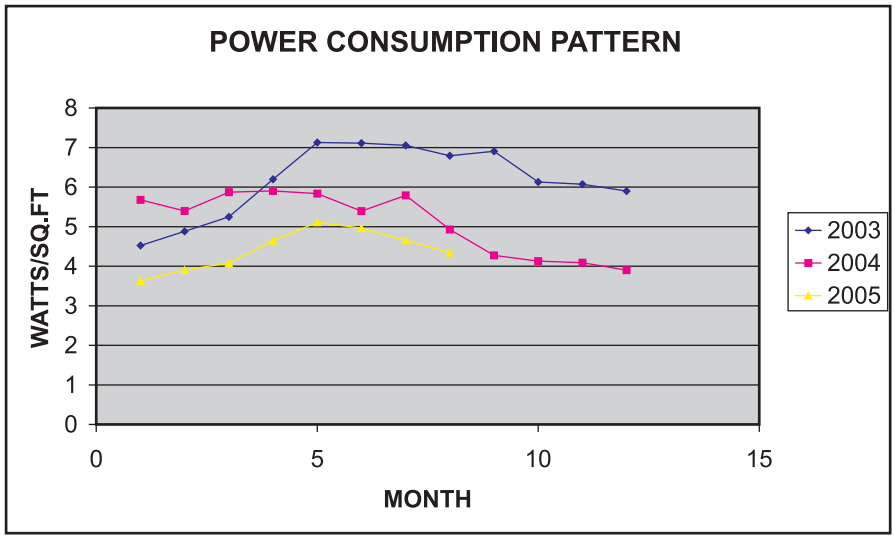
Power Consumption Pattern (Watts/SQFT)

Year	Jan	Fab	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	MAX	MIN	%REDUCTION
	1	2	3	4	5	6	7	8	9	10	11	12			
2003	4.52	4.88	5.25	6.20	7.13	7.11	7.06	6.79	6.91	6.13	6.07	5.90	7.13	4.52	
2004	5.68	5.39	5.87	5.90	5.83	5.40	5.79	4.93	4.27	4.13	4.09	3.90	5.90	3.90	17.20
2005	3.63	3.91	4.08	4.64	5.11	4.96	4.65	4.34					5.11	3.63	15.45



Energy conservation achievements

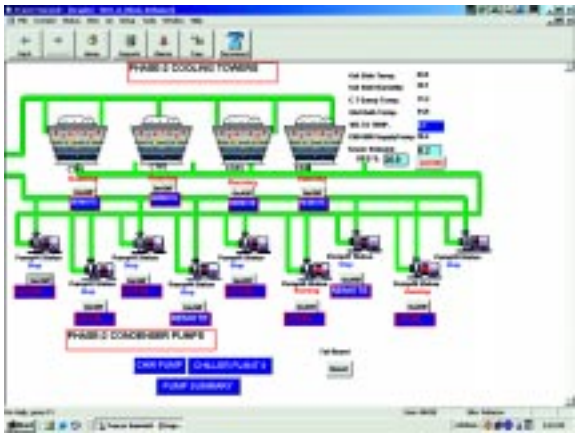
Solar water heaters to generate 24000 liters of hot water to cater the hot water requirement of the Food courts which serve multi cuisine for 15000 people. It has saved the power to the tune of 697 KWH daily. No electricity is used for warm water supply for food courts.

- Infra Red scanner installed for main street lighting on/off, which has reduced manual error of lighting stoppage.

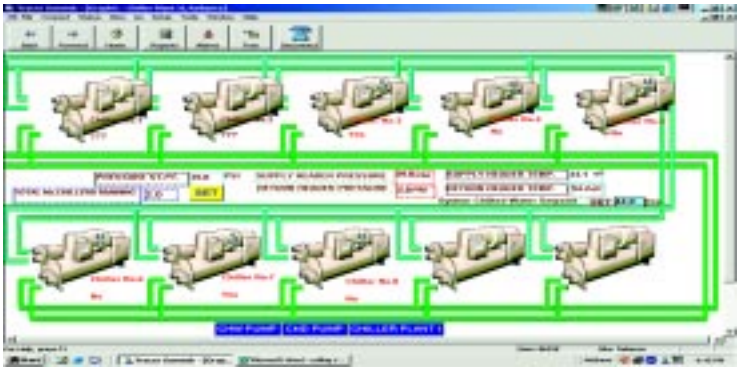
- Rainwater collected from the roof of the chiller house and main electric substation is diverted to the cooling tower basin. With this simple measure, the make up water needs of the Cooling tower are met and resulted in a saving of nearly 7200 M^3 of water per year and associated pumping cost.

