



Testing Mercedes B180 2.0 CDI Results

Lisbon, January 11th, 2013

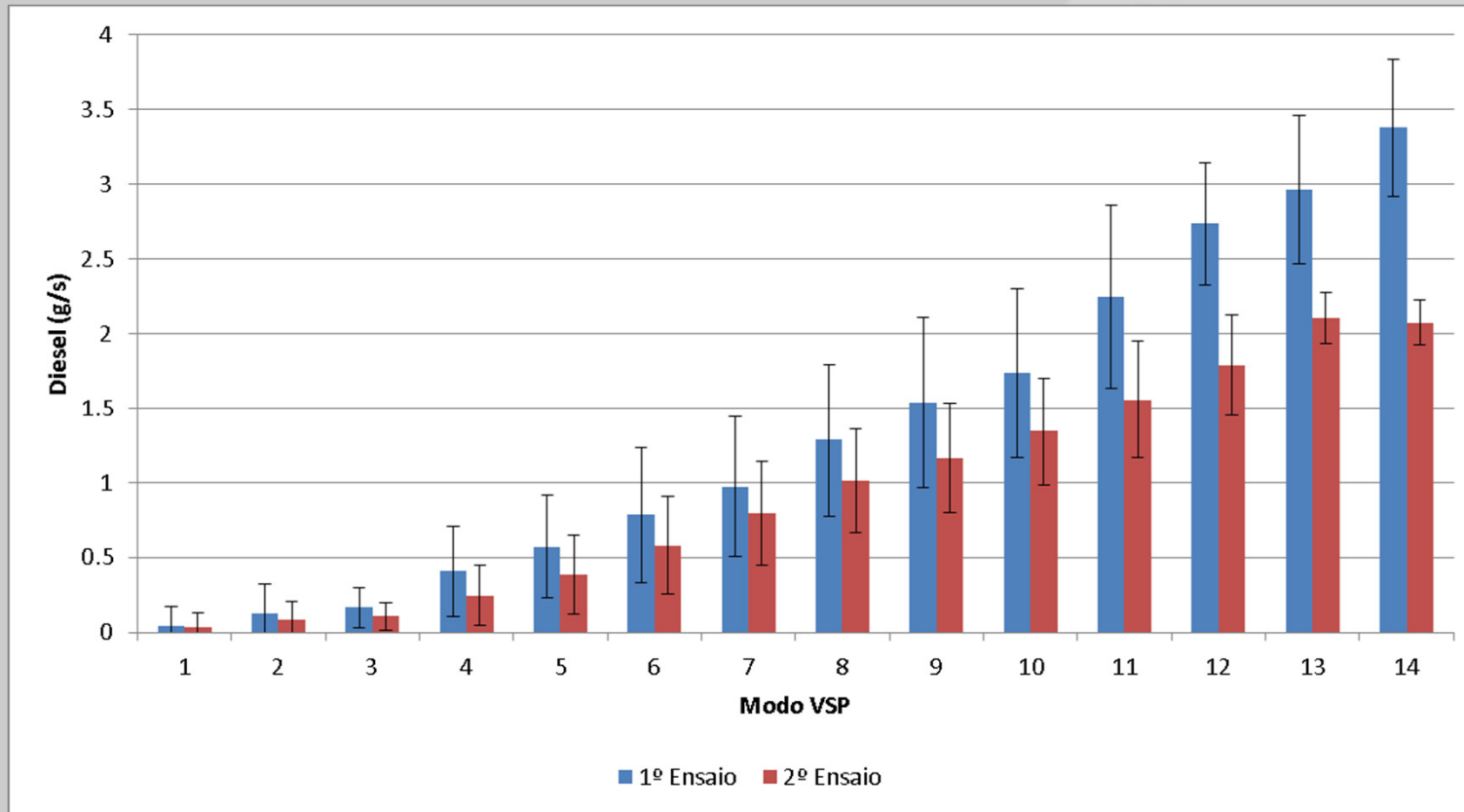
Framework

- Tests carried out at the request of the company Ultimate power to evaluate the utilization of the device Ultimate cell
- Trials conducted on a vehicle Mercedes B180 2.0 CDI
 - Vehicle provided by Ultimate Power
 - The vehicle was tested under two situations (with and without Ultimatecell installed) as received, where there is no monitoring or interfering with the installation process
 - Team Test
 - Dr. Gonçalo Gonçalves
 - Engineer Gonçalo Duarte
 - Driver indicated by ULTIMATEPOWER

