Introduction to TVS Motor Company
### World Two Wheeler Industry

<table>
<thead>
<tr>
<th>Region</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>34</td>
</tr>
<tr>
<td>India</td>
<td>22</td>
</tr>
<tr>
<td>Indonesia</td>
<td>10</td>
</tr>
<tr>
<td>Vietnam</td>
<td>5</td>
</tr>
<tr>
<td>Brazil</td>
<td>5</td>
</tr>
<tr>
<td>Thailand</td>
<td>2</td>
</tr>
<tr>
<td>Argentina</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>20</td>
</tr>
</tbody>
</table>

**World Market is 67 Million two wheelers**

**India is no. 2 two wheeler market in the world**
Indian Two Wheeler Industry

Motorcycles have grown to 79%
Motorcycles have grown to 79%
TVS Family...

SCL - Hosur & Chennai

SACL - Chennai, Mysore, Hosur

TVSM - Hosur, Mysore, HP & Indonesia

Sundaram Clayton Ltd.

Sundaram Auto Components Ltd.

Harita Seatings Systems Ltd.

Harita Fehrler Ltd.

TVS Motor Company Ltd.

HFL - Chennai, Hosur & Pune

HSSL - Hosur, HP & Pune
Our Heritage…

1911

The foundations for the TVS Group was laid by Shri. T. V. Sundaram Iyengar, the visionary who led the world with the ideals of Trust, Value & Service.

100 years...moving lives...moving India
TVS Group - 100 years young…

- Over 30 companies employing a workforce of 40,000 people
- The largest automotive components manufacturer in India – Turnover of USD 5 billion
- Driving success through our core values of
  - Trust
  - Value
  - Exactness
  - Passion for Customers
- TVS Motor Company - the largest company of the group in terms of size and a turnover of USD 1.5 Billion in 2010-11
We live to innovate...

Many firsts . . .
1st
- Indian manufacturer to win the coveted Deming Award
- to introduce auto-clutch technology in a motorcycle in India
- to deploy a catalytic converter in a 100 cc motorcycle
- to indigenously manufacture a 4-stroke 150 cc motorcycle
- to bring out innovative concepts like 99 colours and balancing wheels

The biggest roll out in Indian automotive history....

2007 – Seven new products rolled out on a single day

- 3-wheeler in 3 variants - 2 stroke, petrol, LPG and CNG
- Scooty Teenz Electric - an Electric Scooter
- 110 cc StaR City
- 3-Valve CCVTi Engine - 4 Stroke, 4 geared 125cc FLAME
- Apache RTR with Electronic Fuel Injection in 160 cc category
Leadership:
JRD Tata Corporate Leadership Award - 2004
Star of Asia Award

Engineering:
The Deming Prize
TS16949 Quality certification
Technology Award 2002
ISO 14001 & OSHAS 18001 certification
Progressive Manufacturer 100 Award (TRU4)
TPM Excellence Award 2008

Management:
Most Investor friendly company
SAP ACE AWARD 2007
TEAM TECH 2007 Award
The Value Chain & our business…

TVS Motor Company

Automotive Products Division

Customers

Suppliers

Dealers
TVS New Product Development Process

- More than 450 engineers in Product Development
- Over 85 specialists with Post Graduate & Doctorate qualification
- Consultancy arrangement with leading professors from reputed universities and research labs like AVL, Ricardo, LTC, TNO
- Dedicated team of 10 racing experts
- Participation in National Championship Rallies, Moto Cross, Road Racing, Dirt track racing, Drag racing...
- Won 90% of races participated
Accelerated New Product Introduction

TVS Motor New product launches

First 22 products in 22 years (1979 - 2000)
Second 33 products in 11 years (2000-2011)
TVS Motor products...

- Moped
- Scooters
- Motorcycles
- Three wheeler
- Bebek
TEI (Total Employee Involvement) forms the core of all initiative

In TEI QCC & suggestion are the foundation
Our Strengths…

- Truly Indian
- Indigenous Technology
- Innovative Engineering
"Shaping Sustainability interventions in Manufacturing Facilities"
**Introduction**

**Sustainability** is a business approach that creates long-term stakeholder value managing risks and embracing opportunities through optimisation of the economic, environmental and social bottom lines.

**Green manufacturing** deals with maintaining sustainability’s environmental, economical and social objectives in the manufacturing domain.

**Green manufacturing** was coined to reflect new manufacturing paradigm that employs strategies and techniques to become more eco-efficient.

**Sustainability** is a concept & **Green manufacturing** is a methodology.
Introduction

Inputs

- Water
- Material
- Energy

Outputs-1 (Intended)

Outputs-2 (Un-intended)

- Effluent
- Emissions
- Waste

Parivartan Sustainability
18-Oct-12
Green Manufacturing Strategies include.....

