

Energy conservation measurers for Hotel Industry

DO'S AND DONT'S

FOOD & BEVERAGE DEPARTMENT

This department consumes approximately 25% of the total energy cost so the opportunities to reduce energy consumption in this area are excellent. Some helpful guidelines are given below.

A. FOOD PREPARATION - KITCHEN

01. Determine the preheating time for ovens, grills, boilers, fryers & other cooking equipments. Generally speaking 10 to 20 minutes should be sufficient.
02. When preheating ovens, set thermostat at the desired temperature. Ensure thermostat controls are operating the properly.
03. Determine cooking capacity of ovens; use smaller or more energy efficient oven when possible.
04. Use additional fry units, boilers, oven etc. only for peak business hours.
05. Load & unload ovens quickly. If an oven door is kept open for a second, it losses about 1% of its heat.
06. Cover pots & panswitch lids while cooking.
07. Turn off cooking & heating units that are not needed.
08. Oven should not be opened during operation. Food will cook faster and lose less moisture if oven is kept closed.
09. Frozen food should be thawed in refrigerators. It will thaw easily & reduce power demand on the refrigerator.
10. When using gas range for full heat condition, the tip of the flame should just touch the bottom of the pan or kettle. Yellow flame is the indication of inefficient, incomplete combustion and wastage of gas. Clean burners, pilot light regularly. If flames are still yellow, have gas-air mixture adjusted.
11. A blue flame with a distinct inner cone is best. Flame should never flout but should just wipe the surface. Adjust flame until it is entirely blue.
12. Thoroughly clean pot & pans to ensure there is no carbon build up at the bottom.
13. Placing foil under range burners & griddles will improve the operational efficiency.
14. Fryers need to be cleaned & oil filtered at least once a day.
15. Cooking rang burners should always be smaller than the kettle or pot place on it.
16. Have broken door hinges and cracks of oven doors attended to immediately.
17. Turn off Rotary Toaster when not in use. Use pop up toasters on lean timings.
18. Shut off steam Heater on dishwasher when dishwasher in not in use.
19. Use hot water only when necessary.
20. In pot washing area fill sink for washing utensils instead of running water.
21. Cleaning should be done during day hours if possible. Do not use dishwasher till full load of soiled dishes is available.
22. Turn off lights in the walk – in refrigerators and freezers when not required. Lights not only waste energy but add load to the box.
23. Close tightly all walk-in doors after operating them.
24. Allow hot foods to air cool before placing in refrigerators.
25. Do not store items in front of the refrigerant coils or fans in a manner that restricts air circulation.
26. Fully stored refrigerators and walk-ins use energy more efficiently than partially stored ones.
27. Be sure foods requiring refrigeration are promptly placed in storage after delivery.
28. Turn off supply and exhaust fans in kitchens stores etc. when areas are not in use.
29. Report and leakage of gas immediately.
30. Keep records of all break down of equipments to find out accident prone/uneconomical equipment.
31. Turn on equipment only as needed. Make sure they are turn off at night.
32. Carefully follow instructions in the users guide for all equipments.
33. Keep equipment and door seals clean and free of debris to prevent energy waste.
34. Reduce peak loading. Your electrical bill is determined by two factors:-
 - (a) demand charge (if applicable)
 - (b) total consumption in kWh

