



# Tata Motors Passenger Car Business Unit

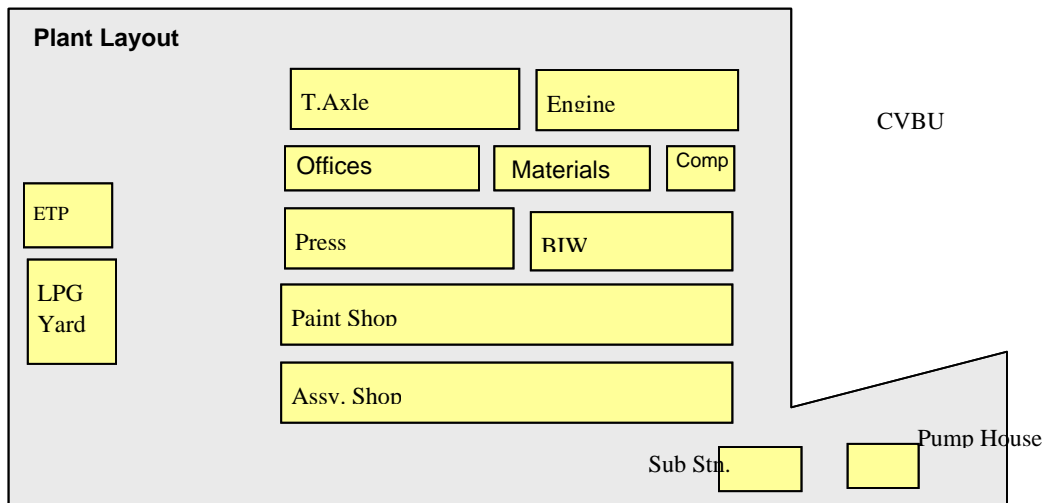


## Unit Profile

- Tata Motors, one of India's largest private sector companies, is the leading commercial vehicle manufacturer with significant presence in the multi-utility and passenger cars segments. The company has an annual turnover of over Rs 80 billion.
- The Passenger Car division was born out of a vision to offer the Indian customer all the comfort of a big car, at the price of a small car.
- The widely successful Tata Indica, a Euro 2 compliant vehicle, is the country's first indigenously designed, developed and manufactured passenger car. In December 2002, the company launched the Tata Indigo, a sedan. It also makes several other passenger vehicles, including the Safari, Sumo and Sierra
- Tata Motors has a strong client following not only in India but also in the Middle East, Asia, Africa, Australia, Europe and America.
- The company has manufacturing plants at Jamshedpur, Pimpri and Chinchwad near Pune, and Lucknow in IIP

