

20. (i) UNIT PROFILE

The Travancore - Cochin Chemicals Ltd, popularly known as TCC is a public sector unit, under government of Kerala and is one of the oldest Chlor-alkali plants in India. The plant is situated in the Udyogamandal industrial belt, which is about 12 kilometres north of Kochi. The company was originally established by M/S Sheshasayee Brothers Travancore Limited, in the year 1950 and started commercial production in 1954, with a capacity of 20 TPD caustic soda, to qualify as first ever unit in



India to produce rayon grade caustic soda, using Mercury process. Presently TCC is Having annual Installed capacity of 57750 MT (175 TPD) of Caustic soda, all through State of the art and environment friendly Membrane cell Process, and market products all over India.

Travancore Cochin Chemicals have integrated manufacturing facilities for:

- Caustic Soda Lye and value added products like;
- Caustic Soda Flakes
- Liquid Chlorine
- Hydrochloric acid
- Sodium hypochlorite.

The Electrolyser Plant Technology is provided by Asahi Glass Co. Japan, and UHDE India Ltd. TCC's capacity utilization was about 103.54% in the year 2006-2007 and 73.24% in the year 2007-2008 The lower capacity utilization due to a major equipment breakdown(rectifier) in the year 2007-2008.

TCC contributes about 2.5% of the total Caustic Soda Production capacity in India and the annual sales revenue is about Rs 1250 Million.

TCC in its pursuit for excellence takes;

- ❖ Utmost level of conservation of all resources including energy
- ❖ Cost effectiveness in all our operations. Regular up-gradation of technologies used in processing.
- ❖ Compliance with laws and statutory regulations.

(ii). ENERGY CONSUMPTION

ELECTRICAL SYSTEM PARAMETERS	
Power supply from	: KSEB
Category	: EHT-2
Supply Voltage	: 110 KV
Present Contract Demand	: 24000KVA
Normal Demand	: 19540 KVA
Peak Demand	: 19467 KVA
Off Peak Demand	: 24655 KVA

Connected Load	:	20558 kW
Average Power Factor	:	0.99
Average monthly Electrical energy consumption	:	124 lakh kwh/month
Average Monthly Bill	:	Rs 430 lakh/month
Average unit rate of KSEB	:	Rs 3.46/kwh

a. ELECTRICAL ENERGY

Electrical Energy is the single largest cost component in the production of a Chlor-alkali plant. The company currently has a power demand of about 20MVA

The Annual total Electricity consumption during 2007-2008 was 1153.84 lakh kWh compared to 1507.02 lakh kWh during 2006-2007. The annual Electricity cost during the above period amounted to Rs.4112.23 lakh and Rs. 5199.65 lakh respectively.

b. FUEL

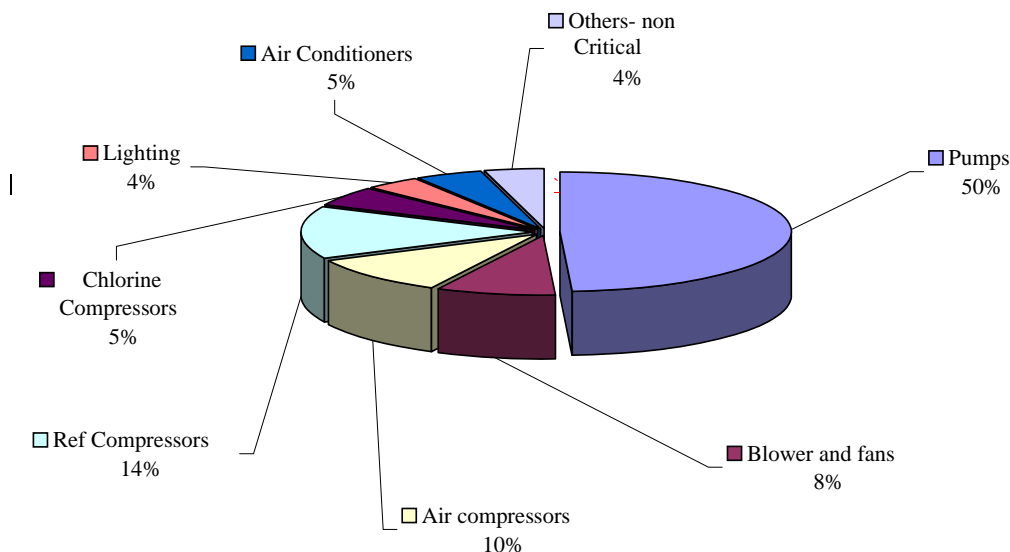
Presently company is making use of Furnace oil in the boiler and Furnace oil and hydrogen in the CCF Plant. The total requirement of Furnace oil for 2007-2008 was 3333.5 kL per annum , compared to 4564.16 kL during 2006-2007. The annual fuel cost during the above period amounted to Rs. 664.36 lakh and Rs. 743.46 lakh respectively.

