

SUPPLEMENT TO REPORT OF THE GRPE
PARTICLE MEASUREMENT PROGRAMME PMP

GOVERNMENT SPONSORED WORK PROGRAMMES - July 2003

(Transmitted by France)

**Supplement to annex 8 relative to inter-laboratory comparisons using
ELPI+CVS + HOT DILUTION**

EXECUTIVE SUMMARY

The objective of the french PMP subgroup work was to carry out an inter-laboratory comparison on the measurement of number of particles on Euro III gasoline and diesel (one equipped with a diesel particulate filter : DPF) light duty vehicles.

The inter-laboratory test was conducted in four laboratories using an Electrical Low Pressure Impactor (ELPI) and hot dilution.

The vehicles are tested over the current European cycle and using the procedure included in the existing European regulations.

The repeatability and reproducibility results observed in this study show that the test procedure developed using an ELPI + Hot Dilution is acceptable both for diesel and gasoline vehicles.

This study also points out the importance of the measurement of the air of the "tunnel blank" before testing.

Clearly, this methodology shows the effect of a DPF as we can observe the same level of particles number as in the "tunnel blank ".

SUMMARY REPORT

1. AIM

Development of a round robin test using an electrical low pressure impactor (ELPI) method and hot dilution in order to measure particle size and number on light duty vehicles, and conducted on chassis dynamometer under cold European driving Cycle (Cold EDC Test) specified in the Regulation.

The tests are performed according to a protocol prepared by the French Sub-Group, and based on existing European legislated procedures.

For calculation of distribution (size and number), data is split into the two phases of the EDC cycle ; ECE (0-780s) and EUDC (781-1180 s).

2. TEST PROGRAM

- ↪ Participating laboratories :
 - Institut Français du Pétrole (IFP)
 - PSA Peugeot Citroën
 - Renault
 - Union Technique de l'Automobile, du Motocycle et du Cycle (UTAC)

- ↪ Tested vehicles :
 - Diesel application :
 - Common rail direct injection engine with an oxydation catalytic converter (2 liters of cylinder, provided by UTAC) : Peugeot 307 HDI (Euro 3)
 - Common rail direct injection engine with a particle filter and an oxydation catalytic converter (2 liters of cylinder, provided by Peugeot) : Peugeot 307 DPF (Euro 3)

 - Gasoline application
 - Conventional MPI gasoline engine fitted with a 3 way catalytic converter (1.6 liter of cylinder, provided by Renault) : Renault Megane (Euro 3)

- ↪ Test fuel
 - Diesel :
 - Having a sulfur level < 10 ppm
 - Gasoline :
 - Having a sulfur level < 10 ppm

- ↪ Lubricant :
 - Having a sulfur content < 5000 ppm

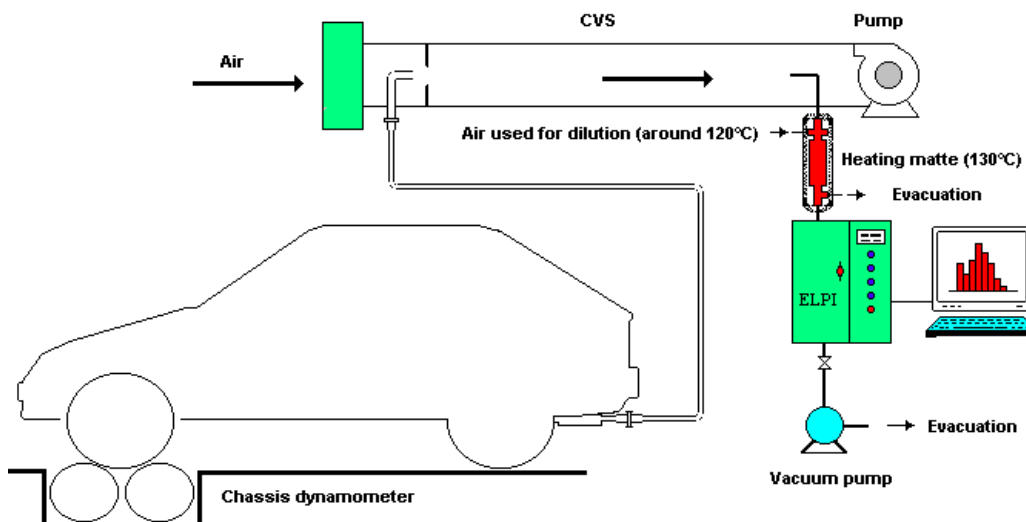
- ↪ Test cycle :
 - EDC with cold start

↪ Test protocol :

