Innovations in vehicle and fuel technologies:
Volvo R&D solutions for improving performance of HGVs

Staffan Lundgren, Volvo Technology
The Volvo Group - global presence
Four heavy goods vehicle brands
Volvo solutions

Infrastructure

Driver

Vehicle

Service

Transport Efficiency

Alternative Fuels

Intermodality

IT Systems

Propulsion

Volvo Technology
Innovation of Road transport Seminar Portugal, October 2, 2009
Technology is there - Fuel availability a problem
Innovation of Road transport Seminar Portugal, October 2, 2009

Volvo Technology
Innovation of Road transport Seminar Portugal, October 2, 2009
5 SL
• BioDME project demonstrates full chain from production of fuel from biomass to the utilisation in vehicles
• 14 Volvo DME trucks in customer operation
• Demonstrate and verify DME technology in real applications
• Planned yearly distance 100 000 km per truck (average)
Volvo’s position on Future Fuels

- Diesel fuel, increasingly from biomass resources, will remain the dominant fuel for at least two decades
- Natural gas and biogas will be used regionally
- DME is a strong candidate for a more long-term future fuel:
  - CO₂ neutral if produced from biomass
- All fuels can be combined with hybrid drivelines
Field trials of new vehicle concepts
Focus on CO2 reduction and fuel efficiency

- Skogforsk is leading the ETT project
- Vehicle part (VETT) is led by Volvo
- VTI studies the consequences for the society
Project ETT "One Pile More" – Heavier and Longer Vehicles

Efficient Usage of the Transportation System

- Climate Neutral Freight Transportation
  - Reduced CO\textsubscript{2} -emission
  - Energy Efficiency

- Industry
  - Transport Economy
  - Competition

- Citizens
  - Impact on other road users?

- Accessability
  - Does the road geometry permit longer vehicles?

- Traffic Safety?

Can the roads carry the heavier weight?
- National, municipal, private?

Can the bridges carry the heavier weight?

~ 120 ton timber

Saving >20% CO\textsubscript{2} / ton x km

~ 120 ton timber
Field Test over 3 years – Research platforms

ETT-vehicle (One Pile More)
Överkalix-Piteå
30 meter
90 ton, 11 axles
Start: 1 Januari 2009

ST-vehicle (Larger Piles)
Bohuslän-Dalsland-Värmland
24 meter
74 ton, 9 axles
Start: 17 August 2009
Energy efficient R&D LH technology solutions

Powetrain efficiency
- Efficient energy conversion
- Efficient powertrain utilization
- Reduced friction
- Waste heat energy recovery
- Brake energy recovery

Vehicle efficiency
- Total vehicle energy management
- Efficient & functional Aerodynamics
- Reduced friction and low friction tiers
- GPS based energy usage rout planning
- Driver utilization of vehicle FE potential

Energy efficiency
- Energy saving
- Energy recuperation