

**GOODLASS NEROLAC PAINTS LIMITED**  
**Jainpur, Kanpur (Uttar Pradesh)**

**Unit Profile**

Earlier Goodlass Nerolac Paints Ltd. was known as Gahagan Paints and Varnish Co Ltd. The Gahagan Paints was started on 2nd September 1920, at Lower Parel in Bombay. In 1957 the company came to be known as Goodlass Nerolac Paints (Pvt) Ltd and then became Public Ltd. Today Nerolac is well known paint brand in the market.

The company has sales turnover of Rs. 1069 crores for the year 2004-2005. GNP is undisputed market leader in Industrial Paints, including automotive business and has significance presence in Decorative Paints as well. Currently at number two position on overall basis on all India basis. GNP is having a network of over 11500 customers spread across India, serviced from 66 sales locations and supported by five strategically located manufacturing units, which are situated at:

- Bawal (Haryana)
- Jainpur (Kanpur Dehat UP)
- Lote (Maharashtra)
- Vatva (Ahmedabad)
- Perungudi (Chennai)

As on 31<sup>st</sup> of March GNP employed 1832 employees with an average age of 36years.

**Jainpur Unit:**

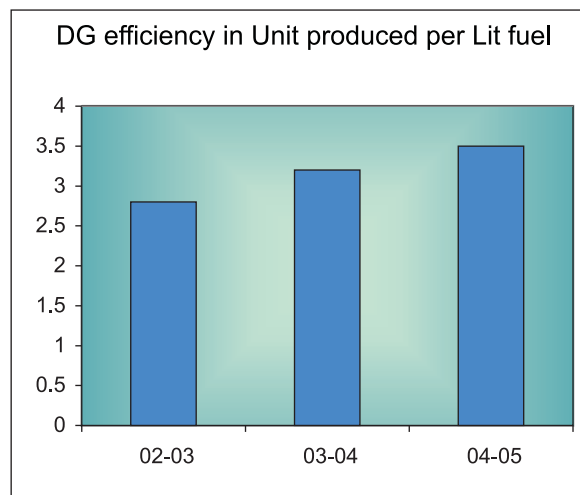
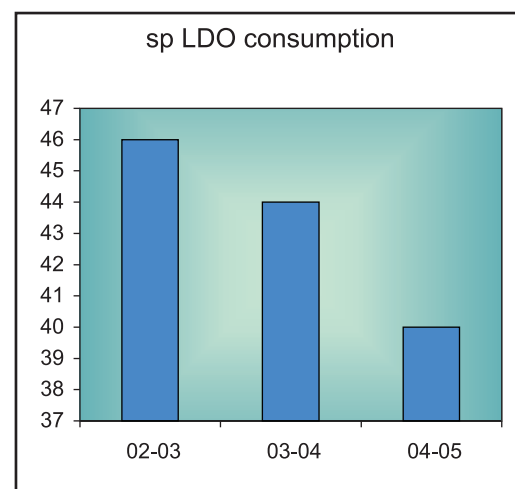
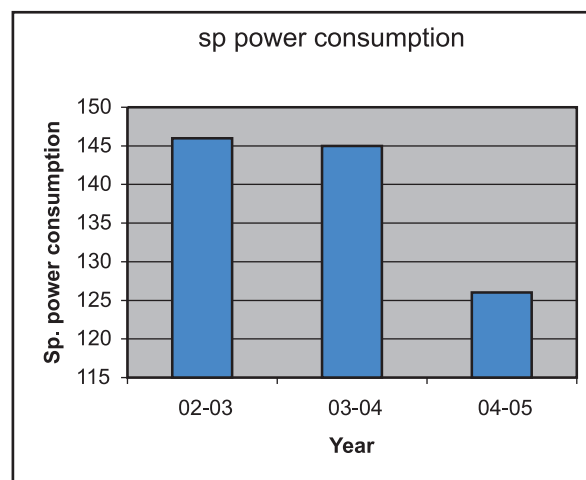
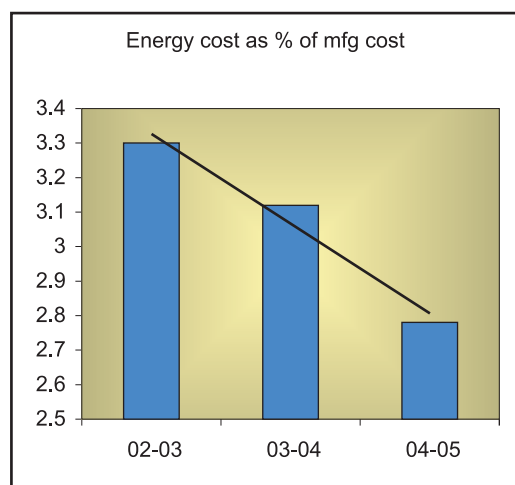
Jainpur Unit is a manufacturing base and here all types of Industrial, Cathodic Electro Deposition Primer, Decorative Liquid and Decorative Stiffs are manufactured. Resin as intermediate is also made here. The unit has an annual capacity of 61000 Ton of Paint- production. The unit was established in late 1993 and since than it is catering the customer needs of Indian market.

The unit is ISO -9001, 14001 certified and has also obtained OHSAS- 18001 & QS- 9000 certification. Currently it is in process of implementing TS-16949.