- Creating products and systems that consumes less **Resource** (e.g., energy, material and water)
- Substituting input materials (e.g., non-toxic for toxic, renewable for non-renewable),
- Reducing unintended outputs and converting output into inputs (recycling).
Environment Management System
Parivartan Sustainability
18-Oct-12

System Model for Green Manufacturing

Design & Planning

- Identify Colour
  * Assessment in terms of -
  * Green culture and Waste level

- Prepare Brush
  * Improvement plan in terms of -Material, Energy, Process & Technology.

- Paint it Green
  * Implement green mfg plan-
  * Process control, Recycle, Layout and Technology modification

- Keep it Green
  * Organizational approach-
  * Sustain green and get greener

Tools

- Environmental Issues
  * Identification
  * Evaluation

- Frame Work:
  * Prioritization
  * Objectives and targets

- Efficiency:
  * Management programs
  * Cost saving
  * Time saving

- Sustainability Tools:
  * Green Kaizen
  * Reporting
We believe that...

• Water and sustainable development are inextricably linked
• Water, today defines human, social and economic developments
• Without adequate supplies and management of fresh water, Socio economic development simply cannot take place.

Strategies adopted for fresh water conservation

- Progressive elimination of water intensive processes
- Migration from conventional technology to advanced technology
- Rinse water management system
- Accurate accounting of water withdrawal and consumption (Telemetry)
- Treated trade effluent recycling
- Rain water harvesting

Specific Water Consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>UOM: L/Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>530</td>
</tr>
<tr>
<td>2010-11</td>
<td>436</td>
</tr>
<tr>
<td>2011-12</td>
<td>433</td>
</tr>
</tbody>
</table>
Energy Conservation

Need of the hour…

Heat Recovery unit at Captive Power Plant

Day light harvester

150W Induction lamps

LED street Lights

Specific Energy Consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>45.31</td>
</tr>
<tr>
<td>2010-11</td>
<td>41.33</td>
</tr>
<tr>
<td>2011-12</td>
<td>37.89</td>
</tr>
</tbody>
</table>

UOM: KWH/Vehicle
Material Conservation

- Electro Deposition & Powder coating have been adopted in painting
- Six axis Robot for painting
- Paint transfer efficiency improvements - a continuous process
- Recycling of Waste Thinner

![Diagram of Material Conservation](image)

**Paint Sludge Generation (gms / Vehicle)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sludge Generation (gms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>04-05</td>
<td>553</td>
</tr>
<tr>
<td>05-06</td>
<td>492</td>
</tr>
<tr>
<td>06-07</td>
<td>500</td>
</tr>
<tr>
<td>07-08</td>
<td>451</td>
</tr>
<tr>
<td>08-09</td>
<td>262</td>
</tr>
<tr>
<td>09-10</td>
<td>175</td>
</tr>
<tr>
<td>10-11</td>
<td>140</td>
</tr>
<tr>
<td>11-12</td>
<td>118</td>
</tr>
</tbody>
</table>

**Disposal of Waste Thinner**

- Distilled Thinner
- Waste Thinner
- Residues
Waste Management

- Paint sludge generated is used for co-generation in cement kiln
- Plating metal sludge is recycled in association with M/s. World Resource company Germany
- ETP sludge will be used as Raw material in Cement manufacturing.
- Used coolant is recycled using Photo Chemical Reactors.

- Garden wastes are converted into manure by vermi-composting
- Canteen waste is composted with EM (Effective Micro-organisms) and part converted into Bio-gas
- These manures are used for gardening and aorestation activities
• Environmental concerns, depletion of natural resources and regulatory pressures have resulted in recycling of engineering goods. End-life-Vehicle (ELV) recycling of automobiles is a well established practice in US, Europe & Japan.

• TVSM through engagement with Society for Indian manufacturers, have been educating peer and government authorities on the opportunities.

• A demonstration center was set at Global Automotive Research Center (GARC), Oragadam, near Chennai on 2nd August 2011

Patent for Conversion of Paint Sludge

A Patent has been granted for a process for the conversion of waste paint sludge into compost suitable for soil enrichment through micro-biological degradation
Product Stewardship

**RECYCLABLE MATERIALS**
Material use (Substitution); Reduce toxic materials; Waste (Reduction in waste generation)

- **Cover frame** - Painting elimination by texturising; No paint sludge
- **Brake lever** - Powder coating to Vibrofinishing (elimination of powder coating)
- **Alloy wheels** - Nickel chromium plating to powder coating
- **Mufflers** - Nickel chromium plating to stainless steel (elimination of plating)
- **Brake Pedal, Kick starter lever** - Nickel chromium plating to less hazardous zinc plating
Educating school children

Demo of Renewable Energy

Plantation by school children

Lecture on Environment

Plantation by school children

Source segregation of waste

Bird watch
Celebration of World Environment Day

Distribution of saplings

Inauguration of tree bank
TVSM believes that business will grow only when the community is wealthy, healthy, educated and empowered.

TVSM has a separate organization viz., ‘Srinivasan Services Trust’ for carrying out its CSR activities. These are supervised and guided by the Chairman of Srinivasan Services Trust. He is assisted by a 154-member team of engineers, Agriculturists, Conservation experts, Social workers.

