

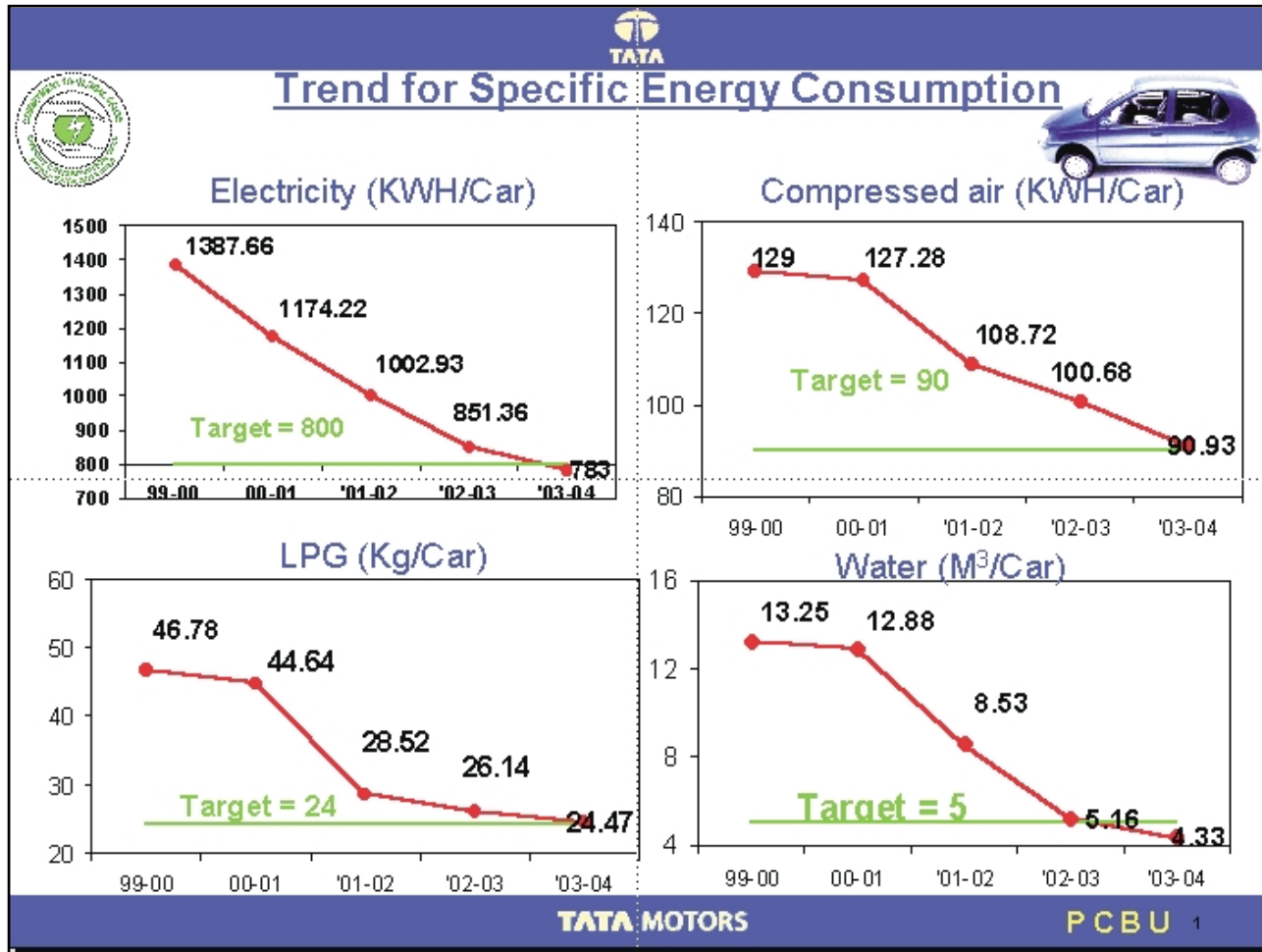
TATA MOTORS LIMITED
(PASSENGER CAR BUSINESS UNIT)
Pimpri, Pune (Maharashtra)

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.