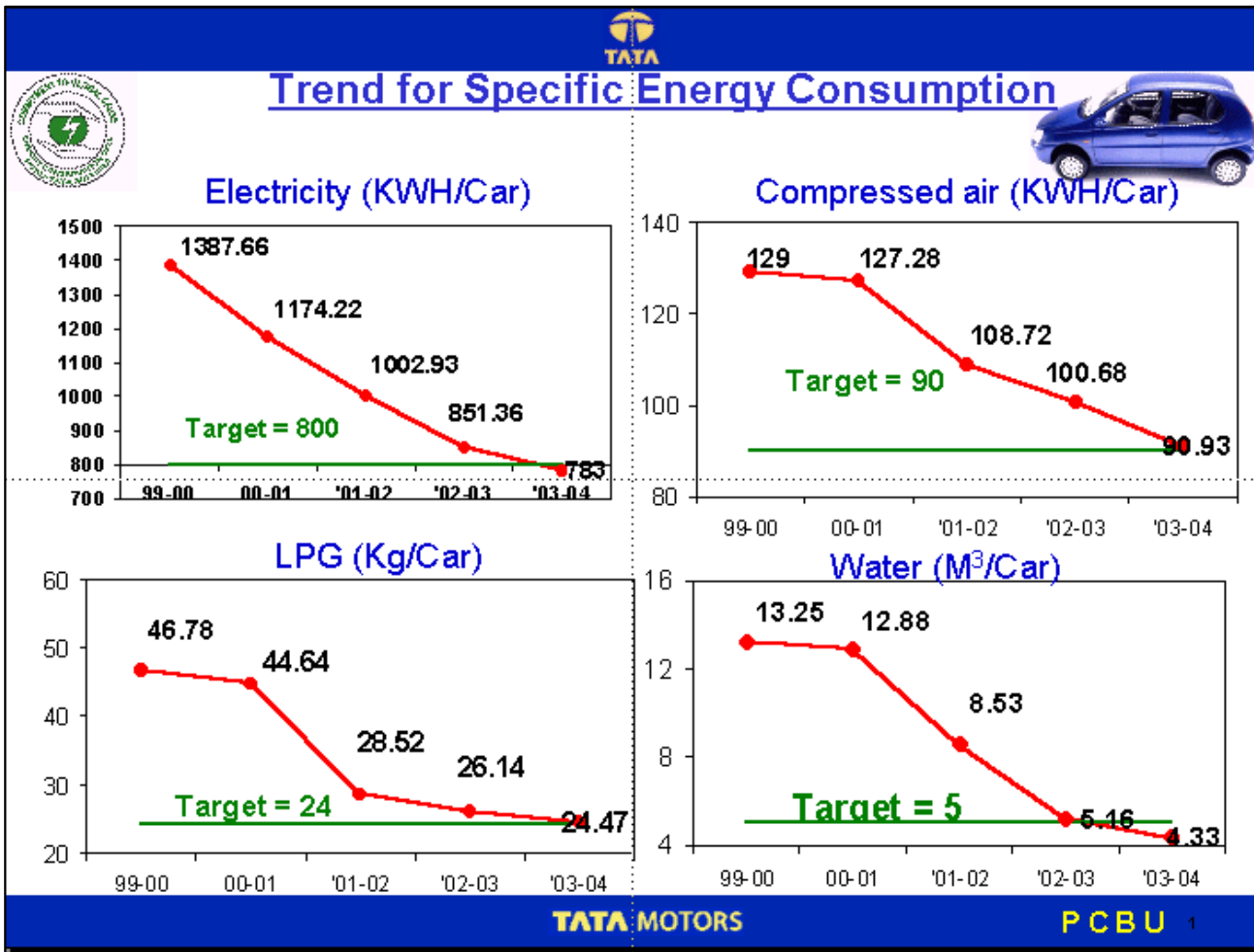
## Plant Profile

Spread of Plant	- 178 acres.
Production Level	- 126005 Units (2003-04)
Total turn over	- Rs. 2478 Crores
Total shop Sub-stations	- 27 Nos.
Total connected load	- 65 Mw.
Maximum demand	- 15 MVA



## Energy Consumption:

Year	Annual Energy Consumption					Prodn. (Units)	Specific Energy Consumption		
	Electrical		Thermal				Electrical	Thermal	
	Kwh (Million)	Rs (Million)	Fuel Type	Tons/ KL	Rs (Million)		Kwh/Car	Kg/Car	Lits/Car
2000/01	54.86	234.6	LDO	673	9.9	46720	1174		14.4
			LPG	2086	47.37			45	
2001/02	64.73	262.46	LDO	828	14.7	64541	1003		12.8
			LPG	1841	31.2			28.52	
2002/03	69.72	282.69	LDO	1052	16.4	81892	851		12.8
			LPG	2141	35.7			26.14	
2003/04	98.72	399.8	LDO	768	12.3	126005	780		6.09
			LPG	3084	52.4			24.47	



## Energy Conservation Commitment, Policy and Organizational Setup:

### Energy Policy:

We, at Tata Motors, are committed to optimum use of Energy and Fuel.

