

Asian Paints Limited, Ankleshwar (Gujarat)

Company 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.

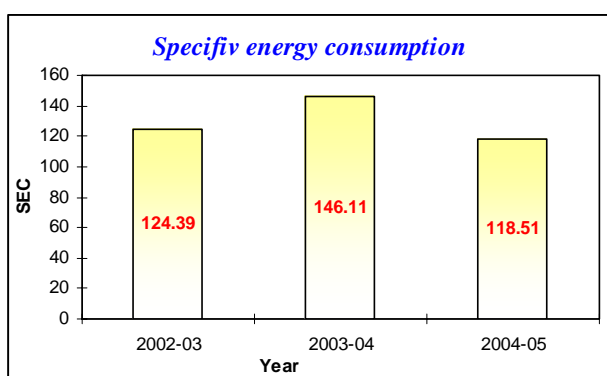
To achieve our goal we shall:

- 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

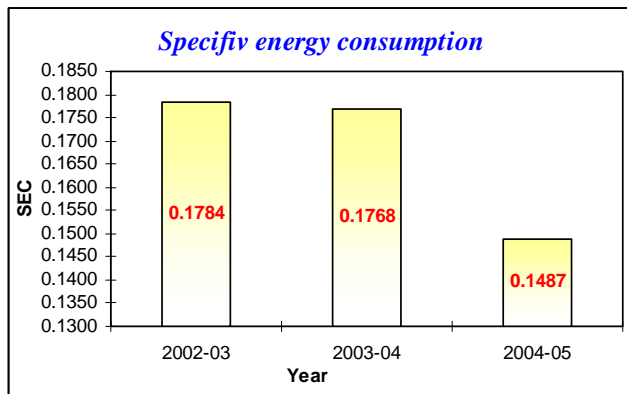
Specific power consumption details	Unit	2002-03	2003-04	2004-05
Annual Production	MT	61529	55241	72325
Total Electrical Energy consumption per annum	Kwh (lakhs)	76.54	80.71	85.71
Total Thermal Energy consumption	Million K Cal	10979.37	9766.66	10756.46
Total Manufacturing cost in rupees.	Lakhs	18151.09	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

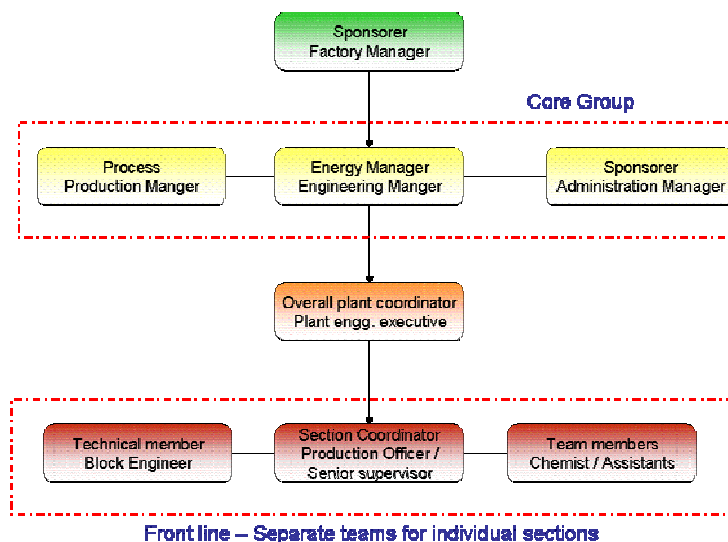


Energy Conservation Commitment and Set-up

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					Investment incurred on the project (Rs. Lakhs)	
		Electricity (Lakhs (kWh))	Fuels*			Total savings in (Rs. Lakhs)		
			Coal (tonnes)	Diesel (KL)	Gas (lakhs m ³)			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	0.2800					0.88	1.20
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

Write up on 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		Approx. investment (Rs.lakhs)	
	Energy Value			Rs. Lakhs
	(KWH in Lacs)	Million Kcal		
Interlocking of Chilled water 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 disperser	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
Total	8.0960		25.70	19.24

DETAILED WRITE-UP OF 2004-2005 PROJECTS

1. Installation of Air pre heater for thermic fluid heater

Background of the project

Thermopac of 20 Lac Kcal was running for 350 days per year with an efficiency of 88%.