Energy Consumption

Year	Annual Energy Consumption					Prodn. (Units)	Specific Energy Consumption		
	Electrical		Thermal				Electrical	Thermal	
	Kwh (Million)	Rs (Million)	Fuel Type	Tons/K L	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	



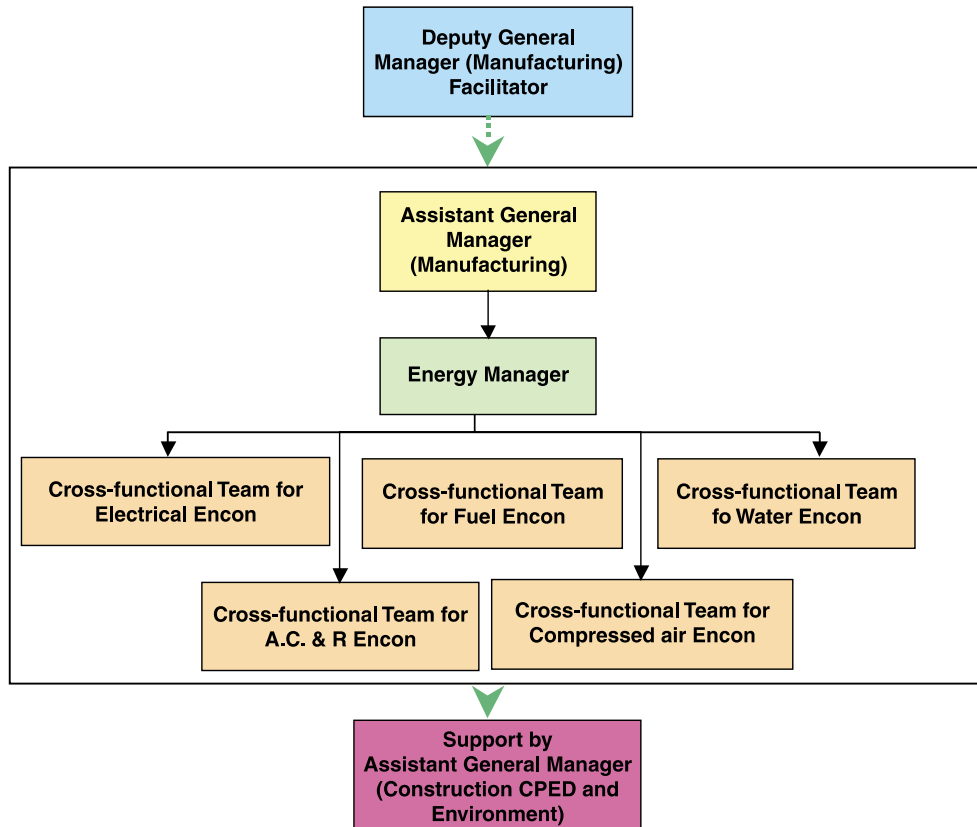
Energy Conservation Commitment, Policy and Set up

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”.

