

DD
GHARDA CHEMICALS LIMITED
D-1/2 MIDC, LOTE PARSHURAM, TAL-KHED
DIST RATNAGIRI (MS) – 415722

UNIT PROFILE

Gharda Chemicals Limited established in 1967, is a research-based private limited company. The company has won several National Awards for Technical Innovation in the Chemical Industry and has many firsts in the field of **dyestuffs, pesticides, veterinary drugs and polymers.**

With world-class products and **sales of Rs. 407 crores in the year 2006-07**, Gharda today is among the top-ranking chemical companies in India.

We have four manufacturing units one each at Dombivli and Lote in Maharashtra & other two are at Panoli and Ankaleshwar in Gujrat.

Both manufacturing units of Gharda in Maharashtra viz. Dombivli & Lote have received ISO 9001 certification. Lote Parshuram unit has received ISO 14001 (Environment Management System) Certification in Yr. 2003. We have received OSHAS 18001 (Safety & Occupational Health) certification in November 2004.

Dombivli Plant has been awarded with National Energy Conservation award for year 2001-02 & 2002-03 and Lote Plant has been awarded with National Energy Conservation award for year 2002-03. Lote Plant has also received the ICMA Energy Conservation Award for the year 2003-04.

The Lote Unit has undertaken various energy & water conservation programs thro

Gharda has successfully introduced **Sulfosulfuron, Oryzalin, Acetamiprid, Deltamethrin, Dicamba, Metamitron, Metazachlor, Chlorpyrifos, Permethrin, Diflubenzuron, Napropamide** in the recent past.

Gharda is the only Indian Company, which has received **U.S. Registration** (EPA Approval) for the sale of Chlorpyrifos (Insecticide) and Dicamba (Herbicide) and its formulation brands in the U. S. A.

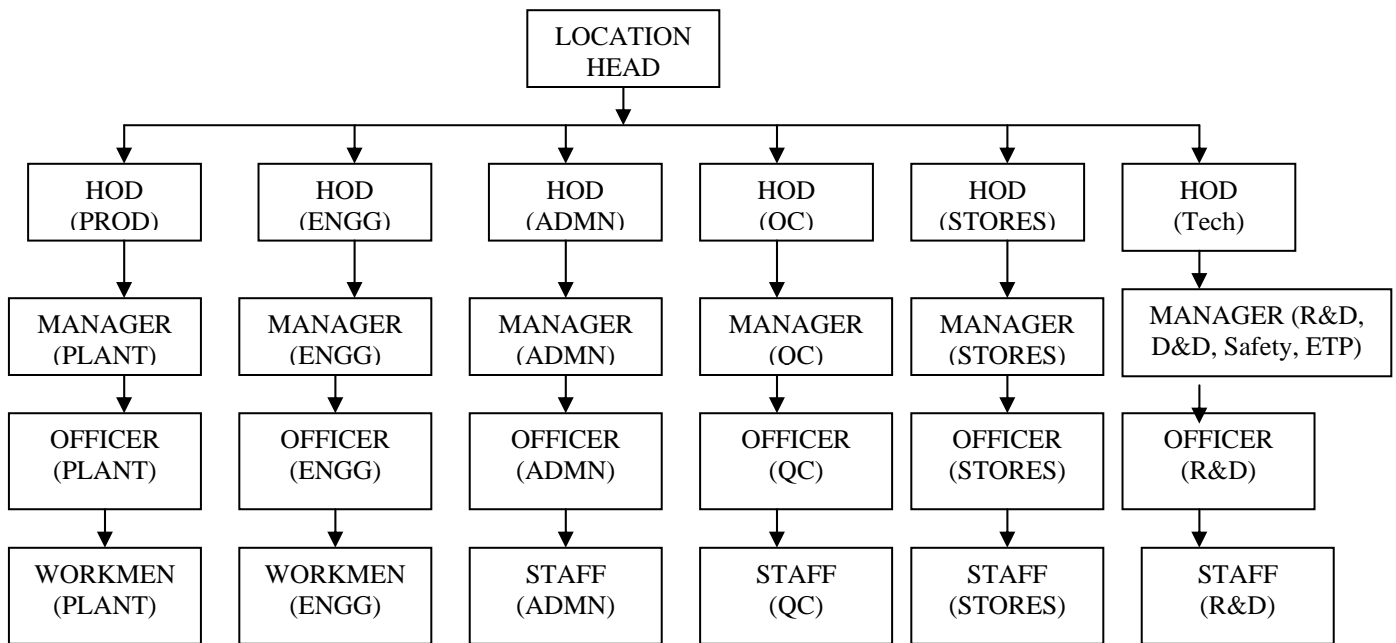
Gharda was awarded the prestigious "**Chemexcil Trishul Award**" for outstanding exports among large-scale chemical manufacturers for 1995-96 and has many other national and international awards under its belt.