## Energy Consumption

Parameter	Unit	2002-2003	2003-2004	2004-2005
Annual production	KL	26808	32727	40444
Total electricity consumption	Kwh	4084000	4441000	4981000
Specific consumption - Electricity	Kwh / Kl	146	145	126
Total thermal energy consumption	M Kcal	2987.75	4357.93	4611.44
Specific LDO consumption	Lit / Kl	47	44	40.3
DG efficiency	Units /Lit	2.8	3.2	3.5
Energy cost as % of mfg. cost	%	3.3	3.12	2.78

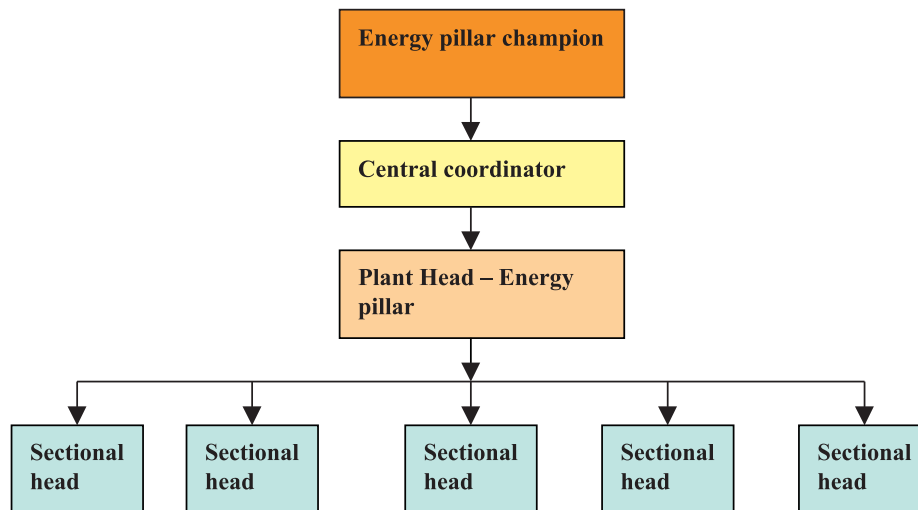
## Goodlass Nerolac Paints Ltd, Jainpur : Energy performance at a glance



## Energy Conservation Commitment Policy and Organizational Set up

As a corporate Goodlass Nerolac Paints Ltd has an Energy Management core team headed by General Manger. Apart from this there is an 'Energy management' team at each of the unit consisting of cross functional members from different departments. Function of this team is to improve the energy efficiency and achieve the specific energy targets. Energy conservation activities are shared across all the units for maximum benefits.

### Energy Organization



Energy management policy for Jainpur plant is as follows:

We at Goodlass Nerolac Paints Ltd., Jainpur are committed to continual improvement in Energy Conservation and Energy Efficiency in all our processes. To achieve sustainable excellence in Energy Conservation and Energy Efficiency we shall strive to:

- Reduce the energy consumption through 'Process Optimization'.
- Improve the energy efficiency through 'Early Equipment Management'. 'i.e. considering the energy efficiency at the design stage itself.
- Consider renewable energy sources, which are eco-friendly as compared to non-renewable energy sources.
- Adopt world-class maintenance practices & technology for energy efficiency improvement.
- Set the targets for Specific Energy Consumption based on national / international standards available and scientific study of processes.
- Review through regular internal & external energy audits to identify areas for improvement.
- Make aware all employees regarding 'Energy management initiative' through active involvement and training.
- Comply with all applicable rules & regulations including 'Energy Conservation Act 2001'.

## **Energy Saving Achievement**

Key points regarding Energy saving

- 16% reduction in energy cost
- 13 % reduction in specific power consumption
- 11% reduction in Specific Fuel consumption
- 25 % Improvement in Diesel Generator's Fuel efficiency Index

### **A. Thermal Energy conservation:**

Goodlass Nerolac paints has initiated several ENCON measures in the starting of financial year 2004-05. We have formed an Energy core group headed by Engineering HOD having representation from various departments for CFT approach.

Team has identified five main project for energy saving, all of them were implemented within time frame and budget. An annual saving of Rs 24.72 lakhs achieved on this account. Following are some of the important projects completed:

**A1 Installed Fuel magnetizer in LDO and HSD fuel supply lines** - Fuel magnetizers has been installed in thermic fluid heater, steam boiler and HSD fired chillers this has resulted saving in the tune of 3-4% of total fuel consumption. Amounting to Rs 7.6 lakhs saving due to reduction in fuel (LDO and HSD) consumption.

**A2 Installed automatic modulation device for TFH/Boilers** - Unit has replaced manual air fuel ratio modulator with advance automatic motorized modulator. This has ensured optimum air fuel ratio all the time. This has contributed a saving of Rs 2.01 lakhs.

**A3 Fuel additives for TFH/Boilers/chillers/DG-** Started dosing fuel additive in LDO and HSD which were not being used in previous years. Unit has consulted Thermax, Oilon, castrol, Indian oil and much other company before going for it. It has contributed a saving of 1% of total fuel consumption, which is aprx Rs 5.4 lakhs.

**A4 DG Fuel Efficiency Improvement** – Improved fuel efficiency of DG set from 3.2 kwh/lit HSD to 3.5 kwh/lit. This has contributed a saving of Rs 8.88 lakhs. Improving loading of all DG from 69 % to 85% by interlinking LT panels of various sections has done this. This has created opportunity to shut off one 520 KVA DG most of the time and being used as push off stand by.

Also two very old ,inefficient 250 KVA DG replaced by one new 520 KVA DG.this also has contributed to fuel saving due to Higher efficiency.

### **B. Electrical Energy conservation :**

**B1 Synchronization of Air Compressors** - Earlier there were dedicated compressor in our different consumption sections. Hence compressors were running on part load or unload condition in the situation of less production load in that section. Unit has shifted all compressors to central location and connected to common receiver. One 175 cfm compressor was made as master for catering plant base load and other compressors were kept as top up compressor to cater peak demand. In this way we have achieved a saving of 60 hp load for average 08 hrs per day i.e. Saving of 96000 kwh per annum.

**B2 Removed air leakages** – Initiated weekly air audit of the plant to identify air leakages. Made list of all leakages and arrested systematically. Got approximate saving of 10 cfm due to this initiative. This is equivalent to a saving of approximately Rs 2.29 lakhs, equivalent to 40000 kwh per annum.