Total Energy cost per annum for the year 2007-2008 was Rs.4776.59 lakhs compared to Rs. 5943.11 lakhs during 2006-2007.

c. AUXILIARY ENERGY CONSUMPTION

The annual auxiliary consumption is about 150 lakh kwh/yr. The auxiliary loads consists of Pumps, blowers and fans, Air compressors, Refrigeration compressors, chlorine compressors and lighting. The percentage contribution of auxiliary loads is given in the chart below.

**Percentage Contribution of Auxiliary Loads
– Total 1750 KW**

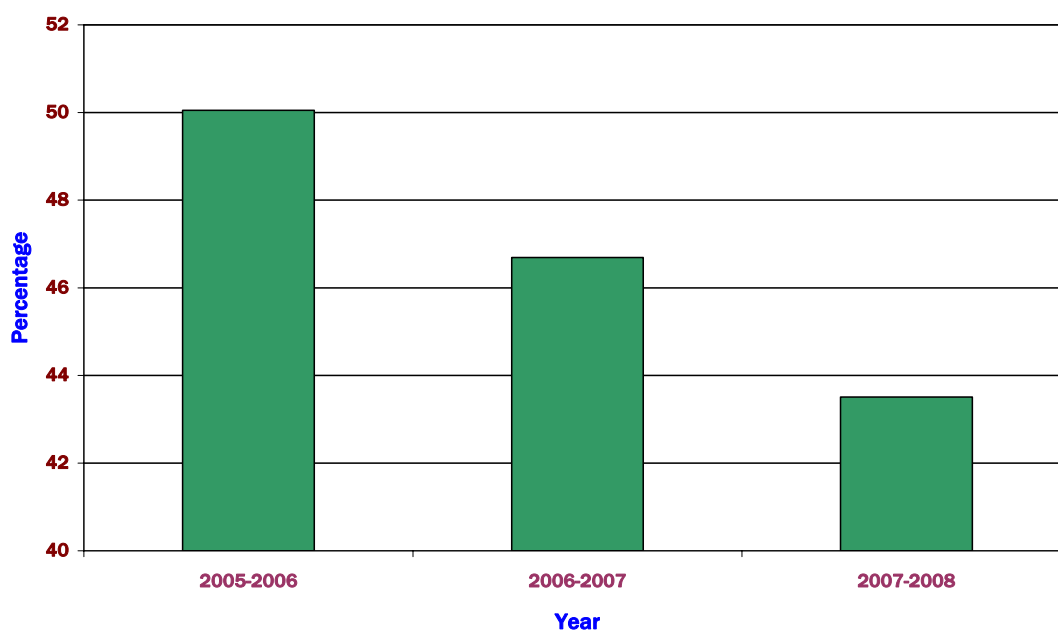


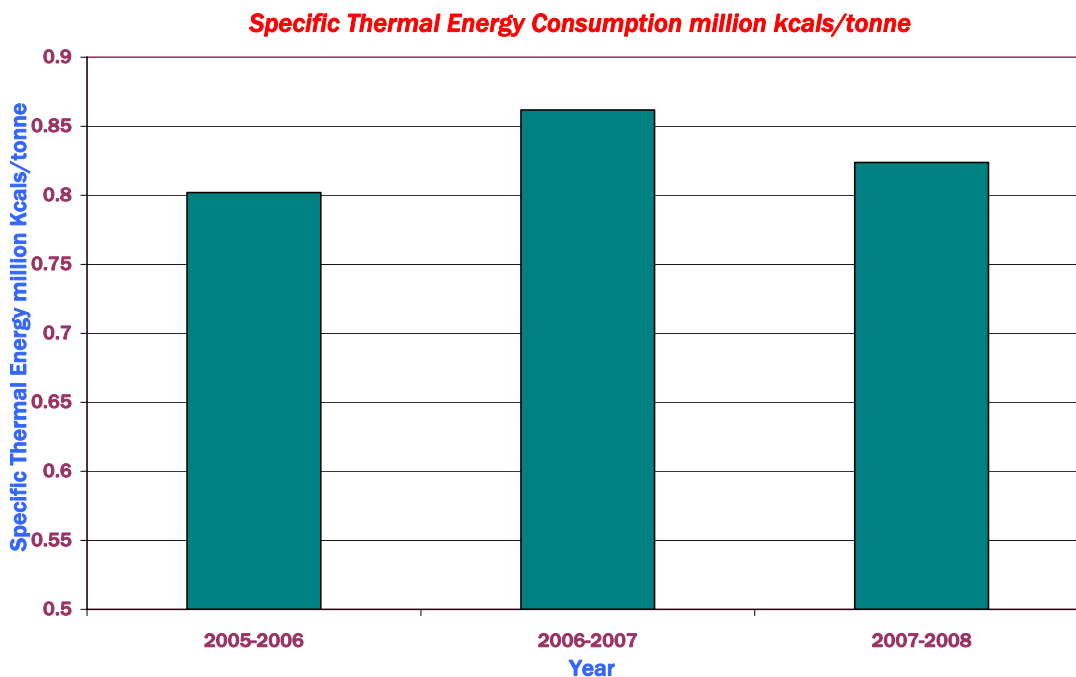
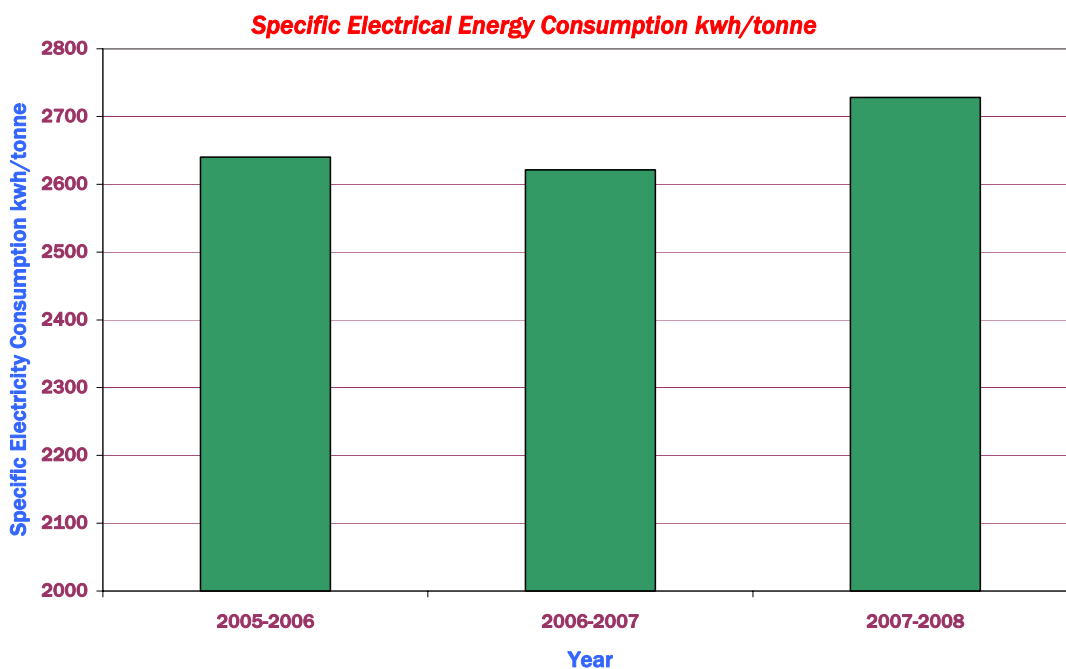
The specific power consumption for the main product caustic soda and other energy consumption indicators for the last three years are summarized in the following tables and charts.