- Number and size distribution using a DEKATI Electrical Low Pressure Impactor covering particle cut sizes from 0.008 μm to 10 μm .
- CVS + sampling from the dilution tunnel.
- Collection Substrates : Aluminium foil greased (e.g. silicone fluid) on the impact plate to prevent particles bounce off.
- Using a dilutor (130°C, 10-20l/min) and hot air for dilution (temperature : \cong 120°C in order to minimize the nucleation particles).
- Total length of the antistatic tube used connecting the sample probe installed on the dilution tunnel to the ELPI \leq 3 meters.
- Measuring the blank CVS during 5 minutes before the test to check the cleanliness of the blank system and at the end of the test with engine stopped, continuing the acquisition during 5 minutes in order to control the initial condition of test.

The measurements are conducted without treatment of diluted exhaust gas before size measurement (without thermodenuder).

3. SYSTEM SET-UP



4. MEASUREMENTS

- ↪ Repeatability and reproducibility have been measured for the three tested vehicles on cold EDC.
- ↪ Results are also given separately under urban cycle and extra-urban cycle.
- ↪ CO, CO₂, HC, NO_x and particulates are also measured to detect an eventual variation of the vehicles.

5. RESULTS

Appendix 1 :

5.1 PEUGEOT 307 HDI – Diesel engine without DPF

Appendix 2 :

5.2 PEUGEOT 307 HDI - Diesel engine with DPF

Appendix 3 :

5.3 RENAULT Megane - Gasoline engine

Appendix 4 : Characteristics of vehicles tested

Appendix 5 : Fuel and lubricant specifications

APPENDIX 1

- 5.1 PEUGEOT 307 HDI – Diesel engine without DPF**
- 5.1.1 Blank CVS**
- 5.1.2 Repeatability and Reproducibility**
 - Cold EDC test
 - ECE (urban cycle) test
 - EUDC (extra-urban cycle) test

Blank CVS

**Blank CVS before the test with Hot dilution (around 120°C to prevent recondensation of the vapor),
Particle Number (1/km)**

Stage n:o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

													SUM		
LAB 1	Test n°1	3.05E+10	7.40E+09	2.62E+09	1.40E+09	7.59E+08	3.84E+08	3.02E+08	1.51E+08	1.01E+08	4.21E+07	3.33E+07	1.08E+07	4.37E+10	LAB 1
	Test n°2	3.52E+10	7.60E+09	3.64E+09	2.78E+09	8.92E+08	5.03E+08	4.31E+08	1.89E+08	7.00E+07	6.46E+07	4.85E+07	9.81E+06	5.14E+10	
	Test n°3	3.34E+10	7.63E+09	2.36E+09	1.97E+09	1.02E+09	5.90E+08	2.66E+08	1.53E+08	7.60E+07	3.74E+07	3.11E+07	6.68E+06	4.76E+10	
LAB 2	Test n°1	7.88E+10	3.81E+10	2.08E+10	1.11E+10	3.84E+09	1.01E+09	6.21E+08	2.34E+08	1.85E+08	1.07E+08	6.30E+07	3.09E+07	1.55E+11	LAB 2
	Test n°2	9.13E+10	1.62E+10	1.67E+10	7.94E+09	2.31E+09	8.96E+08	6.36E+08	2.04E+08	1.38E+08	6.99E+07	6.61E+07	2.49E+07	1.36E+11	
LAB 3	Test n°1	5.40E+10	1.28E+10	2.36E+10	2.07E+10	1.16E+10	2.80E+09	1.96E+09	5.80E+08	1.08E+08	3.25E+07	4.50E+07	1.77E+07	1.28E+11	LAB 3
	Test n°2	9.24E+10	2.91E+10	7.82E+09	3.19E+09	1.94E+09	6.76E+08	6.05E+08	4.24E+08	8.76E+07	2.10E+07	1.31E+08	4.24E+04	1.36E+11	
	Test n°3	7.43E+10	2.19E+10	7.12E+09	5.96E+09	4.89E+09	2.01E+09	1.16E+09	3.46E+08	1.52E+08	5.73E+07	3.20E+07	2.24E+07	1.18E+11	
LAB 4	Test n°1	5.23E+10	1.20E+10	6.99E+09	4.58E+09	4.80E+09	2.31E+09	6.33E+08	2.59E+08	9.67E+07	5.58E+07	2.29E+07	1.08E+07	8.41E+10	LAB 4
	Test n°2	4.44E+10	2.40E+09	1.21E+09	9.90E+08	1.31E+09	6.98E+08	4.26E+07	1.36E+08	7.96E+07	7.61E+06	2.73E+07	5.97E+06	5.12E+10	
	Test n°3	1.90E+11	2.75E+10	1.20E+10	7.47E+09	5.04E+09	1.94E+09	5.93E+08	3.77E+08	1.70E+08	1.20E+08	7.97E+07	3.20E+07	2.45E+11	
Mean =		7.06E+10	1.66E+10	9.53E+09	6.19E+09	3.50E+09	1.26E+09	6.59E+08	2.78E+08	1.15E+08	5.60E+07	5.27E+07	1.56E+07	1.09E+11	
SD =		4.55E+10	1.12E+10	7.75E+09	5.74E+09	3.19E+09	8.46E+08	5.16E+08	1.39E+08	3.99E+07	3.42E+07	3.16E+07	1.06E+07	6.15E+10	
%SD =		64	67	81	93	91	67	78	50	35	61	60	68	56.5	

