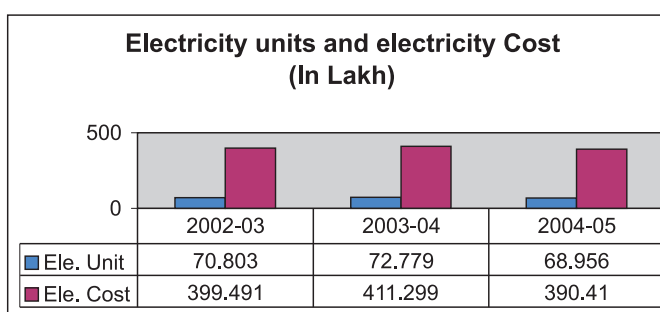
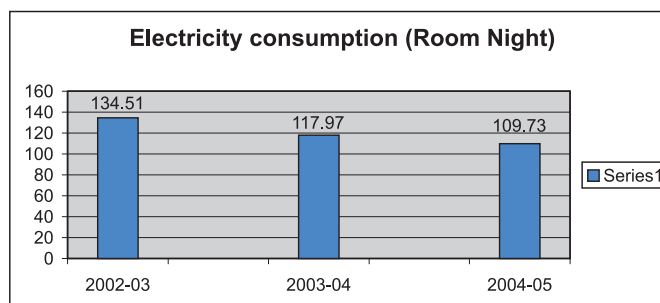


Energy Consumption

The connected load is approximately 2081.72 KVA; Energy consumption in Marriott WelcomHotel is shown in the fig. Below:



Energy Conservation Commitment, Policy & Set up

The Marriott WelcomHotel teams closely monitor the energy consumption (shift wise/day wise/month wise/year wise). The targets are decided by the corporate as below:

- Conservation of energy (Electricity) by 5% every year over the next three years.
- Reduction of fuel consumption by 5% every year over the next three years.
- Conservation of water by 5% every year for the next three years.
- Use of 100% Eco-friendly refrigerants.
- Working towards Zero Waste.
- Plantation of trees (450 trees per year for the next three years)
- Reduction of noise.
- Recharge ground water by rein water harvesting.
- Charcoal consumption reduction by using accurate size & good quality charcoal.
- EMS training to create awareness amongst employees.
- Maintain "0" accident statistics.
- Achieve more than 96% rating in forth coming audit.

Not only does the top management emphasize on achievement of highest level of energy efficiency but also provides the financial supports and best energy efficient equipments.

Regular training and monthly energy conservation meetings are done to help the hotel staff understands the terms related to energy consumption.

Energy Conservation Achievements

Implemented Measures: — **The following energy efficient measures have been implemented in the following areas:**

1. PC Based Energy Management System:

The building control automation system is a state of the art system that is microprocessor based system. One scalable system that pulls together all core building systems and integrates information from many different enterprise sub systems. With the Landis and Steffa (Siemens) building integrator, the building has the information needed to make critical decisions quickly- decisions that ultimately help us to conserve energy.



2. Energy Management Strategy For Chillers:

- a) **Load Reset:-** The chilled water flow control responds quickly to load changes by the microprocessor control panel, to maintain the chilled water temperature. The chilled water temperature may be reset from chilled water return temperature.



- b) **Chiller Sequencing:-** In the chiller sequencing the chilled water flow temperature is controlled by switching chillers ON /OFF. If the flow and temperature are below the specifications for the chillers, then the system first circulate the cooling load, checks the load and decides number of chillers to be on line.
- c) **Cooling Towers:-** The cooling tower's capacity to cool the water is limited by the ambient conditions, If the condenser water design temperature minus the approach temperature of the tower than the outside air temperature, then the cooling tower fans can be sequenced / VFD will vary the speed of C.T. Fans. Set point of the condenser water can be raised, quantity of water can by-passed to reduce the load on CT ,
- d) **VFD's:-** The VFD's are installed to reduce the energy consumption by the C.T. fans, it sense the temperature from the return water from the cooling tower and according to the condenser water the VFD's speed will vary.



3. Energy Management Strategy for Air Handling Units:

- a) **Duty Cycling:-** The duty cycling software program reduces energy consumption (Electrical and Mechanical) in the HVAC systems by switching fans ON/OFF periodically on a fixed time scheduler, however if space temperature exceeds the limits, duty cycling program is disabled.
- b) **Optimum Start/Stop:-** Air handling units are switched ON depending upon the outside air / inside air temperature and the capacity of the AHU to recover the space temperature to the middle of the comfort band before occupancy.

