

**Ranbaxy Laboratories Limited  
Toansa**

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**Unit Profile**

Ranbaxy Laboratories Limited, Toansa is Located in North India in an Industrial belt of Punjab, about 50 Km away from Chandigarh and 12 Km from Ropar. The plant was built in 1985 and underwent expansion progressively over the years. Toansa manufacturing facility is dedicated to manufacture of API's (Active Pharmaceutical Ingredients) only. It is a Multi-product manufacturing site involving more than 46 products. These products are manufactured in campaigns through multi-step organic syntheses using batch processes. The products are a mix of high volume, low value and low volume, high value products. Increasingly the shift is towards low volume highly potent products from bulk commodities. Our products cover several therapeutic segments, viz., antibiotics, antiallergics, anti bacterials, cardiovascular, antihypertensives, antidepressants, antiulcerants etc.

The site has modern state-of-the-art plants facilitating minimal manual intervention and consistent reproduction of processes, on an ongoing basis, and these are built to world standards. The site has approval of regulatory agencies from US-FDA, MHRA-UK, TGA-Australia, WHO and service International Regulated markets mainly the US and Europe, besides others.

The site is self sufficient in providing the engineering services required by the end users.

**Energy Consumption**

Year	Elect. Consumption (Lakh kWh)	Thermal (Fuel) Consumption (M KCal)	Total Energy Cost (Rs Lakhs)
2002	215.87	18.53	992.98
2003	211.56	27.85	1108.80
2004	293.36	39.19	1710.18

### **Energy Conservation Commitment, Policy and Organizational Set up**

As a responsible corporate citizen, Ranbaxy is committed to design, construct and operate all its facilities, in a manner that results in conservation of all natural and man-made resources, including energy by efficient usage.

It is our consistent endeavor to acquire newer learning from technological advancements and employ them in our energy conservation efforts and improving skills and knowledge of our employees, thereby maintaining sustainable development.

We have a well-defined "Energy Management Policy" which clearly lays down the guidelines to be followed in order to conserve energy. A copy of this policy is enclosed herewith.

The EC Cell constitutes an Energy Manager (General Manager, Engineering Services), a senior Manager with line Supervisors and is responsible for maintaining monthly reports of Energy Consumptions, Savings & New initiatives. Any Energy Savings proposal is considered on priority for implementation, even if unbudgeted, if it has a good business case. However proposals involving major investments are budgeted at the beginning of the year. The EC Cell is responsible to organize awareness camps, Training and involving the People. It is also responsible to monitor the following of the systems as per the Policies.

### **Major Energy Conservation Projects Implemented during 2004**

#### **1. Optimization of Steam Working Pressure**

In our unit boilers of capacity 12 TPH & 5TPH supply steam to all the production units through PRV's. Previously we were generating steam at a pressure of 9.5 Kg/cm<sup>2</sup> and reducing it down to 3.0-3.5 Kg/cm<sup>2</sup> before supplying in to LP lines. It was observed that large amount of steam supplied to different production modules was lost from Traps. A useful amount of steam from the Thermodynamic traps in the form of Flash was released through vents into the atmosphere. i.e., nearly 15% of Flash steam was unutilized, since plant is at stretch of 1000 meters in length To curb above wastage, we have replaced all the Thermodynamic traps with Float Traps designed for steam pressure up to 7 Kg/cm<sup>2</sup>. We tuned our Boiler to operate at 7Kg/cm<sup>2</sup> resulting in the following savings:

FO requirement for 9.5 Kg/cm<sup>2</sup> steam  
Generation @ 6.5 TPH = 520 liters  
FO requirement for 7.0 Kg/cm<sup>2</sup> Steam  
Generation@ 6.5 TPH = 479 liters  
Saving of FO due to the changing in Operating  
Pressure = 41 liters  
Saving of Steam per hours = 512 Kg  
Saving of FO per annum = 450 liters



Savings due to change of Operating pressure = Rs. 49 Lakhs

#### **2. Removal of Chilled water primary pumps in the Chilled water system**

The Chillers in our chilled water system were designed with Primary and Secondary circuits by the vendor, by looking at our Plant layout and Heads. We have removed the Primary Pumps, used to pump the water into the cold well through the chiller, and started circulating secondary pump which designed for circulating the Plants, enrooted through the chillers and removed Cold

and Hot well system. Through maintenance of One Storage well and one pump circulation for the both Chiller and Plants, following savings were achieved.

Isolation of 8 Primary pumps from the circuit = 94 KW  
Total Energy saved per annum = 7,90,000 KWH  
Total Saving per annum = Rs. 30,02,000.00  
Total Investment = Nil



### 3. Optimization of Cooling Tower flow rate with one transfer pump, instead of earlier two.

The cooling tower operating with 800cum/hr flow rate was designed to operate with two different pumps of flow rates 400 cum/hr and 350 cum/hr respectively and heads 50 meter 25 meter respectively, with prime mover of 100 & 125 HP. We replaced these two pumps with one pump providing flow rate 800 cum/hr at 125 HP.

