



Working Paper No. **HDH-06-04**
(6th HDH meeting, 06 June 2011)

TNO innovation
for life

HCV - Hybrid Commercial Vehicles

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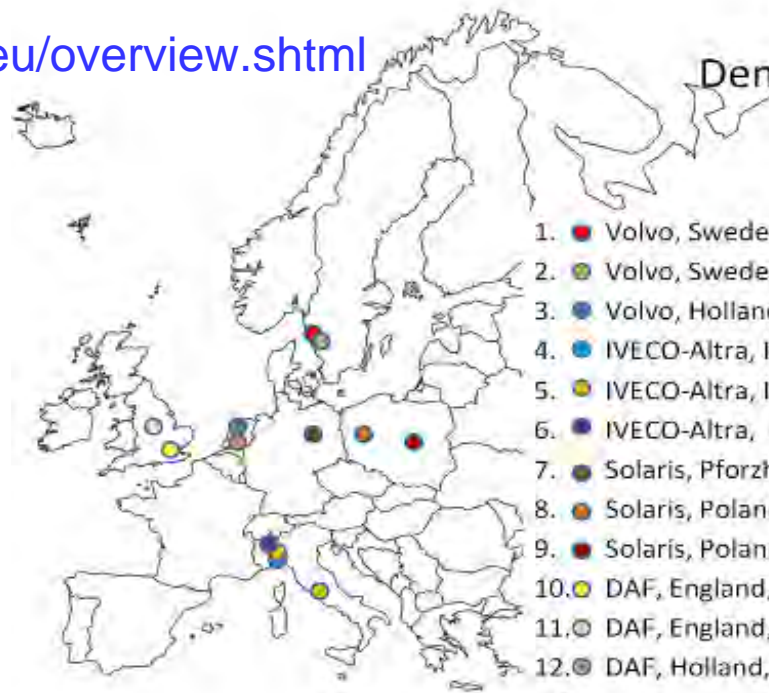
HCV

<http://www.hcv-project.eu/overview.shtml>

› Next generation
Hybrid Commercial
Vehicles



HCV Demonstrators



1. ● Volvo, Sweden, Gothenburg, CityBus
2. ● Volvo, Sweden, Gothenburg, CityBus
3. ● Volvo, Holland, CityBus
4. ● IVECO-Altra, Italy, 5 ton, Genoa, Bus
5. ● IVECO-Altra, Italy, 6 ton, Van/Cab
6. ● IVECO-Altra, Italy, 3,5 ton Turin Van
7. ● Solaris, Pforzheim, Germany
8. ● Solaris, Poland, Customer Bus
9. ● Solaris, Poland, Customer Bus
10. ● DAF, England, London, 7.5 ton truck
11. ● DAF, England, 7.5 ton truck
12. ● DAF, Holland, 7.5 ton truck



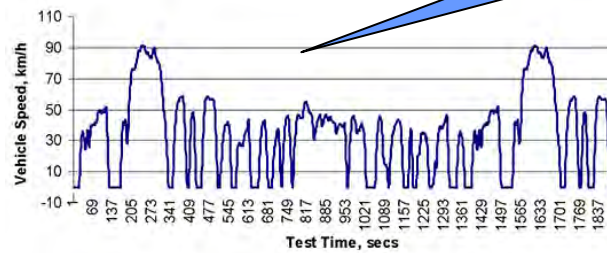


HCV - TNO project activities

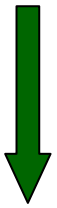


On road Logdata

Drive cycle



Communication protocol Hybrid related to J1939

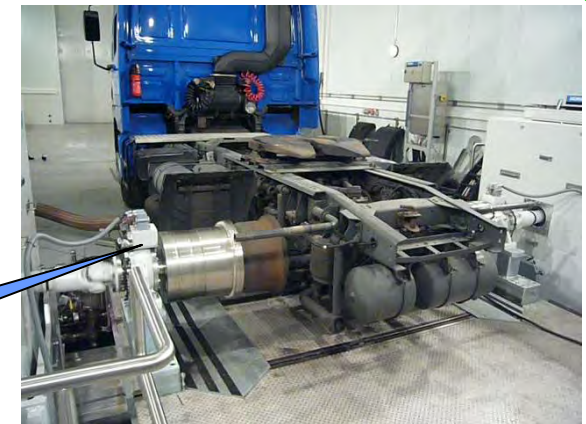


Standardization Hybrid Components

Test procedure

Test procedure:
 UN/ECE R83/49
 SAE J2711, etc.