1. By using Energy Efficient Alternatives, methods and Eco-friendly Technology, by adopting diligent & effective maintenance & work Practices to ensure quality & reliable supply.
2. To minimize and eliminate the wastage in every segment of operations.
3. To make an effort to continuously reduce the cost of service by adopting effective "Energy Management System".

### Environment Policy:

#### ENVIRONMENTAL POLICY

TATA Motors reaffirms its commitment to minimize the adverse impacts of its products, operations and services on the environment.

Towards this end, it shall strive to:

- Establish sound environment objectives and targets & a process of reviewing them.
- Comply with all applications legal / regulatory & other Environment requirement.
- Reduce the emission levels of vehicles in full compliance of the regulatory norms & proactively work with the industry, Government, other related industries & agencies to bring in international practices.
- Use of environmentally sustainable technologies & practices for prevention of pollution and the continual improvement in environment performance.
- Conserve natural resources and energy by minimizing their consumption & "wastage.
- Minimize wastage generation, enhance recovery & recycling of material and develop Eco-friendly wastage disposal practices.
- Building awareness of our work force, customers and vendors on Environment issues.

This policy is communicated to all our employees and made available to public / stake holders on request.

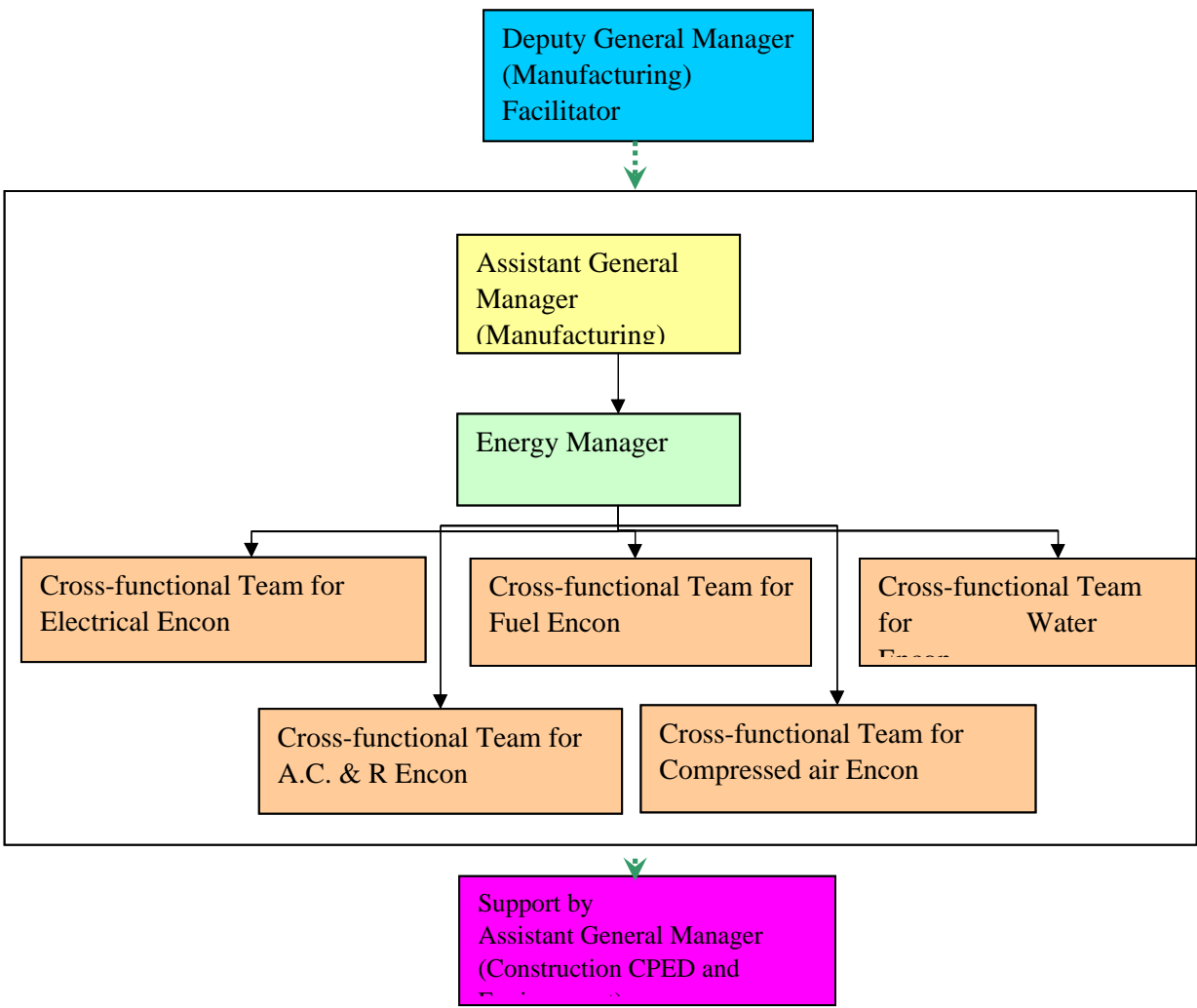