Observation made

The exhaust gas temperature was around 250° C. After the installation of waste heat recovery boiler on Gas engine, thought came of recovering the waste heat at other places in the plant.

Technical and financial analysis

A detailed study was made with M/S Thermax & M/s Transparent and it was proposed to install an Air Pre-heater to utilize the waste heat

Implementation

Air Pre-heater was installed and commissioned. The exhaust gas temp was reduced to 165°C and by pre-heating of the combustion air, increases in Thermopac efficiency of 4% & there by reduction in fuel consumption by 4% was achieved.

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

AIR PRE-HEATER INSTALLED IN THERMOPAC



2. Replacement of Reciprocating air compressors with screw compressor in Utility block

Background of the project

All the compressors in the plant were Reciprocating type.

Observation made

Reciprocating compressors consume power when they are even in unloading condition The power consumed was more also failure rates were high.

Technical and financial analysis

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.

Implementation

The low efficient reciprocating compressor in the utility section has been replaced with efficient screw compressors.

Energy savings per annum	:	174520 KWh
Savings in Rs. per annum	:	5.5 Lakhs
Investment made	:	12 Lakhs
Pay back	:	28.8 months



3. Replacement of Reciprocating air compressors with screw compressor in pneumatic conveying of emulsion paints section

Background of the project

Reciprocating air compressor was in use for pneumatic conveying of powder raw materials in emulsion paint section

Observation made

Reciprocating compressors consume power when they are even in unloading condition The power consumed was more also failure rates were high.

Technical and financial analysis

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.

Implementation

The low efficient reciprocating compressor in the emulsion paint section has been replaced with efficient screw compressors.

Energy savings per annum	:	31250 KWh
Savings in Rs. per annum	:	0.98 Lakhs
Investment made	:	3.4 Lakhs
Pay back	:	41 months

4. Replacement of inefficient copper chokes by efficient electronic chokes

Background of the project

Tube light to the population of around 1100 in the plant had inefficient copper chokes which was consuming around 20 watts

Observation made

In 1st phase it was decided to replace 200 of these copper chokes with electronic chokes in order to get the early benefits.

Technical and financial analysis

Electronic chokes which were proven for its energy efficiency were installed & Lighting power reduction was achieved

Implementation

All 250 Chokes were installed & performance was found be satisfactory

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

5. A.C drives for twin shaft dispersers in emulsion paint section

Background of the project

Processing of emulsion pants require operating the TSD at different speeds

Observation made

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.

Technical and financial analysis

It was proposed to install A.C drives on the TSD's for operating at different speeds & avoid running the equipment at higher speeds than required.

Implementation

A.C. Drives have been installed on TSD's & have been successful in achieving the power savings

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

6. Cyclic timers for Window A.C 's

Background of the project

All the window A/C's were found to run continuously with lower thermostat settings .

Observation made

Since all the employees are not continuously occupying the rooms a thought of providing cyclic timers with ON time as 20 minutes and OFF time as 5 minutes was decided

Technical and financial analysis

One timers were purchased on trail basis & installed and observed for a week after optimizing the ON/OFF time of the timer. Since the comfort level of the occupant has not come down it was decided to extend the same for all the A/C's .

Implementation

Timers were provided for all A/C units & timings were optimized based upon the seasons the duration of ON/OFF time of the A/C's are being adjusted by engineering department.

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

7. [Relocation of power factor capacitor bank at the load End](#)**Background of the project**

Capacitor banks were installed at PCC level

Observation made

While reconciling the daily energy consumption pattern it was observed that the power factor at the load was less

Technical and financial analysis

It was proposed to relocate the capacitor banks to the load end to improve the power factor. Trial for one MCC was taken & found encouraging

Implementation

Power factor capacitor banks were relocated to the load end for all major consuming sections.

