

INDIAN RAYON AND INDUSTRIES LIMITED
Caustic Soda Division, Veraval (Gujarat)

Unit Profile

The Indian Rayon and Industries Limited, Rayon division has installed a Caustic Soda Plant, which was commissioned in 1997. The technology & principal items are supplied by M/S Krupp UHDE of Germany & Basics & detailed engineering is done by M/S UHDE India Ltd. Mumbai. In the Process Caustic Soda Lye, Chlorine Gas, Hydrogen gas are simultaneously produced from UHDE Bipolar Membrane Cell. The Products produced are of high quality, since the process demands very high quality of Raw Materials for membrane cell Technology. Caustic soda Lye produced is of 32% concentration. Chlorine and Hydrogen gas from cells are further purified in respective sections. The main Product is Caustic Soda Lye 100.00 TPD. Chlorine Gas 88.60 TPD, Hydrogen 29400 nm³ TPD are by products. The Hydrochloric acid is produced with chlorine gas and Hydrogen gas. The capacity of HCl is 90.0 TPD on 32% . 30% of Caustic Soda is for self-consumption and remaining is for sales. A 50 TPD Flaking Plant is purchased from M/S Bertrams of Switzerland.

Energy Consumption

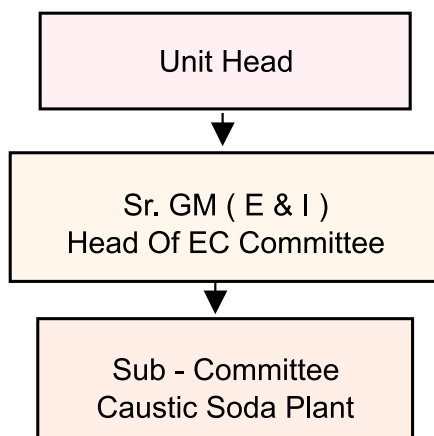
Total energy consumption as electrical energy & thermal energy for last years are shown in the table below, Which depicts continual reduction in energy consumption over the years due to our sustained efforts to conserve it with the implementation of various energy conservation measures & ideas to increase efficiency of equipments.

DESCRIPTION	UNIT	2001-02	2002-03	2003-04
Electrical Energy	KWH/T	2401	2319	2344*
Thermal Energy	M Kcl/T	0.6	0.5576	0.4816
Total Manufacturing Cost	Rs.lakhs	3488.38	4598.49	5188
Total Energy Bill	Rs. Lakhs	2009.4	3005.54	3601
Energy as %age of	%	57.6	65.36*	65.98*

* Energy consumption was increased as plant operated at higher current density.

Energy Conservation Commitment, Policy and Set up

Caustic Soda Plant started in 1997 and right from the beginning the unit has been involved in continuous improvement & energy conservation. EC committee headed by Sr. GM (E&I) constitutes 11 nos. of subcommittees in the IRIL. Subcommittee consists 2 to 4 members from different areas. All the teams meet periodically for review & implementation of new identified energy saving schemes. In our plant 60 % cost of production consumed in terms of power and unit gives utmost importance to energy conservation



Energy Conservation Achievements

During the period 2001– 2004, 100 nos. of energy saving & improvement ideas were generated, out of which 32 ideas are for energy saving and through this the unit achieved Rs. 241.09 Lakhs with an investment of Rs. 440.15 Lakhs with different pay back periods . With this energy conservation we have achieved 2.17 % reduction in electrical energy and 19.73 % reduction in thermal energy during last three years as shown in the table below :

Year	Product	kWh/Tonne	% reduction over 2001-2002	*MKCal/Tonne	% Reduction over 2001-2002
2001-2002	Caustic Soda	2398	-	0.6	-
2002-2003	Caustic Soda	2319	5.42	0.5576	5.8
2003-2004	Caustic Soda	2346	2.17	0.4816	19.73

Following are the Energy conservation measures Implemented during 2003 – 2004

1. Energy saving by installing Vapour Absorption System in place of Freon Refrigeration system for chilled water.
2. Energy saving by installing 105 TPD Cl₂ compressor in place of 55 TPD Cl₂ Compressor
3. Energy Saving By Changing of Cooling Tower mist Eliminator for 3 Shell
4. Energy saving by installing Lighting Transformer for plant & ADM lighting.
5. Energy Saving By Changing Conventional Lighting System To CFL Lighting System
6. Energy Saving By Changing Conventional Lighting System To High Efficient Lighting System.
7. Energy Saving By Changing 250 watt HPSV Lighting System To 70 watt HPSV Lighting System.
8. Energy saving by installing Auto star-delta Current controller on Salt unloading conveyor
9. Energy saving by installing Auto star-delta Current controller on Hydrogen Compressor 41 K01-B
10. Energy Saving By providing 2 Nos separate Timers in Plant Lighting System
11. Saving of Thermal energy (steam) by operating the plant at greater than 115 TPD

Energy Conservation Targets for the year 2004 – 2005

1. Segregation of high and low head water requirement for cooling water distribution]
2. Energy saving by Changing conventional lighting system to High efficient lighting System
3. Energy saving by Changing 250 Watt HPSV lighting fixtures to 45 Watt CFL fixtures
4. Energy saving by conventional indication fixtures to LED type energy Efficient Fixtures
5. Modification of Rectifier cooling System outlet .To be connected directly in cooling water return line instead of Rectifier water sump.
6. Thermal Energy Saving (Steam) by Operating the Plant @ 130 MT / Day.