# TATA CODE OF CONDUCT

## Section (8) – Health Safety and Environment

“ A Tata company shall strive to provide a safe and healthy working environment and comply, in the conduct of its business affairs, with all regulations regarding the preservation of the environment of territory it operates in.

A Tata company shall be committed to prevent the wasteful use of natural resources and minimize any hazardous impact of the development, production, use and disposal of any of its products and services on the ecological environment.”


## Encon Cell Constitution



## Energy Conservation Achievements

**Passenger Car Business Unit bagged 'Excellent Energy Efficient Unit Award' consecutively for 2001-02 and 2002-03 at National Level competition organised by Confederation of Indian Industries (CII).  
Unit also bagged 'Most Useful Presentation Award' at same event in 2002-03.**

## Encon Details

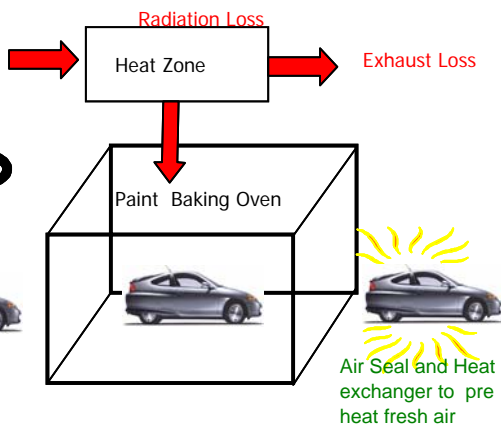
	Year	Encon Projects Implimented (Nos)	Investment Made (Rs Lakhs)	Savings Achieved (Rs Lakhs)	Specific Consumption	
					Electricity	LPG
					KWH/Car	Kg/Car
	1999-00	11	334	1055	1387	47
	2000-01	33	61.5	244.2	1174	45
	2001-02	28	6.6	119.9	1003	28.5
	2002-03	33	100	124.7	881	26.1
	2003-04	25	554	297.7	780	24.5

## Major Encon Projects Implemented during 2003-04

**Project Title : Thermography : An innovative way of Energy Conservation**



Air Seal and doors



Paint baking ovens in Indica Paint Shop were equipped with Air seals and doors at both Oven entry and Exit to take care of heat loss taking place from both places.

To identify and areest the heat loss taking place through radiation from oven walls was a challenge as the surface area is large and some of the areas were not accessible.