GHARDA CHEMICALS LTD, LOTE

LOCATION : D ½, MIDC, LOTE PARSHURAM, TAL – KHED,
 DIST – RATNAGIRI PIN – 415 722
 TEL – (02356) 272254, FAX – (02356) 272190

NO OF EMPLOYEES : OFFICERS : 354
 STAFF & WORKMEN : 223
 TEMPORARY WORKMEN : 105
 CONTRACT LABOUR : 375

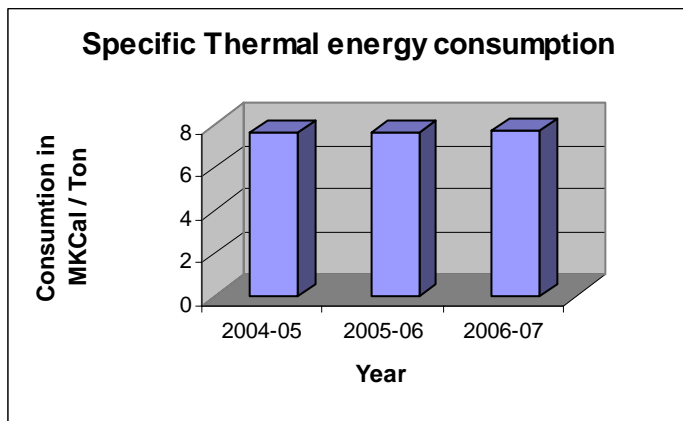
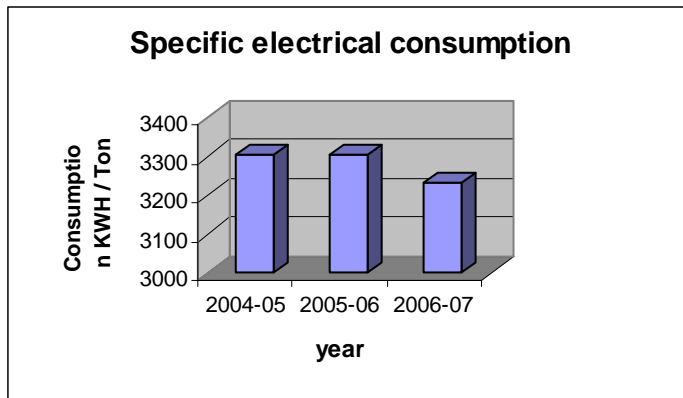
ORGANISATION STRUCTURE :



ENERGY CONSUMPTION TREND

There is a steady decline of specific energy consumption due to implementation of various energy conservation measures. The Energy scenario of GCL in the past three years is given below.

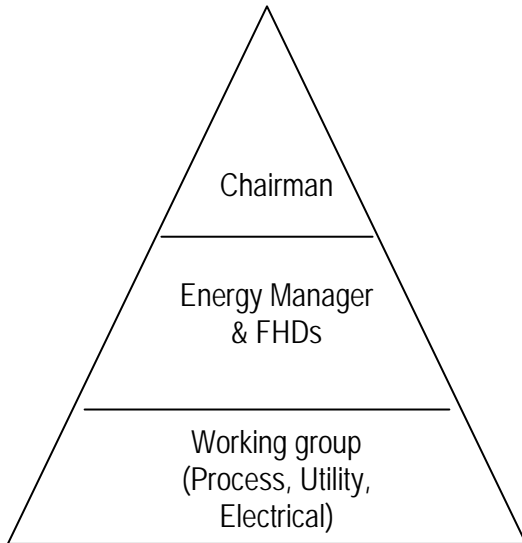
Sr. No.	Description	Unit	2004-05	2005-06	2006-07
1	Annual Chemicals	Tonnes	10113	8995	9862
2	Total Electrical Energy Consumption/yr	Lakhs KWH	334	297	319
3	Specific Electrical Energy Consumption/yr	KWH/tonne	3306	3304	3234
4	Total Thermal Energy Consumption/yr	Mkcal	77178	68682	76422
5	Specific Thermal Energy Consumption/yr	Mkcal/tonne	7.63	7.64	7.74
6	Total Manufacturing Cost	Rs Lakhs	21335	20712	30061
7	Total Energy Cost	Rs Lakhs	1988	1677	2196.16
8	Energy Cost as %age of Total Manufacturing Cost	%	14.35	9.37	7.30