You may achieve this by:-

- (a) Intensive cooking such as baking and roasting during non-peak demand hours.
 - (b) Use minimum number of electric appliances at a time. Stager their operation.
 - (c) Try to use electrical appliances between 6 AM to 10 AM or after mid night if possible.
35. Equipment should be turned on at specific time to a specific temperature and turned off at times when not needed. A 10-15 minutes preheat period is requires only 7 to 15 minutes for pre-heating.
 36. Clean heating elements at least weakly. This may even be done daily if you do high volume frying.
 37. Cooking foods in least volume possible for most economic use of energy.
 38. If keeping electric burner on for shorter period is inevitable, when they are not in actual use keep the temperature low until you are ready to cook. This will even prolong the life of burner besides conserving energy.
 39. Avoid to turn on gas burners until you are ready to cook.
 40. If possible, fill cooking vessels according to capacity. Large cooking vessel if used for cooking lesser quantity of food will consume more energy.
 41. Use flat bottom pots and pans for maximum heat transfer.
 42. Group kettles and pots on close top ranges.
 43. Turn down heat as soon as food begins to boil and maintain liquids at simmer.
 44. Clear boil overs and spill overs promptly to avoid build up of carbon deposits which will effect the efficiency of equipment adversely.
 45. Always try to use roasting and baking oven to full capacity for maximum utilization of heat. If possible wait till oven is loaded upto its optimum capacity prior to switching on.
 46. Regular & prompt cleaning of rotary toaster saves energy.
 47. Avoid frequent opening of refrigerator doors. Door opening if planned, saves energy.
 48. Do not allow frosting on refrigerator coils to save energy.
 49. Close & preferably lock ice cuber bins after removing ice for use.
 50. Using hot water for cooking consumes less energy as compared to cold water.
 51. Switching off heater when cooking is over, not only saves energy it is safer as well.
 52. Do not use dishwasher until you have sufficient load

B. BANQUETS

01. While air conditioning is on, try to avoid using candles on the table. They add a tremendous heat load.
02. When renting a space for function try to fit the space to the size of function. Do not rent a 300 person ball room to 50 people even if the room can be divided. Remembers you are spending almost same on air conditioner of the space.
03. When setting up for a function, make certain that heating, cooling and lighting are off until ½ hour to 1 hour before function starts. Turn off systems as soon as the function is over. In fact, air conditioning can be turned off even ½ hours before function finishes. Air conditioning effect will stay for ½ hour.
04. If you have a choice, try to avoid function that requires the addition of many spotlight or other heat producing equipment.
05. Assign an individual responsible for turning lights on and off.
06. Keep the light off whenever any function area is vacant or unoccupied.
07. While Air-conditioning is on ensure that all doors and windows are properly closed.
08. During winter season try to use outside air for cooling.
09. Review lighting levels and prepare new standard lamping plans for meetings rooms to reduce unnecessary wastage of energy.

C. RESTAURANTS

01. Reschedule cleaning of are during day light hours.
02. Avoid using electrical light while setting the table whenever possible.
03. Turn off air-conditioning ½ hour prior to closing the restaurant.
04. Keep wall and ceiling properly cleaned for better light reflection.
05. Turn off lights when not needed.
06. Review lighting level to provide minimum acceptable lighting level in all food service area.

FRONT OFFICE AND LOBBY MANAGERS

01. Front office can play an important role in energy conservation. When occupancy is unfortunately not high, front office should rent room by virtue of their location. In summer, rooms on the east or north sides of the building will be cooler. Also, corner rooms with two outside exposures will be warmer. Rooms close to heat source should also be avoided if possible. This would certainly help reduce air conditioning load and result in saving of energy.
02. Front office should make sure that the rooms which are not to be rented out during lean period are not air conditioned or ventilated unnecessarily. If any one of these is to be rented out, air conditioning or ventilation can be started ½ hour before the guest moves in.
03. Lower all lighting levels during late night and day light hours. Turn off all lights in offices when these are closed.
04. If possible, instruct shopkeepers to reduce the amount of shop and display lighting. Although, in most cases, shopkeepers do pay for their electric consumption, the lighting load still affects hotels cooling systems.
05. Lobby, managers should ensure that Lobby Main Entrance doors are not unduly kept opened. A door opening will result in ingress of heat from outside and adversely effect air conditioning.
06. Lobby Managers, in course of their duty, do take rounds of the property. They on their rounds, should ensure that no unnecessary lights or water tape are left ON by careless staff.
07. During day light hours reduce electric lighting load in Lobby etc. to minimum to make full use of natural light.
08. During low occupancy period try to block complete floor. If this is not practicable, attempt should be made to block as far as possible total wings of individual floor.
09. As soon as guest checks out, Front office should inform Housekeeping so that all lights of the vacant room is switched off at the earliest.
10. Report broken windowpanes to stop ingress of air.
11. Inspect public toilets periodically and report leading W.C. and faucets top stop water unnecessary illumination.