Validation test procedure





HCV - WP6000: TNO project activities

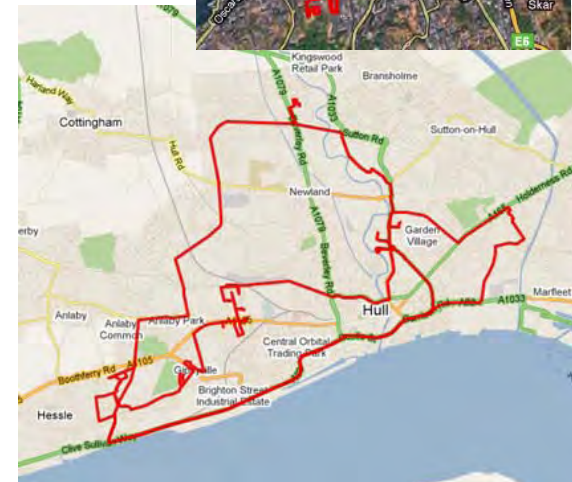
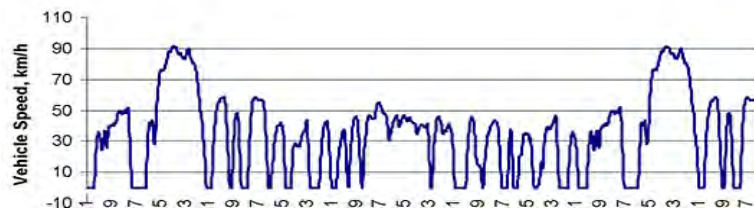
- › Task 6110 - Drive cycle development
- › Task 6120 - Standard component dimensioning classes
- › Task 6130 - Testprocedure development
- › Task 6140 - Validation test procedure
- › Task 6320 - Communication protocol



Task 6110 - Drive cycle development

Based on vehicle measurements and data from other SP's drive cycles will be developed.

- Measurement data from one city bus and two distribution trucks
- Data analysed for speed and dynamics patterns
- Use of cycle generator





Task 6130 - Testprocedure development

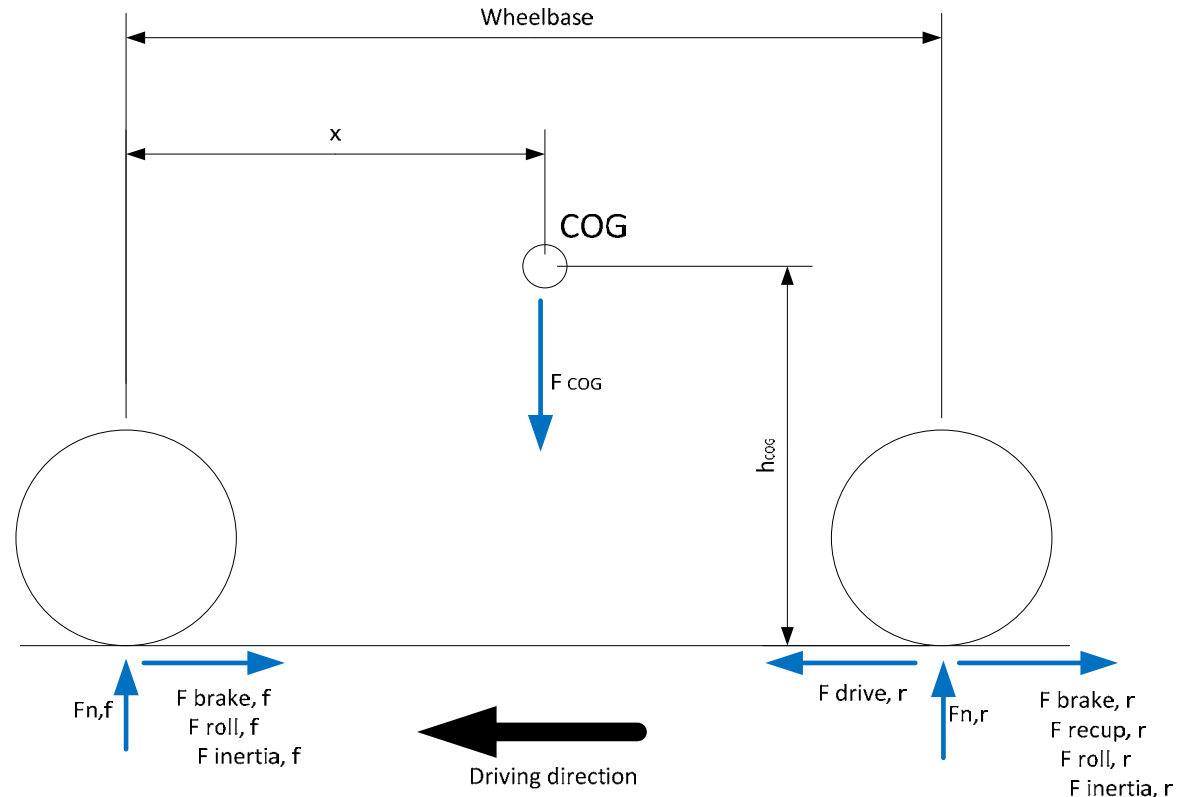
Testing and analysis procedures for FC, emissions and system efficiency will be developed. Including preconditioning, testing, SoC correction. Reference are existing procedures.