ENERGY & WATER CONSERVATION COMMITMENT, POLICY AND SET UP

GCL is committed to Total Energy & Water Management and prevention of energy & water wastage. Because of this commitment, various energy & water conservation features have incorporated in the design stage itself and also there have been continuous efforts to reduce the energy & water consumption. GCL has set up an **Energy Management Cell viz Gharda Energy Management System (GEMS)** and Energy Management Policy to reduce its specific energy & water consumption.

Energy Management System comprises of three groups



The Apex group indicates the involvement & commitment of the top Management. It also gives all necessary support & encouragement to GEMS activities.

The core group forms the middle level Management includes all department heads including Energy Manager.

The working group comprises of plant energy coordinators from various departments at all levels. They identify the problems, look for continuous improvement, conduct brain storming discussions, arrive at remedial measures and implement the same by involving all employees. The performance is monitored continuously, reviewed periodically and reported to management.

GHARDA CHEMICALS LIMITED, LOTE



ENERGY POLICY



WE AT GHARDA CHEMICALS LIMITED, LOTE SHALL BE COMMITTED TO MAKE CONCERTED EFFORTS TO CONSERVE ENERGY AND WATER IN ALL OUR OPERATIONS

WE SHALL MAKE EFFORTS TO IMPROVE EFFICIENCY OF OUR PROCESSES THROUGH R & D AND TECHNOLOGY UPGRADATION

WE SHALL GIVE FAVOURABLE WEIGHTAGE & CONSIDERATION FOR ENERGY EFFICIENCY WHILE SELECTING NEW EQUIPMENT OR REPLACING / REPAIRING EXISTING ONE.

WE SHALL STRIVE TO ADOPT ABUNDANT & ECO-FRIENDLY, RENEWABLE SOURCES OF ENERGY.

WE SHALL DEVELOP CONSCIOUSNESS IN OUR WORK FORCE TO PERSONALLY CONTRIBUTE TO ENERGY AND WATER CONSERVATION, THROUGH TRAINING, INVOLVEMENT AND IMPROVED WORK PRACTICES.

DECLARED ON : 01-06-2003
REV : 01

U. VIDYASAGARAN
(LOCATION HEAD)

ENVIRONMENT MANAGEMENT SYSTEM AND SAFETY

ENERGY CONSERVATION ACHIEVEMENTS (2006-2007)

The major projects implemented during 2006-2007 are given below.

(1) Replacing the cooling tower fans from Aluminium to FRP.

Background:

1. For induced draft cooling tower exhaust fan is available.

Observations:

1. Power consumption due to metallic blades of fan is more.
2. By installing fan with FRP blades instead of Aluminium alloy , power consumption may be reduced.

Action taken:

1. Aluminium alloy Fan blades were replaced by to FRP blades.
2. FRP fan blade were installed and commissioned.

Payback period:

Annual saving	: 28,195 Kwh per annum
Annual saving	: 1.3 lakhs per annum
Investment	: 65,000 Rs
Payback	: 6 months

(2) Replacing the heat exchanger with more heat transfer area HE.

Back ground:

1. To reduce the shoot up in the caustic circulation temperature.
2. To reduce the leakage problem of the heat exchanger

Observations :

1. Found that there is insufficient heat transfer area.

2. Time cycle also decreases with increase in area.

Action taken:

1. Higher heat transfer area heat exchanger is provided.
2. New higher capacity heat exchanger is controlling the shoot up problem.

Pay back period:

Annual saving	: 420000 KWH per annum
Annual saving	: 17.01 lakhs per annum
Investment	: 7.25 lakhs
Payback	: 6 months

(3) Installation of High efficiency impellers in Batch reactors

Back ground:

1. To reduce the power consumption during agitation by using High efficiency pitched blade agitators.
2. The 40% TT agitators are consuming more power for agitation.

Observations:

1. Earlier in reactors R-104, R-5211 & R-5221 40% TT was provided.
2. These agitators consume more power 40% TT, since their Power number is high.