Over the past 16 years, Srinivasan Services Trust (SST) has made effort to bring a change in the lives of the people in rural India by creating self reliant models of sustainable development.

SST’s work area has increased from 2 villages in 1996 to 1056 villages in 2012. Community takes ownership of the development effort. Government recognizes the effort of SST and the community.
Social Activities

- Value Addition in Honey Collection in Javadhu Hills
- Turmeric as Intercropping
- Women Empowerment
- Vermi Compost
- Rearing Milch Animal - Raising Life Standards
- Rearing Milch Animal - Raising Life Standards

Parivartan Sustainability
18-Oct-12
Social Activities

Creating hygienic environment in schools

Infrastructure for villages

Dental Camp

Training to school children

Anemia screening for women
## Results of the Social Activities

<table>
<thead>
<tr>
<th>Category</th>
<th>Initiatives</th>
<th>Expenditure (Rs. Lakh)</th>
<th>Benefit to Community* (Rs. Lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Population Covered</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>401125</td>
<td>717928</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Families</td>
<td></td>
</tr>
<tr>
<td>Physical infrastructure</td>
<td></td>
<td>55.14</td>
<td>101.2</td>
</tr>
<tr>
<td>Formation of roads (Km)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of drains(Km)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving infrastructure in balwadis (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of balwadi toilets constructed (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving infrastructure for schools (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking water facilities in schools (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of community toilets (Nos.) etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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<th>Benefit to Community* (Rs. Lakh)</th>
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<tbody>
<tr>
<td>Livelihood creation</td>
<td></td>
<td>2.35</td>
<td>3.49</td>
</tr>
<tr>
<td></td>
<td>Self Help Groups formed (Nos.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Families enrolled in SHGs (Nos.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Families income increased through income generation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Veterinary camps conducted (Nos.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No. of animals increase by milk yield</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Area covered under drip irrigation (Ha.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agriculture related awareness programs (Nos)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General health check up for public (Nos.)</td>
<td>8.57</td>
<td>9.93</td>
</tr>
<tr>
<td></td>
<td>Dental health check up for students (Nos.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction of Individual toilets (Nos.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction of school toilets (Nos.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malnourished children brought to normal (%)</td>
<td>96 %</td>
<td>96 %</td>
</tr>
<tr>
<td></td>
<td>Reduction of anaemia among women (Nos.)</td>
<td>29140</td>
<td>35660</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>11.95</td>
<td>10.09</td>
</tr>
<tr>
<td></td>
<td>Enrolment of children</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infrastructure for schools (Nos.)</td>
<td>162</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td>Students securing pass marks in public exams</td>
<td>82%</td>
<td>84%</td>
</tr>
<tr>
<td></td>
<td>Adult education for women (Nos.)</td>
<td>29704</td>
<td>35458</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
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<th>Expenditure (Rs. Lakh)</th>
<th>Benefit to Community* (Rs. Lakh)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skill development</strong></td>
<td></td>
<td>0.40</td>
<td>0.28</td>
</tr>
<tr>
<td>No of youth trained in various skills and made employable (Nos.)</td>
<td></td>
<td></td>
<td>10663</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td></td>
<td>11.35</td>
<td>17.53</td>
</tr>
<tr>
<td>Vermi compost pits constructed (Nos.)</td>
<td></td>
<td>31740</td>
<td>36134</td>
</tr>
<tr>
<td>Kitchen gardens constructed (Nos.)</td>
<td></td>
<td>32099</td>
<td>44046</td>
</tr>
<tr>
<td>Area under Afforestation (Hectares)</td>
<td></td>
<td>142000</td>
<td>162000</td>
</tr>
<tr>
<td><strong>Watershed development</strong></td>
<td></td>
<td>5.96</td>
<td>5.39</td>
</tr>
<tr>
<td>Check dams constructed / rainwater harvesting structures</td>
<td></td>
<td>346</td>
<td>347</td>
</tr>
<tr>
<td>Area coverage under watershed (Hectares)</td>
<td></td>
<td>12466</td>
<td>12466</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>95.72</td>
<td>147.91</td>
</tr>
</tbody>
</table>
SST won the Times of India – Self help and Sustainability award from Prime Minister of India-2011

Parivartan Sustainability Leadership Award 2011

CII EHS Excellence Award 2012

Green Nurturing Award 2012
Accolades

Environmental Initiative Award 2012 presented by Honorable Chief minister of Himachal Pradesh

The Award of Excellence in Solid Waste Management from the International Society of Waste Management -2012

“Gold Award” in the “Green Tech Safety Award 2012”.
Intangible Benefit

Migratory birds at Factory

Befriending with Sparrows

Varieties of birds:

- Painted storks
- Spot billed ducks
- Gargany ducks
- Herons
- Egrets
- Sand pipers
"The challenge is to make development sustainable, through the active participation of communities - the true agents of change."