**B3 Shutting of Industrial/SOD section AHU** - Industrial and SOD section air blower were running unnecessarily at the time of shift changeover and lunch/ dinner interval. Unit has installed timers in these AHU to shut off for this time interval. This has contributed an energy saving of 60000 kwh i.e. Rs 300000/annum.

**B4 Improvement in Power factor from 0.85 to .99** – Installed Automatic Power Factor Controller APFC in place of manual capacitor bank controller. Also cap bank installed at PCC/MCC level to get maximum PF. A saving of Rs.30.0 lakhs achieved .

**B5 Delstar converts** – Installed ADC (automatic delster converter) in heavy pug mixer in stiff paint section. This has ensured running of 75 hp motors in star mode maximum time except charging time, which is 10% of total running time. Prior to this all 08 nos 75 hp motor were running in delta mode for entire cycle time. This has resulted a saving of Rs 7.95 lakhs.

**B6 Reduction in Lighting load** – By replacing 240 no 40 watt conventional tubelights by 06 nos 125 watts HPMV lamp in Powder godown and BSR. Also 150 no 40 w tube light replaced by 18 watt CFL. This is done without affecting the lux level. This has resulted in a saving of Rs. 2.37 lakhs.

**B7 Cooling tower fan control** – Installed CTN enegy saver in all cooling tower for controlling fan operation based on temp requirements. Also replaced metallic fan blade by FRP blade to get lower power consumption. This has contributed a net saving of Rs.3.45 lakhs per annum, which is equivalent to 65000 kwh/year.

### **Environment and Safety**

GNPL, Jainpur has an EHS department, which looks after environmental and safety aspects of the plant operation. GNPL has a central EHS core group headed by a Senior Manager.

Some of the major achievements in the field of safety and environment for Jainpur unit are

1. Greentech Gold safety award
2. Golden Peacock Environment excellence award by MoE
3. OHSAS 18000 certification
4. ISO 14000 certification

**ASIAN PAINTS (INDIA) LIMITED**  
**Ankleshwar (Gujarat)**

**Unit Profile**

Asian Paints Limited is among the top 10 decorative paint manufacturing companies around the world, Ankleshwar plant manufactures decorative and industrial paints, resins and emulsions. The plant was setup in 1983 and has expanded, over the years, to a total capacity of 80000 KL of paint per annum as on date. Asian Paints is the leading decorative paints company in India and has various units operating in the Asia-Pacific, the Middle East, etc. spreading over 23 countries

**Energy Policy**

We are committed to continuously improve energy efficiencies in all our manufacturing processes.

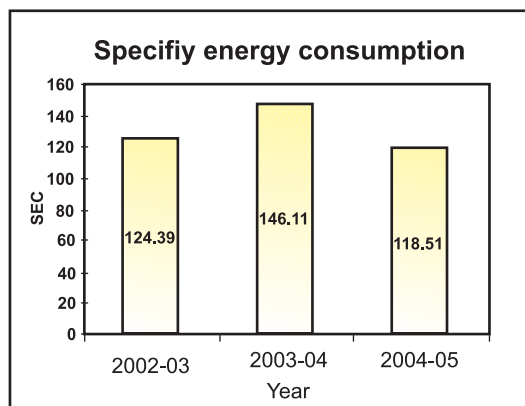
To achieve our goal we shall:

- Treat energy as one of the very vital inputs to our manufacturing processes.
- Measure energy consumption, benchmark and monitor against entitlements.
- Review and update entitlements at least once in a year.
- Continuously explore and implement energy conservation technologies and practices. This will include opportunities to use renewable energy.
- Enrich our experience and knowledge by actively participating in energy conservation forums to promote and exchange best practices.
- Promote awareness among all our employees and their families about the need for energy conservation.

**Energy Consumption**

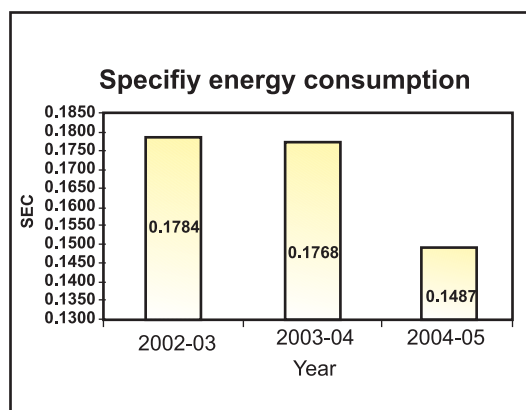
Specific power consumption details	Unit	2002-03	2003-04	2004-05
Annual Production	MT	61529	55241	72325
Total Electrical Energy consumption per annum	Kwh (lakhs)	76.54	80.71	85.71
Total Thermal Energy consumption	Million K Cal	10979.37	9766.66	10756.46
Total Manufacturing cost in rupees.	Lakhs	18151.09	16296.22	21335.88
Total Energy cost in rupees.	Lakhs	498.03	394.94	370.03
Energy cost as percentage Manufacturing cost	% age	27.44	24.24	17.34
Specific Power Consumption	KWH/MT	124.39	146.11	118.51
Specific Thermal Energy Consumption	MK Cal/MT	0.17844	0.17680	0.14872

## Graphical Representation of Specific Energy Consumption



SEC was high in 2003-04 due to decrease in paint volumes & increase in intermediates volumes

