Company Profile
TATA GROUP

The Group was founded by Jamsetji Tata in the mid 19th century,

- 96 plus operating companies
- In seven business sectors:
  
  Information systems & Communications
  Engineering Material Services
  Energy Consumer products Chemicals.

- The Tata Group is one of India's largest business group, with revenues of $70.8 billion
- Tata companies together employees some 3,63,000 people.
- Operations in more than 80 countries across six continents,
- Export products and services to 85 nations.
- The Tata name is a unique asset representing leadership with trust & Our heritage of returning to society
TATA MOTORS

- Tata Motors Limited is **India's largest automobile company**
- Consolidated Revenues of **$15.4 billion (2008-09)**
- Leader in commercial vehicles in each segment in India
- **India’s 3rd largest passenger vehicles** manufacturer
- **World’s 3rd largest medium and heavy commercial vehicle** manufacturer
- **World’s 2nd largest bus** manufacturer.
- 2,000 touch points in India
- 24,000 employees
Tata Motors – Indian MNC

- *First* Indian Engineering Company to be listed in the *New York Stock Exchange* (Year 2004)

- Acquired the *Daewoo Commercial Vehicles* Company, Korea's second largest truck maker (Year 2004)

- Acquired Hispano Carrocera, Spanish bus and coach manufacturer (Year 2009)

- Joint Venture with Brazil-based Marcopolo for Bus body Building (Year 2006)

- MOU with Fiat for vehicle sales & manufacture

- 2008 – Acquired Jaguar & Land Rover
Tata Motors – Global Footprint

PLANT

ASSEMBLY LINE

MAJOR MARKETS

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Tata Motors Manufacturing facilities in India

- **Pune**, 1966
- **Jamshedpur**, 1945
- **Lucknow**, 1992
- **Ahmedabad**, 2009
- **Dharwad**, 1997
- **Pantnagar**, 2007

**Tata Motors 1945-2010**

**India Operations**
Energy conservation at TATA MOTORS
Energy Conservation

- Policy
- EC Act 2001

Government
- Ministry of Power

Encouragement
- Incentive, Taxation, Award

National Energy Policy
- Renewable Energy policy
- Monitoring Agency
- Bureau Of Energy Efficiency (BEE)

Industries
- Declare the Policy
- Team Formation
- Implementation
- Monitoring
Energy Conservation Team at TML Pantnagar

Reduce
Recycle
Reuse
# Tata Business Excellence Model

## Strategy Level
- Vision, Mission, Core Value
- Strategic Direction, Leadership System

## Business Process Level
- **Framework of Process**
  - (Enterprise Process Model - EPM)
  - 21 Top Level Processes (Level 1)
- **Define Business Processes**
  - (Enterprise Processes & Sub Processes Manual)
  - 104 + Sub processes (Level 2)

## Implementation Level
- Physical Plant, Machinery, Facilities & Computer Hardware, Software & network (Level 3)
Since 2006

TATA MOTORS

Pantnagar
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To Delhi 250 Km

To Lucknow 350 Km

TML Pantnagar
TATA MOTORS, PANTNAGAR

• Tata Motors’ 5th and youngest plant. Time from acquisition of land to start of production was in 11 months; a benchmark in the auto industry.

• Tata Motors Pantnagar received IMS (Integrated Management System) certification in 1st, 18 months of operations.

(Including ISO TS:16949, OHSAS 18001, ISO 14001).

• Tata Motors’ 1st plant with an integrated vendor park, to keep inventories low and to ensure supplies JIT.
Strategy

Reducing Environmental Footprint

Infrastructure
- Integrated Manufacturing
- Modular concept
- Innovative construction
- Less Cement
- Efficient Facilities
- Water conservation

New Products
- CNG vehicles
- BS III & IV

Manufacturing
- System
- Process
- Ramp up plan

Logistics
- Vendor Park Near Mother Plant
- Transportation
- Recyclable bins, pallets