Cold EDC Test

Peugeot 307 HDI tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY

Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12		
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085		
													SUM	
LAB 1	Test n°1	8.49E+13	3.25E+13	3.61E+13	1.10E+13	1.80E+12	2.39E+11	6.35E+10	2.08E+10	1.00E+10	5.51E+09	3.31E+09	1.59E+04	1.67E+14
	Test n°2	7.58E+13	2.81E+13	3.39E+13	1.15E+13	2.09E+12	3.01E+11	8.38E+10	2.80E+10	1.06E+10	5.28E+09	3.29E+09	6.26E+04	1.52E+14
	Test n°3	8.27E+13	3.15E+13	3.38E+13	1.29E+13	2.81E+12	4.11E+11	9.63E+10	2.95E+10	1.13E+10	5.47E+09	3.55E+09	1.46E+04	1.64E+14
	Mean =	8.11E+13	3.07E+13	3.46E+13	1.18E+13	2.23E+12	3.17E+11	8.12E+10	2.54E+10	1.06E+10	5.42E+09	3.38E+09	3.10E+04	1.61E+14
SD =	4.76E+12	2.33E+12	1.32E+12	1.02E+12	5.23E+11	8.74E+10	1.65E+10	4.41E+09	6.31E+08	1.23E+08	1.44E+08	2.73E+04	8.02E+12	
%SD =	5.9	7.6	3.8	8.6	23.4	27.6	20.4	17.3	5.9	2.3	4.3	88.1	5.0	
LAB 2	Essai n°1	6.70E+13	4.86E+13	3.99E+13	9.85E+12	1.59E+12	1.66E+11	4.85E+10	2.14E+10	9.78E+09	5.22E+09	3.64E+09	2.61E+09	1.67E+14
	Essai n°2	5.77E+13	4.16E+13	3.45E+13	9.25E+12	1.78E+12	1.88E+11	5.78E+10	2.13E+10	5.21E+09	6.01E+09	3.52E+09	2.57E+09	1.45E+14
	Mean =	6.23E+13	4.51E+13	3.72E+13	9.55E+12	1.68E+12	1.77E+11	5.32E+10	2.14E+10	3.09E+10	5.62E+09	3.58E+09	2.59E+09	1.56E+14
	SD =	6.54E+12	4.95E+12	3.82E+12	4.24E+11	1.36E+11	1.56E+10	6.68E+09	7.07E+07	2.99E+10	5.59E+08	8.49E+07	2.83E+07	1.53E+13
%SD =	10.5	11.0	10.3	4.4	8.1	8.8	12.4	0.3	96.7	9.9	2.4	1.1	9.8	
LAB 3	Test n°1	3.46E+13	2.06E+13	3.53E+13	1.97E+13	6.86E+12	9.26E+11	2.22E+11	3.36E+10	1.33E+10	6.02E+09	4.03E+09	2.68E+09	1.18E+14
	Test n°2	2.69E+13	1.56E+13	2.83E+13	1.90E+13	7.93E+12	1.00E+12	2.40E+11	3.52E+10	1.40E+10	6.28E+09	4.14E+09	2.70E+09	9.90E+13
	Test n°3	3.06E+13	1.51E+13	2.80E+13	1.97E+13	9.14E+12	1.25E+12	2.67E+11	3.81E+10	1.52E+10	6.76E+09	4.36E+09	2.88E+09	1.04E+14
	Mean =	3.07E+13	1.71E+13	3.05E+13	1.95E+13	7.97E+12	1.06E+12	2.43E+11	3.56E+10	1.42E+10	6.35E+09	4.18E+09	2.75E+09	1.07E+14
SD =	3.84E+12	3.05E+12	4.10E+12	3.91E+11	1.14E+12	1.70E+11	2.30E+10	2.29E+09	9.96E+08	3.74E+08	1.71E+08	1.11E+08	9.93E+12	
%SD =	12.5	17.8	13.4	2.0	14.3	16.1	9.4	6.4	7.0	5.9	4.1	4.0	9.3	
LAB 4	Test n°1	3.72E+13	2.69E+13	2.49E+13	1.64E+13	6.58E+12	8.46E+11	1.01E+11	3.00E+10	1.01E+10	4.65E+09	3.59E+09	2.74E+09	1.13E+14
	Test n°2	3.50E+13	2.30E+13	2.22E+13	1.67E+13	7.52E+12	9.11E+11	1.07E+11	3.18E+10	1.11E+10	5.18E+09	4.00E+09	2.93E+09	1.06E+14
	Test n°3	3.75E+13	2.14E+13	1.88E+13	1.60E+13	7.72E+12	8.22E+11	9.46E+10	2.94E+10	1.04E+10	4.78E+09	3.64E+09	2.70E+09	1.02E+14
	Mean =	3.66E+13	2.37E+13	2.20E+13	1.64E+13	7.27E+12	8.60E+11	1.01E+11	3.04E+10	1.05E+10	4.87E+09	3.74E+09	2.79E+09	1.07E+14
SD =	1.34E+12	2.82E+12	3.05E+12	3.60E+11	6.09E+11	4.59E+10	5.98E+09	1.26E+09	5.24E+08	2.79E+08	2.23E+08	1.26E+08	5.41E+12	
%SD =	3.7	11.9	13.9	2.2	8.4	5.3	5.9	4.2	5.0	5.7	6.0	4.5	5.1	

