lights come on only when people are present.
12. Electronic card key systems facilitates in cutting off lights and airconditioning when the guest leaves the room.
13. Lighting in banquet halls, night clubs, discothèques etc can be connected to dimmer switches so that the intensity of light can be adjusted according to the mood of the event.

Energy conservation in Heating, Ventilation and air conditioning

1. Use heat reclaiming equipment in air conditioning plant. The heat energy released for cooling is utilized for heating water which can be used for the guest rooms, laundry and kitchen. Solar panels can also be used..
2. Hot water pipes should be insulated to prevent heat loss.
3. Use of drapes, carpets, double or triple glazed windows, sun reflectors on windows can reduce the load on air conditioners, heaters.
4. Regular maintenance must be done to prevent air and water leakage. Damaged insulation should be changed as early as possible. Filters should be cleaned regularly.
5. .Temperature should not be exceeded than the recommended temperature. Bath-30-43C, shower-35-38C, Sink-43-49C etc.
6. Have regular cleaning and preventive maintenance for laundry equipment undertaken.
7. The first exposure any building get is directly from the suns rays. Solar radiation creates a high heat load inside the building, the walls and windows at the Orchid, Mumbai were specially designed to deflect light and heat.. Walls of the hotel have been constructed using concrete block which have a 30% to 40% the ash component. This helps in reducing heat absorption and radiation to a great extend.
8. In Orchid, all the windows in the hotel have been constructed with triple glazed glass, the reflective outer glass cuts off at least 15% of heat load. After that comes 85mm cavity, then sandwich double glass, which also forms an air cavity in between . Since air is a poor conductor of heat energy less heat is transferred through the windows.
9. Atrium at the Orchid keeps the lobby cool by exhausting the air from the top layer.
10. Set up an Energy Management Plan.
11. **Water Conservation**

Water is one of the basic component of all life on the earth. This most precious resource is getting to be scarce in many parts of the world. Some water conservation methods are following:

1. Low-flushing water closets (9 lt. capacity). Hebrit concealed cistern for water closets are used in Hotel Orchid, Mumbai. A unique water saving system which uses 6 ltrs of water, where conventional one uses 15-20 litres of water.
2. Taps with aerators, reduce the amount of water used.
3. Infra red sensors in urinals use flush which functions only when the urinal is used.
4. Showers use less water than baths.
5. Using good quality pipes with ISI mark for water supply.
6. Hot water pipes should be well insulated..
7. Larger pipes reduce leaks since less water pressure will be needed.
8. Excess water storage should be avoided especially hot water which loses heat easily in annulated pipes and tanks.
9. Usage of cold water detergents reduce hot water requirements in the Laundry. Use final rinse water for the first wash to the next batch to save water.
10. Use treated recycled waste water for gardening, flushing toilets etc .
11. Waste water treatment with ozone instead of chlorine.
12. Rain water harvesting.
13. Drip irrigation for gardening.
14. Set up a Water Management Plan
15. **Energy and Water Management Plan.**

One of the primary ways to improve energy conservation in buildings is to perform an [**energy audit**](https://en.wikipedia.org/wiki/Energy_audit)**.** An energy audit is an [inspection](https://en.wikipedia.org/wiki/Inspection) and analysis of energy use and flows for energy conservation in a building, process or system with an eye toward reducing energy input without negatively affecting output.

The first step to take when creating a water management plan is to do a Water Audit. Start measuring water consumption in different areas and maintain records of the same.

* Calculate the electricity and water used per guest per night by dividing the total electricity and water consumed in guest rooms by the number of guests for that month.
* Calculate the electricity/fuel and water used in Laundry by dividing the total electricity/ fuel and water consumed by the weight of load washed.
* Study the pattern of consumption for a period of time.
* Based on information, establish realistic goals for each department.
* Communicate the management’s commitment to energy and water reduction and the subsequent objectives and goals to all employees
* Train staff so they understand how to make prudent use of water and how to maintain equipment for optimum energy-efficiency
* Encourage staff to put forward their own suggestions for water reduction
* Establish a monitoring and targeting system so that you can regularly report progress back to staff and other stakeholders. Motivate through feedback and reward success
* Join forces with other hotels and provide mentoring to help them reduce their water consumption