**Innovative way to identify weak insulated areas on oven walls :  
Use of Thermal Imaging Camera to identify weak insulation areas and therby arrest the same by attending leakages and replacing worn out insulations  
Savings Achieved: 63 Tons (LPG) ie @ 10 Lakhs Ruppees**

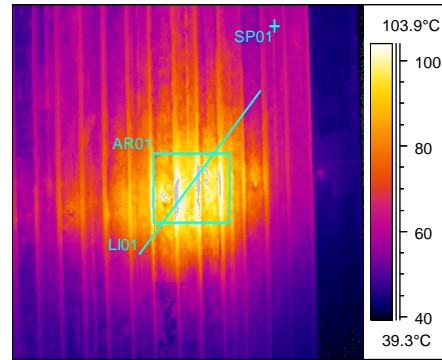
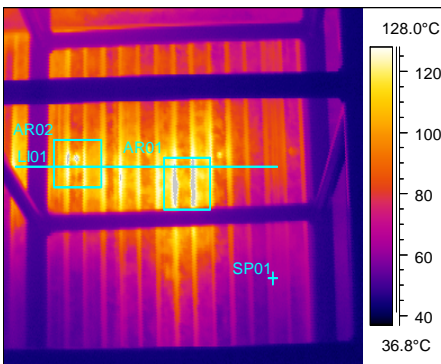
Please see the photographs attached on Next Sheet:

**Paint Baking Oven:**



Wall of Oven when viewed through naked eyes

Wall of Oven when viewed through thermography camera

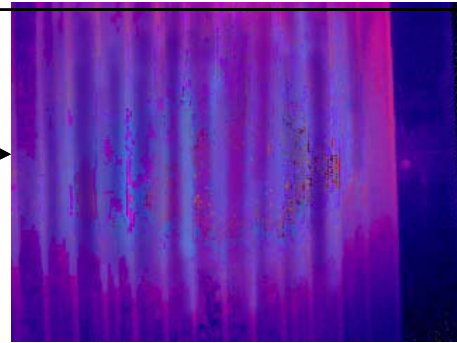


**Location Descriptions:-** Paint Shop Surfacer Paint Oven/ Heat zone-1 (north side) AR01 Temperature (max.)137.3°C  
**Observations:-** AR01 & AR02 are showing the hot zones on right side middle portion. SP01 shows the normal temperature observed on the shell which is 60 °C

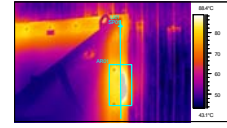
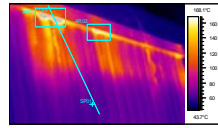
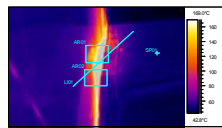
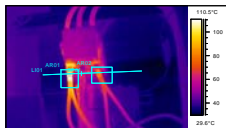
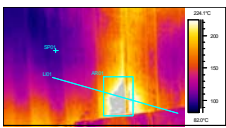
**Location Descriptions:-** CED Oven HZ-1 / East side AR01 Temperature (max.)113.6°C  
**Observations:-** AR01 shows a localized hot spot, where as the normal temperature observed on the same surface is around 60°C only.  
**Corrective Measures:-** Attended the welding leakage and replaced the lining



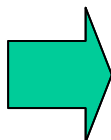
Wall of oven when viewed through Thermography camera after attending the insulation and replacing the worn out insulation



Some more thermography images taken across the plant:



**Project Title : Conversion of LDO fired Hot Water Generators to LPG fired ones**



On LDO supply before conversion

On LPG supply after conversion

<b>LDO</b>	<b>Cost Comparison</b>	<b>LPG (Propane)</b>
<b>10200</b>	<b>Kcal/Kg</b>	<b>10900</b>
<b>18.5</b>	<b>Fuel Cost (RS/KG)</b>	<b>17.0</b>
<b>171</b>	<b>Fuel Cons (KG/HR)</b>	<b>156.38</b>
<b>5694254</b>	<b>Fuel Cost per year</b>	<b>4785238</b>
<b>1016</b>	<b>Elect cost per year</b>	<b>0</b>
<b>5695270</b>	<b>Expenses per Year</b>	<b>4785238</b>
	<b>Annual Saving/Gen</b>	<b>910032</b>
	<b>Net Saving for 5 Gen/year</b>	<b>Rs. 4550160.00</b>