HOUSE KEEPING DEAPRTMENT

The major space in a hotel is devoted to guest rooms and corridors. Number and variety of ways to conserve energy in these areas are startling. Although the energy conserved in one room or corridor does not seem significant, but when multiplied by 100 or so rooms, it does become significant. Some of the opportunities for Housekeeping Department where they can significantly contribute to energy saving listed below:-

01. Turn off guest room lights when rooms are not physically occupied.
02. Use minimum lighting when making up and cleaning rooms. Use natural light whenever possible.
03. Turn off corridor lights, or reduce it to 50% when natural light is available.
04. Turn off lights in linen rooms, storage room and maids closets when not in use.
05. Check your areas for light level. Reduce number of lights if possible. Use lower wattage bulbs wherever possible.
06. Have lamp shades cleaned at once. Bulb gives more light with clean lampshades.
07. Keep walls and ceiling walls cleaned for better light reflection.
08. Switch off music & TV Sets when rooms are not physically occupied.
09. Turn off HVAC system when rooms are not physically occupied.
10. Report water leaks immediately
11. Keep windows closed and curtain on. The ingress of hot air in summer and cold air during winter contribute to very large waste of energy. For example 6' wide window opened just one inch would allow hot air necessitating 1.76 kwh to cool. This in terms of monetary value, will cost approx. Rs. 1150/- per hour.
12. Keep room hot water temperature at lowest acceptable limit.
13. Minimize use of lights during night cleaning by switching on only those lights which are actually required to clean a particular area.
14. Bellhops may be advised to leave only such lights on which are actually needed by the guest while leaving the room.

LAUNDRY DEPARTMENT

One of the large consumers of water and heat, the hotel laundry is an outlet that can significantly reduce energy consumption with no effect on guest comfort or satisfaction. Some of the important points to achieve desired results are listed below:-

01. Have lights turned off when not in use.
02. Periodically clean lamps and lights fixtures.
03. Clean and wash walls, floors and ceiling
04. Operate washing machines at full load, partial loads may require same amount water as full loads.
05. Check and record your water consumption. Compare water consumption daily to find wastages, if any.
06. Do not leave water taps running.
07. Consider using cold water detergents. It will greatly reduce energy consumption.
08. Reduce hot water temperature to 120 ° F.
09. Repair or replace all hot water piping insulation.
10. All steam line valves should be checked for leaks. That is, you should be able to shut off steam to any machine not in use keeping steam supply main open.
11. If possible use final rinse water for 1st wash.
12. Reduce time between loads to prevent tumblers from cooling down.
13. Air line should be checked for leaks.
14. Periodically clean exhaust duct and blower of lint and dust.
15. Keep steam pressure at lowest possible level.
16. Shut off steam valve whenever machine is not being utilised.
17. Keep radiator coils and fins free from dirt all the times.
18. Ensure all steam traps in perfect working order.
19. Keep an eye on the preventive maintenance schedule of all laundry equipments by Engineering Department to ensure timely compliance.
20. Ensure that Drying tumblers and washing machines are kept clean and free from scale at all times.
21. Switch off laundry exhaust fans when laundry is closed.
22. Ensure that extractors are working properly. Incomplete extraction increased load on dryer and consumes more energy for drying.
23. Reschedule machine operation to reduce peak demand charges.
24. Inform boiler room when steam is not required so that boilers can be shut down to save fuel.

ENGINEERING DEPARTMENT

An analysis of Hotels show that approximately 60% of then energy consumed in a property is in the equipment and machinery rooms, boiler rooms, air conditioning rooms, water treatment and pump areas and sewage plants. Engineering Department is responsible for running and maintenance this equipment. They are also concerned with entire building and complex.

Keeping the above in view, it is imperative that the Engineering Department operates these equipments at peak efficiency. Engineering Department can help conserve energy in the following Ways:

01. By acting as an advisor to various departments to help them achieve their respective Energy Management goals.
02. By ensuring efficient and economic operation of all equipments.
03. They must maintain history card of each machine so that in-efficient and uneconomical machines can be identified and eliminated to save the wasteful uses of energy. This will also help in deciding the preventive maintenance schedule of each machine.