Encon Cell Constitution



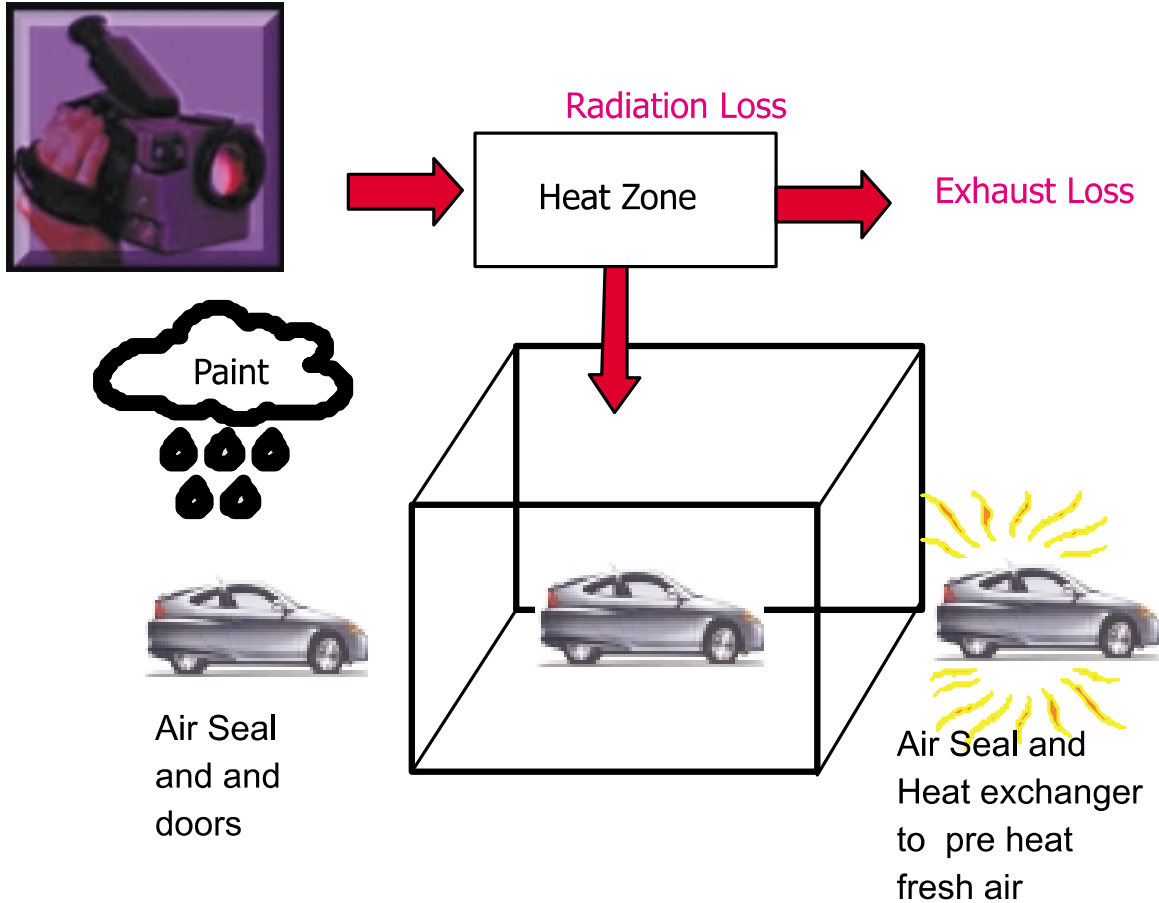
Energy Conservation Achievements

Encon Details

Year	Encon Projects Implimented (Nos)	Investment Made (Rs Lakhs)	Savings Achieved (Rs Lakhs)	Specific Consumption	
				Electricity KWH/Car	LPG 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



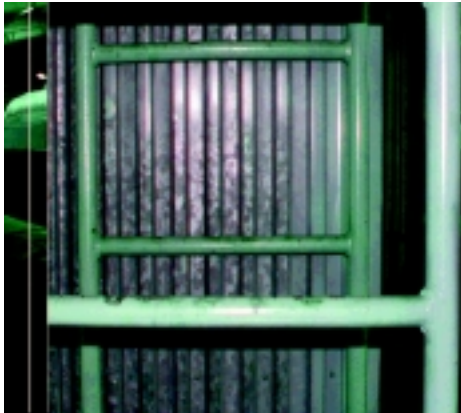
Paint baking ovens in Indica Paint Shop were equipped with Airn seals and doors at both Oven entry and Exit to take care of heat loss taking place from both places.

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 :

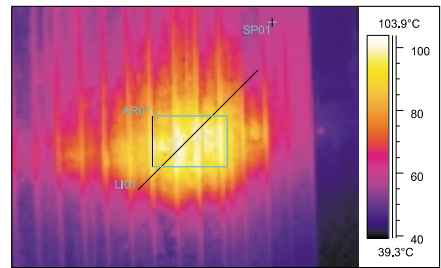
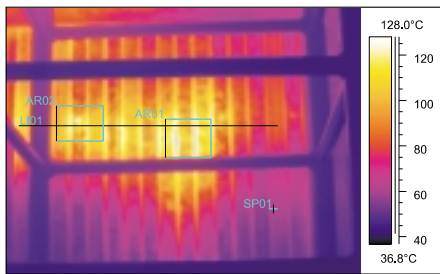
Use of Thermal Imaging Camera to identify weak insulation areas and thereby arrest the same by attending leakages and replacing worn out insulations

Savings Achieved: 63 Tons (LPG) ie @ 10 Lakhs Ruppees



Wall of Oven when viewed through naked eyes

Wall of Oven when viewed through thermography camera

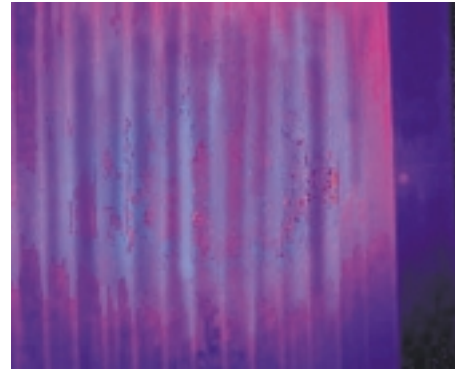


Location Descriptions:- Paint Shop Surfacer Paint Oven/
Heat zone-1 (north side) AR01 Temperature (max.)137.3°C
Observations:- AR01 & AR02 are showing the hot zones on right side middle portion. SP01 shows the normal temperature observed on the shell which is 60 °C

