

ITC Maurya



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Energy Efficiency Measures



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HVAC



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Upgradation of HVAC system

- Constant volume primary to primary/ variable secondary. Cost -70 Lacs
- Installation of efficient AC chillers. Cost - 190 Lacs
- Commissioning of ARI certified cooling towers
- Replacement of antiquated pumping devices with energy efficient pumps

Saving - 6 % saving in energy (**over LY**)



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Co-Generation



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- Installation & commissioning in process of 1100 KW gas engine generator.
- Flue gas would be utilized for steam generation.
- Expect 1000 KG/hr of steam generation @100% loading.
- This would result in 225 T of free Air-conditioning from our existing 300 TR Absorption plant.



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Steam Engineering



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- Maurya operates with two nos of 4T and 5T capacity of steam tube boilers.
- Requirement peak at steam is 2 Tons.
- Evaporation and efficiency losses are about 10%.
- Order concluded for replacement of these boilers to 02 nos of 2 ton, smoke tube type.
- Steam condensate will be recovered and collected in feed water tank
- Feed water make up proposed with controls.
- Expected reduction in PNG from 1700 SCM to 1400 SCM/day.



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Laundry Engineering



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- Laundry drying and calendaring is by steam .
- Proposed replacement of these with gas fired machines. Order in process.
- Expected reduction in PNG. By this is approx 150 SCM.



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Movement Sensors - Guest Room Bathrooms



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- Observation:- Guest leave bathroom lights continuously ON.
- Lighting wattage varies from 150watt to 300watt depending on category of rooms.
- Installation is in process of movement sensors (ultrasound and infrared technology).
- Expected saving 260 KWH per day.



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Heat Wheels



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- Room toilet exhaust are disposed off @ 22 degree C.
- Propose to use Heat Wheels and recover energy.
- Recovered energy would be used to pre cool TFA input air.
- Expected saving of Air-conditioning is 30TR.



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Electrical Motors



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- Efficiency of electrical motors are defined under EFF rating.
- We are in the process of replacing of exiting operating motors with super -E motors where drift losses are rated in line with wattage rating
- Saving anticipated approx 400 units/day.



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Renewable/unconventional Energy Usage

- Solar photovoltaic cells illuminating main signage, environment display boards

KW - 588 W

Cost - 4.5 Lacs

- Replacement of 50/12v mini halogens with 35/12v rating with no decrease in illumination levels.

Nos - 1050 nos.



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Rain Water Harvesting



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HISTORY

Rain water harvesting ITC Maurya implemented in March 2006

- Total Area - 28000 SQM
- Hydrogeology - Hard Rocky Area
- Average annual rain fall in Delhi - 611 mm



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DESIGN

Nomenclature

- SQM - Square Meter
- CM - Cubic Meter
- mm - Millimeter
- M - Meter
- L - Liter
- KL - Kilo Liter



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Design Assumption

- Peak Hourly Discharge - 90mm(25 yrs frequency)
- Run off coefficient for roof top - 0.85
- Run off coefficient for paved area - 0.70
- Run off coefficient for unpaved area - 0.20
- Formula applied - Area (SQM) X Avg. rainfall X Run coefficient

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S No	Types of Catchments	Catchments Area (SQM)	Potential (CM)
1	Roof Top	2680	1392
2	Paved Area & Roads	19320	8268
3	Unpaved	6000	733.2

Total= 10393.21 CM



- Rain water harvesting chambers - 07 Nos
- Rain water recharge structures - 09 Nos
- Rain water recharge depth - 30m

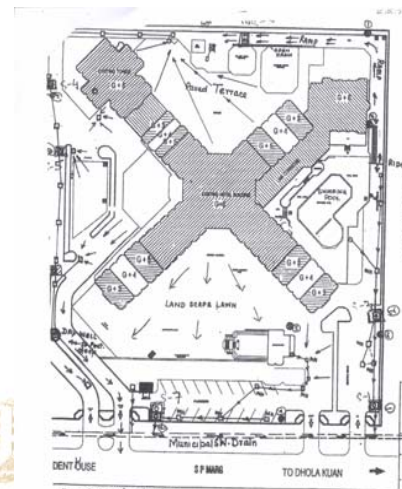
Water Table @ our Bore wells before and after

	Before	25 Aug'07
BW 1	37m	17m
BW 2	30m	14m
BW 3	30m	18m
BW 4	25m	19m
BW 5	30m	18m
BW 6	40m	12m
BW 7	36m	11m

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Site plan Hotel for Rain Water Harvesting



Thank You



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