**Net Annual Saving achieved after conversion of 5 generators on LPG supply: 45 Lakhs**

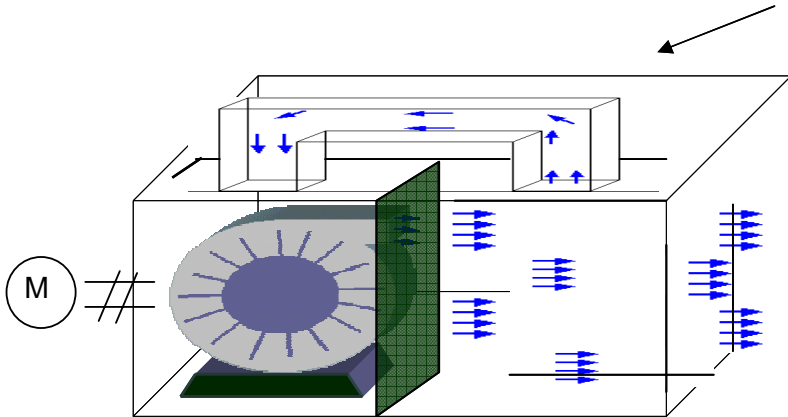
**Other environmental benefits achieved are:**

**No soot formation as LPG is cleaner fuel than LDO**

**No need to maintain separate stock of LDO as it is not required elsewhere in plant**

**Elimination of LDO pumping cost**

**Project Title : Installation of Variable Frequency Drives for Paint Booth Blowers and Pumps**

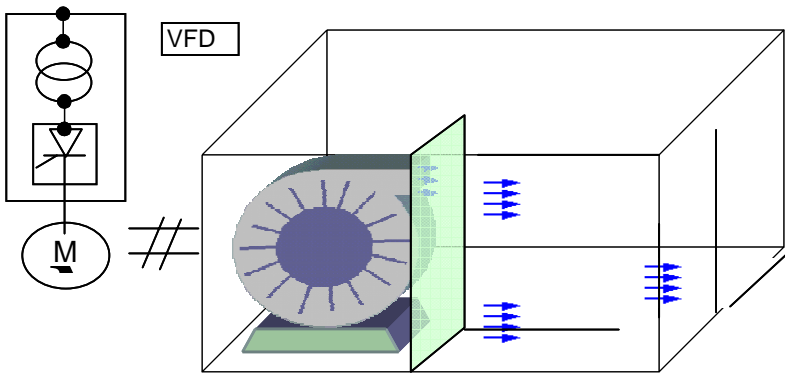


Bypass damper : Resulting in waste of energy as part of air is recirculated to control the out put.

Before VFD installation

Air Supply Blower with Bypass damper to control the flow of air in Paint Booth

**Use of VFD resulted in to enormous energy saving as output air is controlled by controlling the speed of the blower**



After VFD installation

Total Applications Selected	25 Nos.
Total Savings Achieved	454 Kwh
Annual Saving ( 12 Hrs.per day for 300 working days )	1634400 Kwh
Annual Savings in Rupees ( Rs. 4.08 / Kwh )	Rs. 6668352
Total Investment	Rs. 65 Lakhs
Pay Back period	11 Months
Savings Per Car ( For 1,30,000 cars/ Annum )	Rs. 52/-

## Energy Conservation Plans and Targets

### Encon Plans

Energy Conservation Measures (Planned)	Anticipated savings		Approx. investment (Rs.lakhs)	Project Commencement & Completion year
	Energy Value (specify units)	Rs. Lakhs		
1) Downsizing of light loaded motors with the use of energy efficient motors.	195200 Kwh	79	100	2004/2005
2) Conversion of LDO Fired Hot Water Generators to LPG fired once.	23797 Kg (LDO)	4.4	10	2004/2005
3) Implementation of various cycle time reduction projects.	6000000 Kwh 300000 Kg (LPG)	303	5500	2004/2005
4) Installation of Asian E Tubelights	1600 Kwh	0.07	10	2004/2005
5) Reduction of non useful mass in paint baking Ovens.	300000 Kg (LPG)	60	1200	2004/2005

