Inside India
Engineering Innovation – A Tata Technologies Perspective

Kevin Fisher
President – Tata Technologies, Vehicle Programs & Development Group
• Introduction of Tata Technologies and Tata Group
• Vehicle Programs & Development
• Indian Automotive Innovation – “Only in India”
• Other Indian Innovation
• Ready Engineer™ - preparing the next generation
• Look ahead at the future – vision
- India’s best known group, with highest standards of ethical practices and business commitment
- 103 companies in 7 business sectors
- Revenues in excess of US$ 65 billion
- Serving countries for more than 126 years
- More than 350,000 employees
- Trusted by more than 3.2 million shareholders
- Revenues equivalent to 5% of India’s GDP
- More than 61% of revenue comes from overseas markets
- Operations in more than 80 countries across 6 continents
As consumers demand new products –
- auto companies around the globe are scrambling to introduce new vehicles to gain market share
- Engineering resources are a major constraint at every company - OEM & supplier - the VPD Group is fully prepared to offset that increased workload.

As a global Tata company
- we have extensive breadth and depth of experience with auto companies in the Americas, Europe and Asia from Product Innovation to Program Management.
- We have supported internally from the Nano to Jaguar & Land-Rover and as we have the largest, most experienced engineering automotive team in India, we can deliver benchmark quality with Indian cost.
- We use a different operating model that can deliver the skills & quality needed, and with our intimate knowledge of India this gives us a cost & capacity advantage.
- In fact we have been benchmarked against internal sourcing numerous times, and have shown at least 25% savings consistently.
The Role of Tata Technologies

BETTER INNOVATION
POWERED BY TATA TECHNOLOGIES

Engineering & Design
- Bum, Exterior & Interior Trim - Engineering & Design
- CFD - Aerodynamics, Underwood & Powertrain Cooling
- HVAC Design & CFD for Optimum Passenger Comfort
- CAE Analysis for Crash & Durability
- Vehicle Handling & Characteristics Analysis
- Chassis Design, including Suspension, Steering, Wheels & Tires, Fins, & Brakes
- Systems Development
- Vehicle Dynamics
- New Engine Design, Retire & Performance

Product Lifecycle Management
- Managed Master Vehicle Digital Mockup – Chief Digital Integrator
- PLM Technology Integration for CATIA & Teamcenter
- PLM Technology & Systems Upgrades & Technical Support

Enterprise Systems Solutions
- Business Systems & ERP Program Management
- CRM Application Integration with SAP
- Small Car Integrated Production Systems Management
- Nano Web Portal Development
- Manufacturing Application Development for Quality Data Capture
- Manufacturing Application Development for Assembly Equipment, Order Management & Production Booking

Fast NANO Development Team Facts
- 70+ Tata Technologies Engineers
- 18 Tata Technologies Engineers Field (Head of Tata Motors) as Innovators in Patent Applications for Tata Nano

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The Nano Program:

The Importance of Vision

- Safe, comfortable and affordable transportation for the masses
- Do what hasn’t been done before – do the seemingly impossible
- Unique solution for Low speeds, short distance, heavy traffic....
- Who would have thought a $2500 car was possible?

Understanding The Customer
The Nano Program
Finding the Sweet Spot

USD $200-$250
USD $2000-$2500
USD $20000-$25000

Motorcycle 75 to 125 cc
Mopeds / Scooters / Scooterettes
Motorcycles 125 - 250 CC
Mini + Compact
Midsize
Executive + Premium

Price (in Rs.)
Vehicles (per thousand)
Logarithmic Scale
Nano Space
Frugal Engineering Examples:

Assembly Seating

- Foam thickness is comparatively less
- Minimum use of plastic covers
- Seat back, cushion frame made from tubes
- Headrest is integrated with front back
- Track and reclining mechanism unconventional

Dashboard Assembly

- Dashboard is designed for functionality & styling secondarily.
- Dashboard is primarily one piece; leading to reduced mold tooling cost (3X less tooling than conventional)
- Central instrument cluster design makes RHD & LHD dashboard common; instrumental cluster weights less than 0.5lb
- No glove box, No radio – but is prewired
- Circular air vents; hence pre-assembled air vents are used
Frugal Engineering examples:

Tailgate

- Unconventional fixed tailgate
- No additional accessories including gas struts, latches and hinges
- The total part count in tailgate is less, compared to conventional designs
- No special requirement of tailgate & body as no “slam” is involved

‘Fuel Filler Door’

- No additional Fuel filler door
- Reduced Parts, Assembly & Stamping complexity
- Fuel fill added to other Under-hood requirements
Other Tata Programs
Engineered - and INNOVATED - in India

Tata Bluescope affordable steel housing
- Start 2 lakh (up to 6)
- Durable, earthquake and fire resistant
- Energy efficient, environmentally sound
- Families who could not otherwise afford traditional housing

Tata Swach® water purifier
- Rs 999 – family of 5, 30 Rs/month for fresh water
- Collaboration – Tata Chemical, TCS, Titan
Ready Engineer™

- Ready Engineer™ - initiative to enhance employability of graduate engineers
- Launched in spring 2010
- Indira Institute and College of Engineering Pune in India
- Technical education is one the core agendas of Tata Technologies
- Plans to launch in U.S. and Europe in 2011
Looking ahead....

**Manufacturing**
- Maturing Indian Supply Industry
- Becoming competitive with China & Western suppliers

**Product Development**
- Increasing Western vehicles into India
- As the Indian Market matures, this has created opportunities for new & unique Indian segments

**Engineering Services**
- Tata Technologies, & the VPD group is leading a new wave of Engineering Services Outsourcing
- Blending Innovation, Experience, Knowledge & local on-site customer intimacy
Better and better: it’s our way of life.