i. Unit Profile

Shriram Vinyl & Chemical Industries (SVCI) established in the year 1963 is situated at Kota in state of Rajasthan, in the North - western part of India.

View ---→ Membrane based Chlor Alkali Plant at Kota

SVCI is a part of **DCM Shriram Consolidated Limited (DSCL**), a company with turnover of **Rs. 2540 crores** and primary business interests in

Agri-Business (Urea fertilizer, Sugar, Farm inputs marketing such as DAP, Pesticides, Seeds, Agri retailing - Haryali Kisan Bazaar)

- ⇨ Plastics (PVC and PVC compounds)
- ⇨ Chemicals (Chlor-Alkali)
- ⇨ DSCL Building Products (Fenesta door and window profiles)

Other businesses include Cement, Textiles and Energy Services.

Founded by Sir Shriram in 1889 (as DCM limited), today DSCL (which spun of as a separate company in 1990) is managed by Mr. Ajay S. Shriram, Chairman and Senior Managing Director and Mr. Vikram S. Shriram, Vice Chairman and Managing Director along with a highly professional executive team.

DSCL has strong brand equity reflective of credibility, ethical values and consistent high quality product image. With over 30 years of experience in managing large scale process industries with sustained high level of performance, DSCL meets the needs of a wide range of customers from farmers to industrial users, from house builders to business owners. Fostering enduring relationships is at the core of DSCL's

business philosophy - with vendors, business partners, and customers and within the organization between employees.

In year 2004-05, for improving the performance in terms of energy efficiency & environment we embarked on conversion project. In March'05 we completed the conversion & became the first Indian Plant completing the conversion of Old Mercury based plant to Energy efficient Membrane plant after CREP (Charter for corporate responsibility for Environmental protection) **recommendations.**

Since 22nd March'05, we are operating membrane based plant successfully.

We obtained the technology from M/s. Asahi Kasei Japan. Our Electrolysers are based on Natural Circulation. M/s. Asahi Kasei has supplied these **NCS types** of electrolysers **"First time in India"**.

Natural circulation has superiority in terms of power consumption, simplicity over the conventional forced circulation electrolysers.

View---→ Natural circulation **NCS type of** electrolysers

After completing conversion successfully, we have achieved capacity expansion by **installing NCH (Natural circulation with High Efficiency) type of electrolyser**.

NCH type has superiority over NCS type in terms of power consumption at higher current density operations.

View ------→ NCH type of electrolyser – Next higher version of NCS type of electrolysers.

At SVCI, besides **utmost importance to implementation of EC measures**, **continual improvement** in quality, environment & safety is being achieved by:

- **ISO 9001 –2000:** To consistently meet customer expectations and enhance customer satisfaction. **System is in place since Feb'1997**.

- **ISO-14001:** To continue to remain an environmentally responsible entity **System is in place since Oct'2000.**

- **OHSAS 18001:** For continual improvement in Occupational Health & Safety. **System is in place since Apr'2003**

- **TPM (Total Productive Maintenance) :** to build a comprehensive productive management system for entire life span of the equipment.

- **British Safety Council - Five Star Rating :**
  Latest initiative of aligning our safety management system with British Safety Council guidelines and ultimately qualify for "sword of honor".
  Received "**Five Star"** rating **four times** in continuation in the **years 2005 to 2008.**