... towards green plant
Strategy - To reducing Environmental Footprint

**Infrastructure**

**Actions:**
- To reduce 30% Steel for building structure
- Modular concept
- To reduce heat load on ventilation by installing Double insulated side and roof walls.
- To reduce illumination load by installing Sky light sheets
- To install energy efficient motors for blowers, conveyors
- To install Screw chillers for AC system
- VFD for Compressor and all High powered motors
- Servo controller for Compressed Air Supply.
- Fan less cooling towers for compressor
- Propane for process heating, instead of conventional fuel e.g. HSD/LDO/FO
- Use of natural resource Artisan wells
- CFL Lamps, Solar Lamps, Wind Ventilators
- Lakes & Rain water harvesting

**Manufacturing**

**Actions:**
- Efficient Washing Machines
- Inter Shop Conveyor
- Friction roller conveyor
- “Wet on Wet” Painting process
- Process Optimization
- Power & Free Conveyor
- Electrified Monorail System
- CNC Machines
- Reuse, Recycle, Reduce process waste

**Logistics**

**Actions:**
- Vendor park near the mother plant to reduce inbound transportation
- Out bound Transportation - Railways
- Transportation internal & employee transport

**New Product Introduction**

**Actions:**
- CNG Vehicle
- Fuel Efficient Vehicle – with Start-Stop arrangement
- Adherence to emission norms
To meet the production ramp up a Modular concept & Pre fabricated steel structures are used

- 30% steel & 15% cement less used

Hence reduced environmental impact during production of parts
**Strategy**

**Infrastructure**

- Modular Concept

---

**Plant layout**

- **Vehicle Assay 4**
- **Vehicle Assay 3**
- **Vehicle Assay 2**
- **Vehicle Assay 1**
- **Engine & Gear Box**
- **Paint Shop**
- **Weld Shop 3**
- **Weld Shop 2**
- **Weld Shop 1**
- **Weld Shop 4**
- **Utility**
  - Air, Water, Power, Fuel
  - ETP, STP

- Inter shop Conveyor
- Weld shops to Paint to Assy Lines 1.5 Km long

- **Ready**
- **WIP**

- **Phase wise shops in sets**
- **Fast production Ram up**
- **Less inventory**

Hence reduced environmental impact during production of parts

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Strategy

Reducing environmental footprint

Infrastructure

Use of Renewable Energy

- Day light Transparent Sheets
- Wind Ventilators
- Solar Street Lamp
- CFL Tube lights

- Wind Ventilators, Day light sheets
- Double insulated sheets for wall & roof
- Solar Street Lights
- CFL Lamps

Hence reduced environmental impact

Advantages:
1. Installed at Strategic Locations
2. Illumination at emergency

Advantages:
1. 40% Energy saved
2. Illumination uniform & better
3. Load on Air Conditioning reduced
4. 43200 KWH per year saved

Cum Sum Saving in Lacs Kwh

<table>
<thead>
<tr>
<th>Year</th>
<th>Cum Sum Saving</th>
</tr>
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<tbody>
<tr>
<td>2002</td>
<td>3.11</td>
</tr>
<tr>
<td>2003</td>
<td>9.83</td>
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<td>2004</td>
<td>18.34</td>
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<td>2007</td>
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<td>2008</td>
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<td>2009</td>
<td>78.91</td>
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</tbody>
</table>

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Infrastructure

Efficient Facilities

- Screw Compressor with VFD
- Servo controlled Compressed Air
- Fan Less cooling tower

Hence reduced environmental impact during production of parts
Strategy

Reducing environmental foot print

Natural Resource

Efficient Facilities
Water conservation

5% Reduction of Power Consumption for ETP Water Pumping

Solar Water Heating for Canteen

The Artesian well is Supplying Raw water to WTP without power

5% Reduction of Power Consumption for ETP Water Pumping

Since 2001 3945.8 Lacs Wind Units

WIND POWER PERFORMANCE

Target for Year 2009-10 Wind Power - 590 Lacs Wind Units

Use of Natural Resource
Hence reduced environmental impact

TATA MOTORS

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... towards green plant
New Technology at Paintshop

3C1B Process, Direct Heating, RTO (Regenerative Thermal Oxidizer) for incineration of thinner / fumes

Reduced heat loss by providing insulation

Propane – Clean Fuel

Hot surface insulated by glass wool
6 to 8% energy saving, ROI is 6 Month
Logistics