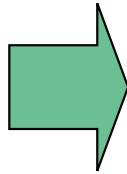
Location Descriptions:- CED Oven HZ-1 / East side
AR01 Temperature (max.)113.6°C
Observations:- AR01 shows a localized hot spot, where as the normal temperature observed on the same surface is around 60°C only.
Corrective Measures:- Attended the welding leakage and



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



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



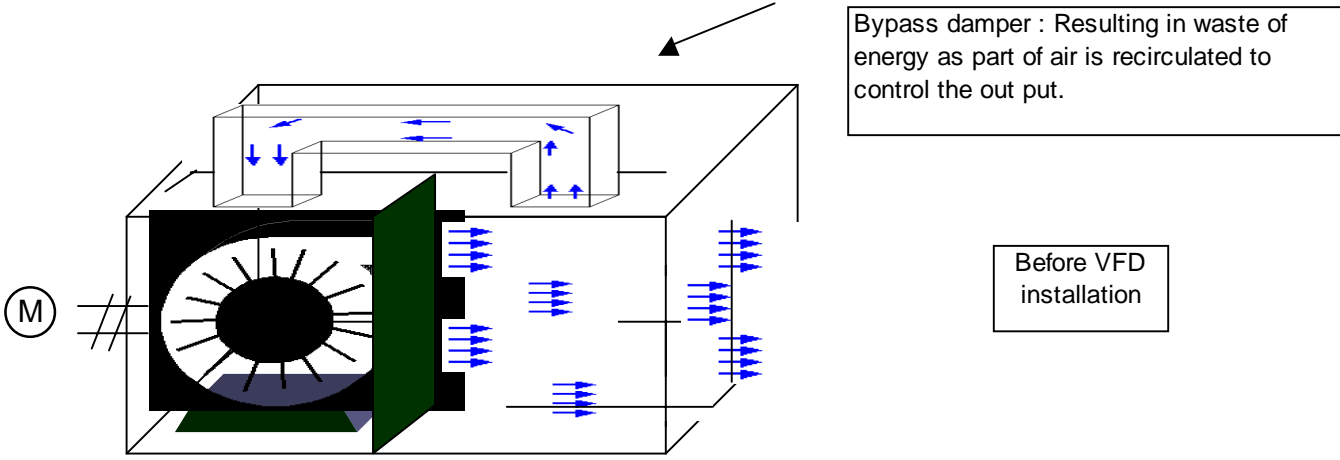
On LDO supply before conversion

On LPG supply after conversion

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

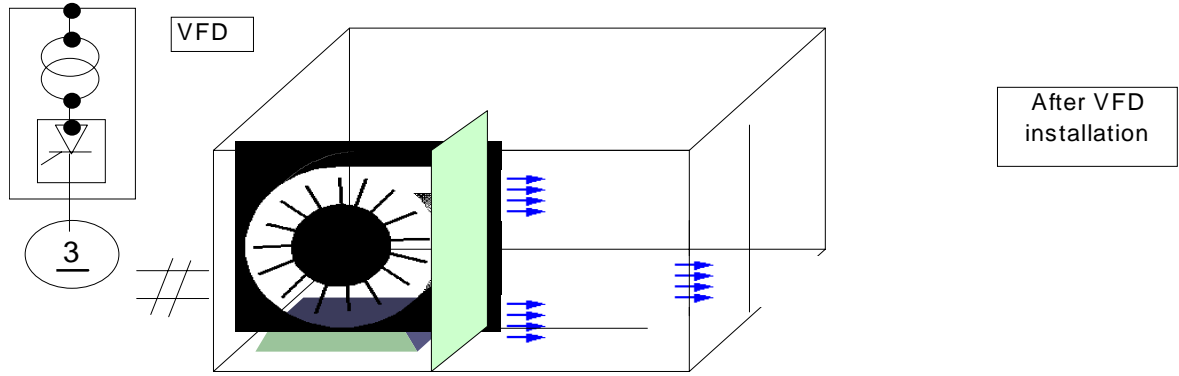
Net Annual Saving achieved after conversion of 5 generators on LPG supply: 45 Lakhs
Other environmental benefits achieved are:
No soot formation as LPG is cleaner fuel than LDO
No need to maintain separate stock of LDO as it is not required elsewhere in plant
Elimination of LDO pumping cost

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



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



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.