Energy savings per annum	:	23540 KWh
Savings in Rs. per annum	:	0.88 Lakhs
Investment made	:	1.50 Lakhs
Pay back	:	20.5 months

8. [Utilisation of excess chilling capacity by converting electrical A/c's in administration block to AHU & FCU's.](#)**Background of the project**

Administration block was having electrical A/c's with a connected load of 55 TR

Observation made

It was found that there is an excess chilling capacity available from the VAM chiller running on hot water of Gas engine

Technical and financial analysis

It was proposed to install Air handling units & forced coil units utilizing the chilling water for the comfort air.

Implementation

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



9. [Installation of energy savers in A/C's & Replacement of reciprocating A/C's with rotary compressors.](#)

Background of the project

Plant was having lot of reciprocating compressors in A/C's

Observation made

It was found that the power consumption of reciprocating compressor are higher than the rotary compressors

Technical and financial analysis

It was proposed to replace all the old A/c's with reciprocating compressor with Rotary compressor along with energy savers which will switch ON / OFF depending on the loading

Implementation

The project was successfully implemented & there has been a lot of power saving

Energy savings per annum	:	44760 KWh
Savings in Rs. per annum	:	1.41 Lakhs
Investment made	:	3.54 Lakhs
Pay back	:	30 months



10. [Load optimisation on Cogen.](#)

Background of the project

Plants power requirement is mostly supplied through the 2 numbers of 678 KW Gas engines

Observation made

It was observed that the average KW generation from the Gas engines was around 525 Kw per hour as against the rated capacity of 678 KW, thereby forcing to take power from state board electricity

Technical and financial analysis

After studying the entire loading pattern it was observed that the engine was running at lower capacities to take care of the kick loads that are going to come (as paint [processing is a batch process.

Implementation

After studying the entire loads & loading patterns, entire load was redistributed so as to have a continuous load on both the engines. This has resulted in increase of generation of KW from the engines

Energy savings per annum	:	0.0 KWh
Savings in Rs. per annum	:	6.05 Lakhs
Investment made	:	0.45 Lakhs
Pay back	:	0.9 months



11. [Turbine ventilators in place of electrical exhaust fans in SPB & Resin House](#)

Background of the project

In the charging floors of Resin House & solvent based paint block roof top exhaust fans were used for air circulation.

Observation made

It was found that there these exhaust fans were frequently going under breakdown & there by creating problem for the people working there

Technical and financial analysis

It was proposed to install turbine ventilator which doesn't require electrical energy for its operation but instead they run due to wind power

Implementation

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

12. [Installation of energy efficient motors.](#)

Background of the project

Ankleshwar plant is 22 year old plant & the motors also have become old

Observation made

During these years some motors have got rewinded many times there by losing the efficiency.

Technical and financial analysis

It was proposed to replace the inefficient motors

Implementation

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

13. [Replacement of HSPV lamps with CFL lamps in street lighting by CFL lamps.](#)

Background of the project

Street lighting in the plant was having HSPV lamps

Observation made

It was found that these HSPV lamps consume more power than CFL lamps

Technical and financial analysis

Trial was taken by fitting the CFL lamps with out compromising on the lux levels of that area . So it was decided to replace at few more areas

Implementation

HSPV lamps were replaced by CFL lamps at identified areas

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



14. [Installation of Mechanical seals in chilled water pumps.](#)

Background of the project

Chilled water pumps were running 24 hrs & they were having gland packings in them

Observation made

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.

Technical and financial analysis

It was proposed to install Mechanical seals

Implementation

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



15. Utilisation of excess chilling capacity by converting electrical A/c's in cold storage room & shade card section to FCU's.

Background of the project

Cold storage room & shade card sections were having electrical A/c's with a connected load of 30 TR

Observation made

It was found that there is an excess chilling capacity available from the VAM chiller running on hot water of Gas engine

Technical and financial analysis

It was proposed to install Air handling units & forced coil units utilizing the chilling water for the comfort air.

Implementation

The project was successfully implemented & there has been a lot of power saving

Energy savings per annum	:	29780 KWh
Savings in Rs. per annum	:	0.94 Lakhs
Investment made	:	2.35 Lakhs
Pay back	:	30 months



SHADE CARD 20 TR



COLD STORAGE 10 TR