### Specific fuel consumption

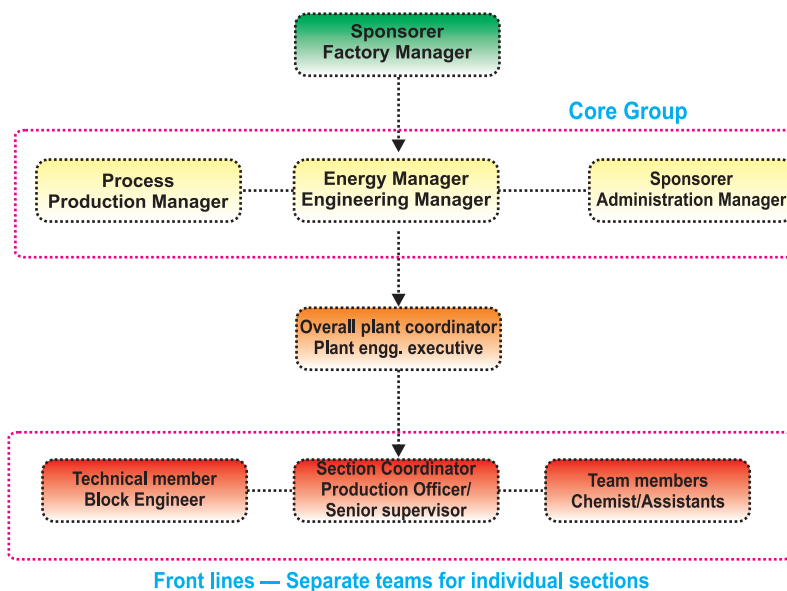


### Energy Conservation Commitment and Set-up

Energy Conservation is identified as one of the plant goals towards continuous improvement. Every year, several activities are taken up to reduce the consumption of various forms of energy. Several awareness campaigns are carried out to nurture attitude towards Energy Conservation as a day-to-day work practice.

The plant has an Energy policy that is modeled with sustainable development as the basis for resource conservation.

## Energy Conservation Cell Structure



The Plant Energy Council is the nodal agency for coordinating various Energy Management and Conservation activities. Members are drawn from various sections and all user groups are well represented. The council evaluates the specific energy consumption trends and identifies tasks towards reduction in energy consumption. Reduction in manufacturing cycle times has been a key benefit due to the involvement of user groups in Energy Management.

### **Energy Conservation Achievements**

Over the past few years, rapid strides have been made in improving manufacturing operations. Effective Energy Management Drive has been a key component in the continuous improvement process. As part of this drive, several energy conservation initiatives have been implemented. A total of 40 initiatives have been implemented during the period 2002 – 2005, with energy savings amounting to Rs. 153.61 lakhs. To achieve further reduction in specific energy consumption further energy conservation initiatives are being freezed.

## Major Energy Conservation Projects implemented during the year 04-05

	Project description	Achievement of energy savings per year basis					Total Savings in (Rs. Lakh)	Investment incurred on the project (Rs. Lakhs)
		Electricity (Lakhs (kWh))	Fuels*					
			Coal (tonnes)	Diesel (KL)	Gas (lakhs m <sup>3</sup> )	Total (fuel) in MKCal		
1	Installation of Air pre heater for thermic fluid heater				0.504	466.2	4.27	8.00
2	Replacement of reciprocating air compressor with screw compressor & refrigerated air drier in utility block	1.7452					5.50	12.00
3	Replacement of reciprocating air compressor with screw compressor with refrigerated air drier for pneumatic conveying in emulsions paint section	0.3125					0.98	3.40
4	Replacement of inefficient copper chokes by efficient electronic chokes	0.4756					1.50	1.24
5	A.C. drive for twin shaft disperser in emulsion paint section	0.4524					1.43	4.24
6	Cyclic timers for Window A.Cs	0.3065					0.97	0.72
7	Relocation of power factor capacitor bank at the load End	0.2354					0.88	1.50
8	Utilisation of excess chilling capacity by converting electrical A/c's in administration block to AHU & FCU's	1.2574					3.96	16.15
9	Installation of energy savers in A/C's & Replacement of reciprocating A/C's with rotary compressors	0.4476					1.41	3.54
10	Load optimisation on Cogen	0.0000					6.05	0.45
11	Turbine ventilators in place of electrical exhaust fans in SPB & Resin House							
12	Installation of energy efficient motors	0.3861					1.22	3.45
13	Replacement of HSPV lamps with CFL lamps in street lighting by CFL lamps	0.1333					0.42	0.10
14	Installation of Mechanical seals in chilled water pumps	0.1260					0.40	0.32
15	Utilisation of excess chilling capacity by converting electrical A/C's in cold storage room & Shade card section to FCU's.	0.2978					0.94	2.35

## Major projects done in 2004-05

### Installation of Air Pre heater in Thermic fluid heater.

The Exhaust gas of the thermic fluid heater which is at 250° C is passed through a heat exchanger in which the combustion air is heated before it goes for combustion. After the installation of pre heater the temperature of the flue gases was reduced to 165° C leading to increase in efficiency of thermic fluid heater from 88% to 92% leading to reduction in Natural gas consumption by 4%.

Energy savings per annum	:	466.2 Million Kcal
Savings in Rs. per annum	:	4.27 Lakhs
Investment made	:	8.0 Lakhs
Pay back	:	22.5 months

### Replacement of Reciprocating air compressors with screw compressor in Utility block & pneumatic conveying of emulsion paint section

The low efficient reciprocating compressors in the utility & emulsion paint sections have been replaced with efficient screw compressors. Screw compressors are efficient & consume less power when compared to reciprocating compressors. Reciprocating compressors consume power when they are even in unloading condition where as the motor of the screw compressor can be stopped if the unloading time is more than the set value.

Energy savings per annum	:	2.0577 Lakh KWh
Savings in Rs. per annum	:	6.48 Lakhs
Investment made	:	15.4 Lakhs
Pay back	:	28.5 months

### Replacement of inefficient copper chokes by efficient electronic chokes

Tube light in the plant had inefficient copper chokes which was consuming around 20 watts each. We have replaced the copper chokes with electronic chokes

Following are the details

Energy savings per annum	:	47560 KWH
Savings in Rs.per annum	:	1.5 Lakhs
Investment required	:	1.24 Lakhs
Payback	:	10 months

### **A.C drive for twin shaft dispersers in emulsion paint section**

During processing of paints in Twin shaft disperser high speed agitators were running at high RPM than required as the high speed agitator was coupled to Dual speed there by making it possible for the TSD to run at only 2 speeds. These TSD's are provided with Variable frequency drive, there by leading to power saving

Energy savings per annum	:	45240 KWh
Savings in Rs. per annum	:	1.43 Lakhs
Investment made	:	4.24 Lakhs
Pay back	:	35.5 months

### **Cyclic timers for Window A.Cs**

All the window A/C's were found to run continuously with lower thermostat settings. A cyclic timer was installed with ON time as 20 Min and Off time as 5 Min for all the window A/C's to control the compressor.