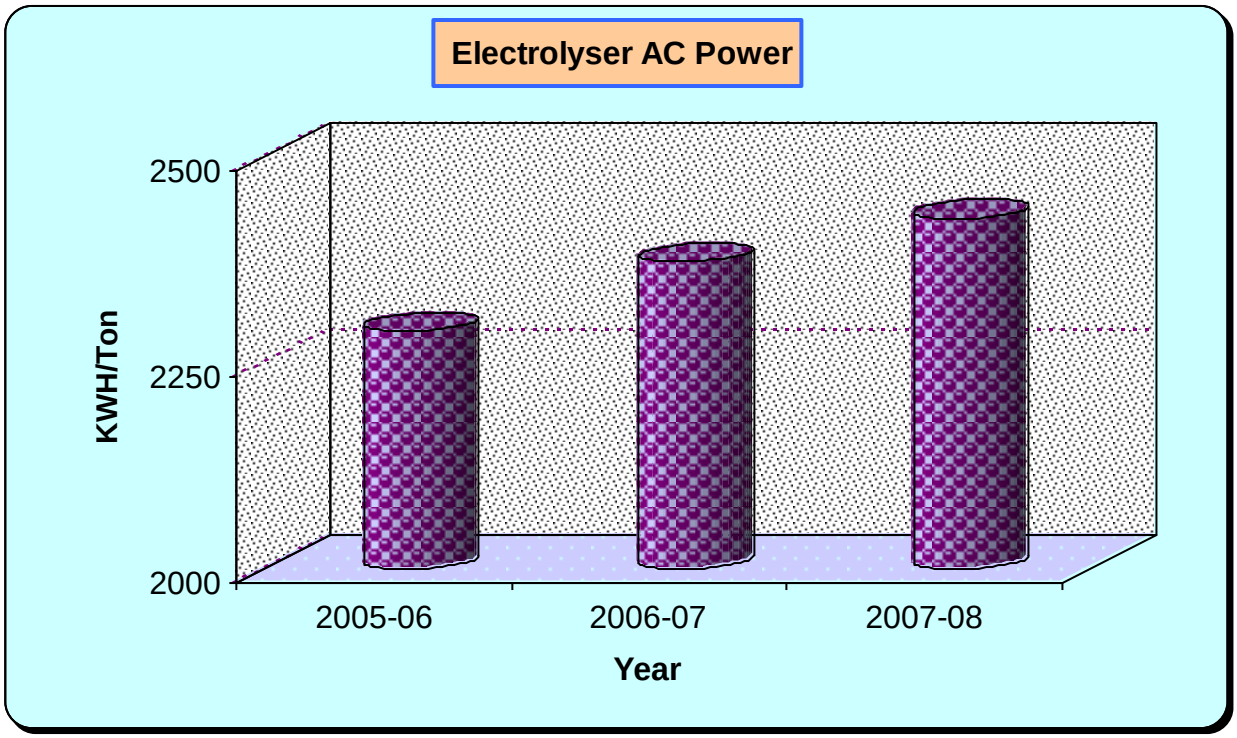
(ii) Energy Consumption

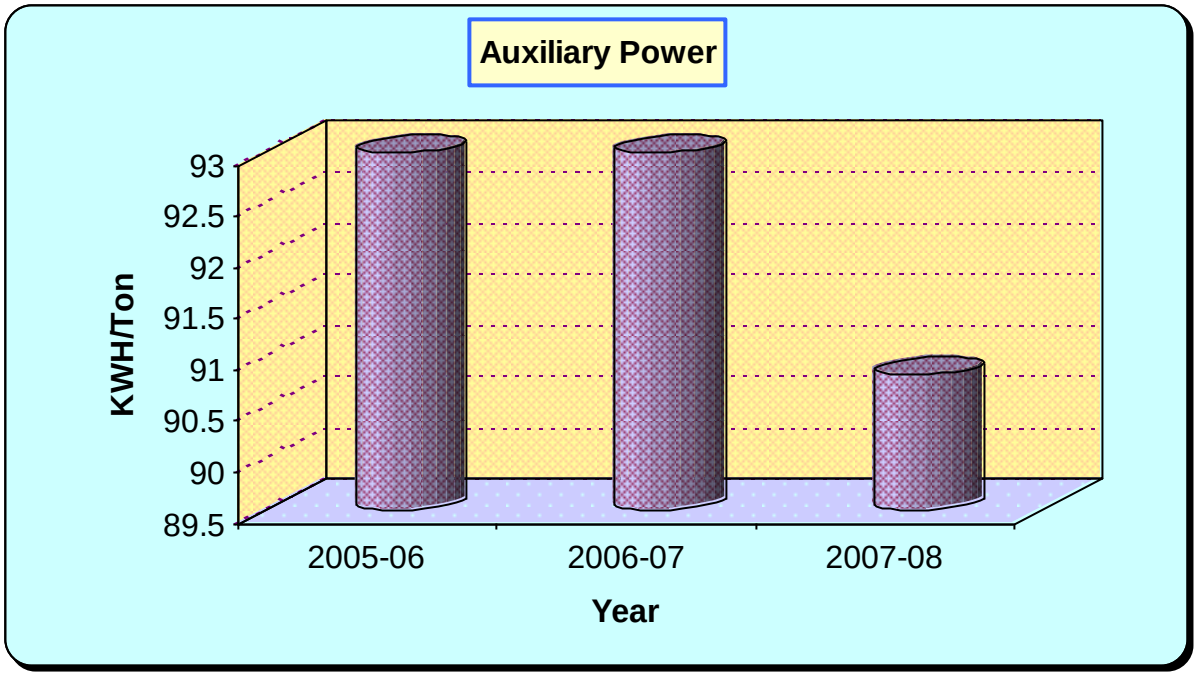
Chlor Alkali plant is an energy intensive plant. The AC Power is converted to DC power by rectifiers. DC power is used for electrolysis. During electrolysis, Caustic soda lye, Chlorine & Hydrogen are generated. Part of the main product caustic soda lye is being converted to Caustic soda flakes as per the market demand.

