

The Orchid Hotel Mumbai

Building Profile :-

The Orchid, a 245 room hotel is Asia's first 5 star ECOTEL (6 storied building). Located in Mumbai and owned by Kamat Hotels India Limited, the building foundation stone was laid by Mr.Vithal V. Kamat in the year 1997.

The total area of The Orchid Hotel is 24,490 sq.m, the air-conditioned area being 14,628 sq.m. The temperature maintained throughout the air-conditioned space is 22 deg. The actual working hours stretch upto 8766 hrs/ year. The connected load is approximately 2234 kW.

Energy Consumption

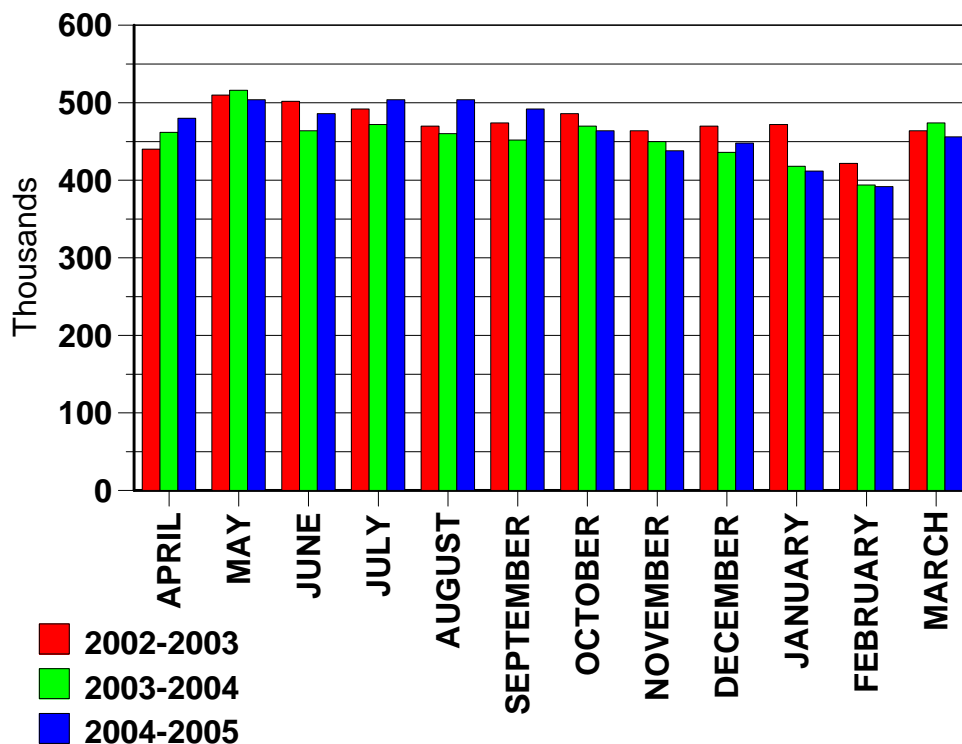
Figures of the Energy consumption at The Orchid Hotel have shown decline as seen in the fig. below

Energy Consumption at The Orchid Hotel:-

Energy Conservation Commitment, Policy & Setup :-

The Orchid Hotel team closely **monitors** the energy **consumption patterns** each month. Not only does the **top management** emphasize on achievement of the highest level of **energy efficiency** but it also provides secure **funding** to implement energy efficiency measures. Their timely approvals of the energy **conservation plans** help speedy implementation of measures to conserve energy. **Training & regular briefings** are done to help the plant personnel understand the terms related to energy consumption.

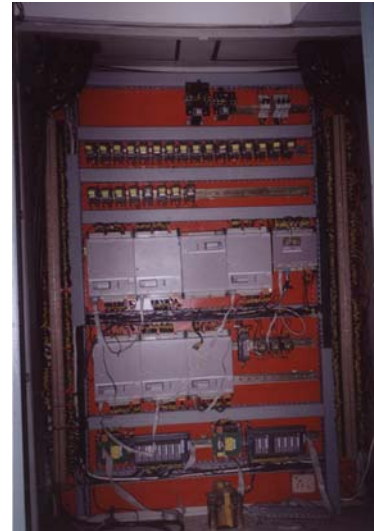
Energy Conservation Achievements



1. PC based Building Management System :-

The Building Management System for The Orchid is a PC based system. It combines the latest state of the art technology with user friendly interface for monitoring and controlling, exception reporting of various service. We can monitor, control and integrate the following service function under the purview of the building management system.

- A) Air Conditioning and Ventilation System.
- B) Early fire detection and warning system.
- C) Access control system.
- D) Energy monitoring and management system.



2. Energy management strategy for Chillers (AC Plant 350 TR) :-



At The Orchid ozone depletion levels have been reduced to 99.55% as we have used the more eco-friendly alternative i.e. R22 instead of CFC refrigerants. The **mono screw chillers** which have the least number of moving parts operates on a stepless efficiency range of 10% to 100%.

Attached to the air-conditioning system is the STL tank to store cold energy during off-peak hours. This stored energy is then used during the peak hours /periods reducing compressor overloading and cutting power consumption.

The heat generated from the air conditioners provides hot water to the guestrooms, laundry, toilets and kitchen.

4. Electronic Reduced Voltage by Soft Starter Cum Energy Saver for A/C Compressor

During the start, the motor acceleration is controlled by gradually increasing the motor current to a reference current ramp limit. In the energy saving mode the applied voltage is adjusted by sensing that the motor current is minimum.



Major Benefits



Electrical – to reduce starting current

Mechanical – to control starting acceleration

Economic – to save energy on partially loaded motors plus electronic motor protection without extra cost.