Chillers and Fan coil units optimization is also done during the low occupancy period OR lean Hours.

Optimum stop function is the opposite of optimum start function. It calculates the earliest possible point in time when the HVAC system can be stopped, ensuring that the minimum comfort condition has just been reached at the end of the occupancy period.

4. Energy Conservative Project Implemented:-

- a) VFD's for AHU's/ Fresh air fans/ Exhaust units, Cooling tower C.T. Fans, & Chilled water secondary pumps.

- b) Replacement of CFL tubes of External lights.
- c) Replacement of low capacity motors in place of high capacity motors.
- d) Solar road blinker at the staff entrance.
- e) Replacement of Tube lights with the energy saving tubes (Picostar-Osram) in the BOH/Basements/ Service Floor/Plant room etc.
- f) New steam Boiler (Thermax make) - Low fuel consumption.
- g) Increasing of the capacity of power capacitor bank (400 KVA- 725 KVA)
- h) Automatic taps in the Public toilets/staff lockers/staff cafeteria.
- i) Hot water spray for the LPG cylinders bank to enhance the LPG conservation.
- j) Use of anti scaling chemical in the Boiler feed water.
- k) Recycling of steam condensate water for the Boiler feed.
- l) Thermostatic steam control system for the hot water system.



5. Energy conservation Observations For Next Year Plan:

- a) **Auto Voltage Regulator** for constant voltage supply.
- b) More **VFD's** for AHU's/Fresh Air Fans/Exhaust Units for energy conservation.
- c) Replacement of Tube lights with the **energy saving tubes (Picostar-Osram)**.
- d) **CFL tubes** for the guest floor corridors for energy conservation.
- e) **Energy Audit** by the External agency.
- f) **Modification of Effluent Treatment Plant** with the energy saving pumps & motors.
- g) **Modification of Steam distribution system** as study carried out.
- h) **Area-wise Energy meters** for close monitoring.

6. Details on Energy Efficiency Improvement Projects/Measures:

Description of upgrades & approximate investment at Marriott WelcomHotel.

S.N.	Solution	Make	Description	Qty. (Nos.)	Value (In Lakh)
1.	Auto Voltage Regulator	ABB / Equivalent	To regulate / Increase the voltage	01 No	20.00
2.	VFD's	Schneider / Danfoss	Variable frequency Drives with panel suitable to drive	10 Nos	20.00
3.	Tube lights	Osram-Picostar	Energy efficient fluorescent tubes	600 Nos	5.00
4.	CFLs	Osram/GE	Energy efficient compact fluorescent lamps	480 Nos	4.00
5.	Energy Audit	UVK Rao (External Auditor)	For finding energy saving scope in the unit.	01 No	6.00
6.	Modification of ETP Plant	Prosyschem / Equivalent	Energy efficient equips. And process improvement.	01 No	3.50
7.	Energy Meters	Enercon / equivalent	For monitoring Area wise power consumption	10 Nos	80

Environment Health and Safety

ITC's mission is to sustain and enhance the wealth generating capacity of its portfolio of business in a progressively globalising environment. As one of the India's premier corporations employing a vast quantum of societal resources, ITC seeks to fulfill a larger role by enlarging its contribution to the society of which it is a part. The trusteeship role related to social and environmental resources, aligned to the pursuit of economic objectives, is the cornerstone of ITC's environment, Health and Safety philosophy. ITC's EHS philosophy recognizes the twin needs of conservation and creation of productive resources.

- Commitment of top management helps create greater awareness and under standing of environmental issues leading to improved corporate culture and industrial relations.
- Organization committed for identifying and meeting mandatory legal and other requirements and continued improvement.
- ISO-14001 provides a unique tool and framework to help address legal, commercial and other issues related to environment.
- Minimized occurrence of incidents / accidents and consequent liabilities.
- Emergency preparedness of the organization to face any eventuality.
- Improved overall efficiency by substantial reduction in operation costs, reduction and recycling of waste, conservation of material and natural resources.
- The organization is meeting its stated environmental policy, goals and objectives with out compromising on its standards.