

## **Finolex Industries Limited Ratnagiri**

### **Unit Profile & Energy Conservation**

As a backward integration, Finolex Industries Limited conceived manufacturing PVC resin to meet its requirement of PVC. PVC resin plant went into commercial production in April 1994.

Finolex PVC resin plant is designed and built with the latest technology supplied by Hoechst AG, Germany, with facilities keeping the protection of safety & environment as a primary concern. Recently pipes manufacturing facility was also started at Ranpar-Golap, District Ratnagiri, in year 1999 in PVC resin complex.

The plant operates in a completely closed system with distributed control system (DCS) to control the plant operations, which helps in minimizing the human errors. The stack gas and the chimney vents are regularly analyzed for monitoring the emissions. The sampling system in the plant is also a closed one. There are LEL and GC detectors for hydrocarbons, located at various places to take care of any fugitive emissions. The treated effluent is used for irrigation of plantation. So far we have planted about 43,500 trees of various species on about 150 acres of land.

We have been implementing various Energy Conservation Projects since plant commissioning. Our specific energy consumption is gradually coming down over the years.

Energy Index for our PVC Unit has been –

For 2001 – 02 : 2.556 million cal / tonne

For 2002 - 03 : 2.439 million cal / tonne (reduction of 4.5 % as compared to previous yr.)

For 2003 - 04 : 2.280 million cal / tonne (reduction of 6.5 % as compared to previous yr.)

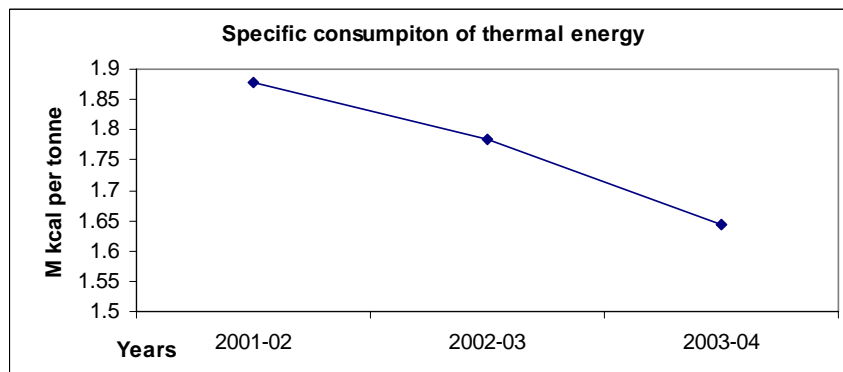
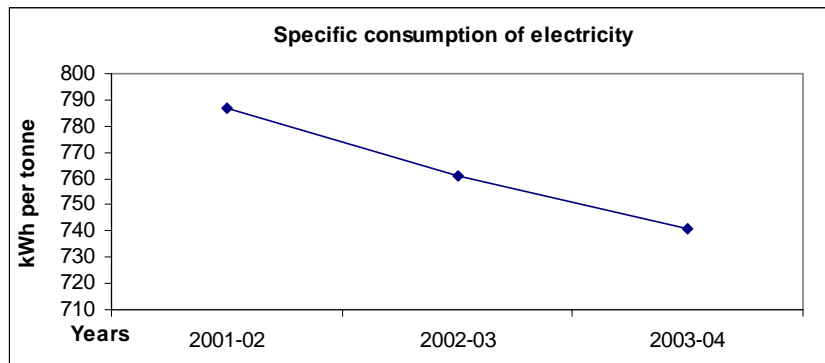
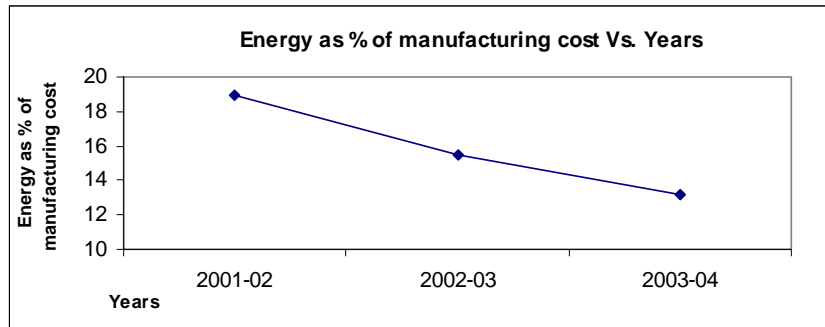
We have recently received ISO 14001 certification from TUV, Germany for environmental management system. We have been continuously implementing Energy & Environment Improvement Projects. We have also won the prestigious MCCA-Dr. R J Rathi award for Excellence in Environmental Pollution Control in the year 1999.