### 4. Cooling tower Exhaust Fans 4 Nos are kept in auto mode w.r.t wet Bulb temperatures

We have cooling towers of capacity 2220 Cum/hr and 1600 cum/hr. These Cooling towers are

Saving due to switch over to one pump =50 Kwh  
Total Units saving per annum = 420000 Kwh  
Total Saving in = Rs. 15,96,000.00



operating with huge exhaust fans driven by 22 KW motors. We have provided the cooling tower exhaust fans with Auto Temperature controller. The controller has been set with cut-off and start-in which can adjust according our working parameters, which in effect puts all the Exhaust fans in Auto Mode due to which huge saving achieved which are summarized below:

The saving due to the Auto Mode Controller = 120 Kwh/day  
Total Saving per annum = 420000kwh  
Total Saving = Rs. 1,59,600.00  
Investment = Nil



### 5. Replacement of NFLP Motor with high Efficiency Motors

The Screw compressor were being operated with ordinary & low efficiency motors having 85% efficiency and are being replace with high efficiency motors of 95% efficiency of 110 KW motor

Units saved by change of motors = 65000 KWH  
 The total saving from the project = Rs. 2,47,000.00  
 The investment done is Nil



#### 6. High TDS RO System to reduce Load on thermal Evaporator

We have the RO System to reduce the Effluent TDS which gives 7 cum/hr reject. This rejected water is taken to Thermal evaporation. This Thermal evaporator operated at full load costs Rs. 230/m<sup>3</sup> of operation. We have introduced another set of RO membrane to treat the Reject. Due to which the rejection reduced further to 3 cum/hr.

The saving in treating 7 cum/hr was reduced to 3 Cum/hr = Rs. 70 cum/day

The saving in avoiding the thermal evaporation = Rs. 16,100.00

Total saving per annum = Rs. 56,35,000

Total Investment = Rs. 13,00,000.00

Pay Back Period = 13 months



#### 7. RO Water system to reduce TDS to 50PPM for DI Water Plant Feed water to reduce regeneration frequency and Boiler Blow down

Earlier we were using the raw water from bore wells and Softened water for the DI and Boiler Feed water. For Each Generation we were able to produce 120 cum/generation and re-generation had to be done daily since usage of DI water was nearly 110 Cum/day. Similarly the Boiler was supplied with Softened Water and the Blow down was around 12% on the total generation of steam. By introduction of the RO Water Unit, frequency of Regeneration is increased to one week and Boiler Blow down reduced from 12 to 1%.

The Saving of Water used for regeneration = 571 KL/month

Total saving of water per annum = 6860 KL

The Regeneration cost for annum Rs. 13,03,400

Total saving from reduction of Blow down = Rs. 6,00,000



Total Saving	=	Rs. 19,03,400
Total Investment	=	Rs. 15,00,000
Pay back	=	14 months

**Other Energy Saving Projects Implemented during 2004:**

S. No.	Title of the Project
1	Stoppage of chilled water booster pump by diverting flow from other circuit
2	Treated RO water for cooling tower make-up
3	Compressed air leakages to be arrested to the equivalent of 6 MM orifice diameter
4	Captive Nitrogen leakages to be arrested to the equivalent of 3.2 MM orifice diameter
5	Twenty five percent reduction of chilled water makeup from the existing 1170 KL /Month
6	Twenty five percent reduction of HBR (Calcium Chloride) make-up from the existing 18 MT/ Month
7	Reduction of furnace oil consumption to the extent of 100 KL by optimizing/ reducing work pressure
8	Providing Orifice plates (15-20 MM) in place of 25 MM direct purging system of 45 Nos hot water tanks to reduce steam consumption
9	Provision of De-super heater on HBR refrigeration compressor to produce 125000 LPD with 20 o C, also leads to reduction in power load on compressor
10	55 Nos manual taps have been replaced by push type valves to avoid any wastage of water
11	VFD has been provided for 40 HP AHU of 30000 CFM capacity in product centrifuge area

### **Energy Conservation Plans and Targets**

Energy Conservation Measures (Planned)	Anticipated savings		Approx. investment (Rs. Lakhs)	Project Commencement & Completion year
	Energy Value	Rs. Lakhs		
	(specify units)			
Separation of high Pressure head pumps	1,45,000	5.8	2.50	Feb'2006
Installation of Intermediate controller	78,300	3.13	2.50	Mar'2006
Installation Thermo compressor in Recovery units	86400lts of FO	14.68	3.50	Feb'2006
Usage of FO in the Incinerator instead of Diesel		19.2	6.00	Feb'2006

Auto Control Arrangement of Chillers & Brine Compressors	120,000	4.80	2.50	Feb'2006
VFD installation for the Cooling tower pumps	360,000	14.4	8.00	Feb'2006
Installation of 730cfm Air compressor by stopping individual compressors	432,000	17.28	8.00	Feb'2006
Installation of 300TR Trane compressor	480,000	19.2	10.00	Feb'2006
V-Belt conversion into Flat Belt	90000,	3.6	2.00	Mar'2006