Action taken:

1. Agitators of R-104, R-5211 & R-5221 are modified to pitched blade. (80% TT)
2. This results in much lesser power number $N_p @ 0.4$ which in turn reduces the power consumption.

Pay back period:

Annual saving	: 105176 KWH per annum
Annual saving	: 3.79 lakhs per annum
Investment	: 0.36 lakhs
Payback	: 1 month.

(4) Combined pump for both Plant-1 and Plant-3

Back ground:

1. CT water circulation pumps are running for the plants 1 & 3.
2. To reduce power consumption by the pumps.

Observations :

1. Earlier there are 2# pumps with 100 HP motor each.
2. According to the load there was very less temperature difference in the system.

Action taken:

1. Modifications done in the piping and make it to only pump.
2. By doing So, we can run only pump with 100 Hp motor power consumption reduced drastically.

Pay back period:

Annual saving	: 586080 KWH per annum
Annual saving	: 23.73 lakhs per annum
Investment	: Negligible
Payback	: Immediate.

(5) using the bi product as a gaseous fuel in the boiler

Back ground:

1. In the manufacture of DCP from Anisole DME (Hydrolysis) gas is liberating.
2. To reduce fuel consumption in exiting boiler.

Observations :

3. At present furnace oil using as a fuel in the oil fired boiler.
4. DME gas produced from the hydration reaction having the calorific value 7500 Kcal/Kg.

Action taken:

1. Provision is made to collect the gas as it is to be utilized in the boiler.
2. By doing So, we can save fuel consumption in the boiler.

Pay back period:

Annual saving	: 41600 KL FO per annum
Annual saving	: 5.17 lakhs per annum
Investment	: 22,000 Rs
Payback	: With in One month.

(6) Modifying the logic of Circulation pumps for Energy conservation

Back ground:

- a. Bottom Utility circulation pumps are used to run continuously for reactors.
- b. To be reduced power consumption of the circulation pumps.

Observations :

1. Earlier both the utility and bottom utility circulation pumps were running for the reactors R- 6202/3/6/9.
2. To be checked that bottom utility circulation pumps stop and process requirement.

Action taken:

1. Stopped the pumps and fulfilling the process requirement.
2. By doing So, we came to save power consumed by the utility booster pumps.

Pay back period:

Annual saving	: 117216 KWH per annum
Annual saving	: 4.75 lakhs per annum
Investment	: Rs 62,000/-
Payback	: 2 Months.

(7) Modifying the flow pattern and logic of the pump.

Back ground:

- CT water plant circulation pumps 2 # with 100 HP motors are continuously running.
- To reduce power consumed by 2# pumps and same process requirement.

Observations :

2. Observed by running the single pump process requirement not fulfilled.
3. Planned to run a pump with sufficient HP to fulfill the process requirement.

Action taken:

3. Done modification in the impeller of a pump with 150 HP motor .
4. By doing So, we came to save power consumption of the 2# pump with 100 HP.

Pay back period:

Annual saving	: 297000 KWH per annum
Annual saving	: 1.12 lakhs per annum
Investment	: Rs 50,000 /-
Payback	: 6 Months.

ENERGY CONSERVATION BY TECHNOLOGY INNOVATION AND R&D EFFORTS
(YEAR 2004-05, 2005-06, 2003-04)

Technology innovation measures undertaken in the plant to reduce energy consumption from year 2003-04 :

- 1) For filtering Effluent, Filtration trials taken in R&D & Filter press is commissioned in Effluent treatment plant for efficient filtration of effluent.
- 2) DCP-XYLENE Steam distillation trial taken in R&D by direct steam purging using a sparger. This is further implemented in the plant to reduce the steam consumption.
- 3) Development of high efficiency impellers based on lab scale trials and scaling up for main plant for batch reactors.
- 4) RPM reduction in batch reactors in main plant based on lab scale study.

In-house R&D Efforts undertaken in the plant to reduce energy consumption from year 2003-2004 :

- 1) Yield improvement in Chlorpyrifos, Anilophos, Deltamethrin, & Temephos, thereby reducing the specific energy consumption at increased capacity.
- 2) Installation of Mechanical vapor recompression unit for reduction in the steam consumption.
- 3) Installation of Variable speed drive to reduce the power consumption.
- 4) Optimization of Pump impeller sizing for pumping head optimization.
- 5) Recovery of heat from steam condensate to preheat Boiler Feed water from 30°C to 90°C.
- 6) Installation of 28Watt Retrofit Tube lights in place of 40Watt conventional bulbs.
- 7) Installation of Rotary Oil Seal Vacuum pumps in place of Water Jet Ejectors.
- 8) Installation of mechanical seal in reactors in place of gland packing.
- 9) Utilization of Byproduct DME as fuel for Boiler.