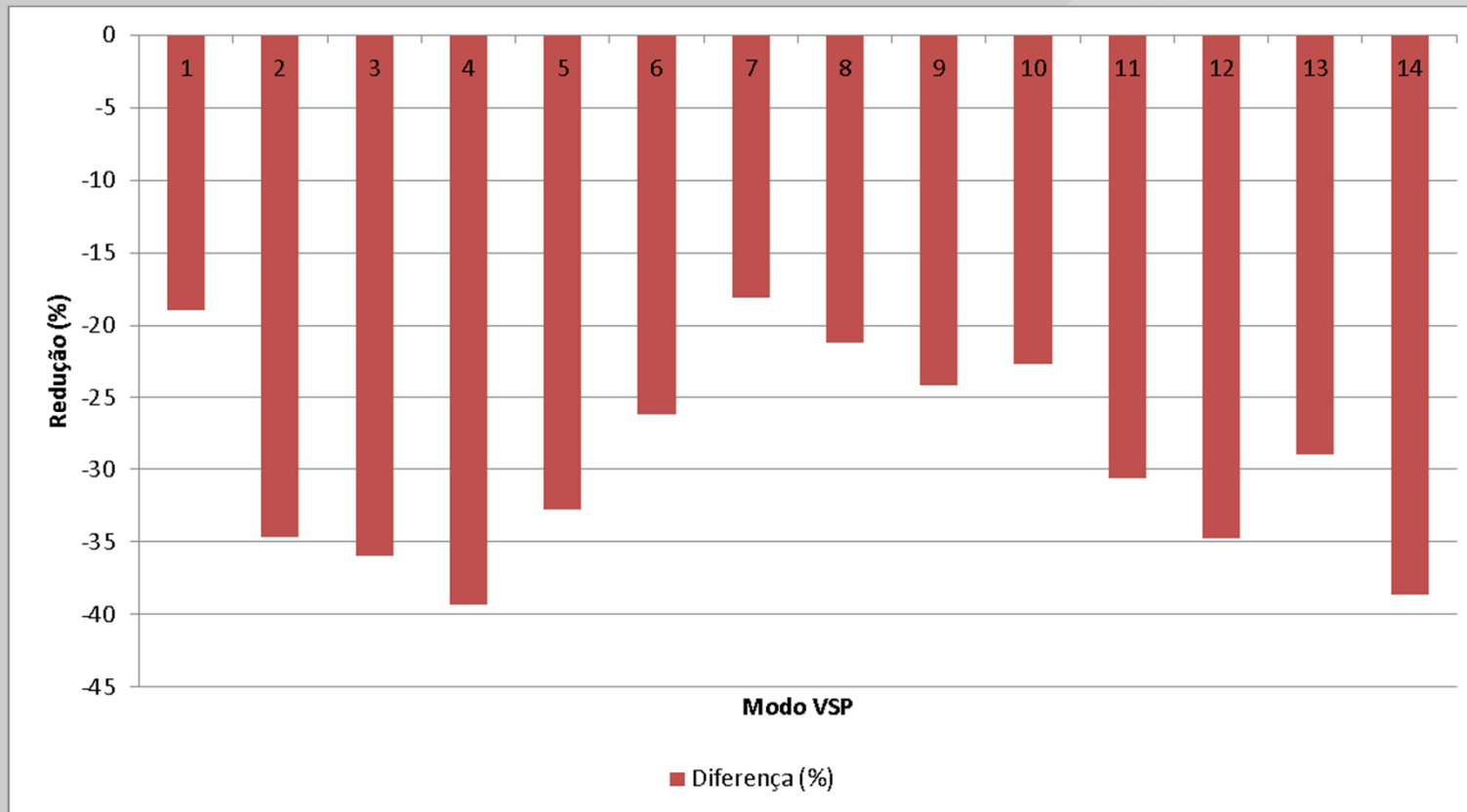
Procedure

- The measurements was performed on the road with three people on board + measuring equipment:
 - OBD Reader
 - GPS with barometric altimeter
 - Gas analyzer (CO₂, O₂, CO, NO_x, Unburnt hydrocarbons)
- The consumption was been calculated based on the intake air and exhaust gas composition
- Results presented using the methodology VSP (calculates power based on speed, acceleration and slope):
 - Modes 1 and 2: negative powers (braking, deceleration)
 - Mode 3: ralenti
 - Modes 4-14: increasing positive powers