Some guidelines to achieve energy management goals at little or no cost are listed below:-

HVAC SYSTEMS – PLANT ROOM

01. Turn off HVAC machinery in all unoccupied spaces.
02. Eliminate or reduce duct air leakage.
03. While operating chillers ensure following:-
 - As far as possible keep leaving chilled water temperature on the higher side.
 - Reduce entering condenser water temperature
 - Maintain proper refrigerant charge.
 - Eliminate refrigerant and charge.
 - Maintain proper flow rate of condenser water
 - Operate chillers in proper sequence.
 - Operate condenser and cooler pumps in proper sequence.
04. Lower hot water temperature for heating when outside temperature rises.
05. When chiller is not operating, make certain that chilled and condenser water pumps are shut down.
06. Use proper water treatment to prevent fouling or scaling of condensers, cooling towers and piping.
07. Repair all hot, chilled and condenser water lines, valves and pumps. A considerable quantity of water is lost through leaky pump glands which can be saved easily.
08. Repair or replace damaged hot or chilled water line insulation.
09. Check cooling water tower bleed off periodically.
10. Check efficiency of chiller against manufacturer's specifications by checking water temperature and pressure drop in and out of chillers and condensers and motor amperage on compressor.
11. Condenser tubes should be kept clean.
12. Stop all refrigerant leaks.
13. Check daily purge operation on chiller for signs of air leaks
14. Remove algae growth from cooling towers.
15. Check all belt drives. Replace worn out or frayed belts.
16. Clean AHU coils and fans periodically, check chilled water sample to know the internal condition of coil. Do periodic cleaning of coil.
17. AHU filter must be cleaned periodically.
18. Check all thermostat for correct functioning.

BOILERS

01. Check Boilers Room for negative air pressure which can reduce combustion efficiency.
02. Avoid multiple boiler operation. One boiler operating at 80% is more efficient than two at 40%.
03. Operate boilers at as low steam pressure as possible.
04. Avoid excessive boiler blow down.
05. Clean burner nozzle periodically.
06. Pre-heat the fuel to correct temperature before injection.
07. Maintain a good water treatment programme.
08. Repair and replace if necessary boiler and flue insulation that is damaged.
09. Repair and replace all worn or damaged steam and condensate piping insulation.
10. Insulate all condensate and steam pipe line flanges.
11. Check and repair all steam traps.
12. Eliminate all steam leaks.
13. Check fuel lines for leaks.
14. Check combustion control in order to maintain maximum efficiency.
15. Check all safety valves for any leaks.

HEATING

01. Check and back wash water filtration plant for higher efficiency and reduction in water system scaling.
02. Check water analysis periodically.
03. Repair at once all leaks, dripping faucets and shower heads.
04. Check toilet flush valves for any water leaks.
05. Lower hot water temperature to 120°F.
06. Check and adjust swimming pool make up water (not to exceed 10%).
07. Shut down pool filtration plant when pool is not in use.
08. Reduce lawn and shrubbery watering to absolute minimum.
09. Check water regulating valves on water coolers, refrigerant units and ice machines.
10. Consider sprint loaded, self closing water valves in Kitchens.

BUILDING AND GROUNDS

01. Seal all exterior windows, doors cracks and openings to reduce outdoor air leaks.
02. Reduce gap under the doors of air conditioned spaces to minimum.
03. Check grounds for leaking pipes underground.
04. Check and repair all door closers.
05. Make certain all electric connections are tight.
06. Keep all 'contacts' clean.
07. Check Lighting levels in all Engineering spaces to see if they can be reduced.
08. Replace all incandescent fixtures with fluorescent and energy efficient lamps like PL-9 or SL-25 etc.
09. Keep all light shades clean. Use shades that allow more light to pass or reflect.
10. Do not switch on lights unless necessary.
11. Arrange schedules for turning or reducing lights in guest corridors, lobby area, function spaces, restaurants, bars, shops, kitchens etc.
12. Make a house inspection of all departments to see that energy conservation is being observed.