



Cross-cutting issues



Session One - *Electric Vehicles*

Points for clarification

- What is the difference between a range extender and a series hybrid?

Key issues

- Affordability of new-technology products
- Lack of road map for India
- Technology transfer – Development, demonstration and acceleration
- How do we educate the consumer?
- Lack of infrastructure in India

Key areas for future collaboration

- Battery technology – life, charging, management systems, recycling
- Power electronics and controls
- Range extenders

Session Two – *Hybrid Vehicles*

Points for clarification

- Why have hybrids not been developed for two wheelers?
- The market is ready for stop start now – how can we get it right?

Key issues

- Lack of an appropriate drive cycle for India (does NEDC fit?)
- Understanding energy balance
- Cost-benefit analysis
- Education of driving habits – fuel economy/CO₂ emissions

Key areas for future collaboration

- The creation of open systems architecture
- Power distribution - Test bed India
- Defining an Indian requirement and technology alignment

Session Three – *Fuel Efficiency*

Points for clarification

- Can alcohol be used to improve the fuel quality for boosting technology?
- Does an Indian engine need to be the same as a European engine.

Key issues

- Variable fuel quality/adulteration
- Cost effective technology – refining the existing engine design

Key areas for future collaboration

- Sensor to detect fuel quality
- The creation of open electronic systems architecture
- Heat recovery for long haul large vehicles (especially food distribution)
- Tech. that maximises the efficiency small engines that fits the Indian mkt.
- Re-optimize the small engine for CNG use in India

Session Four – *Advanced Materials*

Points for clarification

- What would be an appropriate production volume for an Indian car?
- Can carbon fibre be recycled?
- Can carbon fibre and aluminium be combined to optimise cost?

Key issues

- Lack of experience in Indian market with these materials
- Repair cost with advanced materials
- Manufacturing process development

Key areas for future collaboration

- Multi-partner whole vehicle demonstration project
- Carbon-steel/aluminium joining and bonding
- Long term – cost reduction in carbon fibre production



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