S No	Particulars	Unit	2005-2006	2006-2007	2007-2008
1	Annual Installed Capacity of Caustic soda	MT	48370	55520	57750
2	Production of Caustic soda	MT	51004	57487	42298
3	Annual Capacity Utilisation	%	105.45	103.54	73.24
4	Annual sales turnover of the unit	Rs. Lakhs	10877	12371	9384
5	Plant Connected Load	kW	20872	20558	20558
6	Total Consumption of Electricity	Lakh kWh/yr	1346.43	1507.02	1153.84
7	Total Cost of Electricity	Rs Lakh/yr	4670.39	5199.65	4112.23
8	Furnace Oil Consumption	KL/yr	3821.18	4564.16	3333.49
9	Hydrogen Used as Fuel	Lakh Nm ³ /yr	12.74	17.49	8.35
10	Total Thermal Energy Consumption#	Million kcals/yr	40900.19	49543.67	34839.92
11	Total Cost of Thermal Energy#	Rs Lakh/yr	568.36	743.46	664.36
12	Total Energy Cost	Rs Lakh/yr	5238.75	5943.11	4776.59
13	Specific Electrical Energy Consumption	Kwh/tonne	2640	2621	2728
14	Specific Thermal Energy Consumption	Million kcals/tonne	0.8019	0.8618	0.8237
15	Total Energy Cost as percentage of manufacturing cost	%	50.05	46.69	43.51
15	Total Energy Cost as percentage of Turnover	%	48.16	48.04	50.90

#excluding Hydrogen

Total Cost of energy as Percentage of Manufacturing Cost





(iii) ENERGY CONSERVATION COMMITMENT, POLICY AND ORGANIZATIONAL SET UP

TCC is a Designated Consumer under the Energy Conservation Act 2001, in the Chlor-alkali segment. The annual Fuel and Electricity consumption is equivalent to about 18000 MT of oil equivalent per year.

The energy management activity in TCC is lead by a qualified energy Manager. TCC carried out energy conservation activities in the past, and is now embarking on a comprehensive energy management plan, with aggressive goals

a. ENERGY POLICY OF TCC

TCC is having an energy policy signed by the Managing Director. The policy statement is given below:

We at Travancore-Cochin Chemicals Udyogamandal are always committed to Conservation of Energy by all possible means.

To accomplish our Mission, we strive for:

- *Technological Up gradation to reduce Specific Energy Consumption.*
- *Conducting Energy conservation studies including Energy Audit and adopting the apt measures for Conserving Energy.*
- *Contacting other Organization and enriching our experience of energy conservation.*
- *Using renewable energy source to the extend possible.*
- *Disseminating knowledge and information on energy conservation to our employees.*
- *Low Energy fuels also to be tried depending upon feasibility.*

*Sd/-
Managing Director*

(iv) ENERGY CONSERVATION ACHIEVEMENTS

During the period between 2005-2006 to 2007-2008 , TCC has implemented 12 Nos of major energy saving measures apart from many other housekeeping measures to reduce the energy end use.

The cumulative energy cost saving achieved during the previous three years were Rs 721.69 lakhs. Few of the measures implemented during 2007-2008 are detailed below.

Though the specific electrical energy consumption declined during 2006-2007 as compared to 2005-2006, this was not sustained during 2007-2008. The reason behind increase in specific energy consumption during 2007-2008 was due to a major equipment breakdown (Rectifier Transformer) which had resulted in lower plant capacity utilisation of 73.24% as compared to 103.54% achieved during 2006-2007.

1. UNDER SIZING OF PROCESS WATER PUMP.



110 kW process water pump was replaced with a 45 kW spare pump available in the plant . This has resulted in power saving of 55 kW, there by saved 4.752 lakh kWh per annum

Energy Cost Saving : Rs 16.92 Lakhs

Investment : Nil