REPRODUCIBILITY

Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12		
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085		
													SUM	
LAB 1	Test n°1	8.49E+13	3.25E+13	3.61E+13	1.10E+13	1.80E+12	2.39E+11	6.35E+10	2.08E+10	1.00E+10	5.51E+09	3.31E+09	1.59E+04	1.67E+14
	Test n°2	7.58E+13	2.81E+13	3.39E+13	1.15E+13	2.09E+12	3.01E+11	8.38E+10	2.60E+10	1.06E+10	5.28E+09	3.29E+09	6.26E+04	1.52E+14
	Test n°3	8.27E+13	3.15E+13	3.38E+13	1.29E+13	2.81E+12	4.11E+11	9.63E+10	2.95E+10	1.13E+10	5.47E+09	3.55E+09	1.46E+04	1.64E+14
LAB 2	Essai n°1	6.70E+13	4.86E+13	3.99E+13	9.85E+12	1.59E+12	1.66E+11	4.85E+10	2.14E+10	9.78E+09	5.22E+09	3.64E+09	2.61E+09	1.67E+14
	Essai n°2	5.77E+13	4.16E+13	3.45E+13	9.25E+12	1.78E+12	1.88E+11	5.78E+10	2.13E+10	5.21E+09	6.01E+09	3.52E+09	2.57E+09	1.45E+14
LAB 3	Test n°1	3.46E+13	2.06E+13	3.53E+13	1.97E+13	6.86E+12	9.26E+11	2.22E+11	3.36E+10	1.33E+10	6.02E+09	4.03E+09	2.68E+09	1.18E+14
	Test n°2	2.69E+13	1.56E+13	2.83E+13	1.90E+13	7.93E+12	1.00E+12	2.40E+11	3.52E+10	1.40E+10	6.28E+09	4.14E+09	2.70E+09	9.90E+13
	Test n°3	3.06E+13	1.51E+13	2.80E+13	1.97E+13	9.14E+12	1.25E+12	2.67E+11	3.81E+10	1.52E+10	6.76E+09	4.36E+09	2.88E+09	1.04E+14
LAB 4	Test n°1	3.72E+13	2.69E+13	2.49E+13	1.64E+13	6.58E+12	8.46E+11	1.01E+11	3.00E+10	1.01E+10	4.65E+09	3.59E+09	2.74E+09	1.13E+14
	Test n°2	3.50E+13	2.30E+13	2.22E+13	1.67E+13	7.52E+12	9.11E+11	1.07E+11	3.18E+10	1.11E+10	5.18E+09	4.00E+09	2.93E+09	1.06E+14
	Test n°3	3.75E+13	2.14E+13	1.88E+13	1.60E+13	7.72E+12	8.22E+11	9.46E+10	2.94E+10	1.04E+10	4.78E+09	3.64E+09	2.70E+09	1.02E+14
Mean =	5.18E+13	2.77E+13	3.05E+13	1.47E+13	5.07E+12	6.42E+11	1.26E+11	2.88E+10	1.53E+10	5.56E+09	3.73E+09	1.98E+09	1.31E+14	
SD =	2.23E+13	1.04E+13	6.54E+12	3.97E+12	3.01E+12	3.86E+11	7.84E+10	5.88E+09	1.24E+10	6.45E+08	3.49E+08	1.28E+08	2.83E+13	
%SD =	43	38	21	27	59	60	62	20	81	12	9	64	22	

