

VOLVO

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



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 **NISSAN DIESEL**



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Infrastructure



Driver



Vehicle



Service

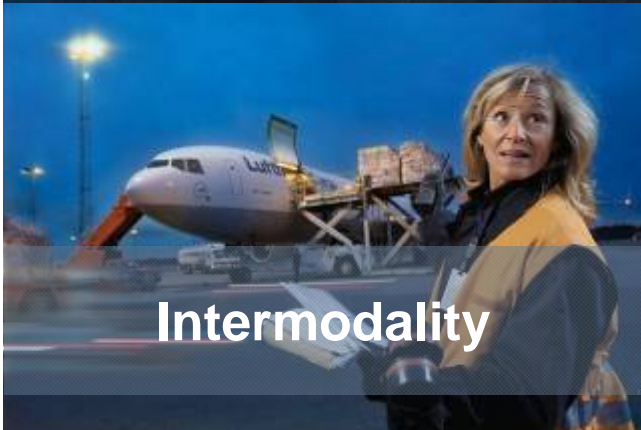
Volvo solutions



Transport Efficiency



Alternative Fuels



Intermodality



IT Systems



Propulsion

Technology is there - Fuel availability a problem

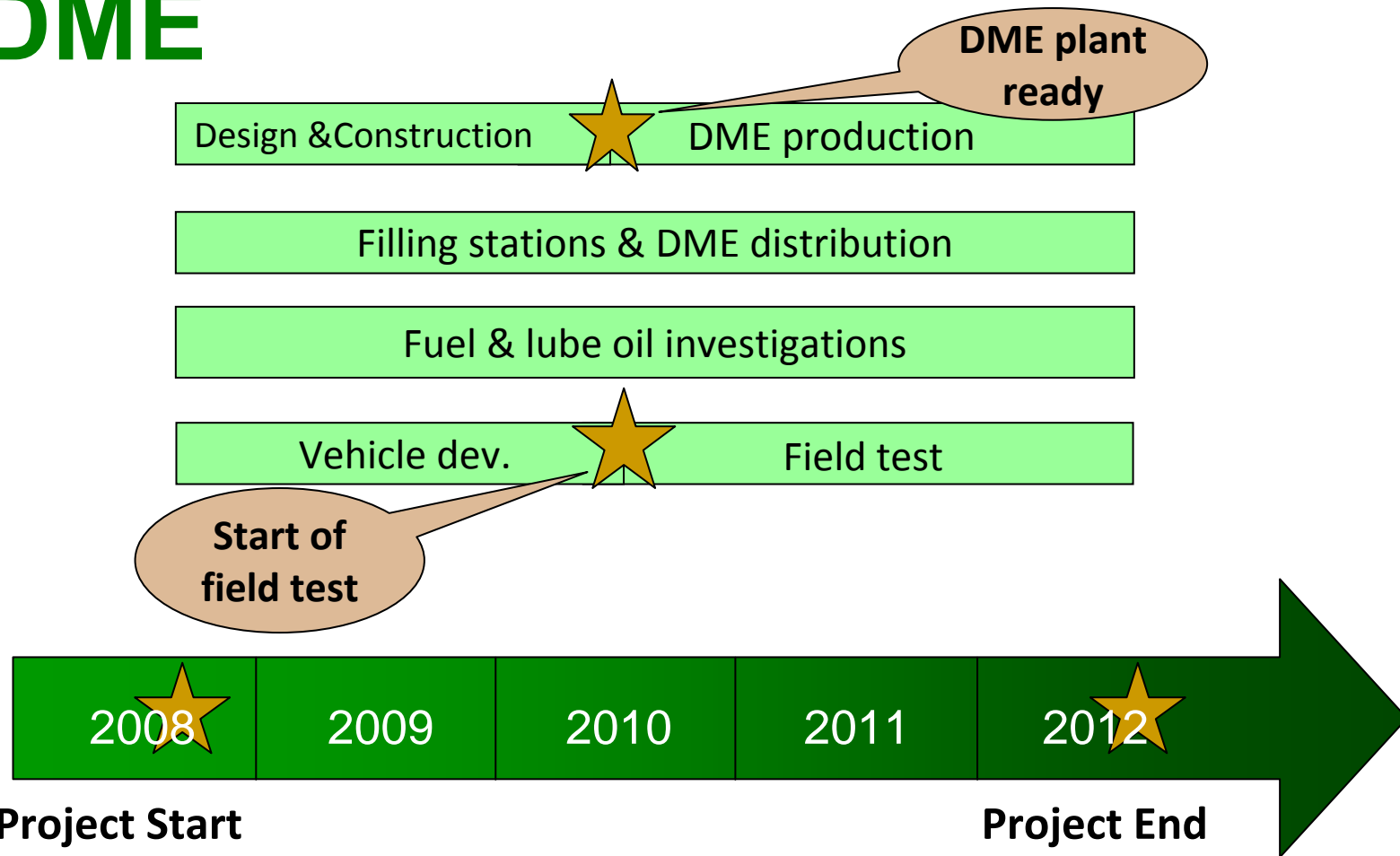


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HALDOR TOPSOE
CATALYSING YOUR BUSINESS



ETC



CHEMREC DELPHI VOLVO

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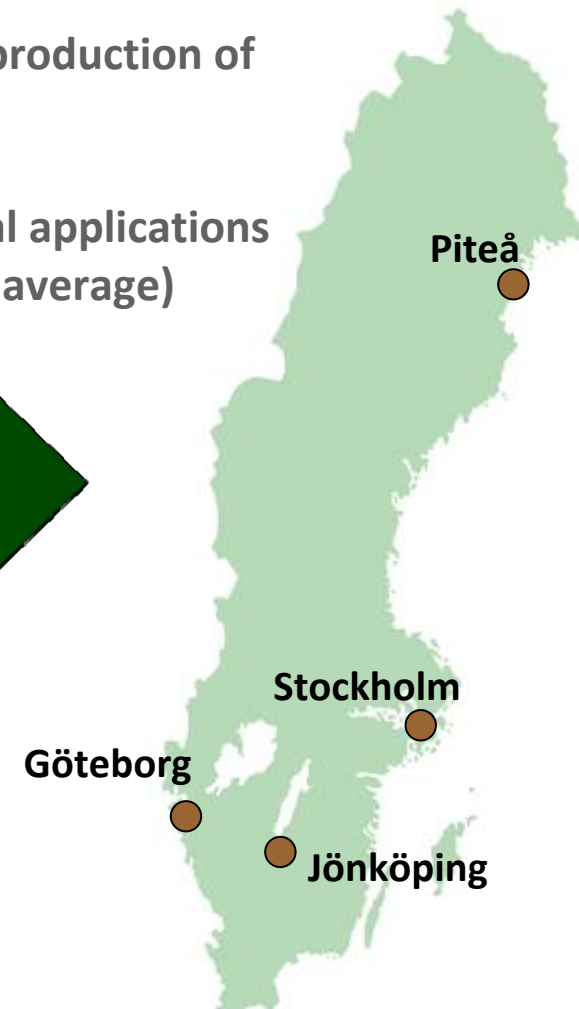