- Variable set point instead of fixed set point for supply air, set from a centrally located BMS workstation. This has resulted in substantial saving of AHU fan power consumption and reduced the refrigeration load on chillers.

- VFDs installed for Cooling tower fan. Using the BMS control for decision on best possible approach. BMS checks the ambient WBT, cooling tower outlet temperature and load which controls the speed of CT fan. With this always best possible water temperature is achieved without wasting fan power.



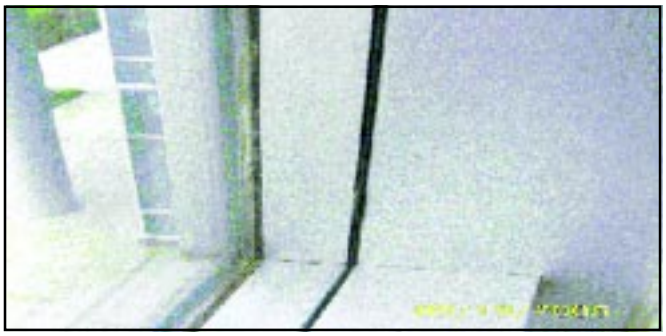
- Advance chiller operation based on chilled water return header and supply header temperature.



- Sun Visors provided on High Rise Buildings to avoid Radiation.

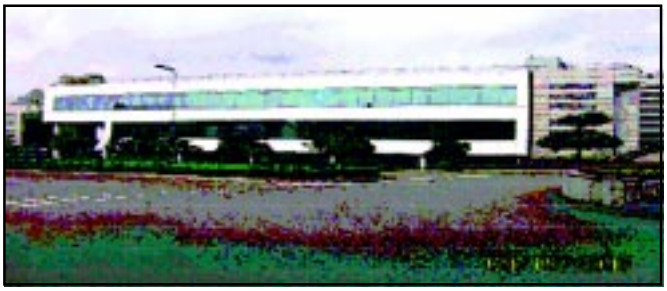
- Venetian translucent rolls provided on all windows. The photograph shows effect of one glass panel with fully closed roll & half open roll.

- Double glass Panels provided for NNOC, PHQ, NHQ, G, and H & I Blocks.



- Dry cladding is provided on concrete facing Sun.

- Sun film on single glass panel.



Energy Conservation Achievements

- Drip and irrigation pump spray head optimized and the old pump is replaced with new low head pump.
- Condenser pump and chilled water primary pump were operating with high head compared to head required at site and hence impellers were trimmed to save power.
- Ozone generator installed in AHU of the food courts to reduce the food smell, this has resulted in lesser fresh air intake.

- Change of VFD in AHU as per actual demand.
- Natural light utilized for food courts. No artificial illumination during day time.
- Maintaining unity power factor to reduce T&D losses.
- Automated lighting ON/OFF switches for offices.
- Replacement of 40 W tube lights by 36 W.
- Replacement of ferromagnetic ballast by electronic chokes

Details of the some of the Projects implemented are as under:

1.Energy Conservation in rain water harvesting

The rainwater collected from the roof of the chiller house and main electric substation is diverted to the cooling tower basin. With this simple measure with minimum investment, the make up water needs of the Cooling tower are met and resulted in a saving of nearly 7200 m3 of water per year and associated pumping cost. During Monsoon seasons the entire make water of the Cooling tower is met from this.

Area of Chiller House roof & Sub Station Roof

= (33 x 35) + (57 x 37) = 3264 M^2

Considering 2.2 M rainfall every year, building gets

= 3264 x 2.2
= 7180 M^3

say 7200 M^3 per Annum Approx.

