EGVI

European Green Vehicles Initiative

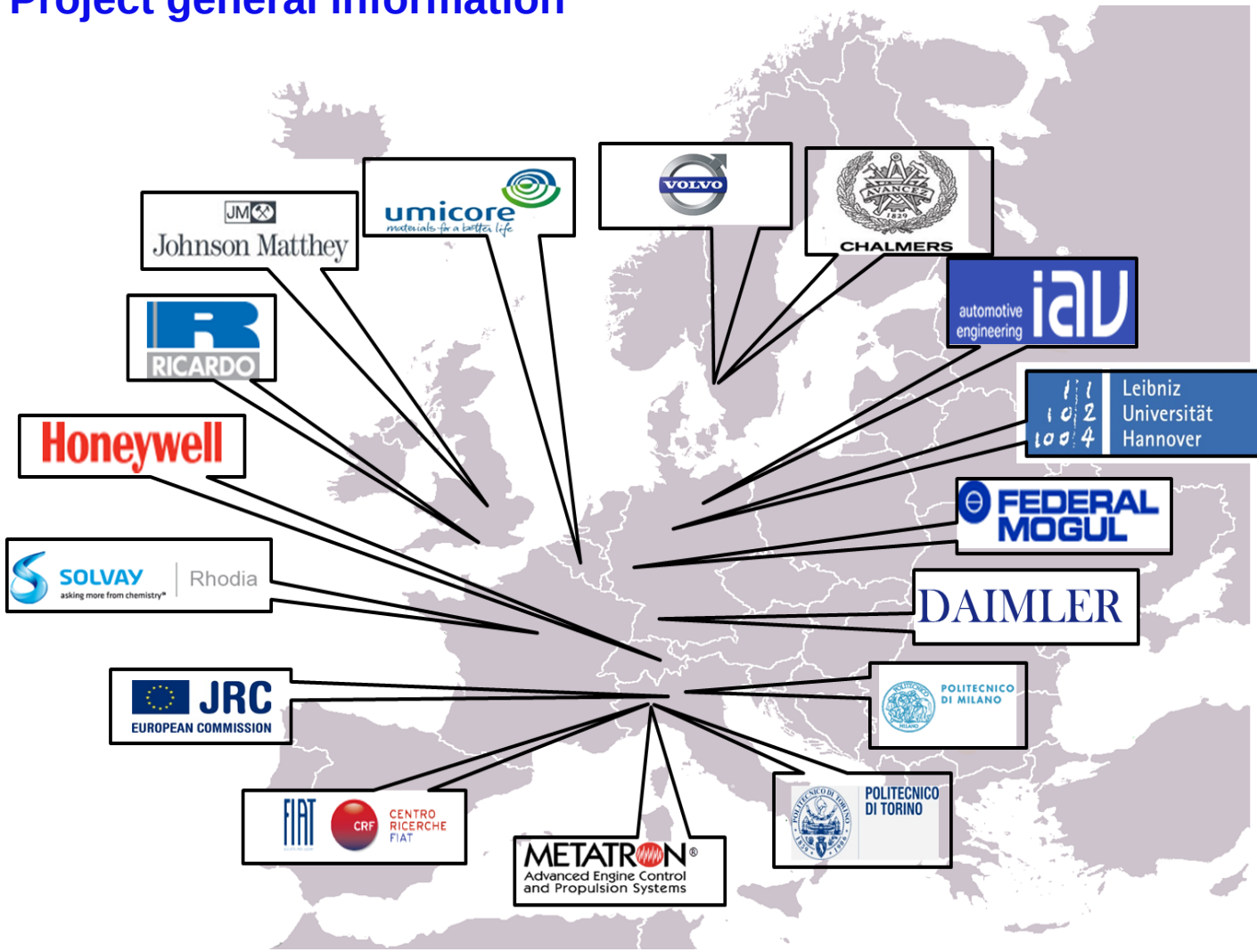
CO_2RE

CO2 reduction for transport

CO_2 Reduction for long distance transport

January 2012 / December 2015

Project general information



4 year project

Start 212 – End 2015

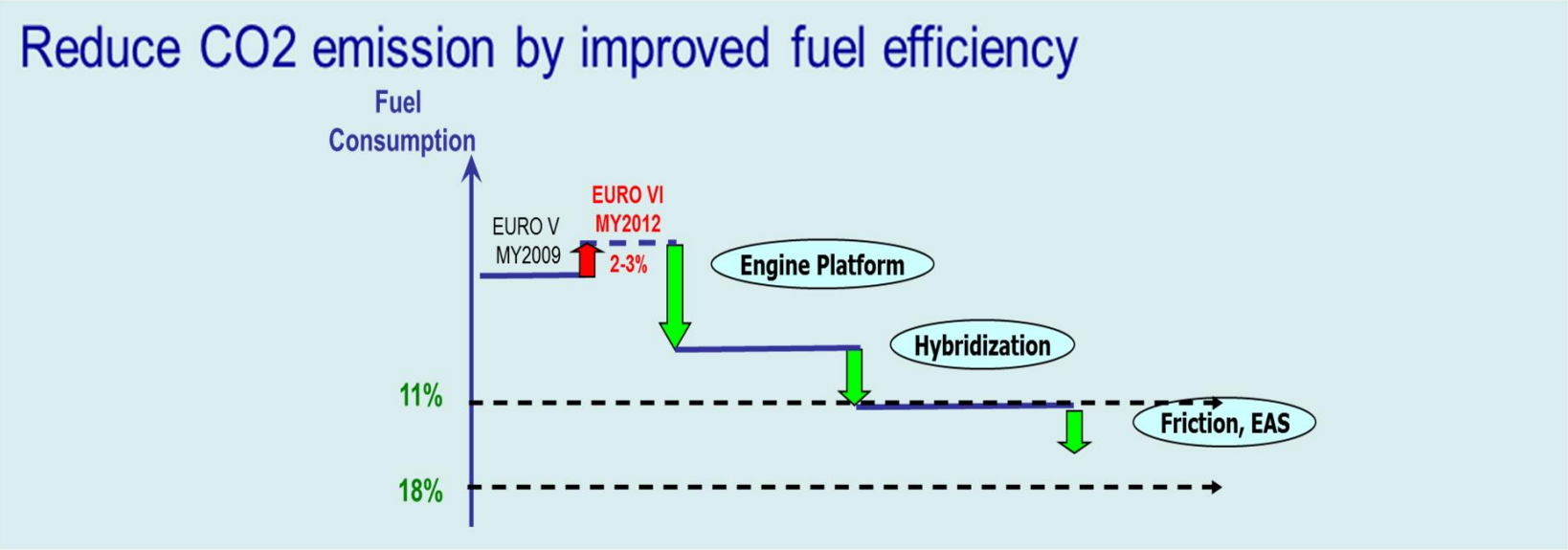
16 partners

Total Budget 17MEuro
EC contribution 9 MEuro

CORE's Objectives

- Developing highly efficient drivelines for long distance transport contributing to a 15% reduction in fuel consumption at EURO VI emissions standards, reference engine is EURO V.

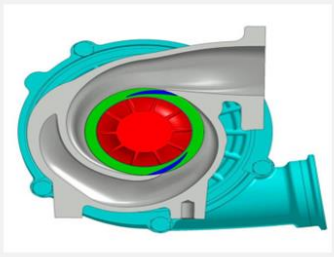
- Approach - contribution from:



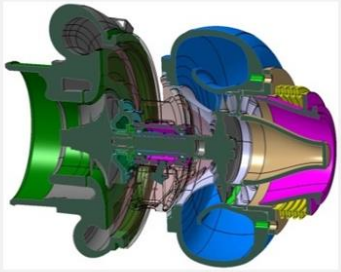
CORE's Results: examples sub-system

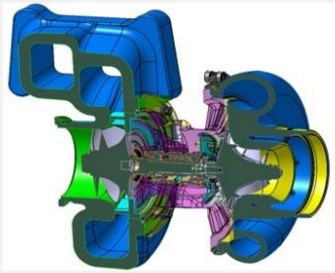
Novel technologies for long hall truck demands
Improved engine efficiency on CORE engine with novel high performance turbo systems and flexible vale timing systems

Examples of two CORE Turbo systems



System 1: = **Variable Rotary Turbine**

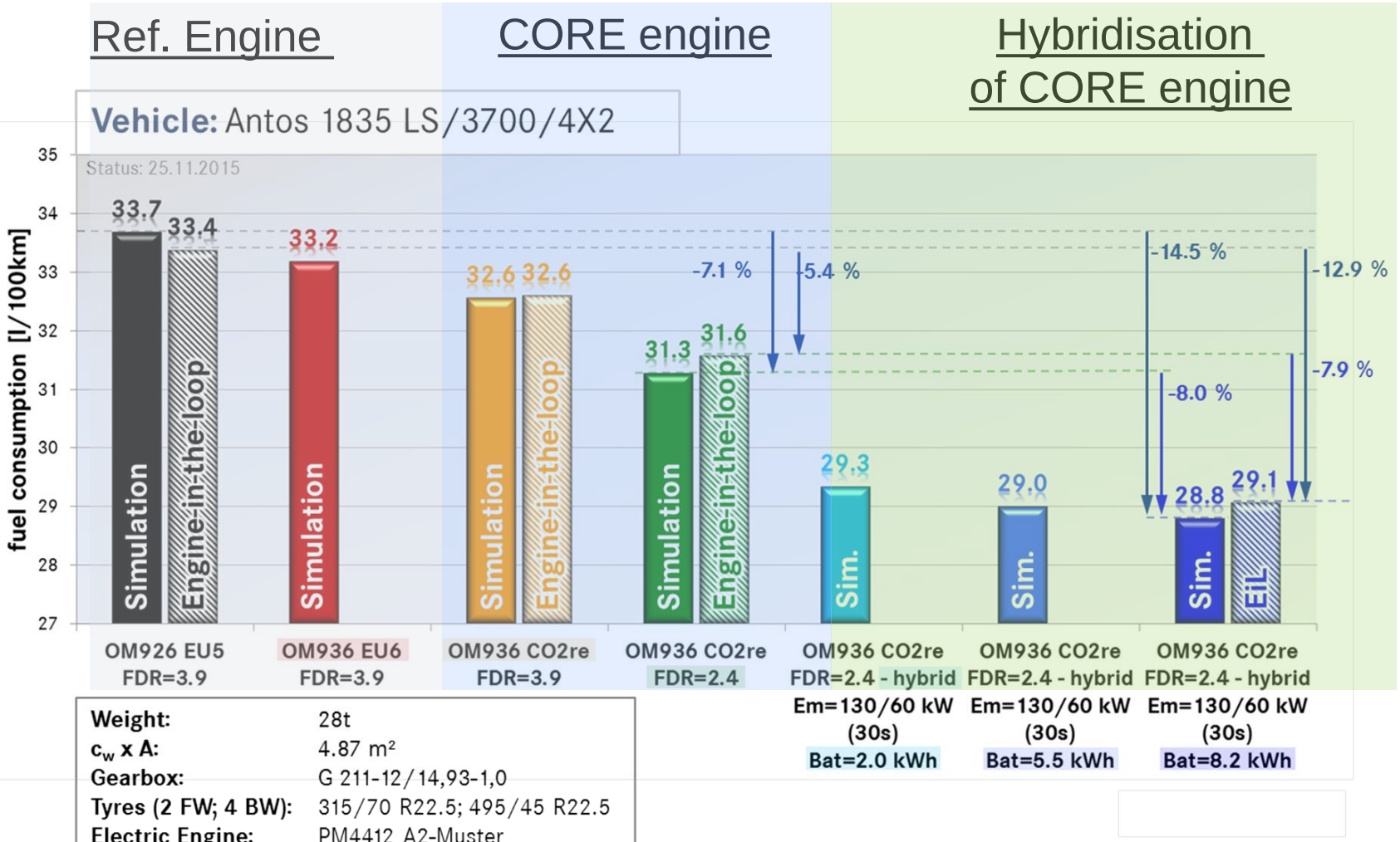




Low Pressure High Pressure