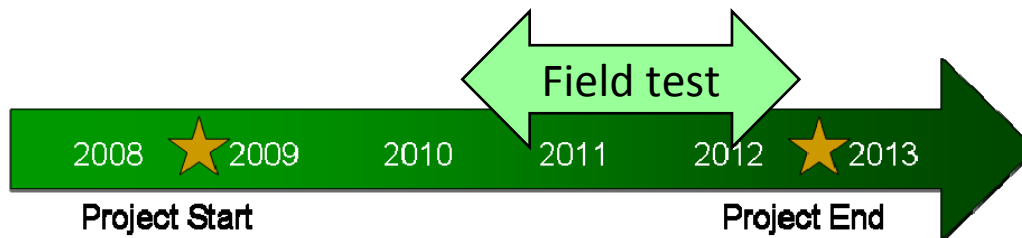
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BioDME - Field test

- 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



Vägverket



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Efficient Usage of the Transportation System

Climate Neutral Freight Transportation

- ✓ Reduced CO₂ -emission
- ✓ Energy Efficiency

Industry

- ✓ Transport Economy
- ✓ Competition

Citizens

Impact on other road users?

ETT "One Stuck More"- Heavier and Longer Vehicles



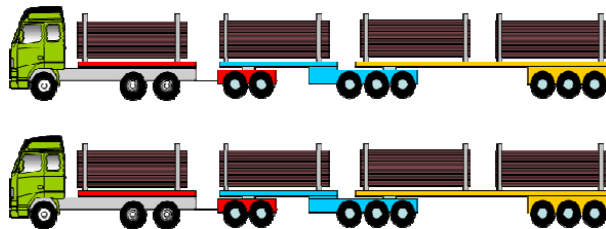
Can the roads carry the heavier weight?
National, municipal, private?