Specific Energy Consumptions during the period 2005-2008

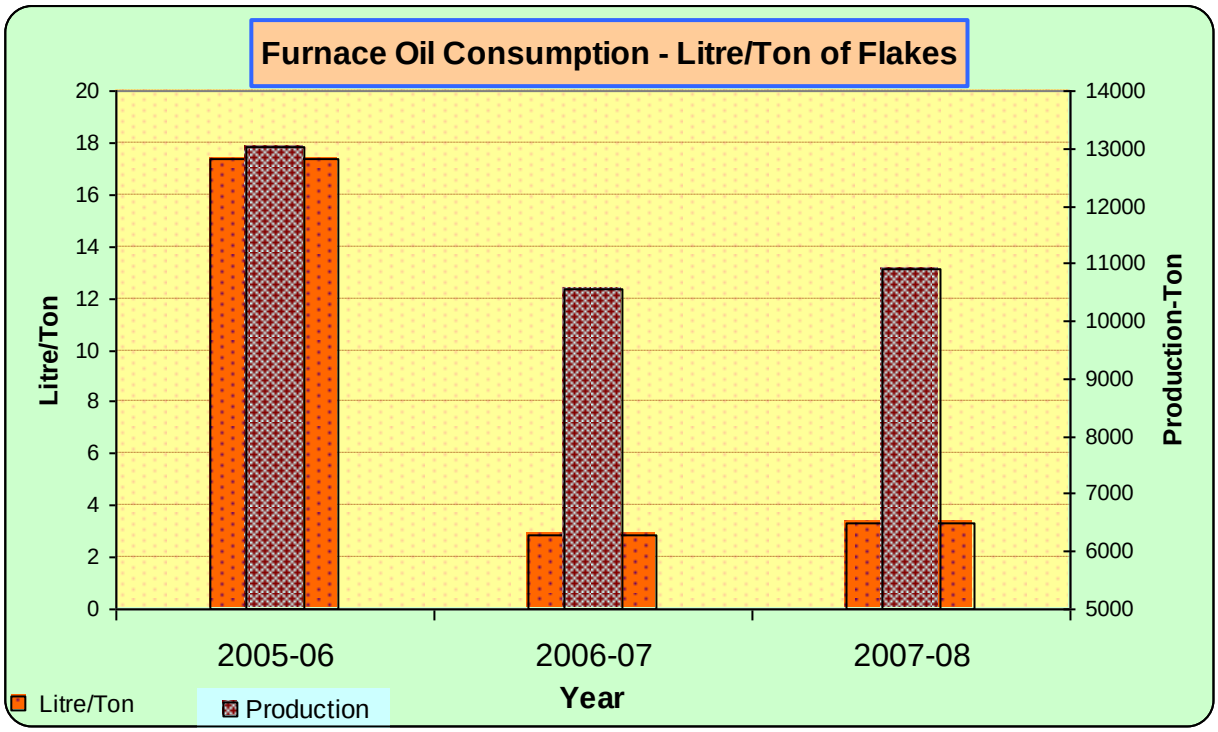
Year	No. of measures implemented	KWh / Tonne of caustic soda		Furnace oil consumption Ltr/ton of flakes
		Electrolyser AC Power	Auxiliary power	
2005-2006	13	2288	93	17.4
2006-2007	7	2372	93	2.9
2007-2008	4	2425	91	3.3