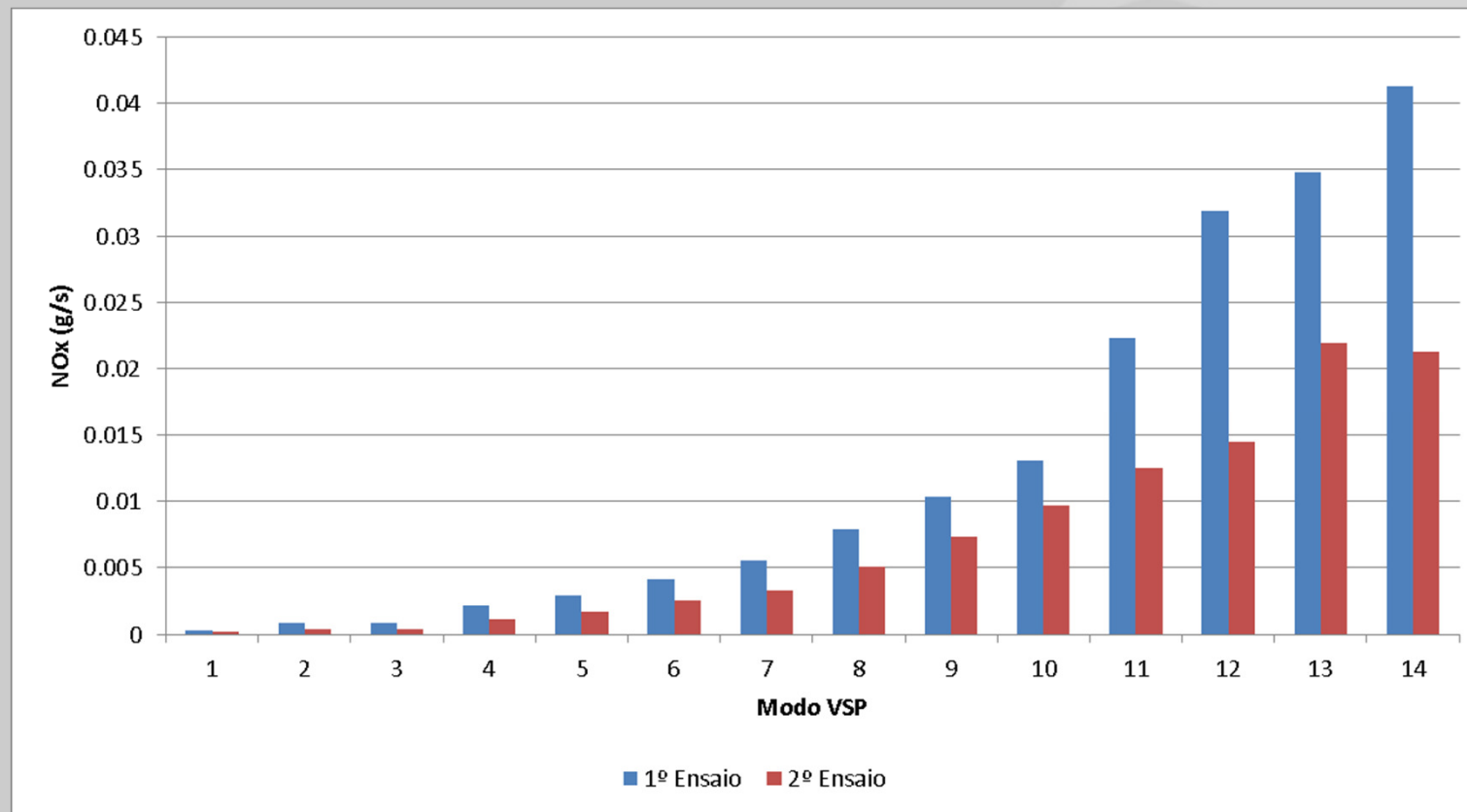
Consumption of diesel



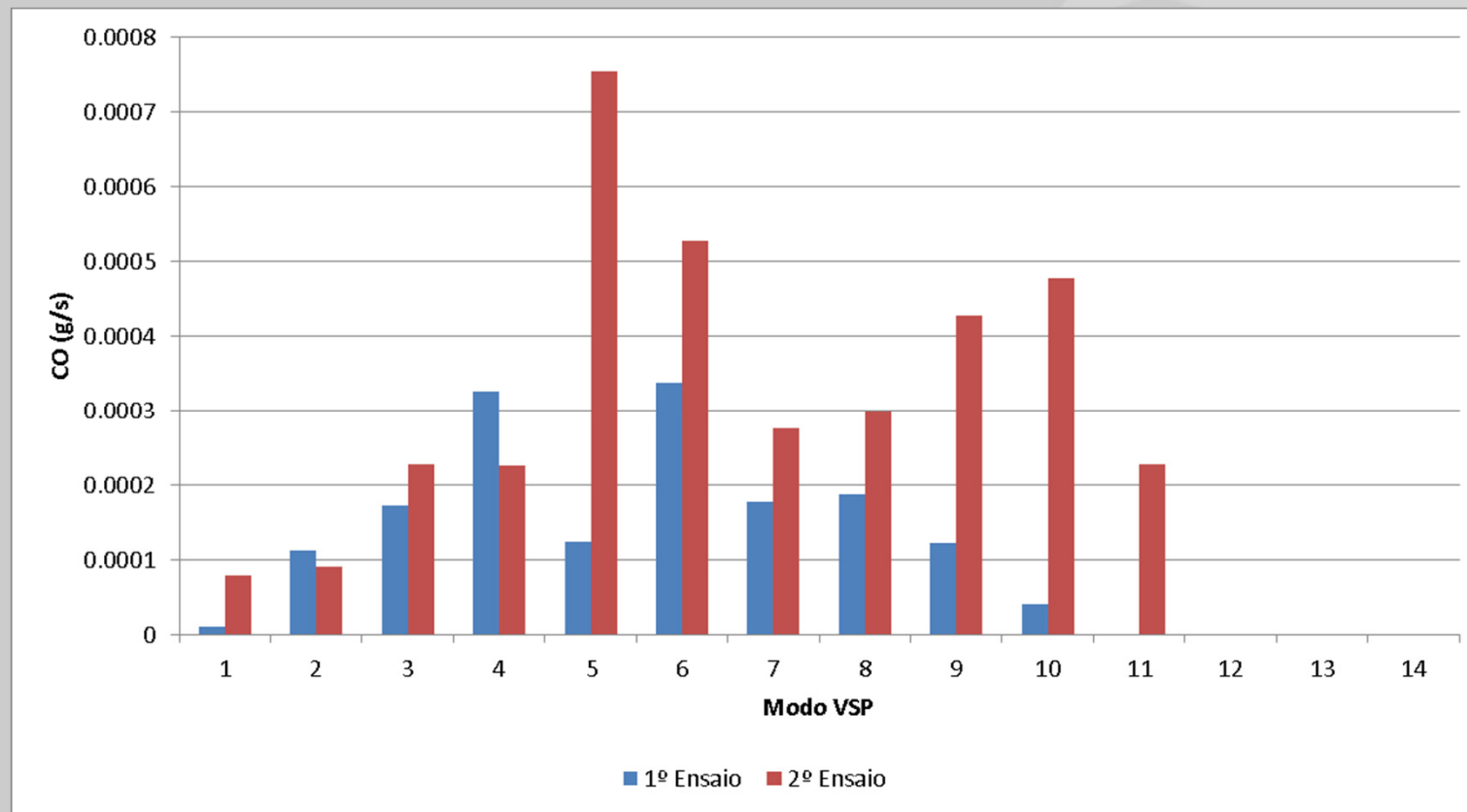
Variation in consumption



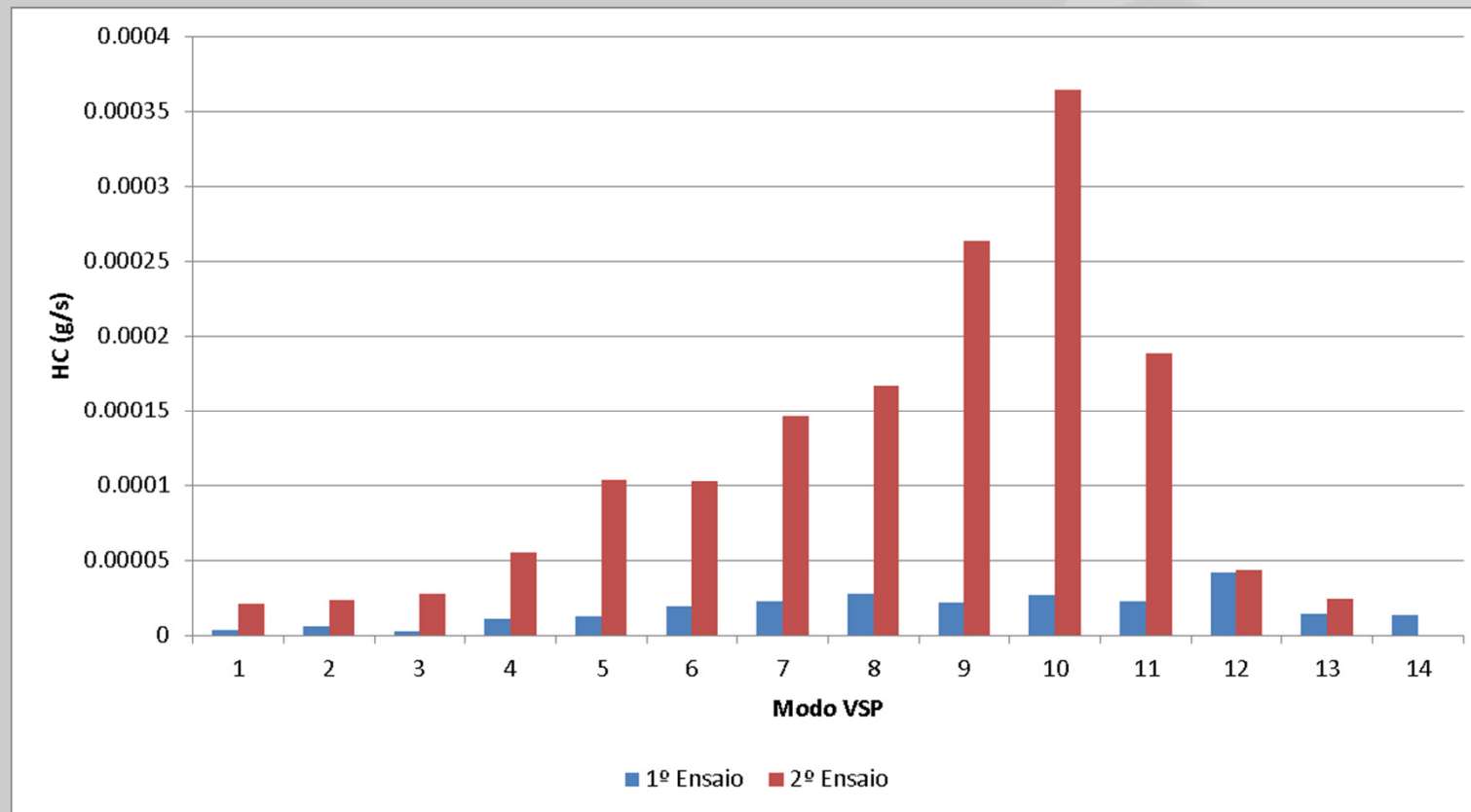
Emission of NOx (g/s)



Emission of CO (g/s)



Emission of HC (g/s)



Analysis

- The procedure used (VSP) allows even if the driving cycles are not the same in both trials, the results are comparable and even extrapolated to the same vehicle in other driving cycles
- The results of absolute consumption were validated by simulating the vehicle to operate in the NEDC test cycle. The consumption of the vehicle in the original configuration differs by less consumption of 0.2 l/100 km of the certification consumption
- The results shown are valid only for the tested vehicle, variations in consumption in real conditions depend on the driving cycle

Analysis

- Regarding consumption, the vehicle in the second essay presents consumption ranging between 18% and 38% reductions, depending on the operating mode
- Regarding NOx emissions reductions were observed in all modes of operation
- Emissions of CO and unburned hydrocarbons increased but the value of the base was very low starting, consistent with this type of engine (Diesel).
- No measurements of particle emission were made



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