With proper care during design & commitment of all the employees we have completed 11.25 million man-hours of work without any reportable accident and have received the prestigious National Safety Council - Maharashtra Chapter, Maharashtra Safety Award for achieving lowest accident frequency rate under Chemical & Fertilizer Industry group for 3 consecutive years 1999, 2000, 2001. For year 2002, we have received Meritorious Safety award from National Safety Council, Maharashtra chapter, under Chemical & Fertilizer Industry group. We have also received Prashansa Patra award from National Safety Council of India for year 2002 & 2003.

Enclosed herewith please find a page for graphical presentation of our energy conservation achievements.

## Energy Consumption

Year	Thermal energy Mkcal / yr	Electricity lakh kWh / yr	Energy Cost (Rs. Lakhs)	Energy cost as % of manufacturing cost	Specific Consumption	
					Electricity kWh / t	Thermal Mkcal/t
2001-02	173157	725.03	4141.66	18.96	787	1.879
2002-03	243474	1037.21	6051.46	15.5	761	1.785
2003-04	236079	1063.84	6172.26	13.14	741	1.643



# Energy Policy


## **FINOLEX INDUSTRIES LIMITED RATNAGIRI**

### **ENERGY POLICY**

Finolex Industries Limited, PVC Resin Division & ECF Division is fully committed for energy conservation as emphasized in the Environmental Policy. The organisation is fully aware of the growing need of more energy to augment the production, at the same time realises the impact of ever-increasing cost of energy forming a substantial part of the cost of production which needs to be curtailed by implementing programmes to reduce the specific consumption of energy, which ultimately contributes to national saving.

Company will comply with all the legal requirements as laid down in the Energy Act 2001 and strive to achieve the goal of efficient use of energy through total participation of all employees. Necessary awareness will be created among employees through proper training and setting up a separate cell for energy management.

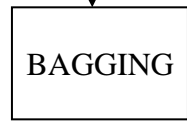
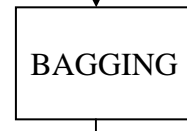
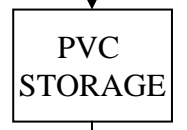
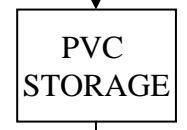
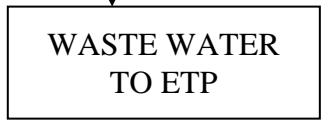
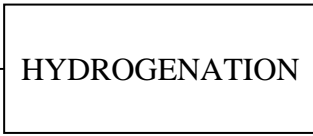
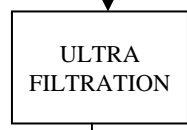
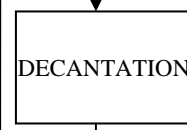
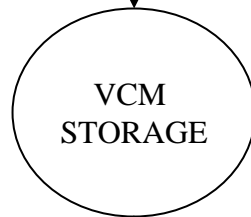
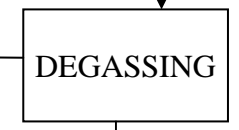
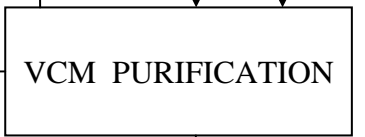
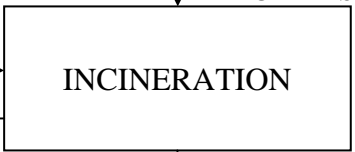
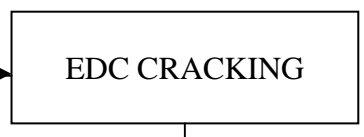
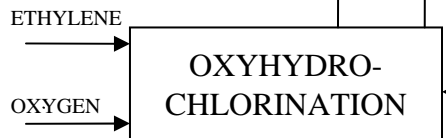
The Company will look into energy efficient processes and do appropriate modification for technological improvement with an objective of energy conservation.