Can the bridges carry the heavier weight?

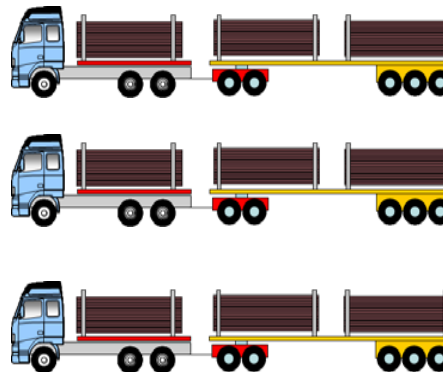
Accessibility
Does the road geometry permit longer vehicles?

Traffic Safety?

~ 120 ton timber



~ 120 ton timber



Saving >20% CO₂ / ton x km

Field Test over 3 years – Research platforms

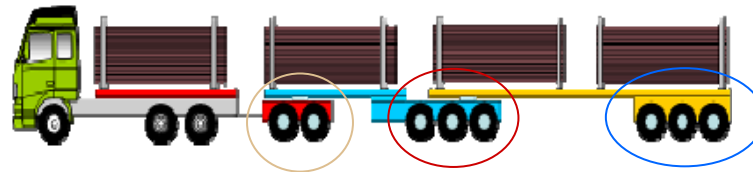
ETT-vehicle (One Pile More)

Överkalix-Piteå

30 meter

90 ton, 11 axles

Start: 1 Januari 2009



↑
Modular system
↓

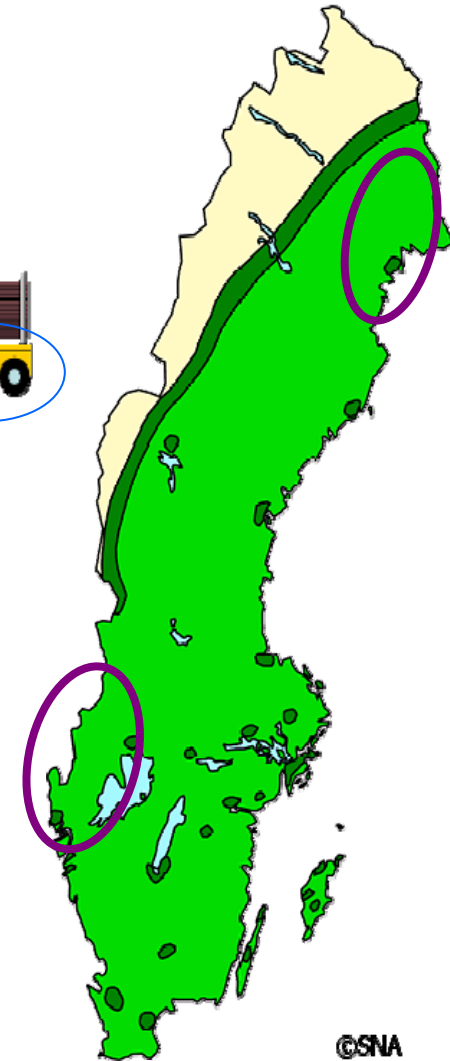
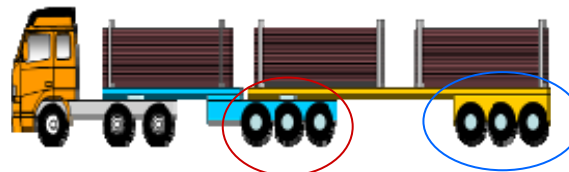
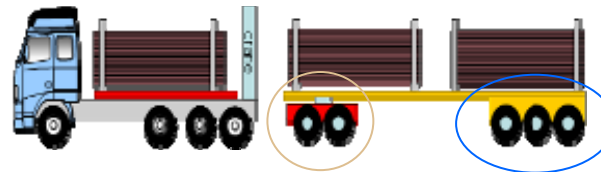
ST-vehicle (Larger Piles)

Bohuslän-Dalsland-Värmland

24 meter

74 ton, 9 axles

Start: 17 August 2009



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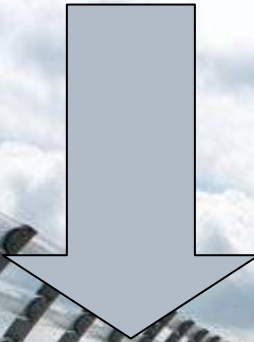
Energy efficient R&D LH technology solutions

- Energy efficiency
- Energy saving
- Energy recuperation



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



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