Reproducibility limit

Peugeot 307 HDI.

Cold EDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.240	136	0.037	0.330	0.370	0.022	5.16
	Test n°2	0.200	138	0.035	0.340	0.370	0.023	5.22
	Test n°3	0.170	138	0.030	0.330	0.360	0.025	5.23
Mean =		0.203	137	0.034	0.333	0.367	0.023	5.20
SD =		0.035	1.14	0.004	0.006	0.006	0.002	0.04
%SD =		17.3	0.8	10.6	1.7	1.6	6.5	0.7

LAB 2	Test n°1	0.245	137	0.033	0.341	0.374	0.028	5.21
	Test n°2	0.228	138	0.030	0.347	0.376	0.027	5.25
Mean =		0.237	138	0.032	0.344	0.375	0.028	5.23
SD =		0.012	0.64	0.002	0.004	0.001	0.001	0.03
%SD =		5.1	0.5	6.7	1.2	0.4	2.6	0.5

LAB 3	Test n°1	0.259	138	0.039	0.320	0.359	0.030	5.30
	Test n°2	0.223	135	0.032	0.323	0.355	0.034	5.20
	Test n°3	0.220	135	0.033	0.313	0.346	0.030	5.18
Mean =		0.234	136	0.035	0.319	0.353	0.031	5.23
SD =		0.022	1.66	0.004	0.005	0.007	0.002	0.06
%SD =		9.3	1.2	10.9	1.6	1.9	7.4	1.2

LAB 4	Test n°1	0.226	137	0.030	0.369	0.399	0.033	5.19
	Test n°2	0.213	138	0.029	0.361	0.390	0.032	5.22
	Test n°3	0.209	138	0.027	0.349	0.376	0.029	5.24
Mean =		0.216	138	0.029	0.360	0.388	0.031	5.22
SD =		0.009	0.62	0.002	0.010	0.012	0.002	0.03
%SD =		4.1	0.5	5.3	2.8	3.0	6.6	0.5

Cold EDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)	
LAB 1	Test n°1	0.240	136	0.037	0.330	0.370	0.022	5.16	LAB 1
	Test n°2	0.200	138	0.035	0.340	0.370	0.023	5.22	
	Test n°3	0.170	138	0.030	0.330	0.360	0.025	5.23	
LAB 2	Test n°1	0.245	137	0.033	0.341	0.374	0.028	5.21	LAB 2
	Test n°2	0.228	138	0.030	0.347	0.376	0.027	5.25	
LAB 3	Test n°1	0.259	138	0.039	0.320	0.359	0.030	5.30	LAB 3
	Test n°2	0.223	135	0.032	0.323	0.355	0.034	5.20	
	Test n°3	0.220	135	0.033	0.313	0.346	0.030	5.18	
LAB 4	Test n°1	0.226	137	0.030	0.369	0.399	0.033	5.19	LAB 4
	Test n°2	0.213	138	0.029	0.361	0.390	0.032	5.22	
	Test n°3	0.209	138	0.027	0.349	0.376	0.029	5.24	
Mean =		0.221	137	0.032	0.338	0.370	0.028	5.22	
SD =		0.024	1.19	0.004	0.017	0.015	0.004	0.04	
%SD =		10.8	0.9	11.2	5.1	4.1	13.8	0.7	