Transportation

- Finished Goods Transport by Railways
- Transport facility to Employees,
- Internal Shuttle

Hence reduced environmental impact

Reduce environmental Impact of transporting finished vehicles

>20,000 Vehicles dispatched

>600 t CO2 Reduced

35 t CO2 Reduced /Year

Entry for 100 Vehicles / day restricted

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New Products

- ACE CNG
- Magic CNG
- ACE -Fuel Efficient

- Worlds Lowest Priced Car
- CNG Vehicle, New Efficient Products
Our Journey

Innovation

Use of New Technology

Use of God Gift

Process improvement or Efficiency Improvement

Loss Elimination
Specific Fuel Consumption Trend in Million KCal / Veh.

Plant 2, Fuel Consumption, MKcal / Veh.

- Fiscal Year 2007-2008
- Fiscal Year 2008-2009
- Fiscal Year 2009-2010

- 16% decrease

New Plant, Fuel Consumption, MKcal / Veh.

- Fiscal Year 2007-2008
- Fiscal Year 2008-2009
- Fiscal Year 2009-2010

- 48% decrease
Case Study - 1

Theme: Reduce Energy Consumption in Illumination

Theme: Use of New Technology & Innovation to reduce energy consumption

Yearly consumption trend for illumination CVBU

<table>
<thead>
<tr>
<th>Year</th>
<th>Lahs Units</th>
<th>1996</th>
<th>2000</th>
<th>2003</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1000W bulbs &amp; 5000 NOS</td>
<td>152.5</td>
<td>61.0</td>
<td>56.4</td>
<td>53.0</td>
<td>45.1</td>
</tr>
</tbody>
</table>

- 1000 W to 4000 W: 60%
- 400W to 250W (1000 Nos): 7.5%
- Out of 5000 nos 1500 nos brought under saving scheme
- Target - After implementation by 2006 for all 5000 nos

What Next?

<table>
<thead>
<tr>
<th>Picture/ sketch/ drawing before modification</th>
<th>Picture/ sketch/ drawing after modification</th>
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<tbody>
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<tr>
<td><img src="image3.png" alt="Image 3" /></td>
<td><img src="image4.png" alt="Image 4" /></td>
</tr>
</tbody>
</table>

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Case Study - 2

Result

Power Consumption UPCL vs DG in MWH

- DG Power Nil
- DG Power 1%
- DG Power 18%

Year | Rs / KWH
--- | ---
FY-07-08 | 3.52
FY-08-09 | 3.66
YTFY-09-10 | 4.50

Power Consumption in MWH & KWH / Veh.

- 49%

Power Consumption KWH / day & KWH / Veh.

- 31%
Sharing Best Practices

1. Intranet Site
2. Cross Locational Team
3. Knowledge Book
4. Innovision – Tata Motors Level
5. Innovista – Tata Group Level
National Energy Conservation Award - 2009 (1st Prize in Automobile Sector)
## Achievements in the field of Energy Conservation

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Award Description</th>
<th>Organizing Body</th>
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<tbody>
<tr>
<td>2009</td>
<td>TML Pantnagar</td>
<td>National Energy Conservation Award BEE, 1&lt;sup&gt;st&lt;/sup&gt; Prize in Automobile Industry</td>
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<tr>
<td>2008</td>
<td>TML Pune</td>
<td>Excellence in Energy Management</td>
<td>CII</td>
</tr>
<tr>
<td>2006</td>
<td>TML Pune</td>
<td>Excellence in Energy Management</td>
<td>CII</td>
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<td>Excellence in Energy Management</td>
<td>CII</td>
</tr>
<tr>
<td>2004</td>
<td>TML Pune</td>
<td>Excellence in Water Management</td>
<td>CII</td>
</tr>
<tr>
<td>2003</td>
<td>TML Pune</td>
<td>National Energy Conservation Award BEE, 2&lt;sup&gt;nd&lt;/sup&gt; Prize in Automobile Industry</td>
<td></td>
</tr>
</tbody>
</table>
Reducing environmental foot print

TATA MOTORS
PANTNAGAR

5M USD

towards green plant