Energy savings per annum	:	30650 KWh
Savings in Rs. per annum	:	0.97 Lakhs
Investment made	:	0.72 Lakhs
Pay back	:	8.9 months

### **Utilisation of excess chilling capacity by converting electrical A/c's in administration block to AHU & FCU's.**

Administration block was having electrical A/c's with a connected load of 55 TR It was found that there is an excess chilling capacity available from the VAM chiller running on hot water of Gas engine. It was proposed to install Air handling units & forced coil units utilizing the chilling water for the comfort air. The project was successfully implemented & there has been a lot of power saving

Energy savings per annum	:	12574 KWh
Savings in Rs. per annum	:	3.96 Lakhs
Investment made	:	16.15 Lakhs
Pay back	:	48 months

### **Turbine ventilators in place of electrical exhaust fans in SPB & Resin House**

In the charging floors of Resin House & solvent based paint block roof top exhaust fans were used for air circulation. Turbine ventilators have been installed which doesn't require electrical energy for its operation but instead they run due to wind power

Energy savings per annum	:	28000 KWh
Savings in Rs. per annum	:	0.88 Lakhs
Investment made	:	1.2 Lakhs
Pay back	:	16.36 months

### **Installation of Mechanical seals in chilled water pumps**

The chilled water circulation pumps were having gland packing's in them & these glands are to be tightened for reducing the leakage during this process lot of friction is exerted onto the shaft of the pump leading to higher power consumption. These pumps are fitted with Mechanical seals there by leading to both power saving & zero leakages

Energy savings per annum	:	12600 KWh
Savings in Rs. per annum	:	0.40 Lakhs
Investment made	:	0.32 Lakhs
Pay back	:	9.6 months

### **Installation of energy efficient motors**

Ankleshwar plant is 22 year old plant & the motors also have become old. During these years some motors have got rewinded many times there by losing the efficiency. 6 numbers of motors have been replaced with energy efficient motors. Also all the motor procured for the Capex projects are of energy efficient type

Energy savings per annum	:	38610 KWh
Savings in Rs. per annum	:	1.22 Lakhs
Investment made	:	3.45 Lakhs
Pay back	:	9 months

## Energy Conservation Plans and Targets

Several projects have been identified to reduce the specific energy consumption, resulting in total annual estimated savings of Rs.25.70 lakhs against an investment of Rs.19.24 lakhs. A list of identified projects is given below:

Energy Conservation Measures (Planned)	Anticipated savings in		Rs. Lakhs	Approx investment (Rs. lakhs)
	Energy Value			
	(KWH in Lacs)	Million Kcal		
Interlocking of Chilled wter valves with process equipment to reduce the load on the pump as well heat load to chiller	0.4275		1.35	1.50
Replacement of low efficiency motors	0.5625		1.77	1.75
Energy efficient agitator for continuously run high rated motors.	3.7100		11.69	10.00
PP Internal Coating for cooling tower pumps to increase the efficiency	0.1600		0.50	0.40
Modifying Star-Delat circuit of under loaded equipments like sandmills as Star-Delta-Star starters by connecting 'On delay timers'	0.5235		1.65	0.24
Installation of on delay timers in Twin shaft dispersers	0.1800		0.57	0.35
Installation of Preset selector switch for RPM setting in the inverter of Twin shaft dispersers	0.2100		0.66	0.25
Optimisation of Cogen KWH generation	0.1525		0.68	0.00
Installation of mechanical seals in cooling tower pumps	0.0975		0.31	2.00
Installation of capacitor banks at end use points	2.0725		6.53	2.75
<b>Total</b>	<b>8.0960</b>		<b>25.70</b>	<b>19.24</b>

## ***Environment and Safety***

The plant has an Apex Environment, Health and Safety Committee (AEHS), headed by the Unit Head (Factory Manager) and comprises of key personnel in the plant. The Committee meets regularly to review the status of various aspects of Safety, Health and Environment in the plant. The Safety policy outlines the organizational commitment towards compliance to statutory requirements, continuous improvement in EH&S performance and training of personnel on safe work practices. The Environmental policy outlines the organizational commitment towards resource conservation and environment protection. There is a periodic Audit programme of the Environmental Management Systems and Safety Management Systems – implemented both through internal and external audits. Suggestion scheme has been launched and various suggestions implemented in the area of improving Safety and Environment protection.

**ASIAN PAINTS (INDIA) LIMITED  
Patancheru (Andhra Pradesh)**

**Unit Profile**

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**Energy Policy**

We are committed to continuously improve energy efficiencies in all our manufacturing processes.

To achieve our goal we shall:

Treat energy as one of the very vital inputs to our manufacturing processes.

Measure energy consumption, benchmark and monitor against entitlements.

Review and update entitlements at least once in a year.

Continuously explore and implement energy conservation technologies and practices. This will include opportunities to use renewable energy.

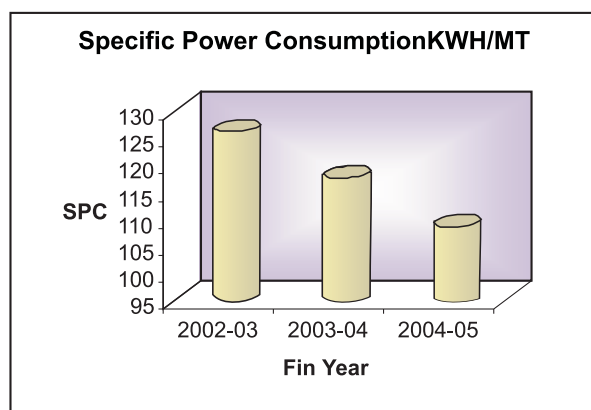
Enrich our experience and knowledge by actively participating in energy conservation forums to promote and exchange best practices.