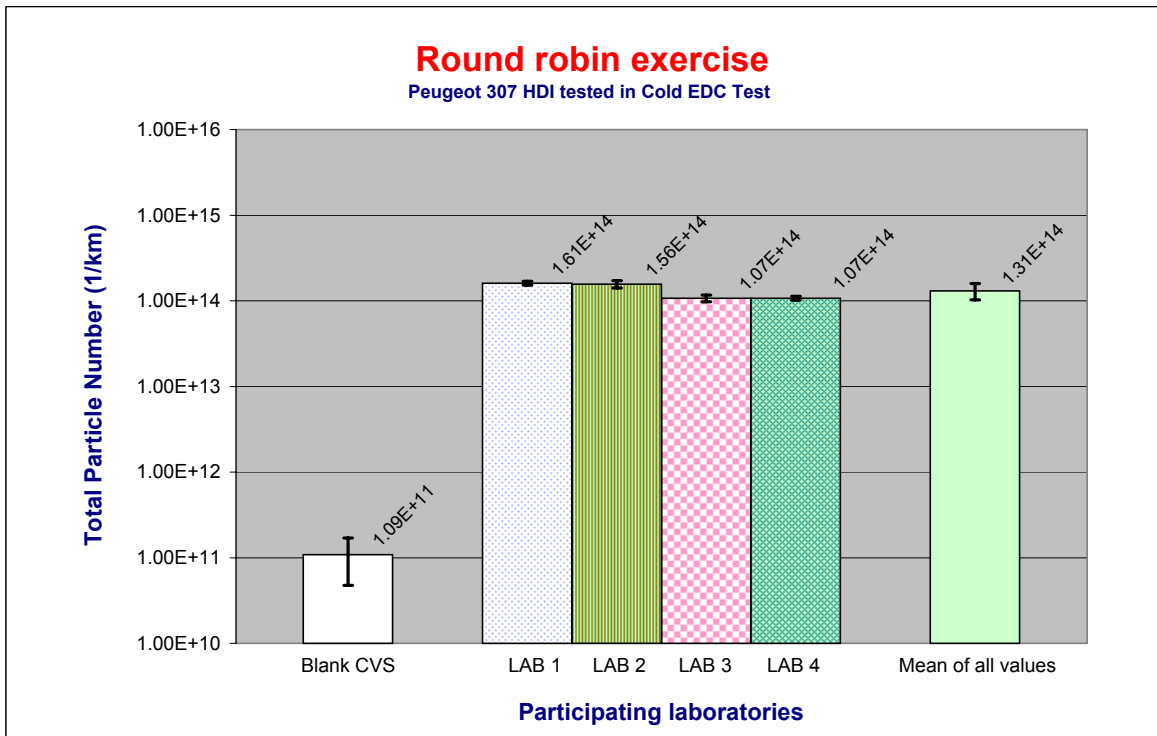
Cold EDC Test

Cold EDC Test

Only the average results are presented

Etage n° =	Dp (µm)	Blank CVS before the test	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	7.06E+10	8.11E+13	6.23E+13	3.07E+13	3.66E+13	5.18E+13
2	0.030	1.66E+10	3.07E+13	4.51E+13	1.71E+13	2.37E+13	2.77E+13
3	0.063	9.53E+09	3.46E+13	3.72E+13	3.05E+13	2.20E+13	3.05E+13
4	0.109	6.19E+09	1.18E+13	9.55E+12	1.95E+13	1.64E+13	1.47E+13
5	0.173	3.50E+09	2.23E+12	1.68E+12	7.97E+12	7.27E+12	5.07E+12
6	0.267	1.26E+09	3.17E+11	1.77E+11	1.06E+12	8.60E+11	6.42E+11
7	0.407	6.59E+08	8.12E+10	5.32E+10	2.43E+11	1.01E+11	1.26E+11
8	0.655	2.78E+08	2.54E+10	2.14E+10	3.56E+10	3.04E+10	2.88E+10
9	1.021	1.15E+08	1.06E+10	3.09E+10	1.42E+10	1.05E+10	1.53E+10
10	1.655	5.60E+07	5.42E+09	5.62E+09	6.35E+09	4.87E+09	5.56E+09
11	2.520	5.27E+07	3.38E+09	3.58E+09	4.18E+09	3.74E+09	3.73E+09
12	4.085	1.56E+07	3.38E+09	2.59E+09	2.75E+09	2.76E+09	1.98E+09
Total Particle Number (1/km) =		1.09E+11	1.61E+14	1.56E+14	1.07E+14	1.07E+14	1.31E+14
SD =		6.15E+10	8.02E+12	1.53E+13	9.93E+12	5.41E+12	2.83E+13