Graphical presentations of last three-year consumption are as under:





For converting the caustic soda lye into flakes, SVCI has a fusion plant of capacity 45 TPD. Combination of Furnace Oil & Hydrogen can be used for heating & converting 47.5 % of Caustic soda lye to flakes (~ 98% un-hydrous NaOH). Heating of lye is carried out in six furnaces in series with Nickel pots. Heating of pots is done by burning Hydrogen or Furnace oil.



In year 2007 - 2008 the unit consumed 2711 lakhs KWH of electricity. The cost of consumed electricity is 75 Rs. crores.

(iii) Energy Conservation Commitment, Policy and Organizational Set up

Continual improvement in Energy Management is a key component of our strategy to improve cost competitiveness of our products and their long-term profitability.

We have "Energy Policy" in place. We are committed for benchmarking our energy utilisation techniques with best practices, adopting modern techniques, retrofitting with high efficiency equipment and seeking cooperation from external agencies to reduce our energy consumption.

Copy of energy policy is enclosed herewith.

The plant has an energy conservation committee headed by Vice President (Chlor Alkali). This committee comprises of 9 (Nine) engineers looking after various sections. They interact on regular basis to discuss various EC steps and implement. In addition to EC, each person in the plant is well aware and actively participating for energy conservation and cost reduction.

The review of EC performance is done on regular basis.

Plant also has an attractive "SUGGESTION SCHEME" in-place to motivate employees towards betterment / improvement of the system, energy conservation, cost reduction etc. Suggestions received from workmen, supervisors, shift engineers, and are registered, evaluated & implemented subsequently.

The scheme generally covers all types of suggestions, which will benefit the organization.

More specifically scheme covers suggestion of following aspects: **Safety, Energy Conservation,** Cost reduction, Quality improvement, Work Simplification etc.

Cash rewards in kind ranging from Rs. 300/- to Rs. 20,000/-will be given to each accepted suggestion. In addition, there is a token reward to all eligible employees for filing a suggestion.

(iv) Energy Conservation achievement

Inline with our energy conservation commitment, policy & set-up, in last three years, we had successfully implemented the 24 energy saving measures.

In the year 2007-08, the measures implemented **successfully** are as under:

Major Energy Conservation Projects Implemented During the year 2007-08

1) Replacement of Aluminium Fan Blades by FRP Fan Blades Cooling Tower -

Original design of Cell House cooling tower ID Fan was having Aluminium blades, which was consuming 28.9KW power. Now it is replaced with the high efficiency FRP blades. It is now consuming 22.8KW with the same blade angle i.e. with the same performance.