System 2: = **Dual Stage Turbo**

CORE's Results: Fuel consumption walk in CORE by Daimler



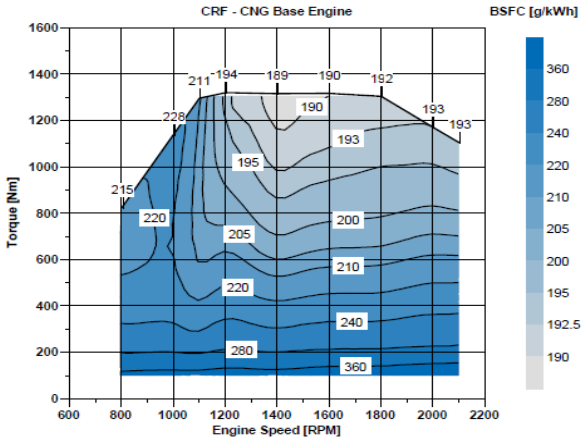
Weight:	28t
c_w x A:	4.87 m²
Gearbox:	G 211-12/14,93-1,0
Tyres (2 FW; 4 BW):	315/70 R22.5; 495/45 R22.5
Electric Engine:	PM4412 A2-Muster

CORE results: Natural gas as alternative fuel

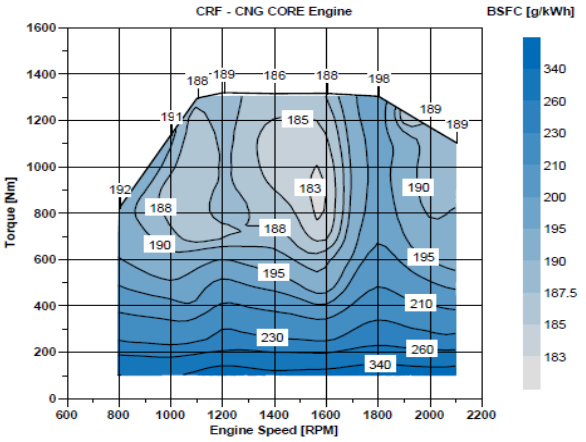
- CNG engine increased efficiency of about 6%
- Main contribution variable valve technology