Note . = Value no treated



For information

Cold EDC Test

Peugeot 307 HDI tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY

dN/dlogDp (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

LAB 1	Test n°1	1.38E+14	1.08E+14	1.47E+14	5.25E+13	9.52E+12	1.28E+12	3.01E+11	1.08E+11	4.75E+10	2.99E+10	1.58E+10	3.88E+04
	Test n°2	1.23E+14	9.32E+13	1.38E+14	5.52E+13	1.10E+13	1.61E+12	3.97E+11	1.36E+11	5.00E+10	2.87E+10	1.58E+10	1.53E+05
	Test n°3	1.34E+14	1.05E+14	1.38E+14	6.20E+13	1.49E+13	2.20E+12	4.57E+11	1.54E+11	5.34E+10	2.97E+10	1.70E+10	3.56E+04
	Mean =	1.31E+14	1.02E+14	1.41E+14	5.65E+13	1.18E+13	1.70E+12	3.86E+11	1.33E+11	5.03E+10	2.94E+10	1.62E+10	7.57E+04
SD =	7.71E+12	7.75E+12	5.40E+12	4.88E+12	2.76E+12	4.68E+11	7.84E+10	2.30E+10	2.99E+09	6.69E+08	6.89E+08	6.67E+04	
%SD =	5.9	7.6	3.8	8.6	23.4	27.6	20.4	17.3	5.9	2.3	4.3	88.1	

SUM

4.57E+14
4.23E+14
4.56E+14

4.45E+14
1.96E+13
4.4

LAB 2	Test n°1	1.09E+14	1.66E+14	1.80E+14	4.51E+13	6.95E+12	1.02E+12	2.36E+11	1.13E+11	4.31E+10	2.99E+10	1.63E+10	6.62E+09
	Test n°2	9.35E+13	1.42E+14	1.55E+14	4.24E+13	7.75E+12	1.15E+12	2.81E+11	1.13E+11	2.29E+11	3.45E+10	1.58E+10	6.52E+09
	Mean =	1.01E+14	1.54E+14	1.68E+14	4.38E+13	7.35E+12	1.09E+12	2.59E+11	1.13E+11	1.36E+11	3.22E+10	1.61E+10	6.57E+09
	SD =	1.07E+13	1.68E+13	1.73E+13	1.93E+12	5.68E+11	9.66E+10	3.19E+10	1.07E+08	1.32E+11	3.22E+09	3.71E+08	7.42E+07
%SD =	10.6	10.9	10.3	4.4	7.7	8.9	12.3	0.1	96.7	10.0	2.3	1.1	

5.08E+14
4.43E+14

4.75E+14
4.59E+13
9.7

LAB 3	Test n°1	5.74E+13	7.43E+13	1.50E+14	8.42E+13	3.00E+13	5.69E+12	1.08E+12	1.78E+11	5.82E+10	3.47E+10	1.80E+10	6.79E+09
	Test n°2	4.46E+13	5.63E+13	1.21E+14	8.12E+13	3.47E+13	6.16E+12	1.17E+12	1.86E+11	6.13E+10	3.62E+10	1.85E+10	6.84E+09
	Test n°3	5.08E+13	5.43E+13	1.19E+14	8.40E+13	4.00E+13	7.69E+12	1.30E+12	2.02E+11	6.69E+10	3.90E+10	1.95E+10	7.30E+09
	Mean =	5.09E+13	6.16E+13	1.30E+14	8.31E+13	3.49E+13	6.51E+12	1.18E+12	1.89E+11	6.21E+10	3.66E+10	1.86E+10	6.98E+09
SD =	6.38E+12	1.10E+13	1.75E+13	1.67E+12	4.99E+12	1.05E+12	1.12E+11	1.21E+10	4.37E+09	2.16E+09	7.61E+08	2.82E+08	
%SD =	12.5	17.8	13.4	2.0	14.3	16.1	9.4	6.4	7.0	5.9	4.1	4.0	