Hybrid testprocedure development:

- › Reference to existing procedures R49, R83, R101, SAE 1711 / 2711
- › Preconditioning Energy storage system
- › Preconditioning Emission system
- › Postconditioning Energy storage system
- › Chassis dyno testing Hybrid vehicles, 2WD



Compensation of vehicle behaviour for 2WD chassis dyno





Task 6140 – Validation of developed procedures

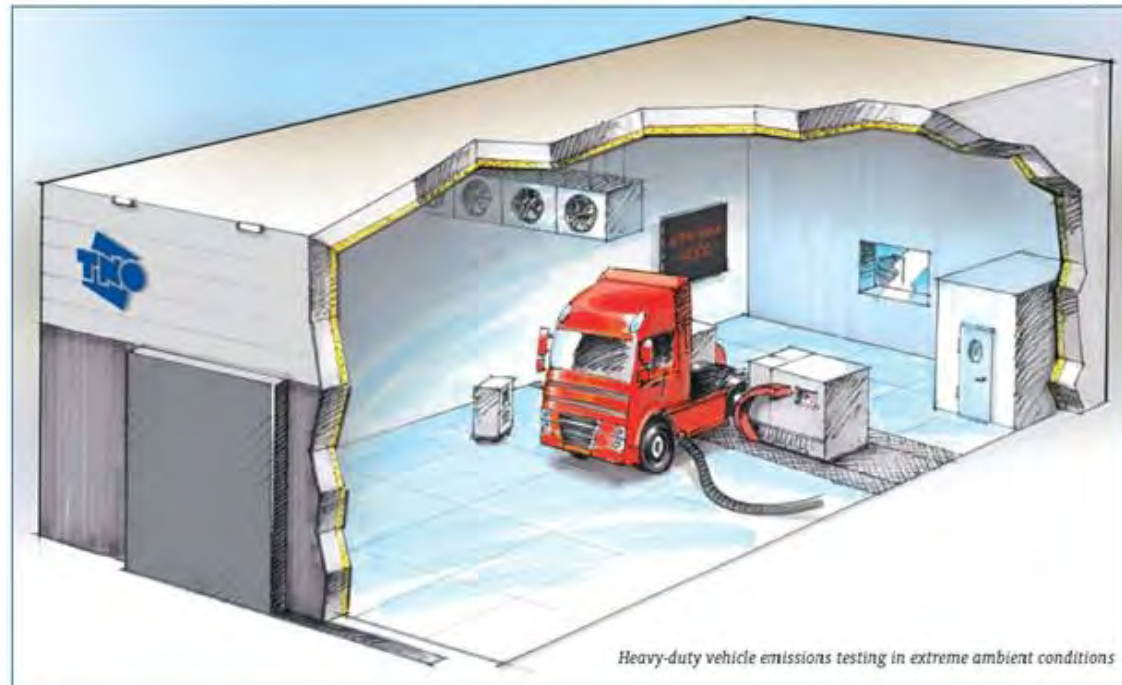
Validation of the test and analysis procedures will be performed with a heavy-duty hybrid on a climatised chassis dynamometer based on the determined drive cycles.