ENERGY CONSERVATION PLANS AND TARGETS (2006-2007)

List of energy conservation measures planned for the future, investment planned & expected savings include the following.

Energy Conservation Measures (Planned)	Anticipated savings in		Approx. investment (Rs.lakhs)	Project Commencement & Completion year
	Energy Value (specify units)	Rs. Lakhs		
Eco ventilators	0.34	0.12	0.20	Mar'07
Co-generation plant	111.11	400.00	2500.00	June'08
Pumping head optimization	5.00	18.00	1.20	Dec'07 & Feb'08
Steam Trap Conversion	4000.00	5.42	5.45	Nov'07 & March'08
Change over to cheaper utility	25.00	90.00	50.00	Nov'07 & March'08
Condensate Recovery	8840.00	11.98	10.00	Dec'07 & Feb'08
High Efficiency agitators	2.00	7.20	1.50	Mar'08
RPM reduction in reactors	2.50	9.00	0.75	Dec'07 & March'08
Total	-----	541.72	2568.90	-----

Specific Energy Consumption Planned Target for the year 2007-08 & 2008-09 :

Year	Electrical*	Thermal*	Reduction over the year 2003-04	
			Electrical%	Thermal%
2005-06 (Base year)	3303.706	7.636	-	-
2006-07	2907.261	6.719	12.00	12.00
2007-08	2616.535	6.047	20.80	20.80

Note: Units for Electrical energy saving is lakhs KWH per tonne & thermal energy saving is MKCal/Tonne.

ENVIRONMENT MANAGEMENT SYSTEM AND SAFETY

As per the Environmental Policy, GCL is committed to continual up gradation of technology, prevention of pollution, conservation & optimal utilization of natural resources by adopting Recycle, Reuse & Recovery methods, training for Environmental awareness to employees, safe operation of the plant & equipment, complying with all the applicable environmental legislations & regulations to preserve its environment and ensure safety of its employees.

GCL has bagged the prestigious ISO-14001 awards from BVQI during September, 2003.

Green Belting :

- House Keeping
- Development of green belt in and around the factory.
- Planting of sapling by employee in the factory premises on his birthday.
- Various types of plants and lawns developed around the factory to improve the environment.

Safety :

- Functioning of Central & Departmental Safety Committee.
- Daily Safety Inspection at the shop floor and report the unsafe acts to the top management.
- Fire safety, First Aid Training & Basic Orientation Training to all employees about safety.
- Periodical Mock Drill is being conducted to increase safety awareness.
- Work Permit system for various types of jobs involved.
- On-site & Off-site emergency plans.
- Celebration of National Safety Day during March every year / worker participation and pledge taking.

**GHARDA CHEMICALS LTD., LOTE
ENVIRONMENTAL POLICY**



WE AT GHARDA CHEMICALS LIMITED, LOTE ARE COMMITTED TO CONSERVE AND PROTECT THE ENVIRONMENT. WE SHALL FOLLOW ALL THE ENVIRONMENTAL RULES, REGULATIONS AND ACTS RELEVANT TO OUR BUSINESS ACTIVITY.

WE SHALL EMPHASIZE ON RECYCLE, RECOVERY AND REUSE OF RAW MATERIALS, SOLVENTS, WATER AND PACKING MATERIAL.



WE SHALL BE RESPONSIVE TO THE ENVIRONMENTAL NEEDS OF THE NEIGHBOURING INDUSTRIES AND VILLAGES.

WE SHALL IMPART TRAINING TO ALL OUR EMPLOYEES TO CREATE ENVIRONMENTAL AWARENESS AMONGST THEM AND THE IMPACT OF THEIR ACTIVITIES ON ENVIRONMENT.

WE ARE ALSO COMMITTED TO PREVENT POLLUTION THROUGH OUR R & D EFFORTS, TOWARDS CONTINUAL IMPROVEMENT IN PROCESSES, PRODUCTS AND INPUTS.

**ISSUED ON DATE 01-01-2003
REVISION : 00**

**U. VIDYASAGARAN
LOCATION HEAD AND CEO**