Cost of MIDC water saved
= 7200 M^3 x 20 Rs
= Rs. 144000/- per Annum.
Investment cost
= Rs. 125000/- Approx.

Therefore pay back is of 11 months only

2. Replacement of gardening water pump

Installed Garden pumps were having capacity of 130 M3 / Hr at 60 M head. After assessing it was found that building is having requirement of 105 M3/ Hr at 45 M head. Present pumps were checked for trimming option from characteristic curve but even at minimum diameter required parameters were not getting. Therefore management decided to get new pump with energy efficient motor. This resulted in saving of 1.23 lakhs per year & pay back was only 10 months.

3. Impeller trimming for condenser and primary chilled water pump

The condenser pump and chilled water primary pump were operating with high head compared to head required at site. This was compared with characteristic curve and impellers were trimmed to get required parameters & save power.

a. Condenser pump.

Data from characteristic curve from Mather & Platt for Pump model 200/300 BST.

Original Dia of Impeller	= 335 mm
Trimmed Dia of impeller	= 315 mm
Saving per pump	= 12 Kw
No of pumps working	= 2.5 per day
Hence, saving	= 12 x 2.5 x 3.7 Rs. x 24 Hrs x 365 days
	= Rs. 972360/-
Total investment cost	= Rs. 3000 x 4 pumps
	= Rs 12000/-

Pay back is less than one week.

b. Primary Chilled water Pump

Data from characteristic curve from Mather & Platt for Pump model 8/8 ALE.

Original Dia of Impeller	= 305 mm
Trimmed Dia of impeller	= 267 mm
Saving per pump	= 11 Kw
No of pumps working	= 2.5 per day
Hence saving	= 11 x 2.5 x 3.7 Rs. x 24 Hrs x 365 days
	= Rs. 891330/-
Total investment cost	= Rs. 3000 x 4 pumps
	= Rs 12000/-

Pay back is less than one week.

4. Unity Power factor maintenance

Building was wheeling power from Patalganga plant till Oct 2004 as surplus self-generation capacity was available in the group. System power factor was around 0.91 at that time capacitor banks were not operated. PF incentive was not available. Due to Naptha price hike, wheeling was stopped in Oct'2004. As the PF incentive is available from the supply company, management switched on all the capacitor banks and installed capacitors wherever needed. Unity PF is maintained at the site always. 7% discount on energy cost was achieved as per MSEB tariff rates. Further , building has approx 5% T & D losses in all over power/distribution, plus cabling & internal distribution, which was brought down to 4% by PF improvement.

Saving Energy saved	= 60000 KWH /month
Yearly saving	= 7.2 lakhs units per annum.
	= Rs. 27 lakhs.
Total investment	= Rs. 6 lakhs.

Pay back is less than one week.

5.Replacement of Tube lights Policy

Total 20000 tube lights have been used at the complex. The management adopted a maintenance strategy of replacing these tube lights by 36 W. Originally filament was of 40 W ratings.

Annual savings = Rs. 3.7 lakhs.

6. Replacement of Magnetic ballasts with Electronic ballast

For most of the tube lights, magnetic ballast were used. As maintenance practice & energy conservation measures, these are getting replaced by electronic ballasts. In the year 2004, management replaced 500 Nos. ballasts on these tube lights and saved 4 kW of worth Rs.0.8 lakhs with a pay back period of 5 years.

Energy Conservation Plans

- Introduction of differential winding on the parallel transformer to reduce harmonics due to electronic load.
- Switching of light automatically by BMS with time delay after switching of the AHU in office area.

Energy conservation commitment

The management is committed to reduce power and water consumption continually which shall reduce the impact on environment. The substantial reduction to the level of 40% from the starting consumption has dramatically reduced the CO_2 load of about 150 000 kg annually.

Energy Management Policy

Reliance Infocom is committed to Green Environment and shall try all possible means to conserve energy and utilize maximum resources to its optimum level without sacrificing the comfort and productivity of customers.