4. Mini Bars

The mini bars used in the guestrooms by us save upto 40% energy, as it is equipped with “fuzzy logic” which senses the load inside the refrigerator and cools it accordingly. Also an added advantage is that these mini bars are CFC free.

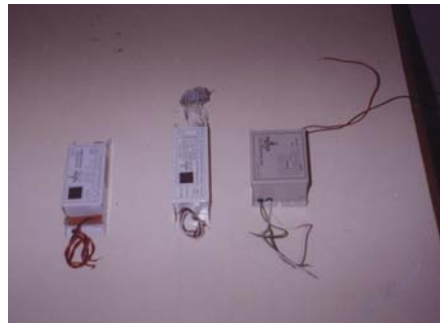
Lighting upgrades / modifications :-

Lights upgrades :-

- A. Electronic Dimmer: - Electronic Dimmer used for the lighting in the banquet halls, pre-function area, Restaurants, Entrance lobby. Lights can be dimmed by reducing the voltage by the custom built light control and remote control facility. Lot of energy saving (80 % saving in electricity)we achieved and also longer life of bulbs.



- B. Electronic choke for tube lights: - Instant flicker free starting and operation. High resistance to switching transient. Longer life of tube light. More saving of energy as compared to core wound choke use for tube light.



C. Compact Fluorescent Lamps: - Various types of CFL lamps used in our hotel and maximum 80% PL tubes used in Hotel.

5. Improving power Factor by Auto power factor control panel : This is a panel to maintain the standard value of power factor (0.85 to 0.99) there is a capacitor bank installed in such system to compensate the inductive losses. Here the system power factor is maintained at 0.99 min. And hence the system efficiency is increased as the inductive losses are compensated.

7. Solar panels on the terrace : This implementation will ensure that partial electrical load of the terrace lighting only can be fulfilled by these solar panels.



Details on the Energy Efficiency Improvement projects/Measures

Description of the Energy efficient equipment's / projects

Sl.No.	Solution	Make	Description	Qty Nos.	Investment Value Rs. Lakh.
1	Chillers	CIAT	350TR Water Cooled Screw Chillers with DeSuperheater.	2 Nos.	187.00
2	Soft Starters	Grompton Greaves	Soft starter use for the reduce the starting current and control the starting acceleration of the AC plant compressor start up. (800A = 2 Nos.)	2 Nos.	5.00
3	Cooling tower	Dupond	Upgraded the cooling towers. 150TR = 2Nos 250TR = 2Nos	4 Nos.	3.00
4	STL (Storage Thermal Latent) Tank	Kehms	STL tank for storing the cold energy of chilled water to use in peak load & any maintenance. (2 Nos. Tank 85000 Liters & 15000 Liters)	2 Nos.	10.00
5	Pumps	Kirlosker / Johnson & Johnson	Chiller Pumps 30HP = 3Nos. STL Pumps 10HP = 2Nos. Condensor Pumps 10HP = 2Nos. Condensor Pumps 50HP = 2Nos.	9 Nos.	6.00
6	VFD	ABB	Variable Frequency Drives with Panel suitable to drive the pumps of suitable capacity. (Hot water pumps , Domestic water pumps , Chilled water pumps)	7 Nos	7.50

7	Electronic Dimmer for lighting	Darbari	Lighting electronic dimmer used for the banquet halls , restaurant & lobby each of 20KW Total 6Nos.	6 Nos.	2.50
8	CFL lamps	Osram	Varies types of rated watts CFL lamps used (7W = 165Nos, 9W= 161Nos, 10W=1846Nos, 11W= 300Nos, 18W, = 161Nos., 23W= 37Nos.,)	2670 Nos.	10.09
9	Supply and Exhaust fans	Comefri s.p.a. / Kirloskar electric co.	Energy conservation by the various capacities of supply and exhaust fans use as double speed. And speed selection depend on the space temperature and the air quality.(Supply Fan 20HP = 2Nos , Exhaust Fans (7.5HP = 4Nos, 19KW=1No., 15HP = 2Nos.)	7 Nos.	1.50
10	Electronic Choke used for tube light	Pamba	Tube light core wound choke replaced with the electronic choke = 320Nos	320 Nos	0.95
11	Energy Meters	Enercon	For monitoring the electrical consumption.	30 Nos.	1.65
12	Building Management System	Voltas	Building Management System PC based for monitoring and controlling the HVAC system.	1 PC with 16 Nos. Panel	50.00
13	ECO - Button	Pamba	Energy saving through pressing the ECO - Button of guest rooms master control panel. By pressing ECO-Button , guest room AC temperature raise to 2 deg C. by intervals 2Hrs. (245 Rooms)	245 Nos.	42.00
14	Sewage Treatment Plant	Shreeram Engineering	All building waste water treated by STP. And Treated water use for cooling tower and gardening. (3 Lakh Liters per day)	1 No.	20.00
15	Solar Panel	TATA BP Solar	Solar panel use for the terrace lights only. (700 W)	1No.	3.70

Environment & Safety

By reducing the energy consumption a significant amount of reductions in CO2 have been attained. The Orchid Hotel prevents 4000 tons of CO2 equivalent emissions every month into the atmosphere. This endeavor helps in reducing of global warming; & contributes to both environment & economy. As an environmentally friendly hotel we follow the 3 R principle of Reduce, Reuse and Recycle. We follow various operations towards effective implementation of Solid Waste Management, Energy Efficiency and water conservation. We have also initiated various environment awareness programs at the community level. The Orchid also maintains traffic islands in many parts of the city.