### Encon Targets

Year	Electrical*	Thermal*	Reduction over the year 2003-04	
			Electrical %	Thermal %
2003-04 (Base year)	783 Kwh/car	269.17 MKcal/car	-	-
2004-05	626 Kwh/car	215.37 MKcal/car	20%	20%
2005-2006	500 Kwh/car	172.29 MKcal/car	40%	40%

## Environment and Safety

### List of major environmental improvements made during 2000-04

Tata Motors has led the Indian automobile industry's anti-pollution efforts by introducing cleaner engines. It is the first Indian company to introduce vehicles with Euro Euro II norms and I. Its joint venture with Cummins Engine Company, USA, in 1992 was a pioneering effort to introduce emission control technology in India.

Tata Motors has set up effluent treatment facilities to avoid release of polluted water into the environment. In Pune the treated water is conserved in lakes that attract various species of birds from around the world, thus turning the space into a green belt.

The company's endeavors in environment protection include soil- and water-conservation programmes and extensive tree plantation drives.

At Tata Motors, carrying out process changes for improving our environmental performance is continuous process. Top Management commitment to ensure that our operations have the least environmental impact is reflected in our Quality Policy signed by our Chairman, Mr. R. N. Tata.

#### QUALITY POLICY

Tata Motors is committed to maximizing customer satisfaction and strives to achieve the goal of excellence, by continual improvement, through ongoing design and development, manufacture and sale of reliable, safe, cost-effective, quality products and services of international standards, using environmentally sustainable technologies, for improving levels of efficiency and productivity within its plant and ancillaries.

Tata Motors also has commitment towards improving the quality of life of its employees, both within and outside its plants and offices, through improved work practices and social welfare schemes.

Ratan N. Tata

Chairman December, 2000

Our 'Quality Policy' underlines our commitment to the manufacture of quality products using "environmentally sustainable technologies".

The 'Environmental Policy' makes specific commitment to prevention of pollution and management review of the environment management system.

#### ENVIRONMENTAL POLICY

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Ratan N. tata

Chairman 2001

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On this background of management of management commitment to pollution prevention and environment protection, Tata Motors is constantly striving to set new standards in the environmental performance of its products and processes.

#### LIST OF GREEN INITIATIVES FOR PRODUCTION:

·Oven exhaust from paint baking operations is burned in LPB fired 'Thermal Exhaust Air Incinerators', for complete combustion of Volatile Organic Compound (VOCs) and other un-burnt hydrocarbons in the oven exhaust, before discharge in atmosphere

·The painting setup (Booth, Oven, Automatic Painting Machines etc) installed is suitable for both solvent and water based painting process. A complete switch over to water based paints is planned when water based paints of required quality can be procured in sufficient quantities from indigenous paint manufacturers

·The application of primer electro-coat on car bodies is carried out through 'dip' type cathodic electro – deposition (CED) process. Paint transfer efficiencies of the water based CED paint are highest for 'dip type painting processes', which ensures resource conservation and minimal waste generation

·'Heat Wheels' are installed for recovering waste heat from exhaust air

·LPG, a cleaner burning fuel with low SO<sub>2</sub> emissions is used for majority of the process heat requirements

·The effluent treatment technology includes high rate DSM screens, Parallel Plate Separator (PPS) type- oil water separators and clariflocculators, trickling filters with special plastic packing media with large surface area and centrifuge for sludge handling. Tertiary treatment is given to the treated waste-water in the Recycling Plant by means of pressure sand filter, activated carbon filter and de-mineralisation plant

·Designed and implemented water recycling system for Paint Booths & Pre-treatment plant

·Use propane a much purer in place of LPG from November 2002

·Eliminated use of Glass fiber bag filters by replacing with synthetic media

·Installed Thinner recollection system for Paint booths in June 2002. This has eliminated contamination of atmosphere and water

·Use of Vermiculture for decomposing decompose organic food waste, turning the waste into a nutrient-rich material capable of supplying necessary nutrients to help sustain plant growth. This method is simple, effective, convenient, and noiseless. It saves water, energy, landfills, and helps rebuild the soil. The worms ability to convert organic waste into nutrient-rich material reduces the need for synthetic fertilizers.