- › Climatised 2WD HD powertrain test stand
- › Testing of fuel consumption and emissions on 4 vehicles
- › Testing of the effect of environmental factors (e.g. altitude) on 1 vehicle
- › Testing of electrical accessories on 1 vehicle



2WD LD & HD power train test stand

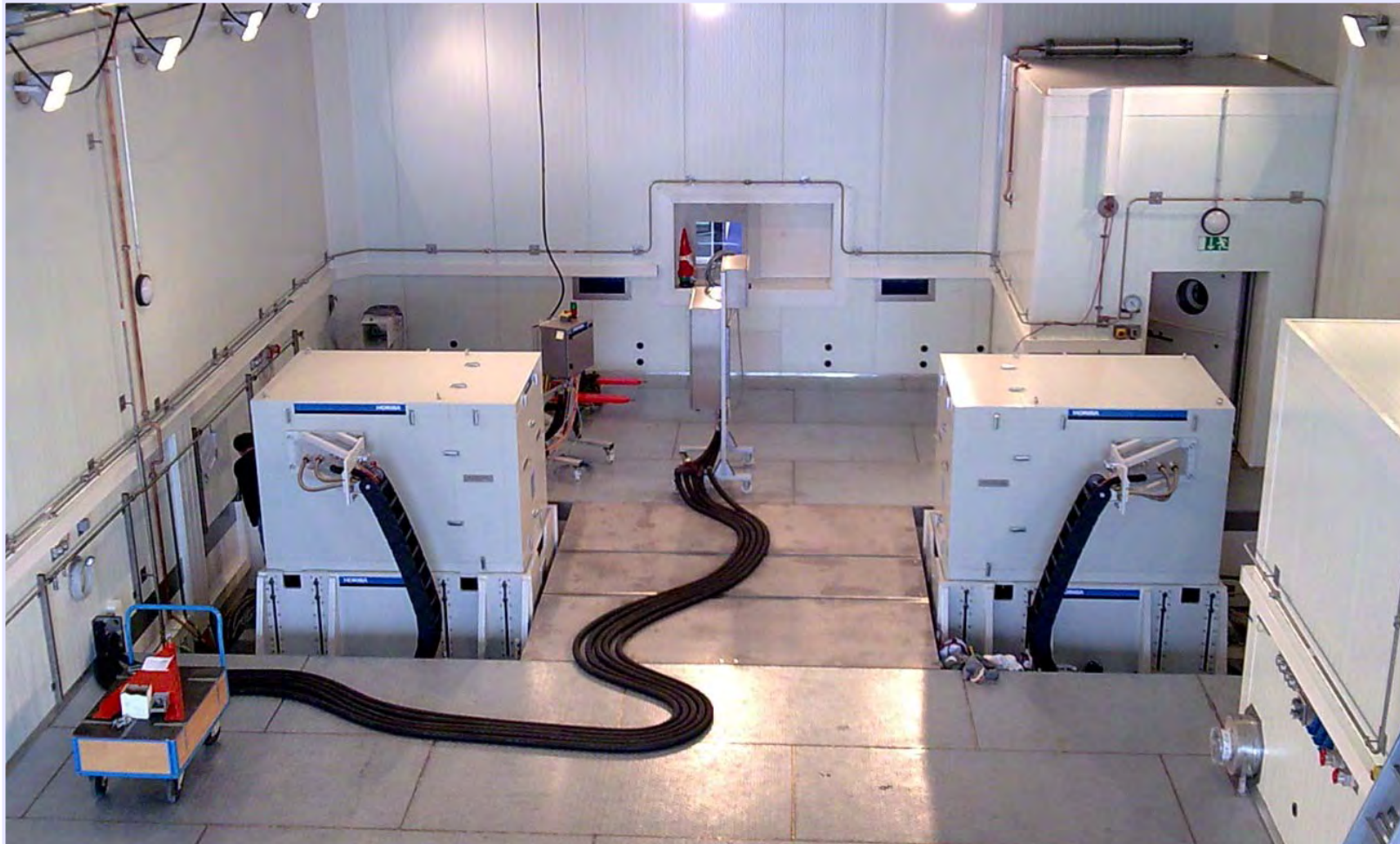
- Equipped for conventional, hybrid, range extended and EV
- Climatic control (-40°C > + 55°C / 0 > 4000m)
- Vehicle performance, energy consumption and emissions
- Light duty, heavy duty and off-road
- Digatron (300kW) (≤700V, ≤400A)





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