Motor Running load with AL Blade, KW : 28.9

Motor Running load with FRP Blade, KW : 22.8

Saving, Lacs KWh/annum : 0.51

Amount Saved (Rs. Lacs) @2.76 : 1.41

2) Installation of Bigger Chlorine Compressor –

While carrying out the energy/power utilization study of the chlorine section, it is observed that three Chlorine compressors of different capacities (Two compressors of 50 TPD rating and one compressor of 81 TPD rating), having power rating of 160KW+135KW+110KW, are need to run at plant average load. Under this situation, motors were also operating at low power factor.

It was calculated & suggested that for getting the high efficiency of compressor and motor, one additional Chlorine Compressor of same capacity i.e. 81 TPD need to be installed and run in parallel with existing 81TPD compressor.

With the new compressor, now it is possible to run the two big compressors at plant normal condition i.e. 135TPD, in place of three compressors.

Power Saving in KW (average) : 172

Saving, Lacs KWh/annum : 12.6

Amount Saved (Rs. Lacs) @2.76 : 34.8

3) Replacement of Old AC Unit (Compressor & Motor) by Hermetically Sealed Compressor:

Since beginning HCL Control Room AC compressor of 5 TR capacity was coupled with 11KW motor. It was drawing 8.40 KW power. In place of coupled unit one hermetically sealed compressor of equal capacity (5 TR) is installed. It is drawing only 4.40KW.

Power Saving in KW (average) : 4.00

Saving, Lacs KWh/annum : 0.14

Amount Saved (Rs. Lacs) @2.76 : 0.39

4) Replacement of Old luminaries with High Efficiency Metal Halide Luminaries

Very old luminaries / light fittings are not energy efficient and have poor lux output. Hence new T5 fittings and Metal Halide fittings are used in place of old fittings.

Saving, Lacs KWh/annum : 0.06

Amount Saved (Rs. Lacs) @2.76 : 0.16

(v) Energy Conservation Plans and Targets

We are committed for continual improvements in energy consumption & efficiency.

Energy Conservation Plans --------→

Energy Conservation Measures (planned)	Anticipated savings in		Approx. Investment (Rs. Lakhs)	Project commencement and completion year
	Energy Value (Lakhs KWh/ Annum)	Rs. Lakhs		
Reducing the unloading hours of utility compressors by Reducing RPM of the compressors.	0.13	0.37	0.20	Commencement : Dec'08 Completion : Jan'09
Replacement of Cooling Tower ID Fan – 2, Aluminium Blades by FRP Blades	0.51	1.46	0.90	Commencement : Jan'09 Completion : Feb'09
Installation of low capacity Anolyte Blow down Pp (5.5KW in-place of 15KW)	0.52	1.48	1.20	Commencement : Aug'08 Completion : Oct'08
Phase wise replacement of ordinary light fittings with energy efficient luminaries.	0.07	0.20	0.30	Commencement : Nov'08 Completion : Mar'09

Energy conservation targets -------→

Year	Electrical* KWh/Tonne	Thermal Ltr of F.O. /tonne of flakes	Reduction over the year 2007-08	
			Electrical %	Thermal %
2007-08 (Base Year)	2461	14	-	-
2008-09	2501	13	-	7.1
2009-10	2541	12	-	14.2

*: As per membrane technology norm annual increase of 40 Kwh/ton of power is expected due to deposition of Ca/Mg on the membranes & ageing of cell units. Target has been set accordingly.

(vi) Environment and Safety

Being an **ISO-14001 & OHSAS 18001** certified company; **adoption of cleaner technology has always received strong emphasis at our complex.** Our all process effluents are being reused /recycled. **No discharge of any process effluent**.

In year 2005-06 to strengthen safety of work place, Health and safety management, complex was aligned to the requirements of **British Safety Councils Safety management System**.

This programme took continuous efforts on all fronts including rigorous training and change in mind sets of the people. The result of which, we have achieved the "**5 Star" rating for 4th year of succession**.

In year 2006-07, our complex was awarded with **"Sword of Honour".**