Promote awareness among all our employees and their families about the need for energy conservation.

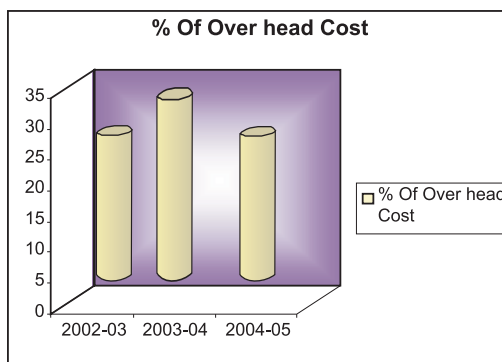
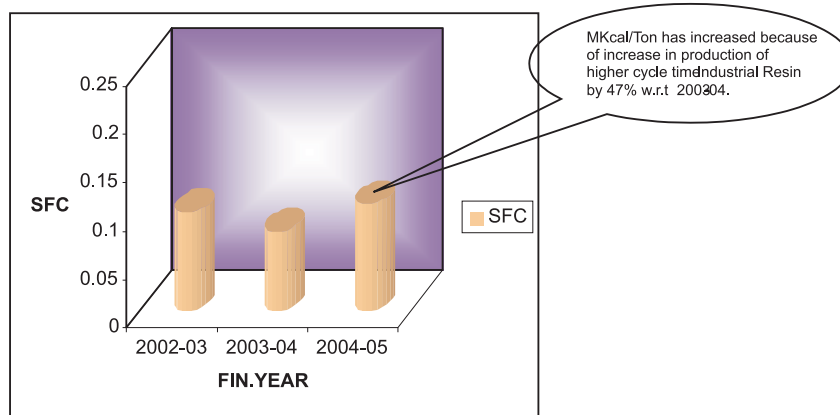
**Energy Consumption**

Specific power consumption details	Unit	2002-03	2003-04	2004-05
Annual Production	MT	66496	70384	73792
Total Electrical Energy consumption per annum	Kwh (lakhs)	84	82.89	80.22
Total Thermal Energy consumption	Million K Cal	6757.35	5775.35	8132.87
Total Manufacturing cost in rupees.	Lakhs	1830.63	1961.60	2207.85
Total Energy cost in rupees.	Lakhs	508.702	511.458	587.498
Energy cost as percentage Manufacturing cost	% age	27.09	33.9	27.14
Specific Power Consumption	KWH/MT	126.32	117.77	108.71
Specific Thermal Energy Consumption	MK Cal/MT	0.102	0.082	0.110

## Graphical Representation of Specific Energy Consumption



## Specific fuel consumption

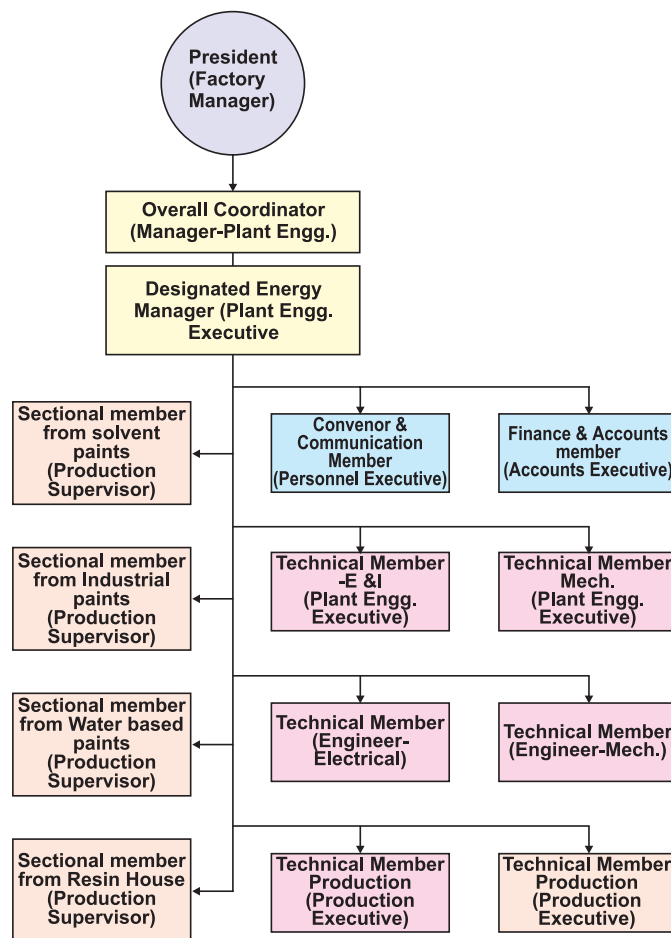


## Energy Conservation Commitment and Set-up

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The plant has an Energy policy that is modeled with sustainable development as the basis for resource conservation.

### Energy Conservation Cell Structure



The Plant Energy Council is the nodal agency for coordinating various Energy Management and Conservation activities. Members are drawn from various sections and all user groups are well represented. The council evaluates the specific energy consumption trends and identifies tasks towards reduction in energy consumption. Reduction in manufacturing cycle times has been a key benefit due to the involvement of user groups in Energy Management.

## Energy Conservation Achievements

Over the past few years, rapid strides have been made in improving manufacturing operations. Effective Energy Management Drive has been a key component in the continuous improvement process. As part of this drive, several energy conservation initiatives have been implemented. A total of 39 initiatives have been implemented during the period 2000 – 2005, with energy savings amounting to Rs. 111.61 lakhs. Plans are on the anvil to achieve further reduction in specific energy consumption. An important milestone in the continuous improvement process was achieved in the development of a unique Energy Model.