Nature's ability to complete the life cycle process gets violated when we send food down the garbage disposal, or bury it in a landfill. We deplete the soil and deprive nature from rehabilitating itself when we bypass this natural life cycle recycling process.

Tata Motors developed vermiculture bed in January 2003, and is now being used for processing various organic wastes generated in plant.

These recycling activities have the unique feature of having a positive social impact also, as they are managed by Co-operative Societies, created with the intention of providing employment to needy relatives of our employees

·Retrofitment of LDO fired Hot Water Generators to that of LPG fired ones with the help from M/s Thermax Ltd the OEM of Hot Water Generators. Initiative has resulted in to considerable reduction of Total Particulate Matter (TPM) being exhausted from the chimneys of Hot Water Generators.

· Developed Petrol and Diesel engines for the Indica platform with enhanced performance meeting Euro III with EOBD (European On-Board Diagnostic) and development of Engines meeting Euro IV norms with common rail technology for Diesel Engines is in progress. Additional projects for Petrol Engines to meet Euro IV emission norms are also in progress.

·Rain Water Harvesting project implemented at Car Plant with an investment of 1.5

lakhs rupees resulted in to saving of precious water resource. Company could able to harvest 2460 meter cubes of water in financial year ending on 31 st March 2003.

## List of Certifications (ISO-9000/14000), Encon, Environment, Quality, Productivity and other Awards won during 2000-2004

Tata Motors PCBU Car Plant received ISO 9001:2000 and ISO 14000 Certification by BVQI in July 2003

**.Tata Motors PCBU received prestigious "Excellent Energy Efficient Unit" Award during the National level competition held by CII in November 2003, company also bagged Best Presentation Award on the rating given by all other participating companies.**

·The ICICI Bank and Overdrive Awards, 2003, voted Tata Indigo as the 'most exciting new car' of the year

·The Tata Indigo was adjudged the 'best value for money car' at the prestigious CNBC Auto Car Awards 2003

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·Tata Indica won the 'voice of the customer award' for 'best diesel small car' at NFO Automotive India 2002

**·Tata Motors PCBU Car Plant received the prestigious ' Excellent Energy Efficient Unit' Award in CII's National level competition held in December 2002.**

·The Center for Science & Environment (CSE), New Delhi initiated a "Green Rating of Indian Industry Project" for Automobile sector in 1999. The purpose of the same was to benchmark Indian Automobile industry for its environment friendliness taking in to account manufacturing process and product. The final rating was made public by Dr. Manmohan Singh, Ex- Finance minister in October 2001. Tata Motors has been placed in overall 12th position among the 26 participating companies, with a rating of ' Two leaves' which is the same as average industry rating, the highest industry rating awarded is 'three leaves'

· Tata Motors, Pune received the 'MCCIA-Dr. R J Rathi Award' for 'Environmental Pollution control in Industry' for the year 2001

· The Technology Development Board of the Department of Science and Technology, Government of India, recognized the indigenous development and successful commercialization of the Indica car by awarding Tata Motors the 'national award for successful Commercialization of indigenous technology by an industrial concern' for 2000

· Tata Motors received the 1999 national award for R&D efforts in the mechanical engineering industries sector

· Tata Motors was awarded the EEPC regional top exporter's trophy

· Tata Motors received the 'all-India trophy for highest exporter' 1998-99 in the capital goods exporters (non-SSI) category