  
**K P CHHABRIA**  
**MANAGING DIRECTOR**

August 21, 2004

IMPORTED EDC

RECYCLE EDC



S-PVC

E-PVC

**BLOCK/ FLOW DIAGRAM - VCM & PVC PLANT**

## **Energy efficiency improvement projects commissioned during 2003 – 04**

**1. Atomizing air blower of old cracker was hooked up to new cracker, thereby stopping atomizing blower of new cracker –**

In VCM plant we have two EDC crackers. For old cracker R-1401, atomizing air requirement is 1600 Nm<sup>3</sup>/h with blower design capacity 2335 Nm<sup>3</sup>/h. This blower was operated with vent valve partially opened. For new cracker R-1402 with atomizing air requirement of 400 Nm<sup>3</sup>/h, a separate blower was operated. Atomizing air blower of R-1401 was consuming 15 kW power & that for R-1402, 8 kW. It was observed that atomizing air blower for R-1401 can be operated for a higher flow rate. Initially both crackers were operated with only one blower of R-1401, on trial basis. No operating constraints were seen during trial. Hence 'common atomizing blower for both crackers' was adapted as revised operating procedure, by stopping of atomizing blower for R-1402. This project resulted into net power saving of 7 kW.

**2. Condensate drum flash steam was lined up to waste water stripper –**

In VCM plant, low-pressure condensate was flashed in drum D-1508 & flashed steam was condensed in fin-fan condensers E-1507 and send back to this drum. Also a very low-pressure steam was fed to a wastewater stripper C-2101 & this steam was a net import from boiler.

It was observed that flashed steam from D1508 could be used for C-2101 so as to reduce steam import. D-1508 flash steam at 0.2 bar g was lined up to C-2101 with balance steam requirement by import. This project resulted in net steam saving of 1 ton/h & power saving of 6 kW.

**3. A cooling water pump of 390 kW was replaced by 120 kW –**

For VCM Cooling Tower two pumps of 1750 m<sup>3</sup>/h were in operation. A scope for optimization of cooling water requirements was observed. Cooling water consumption was optimized to various plant consumers. Finally, one of the two big pumps was replaced by 400 m<sup>3</sup>/h pump. This project resulted into power saving of 75 kW per year

**4. Hot air fan motor (K6611) of 350 kW was replaced by 130 kW, alongwith speed reduction –**

In EPVC plant, optimizing batches this project was implemented, which resulted into power saving of 150 kW

**5. Off air blower motor (K-6705) of 132 kW was replaced by 45 kW –**

This project resulted into power saving of 65 kW

- 6. For Processing unit conveying air blower (K-6801 A/C), 90 kW motor was replaced by 30 kW –**  
This project resulted into power saving of 48 kW
  
- 7. For blower K-6803 C, 90 kW motor was replaced by 37 kW –**  
This project resulted into power saving of 42 kW
  
- 8. In refrigeration unit Z-4206, 160 kW motor was replaced by 75 kW –**  
Polymerization batch recipe was changed for process improvement. This change also resulted into reduction in heat load to 35% of design in refrigeration unit. For refrigeration unit Z-4206 compressor, 160 kW motor was replaced by 75 kW. This project resulted into power saving of 65 kW
  
- 9. Refrigeration unit Z-4206 was stopped –**  
After motor downgrading in Z-4206, it was found that by transferring this refrigeration load (13 deg C consumers) to other underutilized refrigeration unit (for 5 deg C consumers), Z-4206 can be stopped. Implementing this resulted in power saving of 63 kW.
  
- 10. Autosequencing of K-5102 A/B/C –**  
In SPVC plant by optimizing plant batches, 100 kW power saving was achieved.
  
- 11. Variable speed drive for K-4501 A/B –**  
This project optimized air consumption in SPVC plant, thereby saving power of 150 kW

Please see Annexure F for photographs