Baseline & CORE BSFC Map – CNG Engine

CNG - Baseline BSFC Map



CNG - CORE BSFC Map

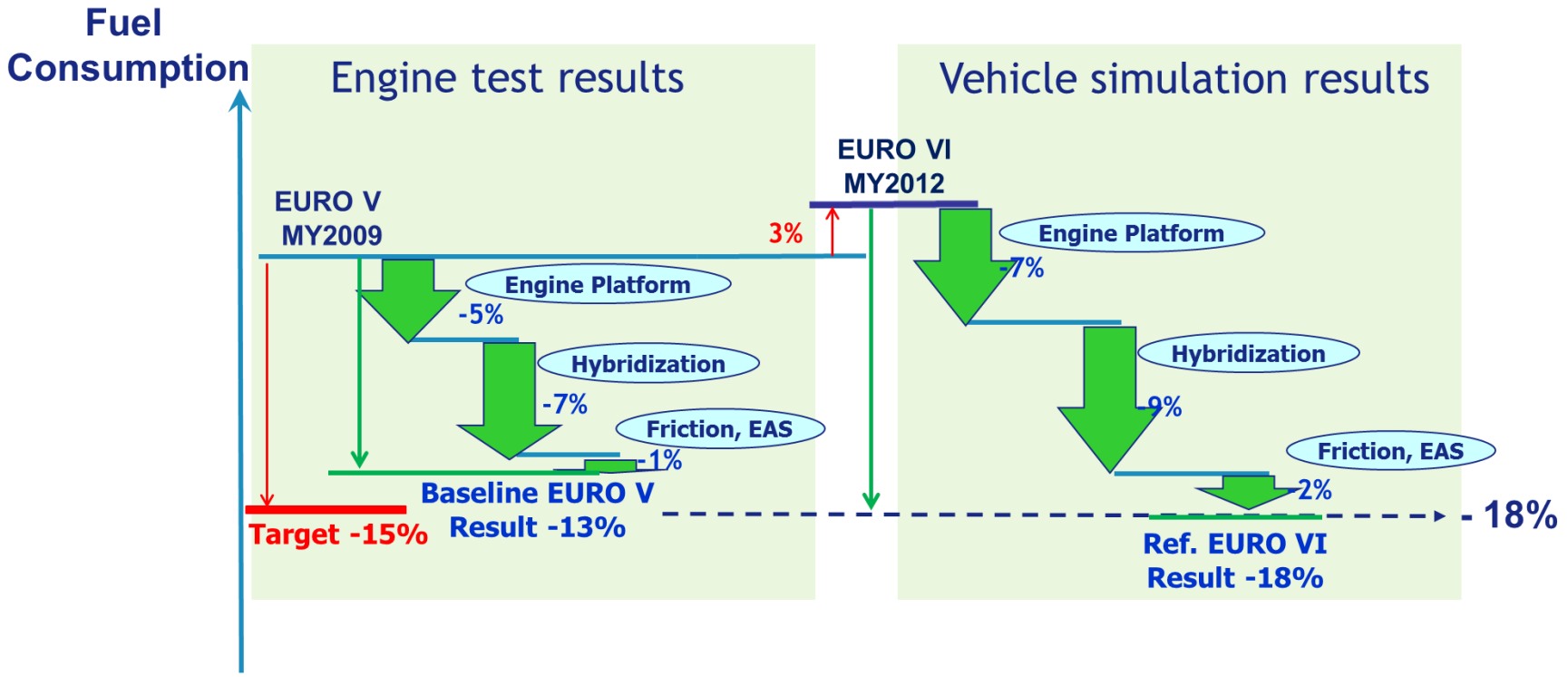


- In parallel a LNG fuel storage system was installed on NG vehicle prototype.
- Adopting LNG fuel the range of this vehicle improves

Electronic Pressure Regulator (Proto C) and LNG + NG vehicle lay-out

Summary of CORE Results – improved fuel consumption

- The table show achieved CORE results of reduced fuel consumption.
- The best measured results was 13% lower fuel consumption compered to EURO V.
- In the assessment of CORE technologies the best combination was simulated to 18% reduced fuel consumption with EURO VI as reference.



CORE Impact

- The presented CORE results show a substantial reduction in CO_2 emissions by improved fuel efficiency in the powertrain.
- The different developed and analysed concepts will support the new products for introduction on the market in 2020 in long haul applications.
- The hybrid potential exceeded the expectations in most of the investigated applications. However, as pointed out the relative benefits of each of hybridisation depends upon the vehicle application and its duty cycle, which show good potential also for long distance transport
- Furthermore in the cost analysis the results showed that the business case may not yet appeared in the investigated applications for long haul hybridisations. But…
- Other positive outcome of CORE is the developed and applied methodology of engine-in-the-loop (EiL) techniques. This knowledge supported the early stage in VETCO development, however for future demands more development work is needed for VECTO.

Ref: Photo May 2015

Thank you