### Major Energy Conservation Projects implemented during the year 04-05

#### 1. Replacement of MLL by CFL lamps

Around 450 no of MLL Lamps that used for path way lighting and shop floor lighting were replaced by CFL lamps without compromising on Lux levels. The lux level with MLL lamp was measured and to match that Lux level CFL lamps were selected .On trial basis data of Lux level was collected for a month. After confirming the compliance of lux levels to old value, all 450 numbers were replaced with CFL Lamps.At required places the luminaries height was also reduced to get sufficient Illumination



Energy savings per annum	:	225000 KWH
Savings in Rs.per annum	:	9.0 Lakhs
Investment made	:	1.15 Lakhs
Pay back	:	1.5 months

#### 2. Installation of Air pre heater for thermic fluid heater

The Exhaust gas of a thermopac was at 300 deg Celcius.This waste heat was unrecovered .On discussing with the supplier M/ S Thermax, a preheater was installed. After the installation of the preheater the exhaust gas temperature was reduced to 200 deg Celsius .This waste heat recovery has reduced the fuel consumption by 4%



Energy savings per annum	:	240 Million Kcal
Savings in Rs.per annum	:	5.748 Lakhs
Investment made	:	6.0 Lakhs
Pay back	:	12.5 months

### 3. Replacement of air compressor with blower in E.T.P

An 18.5 kW compressor was supplying air for process requirement of ETP( after pressure reduction at 0.3 Bar)The same was eliminated by installing a roots blower of 5 kW capacity and thus energy saving to the tune of 12.5 kW was achieved. Following are the details

Energy savings per annum	: 113000 kWh
Savings in Rs. per annum	: 4.52 Lakhs
Investment made	: 1.2 Lakhs
Pay back	: 2.6 months



### 4. Time switch to eliminate the running of Forced Draught fan during shift change over timing.

A forced draught system with a total capacity of 81 kW was operating round the clock. Actually this was required when operators were present in the shop floor and while they do processing. During shift change overs it was confirmed that absolutely there was no need of operating this system since there were no operators and no processing activity. After this study, with a Real time switch plant automated the Starting and Stopping of the equipment during shift change overs. Following are the details

Energy savings per annum	: 65600 kWh
Savings in Rs. per annum	: 2.625 Lakhs
Investment made	: 0.003 Lakhs
Pay back	: 0.5 day



### 5. Cyclic timers for Water base paint block hopper equipment.

Finished Product was finally stored in an intermediate vessel called hopper. From that hopper paint was packed in retail packs. The agitator in the said hopper used to run continuously. An idea of intermittently running the agitator with a cyclic timer got evolved. By cyclically switching ON and OFF of the agitator it was confirmed that quality of the product remains same. Based on the above fact around 10 cyclic timers were installed for 10 agitators. By this the on time got reduced by 50% per batch. Following are the details

Energy savings per annum	: 61000 kWh
Savings in Rs. per annum	: 2.44 Lakhs
Investment required	: 0.10 Lakhs
Payback	: 15 days



## 6. Reducing the running hour of compressor system by optimizing the temperature setting of 20 Ton chiller

The 20 TR chilling system was running at the rate of 22 hrs per day with a trip setting of 14 deg. Celsius and 16 deg Celsius. Process requirement was found to be 30 deg. Celsius. To meet this process requirement chilled water temperature at 18 deg. Celsius was sufficient. Hence plant optimized the temperature setting to 18 Deg -20 Deg Celsius. By this operating hours of the chiller has come down resulting in Energy saving. Following are the details

Energy savings per annum	:	49500 kWh
Savings in Rs.per annum	:	2.16 Lakhs
Investment required	:	0 Lakhs



## 7. Replacement of inefficient copper chokes by efficient electronic chokes

Tube light to the population of around 1000 in the plant had inefficient copper chokes which was consuming around 20 watts each

250 numbers of tube lights were switched ON round the clock. Other 750 lamps were used @ 12 Hours per days Hence in phase I plant replaced these copper chokes with electronic chokes ( in order to get the early benefits)All 250 Chokes were replaced with electronic chokes and performance was found to be satisfactory. Pase II and Phase III plant plans to replace other chokes also.

Following are the details

Energy savings per annum	:	50000 kWh
Savings in Rs.per annum	:	2.0 Lakhs
Investment required	:	1.42 Lakhs
Payback	:	8.5 months



## 8. Refrigerant Air drier for Compressed air

Around 350 cfm of air got dried through an adsorbent type air dryer. During every regeneration 15% of dry air was vented out to atmosphere in the process of regeneration. With the advent of new technology a new refrigerated air dryer was installed and system was found to be energy efficient by elimination of the air wastage(that was vented out to atmosphere in old system.)

Energy savings per annum	:	41300 kWh
Savings in Rs.per annum	:	1.65 Lakhs
Investment required	:	1.85 Lakhs
Payback	:	14 months



## 9. A.C drive for RC 25 air compressor

The compressed air requirement of the plant was met with one 9X7 compressor of 240 CFM and one RC 25 compressor of 250 CFM. The average demand observed is 340 CFM and peak demand is 450 CFM. So, one compressor was running in loaded and another in unloaded pattern. Plant provided A.C. drive for 2<sup>nd</sup> compressor (RC 25 air compressor) and the RPM of the compressor is now varying with respect to the feed back got from pressure transducer instead of running in unloaded condition. Following are the details

Energy savings per annum	:	39000 KWH
Savings in Rs.per annum	:	1.56 Lakhs
Investment required	:	3.0 Lakhs
Payback	:	23 months



## 10. Cyclic timers for Window A.C 's

All the window A/C's were found to run continuously with lower thermostat settings. A cyclic timer was installed with ON time as 20 Min and Off time as 5 Min for all the window A/C's to control the compressor. This setting was optimized by Eng. department based on seasons. Good energy saving was achieved by installing this timer for 33 A/C's. Following are the details

Energy savings per annum	:	38750 kWh
Savings in Rs.per annum	:	1.55 Lakhs
Investment required	:	0.60 Lakhs
Payback	:	4.6 month



<b>Other Encon Activities of 04-05</b>				
<b>S.No</b>	<b>Encon Activities</b>	<b>kWh savings/annum in Lakhs</b>	<b>Savings in Rs. Lakhs/ annum</b>	<b>Investment in Rs. Lakhs</b>
11	Utilization of existing cooling tower which is under loaded in other area and avoided the running of dedicated cooling tower for 36 Ton chilling plant	0.32	1.30	0.10
12	Elimination of cold well pump running by utilizing the hotwell pump by removing the cold well and hotwell concept in 36 Ton chilling plant	0.31	1.27	0.10
13	Energy efficient agitator for 12 KL mixer	0.31	1.25	1.00
14	Energy efficient gear box in place of Worm and worm gear box	0.31	1.24	0.80
15	Regrouping/Illumination based lighting control	0.22	0.86	0.23
16	Demand based auto cut-off of cooling tower pumps	0.10	0.38	0.02
17	Reducing the running hour of compressor system by optimizing the temperature setting of 36 Ton chiller	0.09	0.36	0.00
18	Cyclic timers for under utilized ventilator exhaust fans	0.08	0.31	0.10
19	Interlocking condenser fan with compressor of 33 Ton chiller	0.08	0.30	0.00

## Energy Conservation Plans and Targets

Energy conservation is a continuous process. Several projects have been identified to reduce the specific energy consumption, resulting in total annual estimated savings of Rs.60.17 lakhs against an investment of Rs.58.58 lakhs. A list of identified projects is given below:

Energy Conservation Measures (Planned)	Anticipated savings in		Rs. Lakhs	Approx investment (Rs. lakhs)	Project Commencement & Completion year
	Energy Value				
	(KWH in Lacs)	Million Kcal			
Solar energy for lighting and heating applications.	0.28		1.12	1	2006-07
Power quality improvement	7.5		30	3	2006-07
Energy efficient agitator for continuously run high rated motors	3.76		15	1	2005-06
Hat Belt System for Blowers of Forced draught ventilation system	0.14		0.56	0.0	2005-06
Conversion of Backward Flat blades to Backward curved blades to maximise the Efficiency	0.14		0.56	0.0	2006-07
Elimination of running additional pump in WBU cooling tower	0.216		0.86		2005-06
Interlocking of cooling tower pump with process equipment to avoid idle running of cooling tower pump in Industrial paint unit	0.105		0.42	0.0	2005-06
Selector switch option for two cooling water pumps in resin house to eliminate running of spare pump (Even by mistake)	0.24		0.96	0.0	2005-06
Eliminate running of Cold well pump and use only Hot well pump in Water Based Unit 20 TR chiller	0.16		0.65	0.0	2005-06
Interlocking of Chilled water valves with process equipment to reduce the load on the pump as well heat load to chiller (by avoiding idle running of pump and chilled water flow through process equipment when it is not in operation)	0.372		1.48	0.0	2005-06
Belzona Internal Coating for cooling tower pumps to increase the efficiency	0.08		0.32	0.0	2005-06
Modifying Star-Delta circuit of under loaded equipments like sandmill as Star-Delta-Star starters by connecting 'On delay timers'	0.675		27	0	2005-06
Activity based grouping of CT pumps in New Bazar to eliminate running of third pump	0.5712		228		2005-06
Motor audit and re-sizing of underloaded motors	0.81		3.26		2005-06
<b>Total</b>	<b>15.0492</b>		<b>60.17</b>	<b>58.58</b>	

## ***Environment and Safety***

The plant has an Apex Environment, Health and Safety Committee (AEHS), headed by the Unit Head (Factory Manager) and comprises of key personnel in the plant. The Committee meets regularly to review the status of various aspects of Safety, Health and Environment in the plant. The Safety policy outlines the organizational commitment towards compliance to statutory requirements, continuous improvement in EH&S performance and training of personnel on safe work practices. The Environmental policy outlines the organizational commitment towards resource conservation and environment protection. There is a periodic Audit programme of the Environmental Management Systems and Safety Management Systems – implemented both through internal and external audits. Suggestion scheme has been launched and various suggestions implemented in the area of improving Safety and Environment protection. As part of contributing to the development of the neighboring society, several initiatives have been taken up, such as Donating an ambulance van to the police department for handling medical emergencies on the highways. Donating a water tanker to the local municipality Conducting various Environment and Safety programmes for school children

## ***Awards & Recognitions***

- Won the prestigious Golden Peacock Environmental Management Award (in Manufacturing – Large category) for outstanding achievement in pursuit of cleaner environment – awarded in 2002 by the World Environment Foundation.
- Awarded Certificate in Recognition of Excellence in Environment Management by the Andhra Pradesh Pollution Control Board on the occasion of World Environment Day (June 5, 2002.),
- The Environmental Management System has been certified as conforming to the ISO 14001 standards in July 2003.
- Awarded the highest ranking of Safety “Five Star” by the British Safety Council-UK and achieved “SWORD OF HONOUR” – the highest recognition for Safety Standards from British Safety Council for the year 2003-04.
- Awarded the Five Star rating for the year 2005 by British Safety Council and applied for “SWORD OF HONOUR AWARD” for the year 2005-06.
- Asian Paints has internally awarded the Patancheru Plant for Best Energy Conservation measures taken during 2004-05 across the Asian Paints manufacturing setups..

## ***Safety***

- Ensuring high standards of housekeeping in the factory premises, resulting in a Safe Shop floor, by adopting 5S methodology.
- Development of Safety Manual as a common standard for Safety systems in all plants. The Safety Manual captures all the specific requirements of the paint industry and the hazards associated with it. The Safety Manual has been fully implemented.
- All personnel are trained on First Aid and basics of Safety management.
- Regular monitoring and analysis of accidents with a view to reduce accidents