4.03E+14
3.45E+14
3.58E+14

3.69E+14
3.05E+13
8.3

LAB 4	Test n°1	6.48E+13	8.33E+13	1.05E+14	8.18E+13	3.49E+13	4.62E+12	4.90E+11	1.56E+11	4.82E+10	2.55E+10	1.71E+10	7.06E+09
	Test n°2	6.10E+13	7.14E+13	9.33E+13	8.35E+13	3.99E+13	4.97E+12	5.16E+11	1.65E+11	5.30E+10	2.84E+10	1.91E+10	7.55E+09
	Test n°3	6.53E+13	6.63E+13	7.91E+13	7.99E+13	4.10E+13	4.49E+12	4.58E+11	1.53E+11	4.94E+10	2.62E+10	1.73E+10	6.94E+09
	Mean =	6.37E+13	7.37E+13	9.24E+13	8.17E+13	3.86E+13	4.70E+12	4.88E+11	1.58E+11	5.02E+10	2.67E+10	1.78E+10	7.18E+09
SD =	2.34E+12	8.74E+12	1.28E+13	1.80E+12	3.23E+12	2.50E+11	2.90E+10	6.55E+09	2.50E+09	1.53E+09	1.06E+09	3.25E+08	
%SD =	3.7	11.9	13.9	2.2	8.4	5.3	5.9	4.2	5.0	5.7	6.0	4.5	

3.75E+14
3.55E+14
3.37E+14

3.55E+14
1.91E+13
5.4

REPRODUCIBILITY

dN/dlogDp (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

LAB 1	Test n°1	1.38E+14	1.08E+14	1.47E+14	5.25E+13	9.52E+12	1.28E+12	3.01E+11	1.08E+11	4.75E+10	2.99E+10	1.58E+10	3.88E+04
	Test n°2	1.23E+14	9.32E+13	1.38E+14	5.52E+13	1.10E+13	1.61E+12	3.97E+11	1.36E+11	5.00E+10	2.87E+10	1.58E+10	1.53E+05
	Test n°3	1.34E+14	1.05E+14	1.38E+14	6.20E+13	1.49E+13	2.20E+12	4.57E+11	1.54E+11	5.34E+10	2.97E+10	1.70E+10	3.56E+04
	LAB 2	1.09E+14	1.66E+14	1.80E+14	4.51E+13	6.95E+12	1.02E+12	2.36E+11	1.13E+11	4.31E+10	2.99E+10	1.63E+10	6.62E+09
LAB 3	Test n°1	5.74E+13	7.43E+13	1.50E+14	8.42E+13	3.00E+13	5.69E+12	1.08E+12	1.78E+11	5.82E+10	3.47E+10	1.80E+10	6.79E+09
	Test n°2	4.46E+13	5.63E+13	1.21E+14	8.12E+13	3.47E+13	6.16E+12	1.17E+12	1.86E+11	6.13E+10	3.62E+10	1.85E+10	6.84E+09
	Test n°3	5.08E+13	5.43E+13	1.19E+14	8.40E+13	4.00E+13	7.69E+12	1.30E+12	2.02E+11	6.69E+10	3.90E+10	1.95E+10	7.30E+09
	LAB 4	6.48E+13	8.33E+13	1.05E+14	8.18E+13	3.49E+13	4.62E+12	4.90E+11	1.56E+11	4.82E+10	2.55E+10	1.71E+10	7.06E+09
LAB 4	Test n°1	6.10E+13	7.14E+13	9.33E+13	8.35E+13	3.99E+13	4.97E+12	5.16E+11	1.65E+11	5.30E+10	2.84E+10	1.91E+10	7.55E+09
	Test n°2	6.53E+13	6.63E+13	7.91E+13	7.99E+13	4.10E+13	4.49E+12	4.58E+11	1.53E+11	4.94E+10	2.62E+10	1.73E+10	6.94E+09
	Mean =	8.55E+13	9.27E+13	1.30E+14	6.83E+13	2.46E+13	3.72E+12	6.07E+11	1.51E+11	6.91E+10	3.12E+10	1.73E+10	5.06E+09
	SD =	3.48E+13	3.53E+13	2.96E+13	1.70E+13	1.44E+13	2.35E+12	3.82E+11	3.13E+10	5.35E+10	4.32E+09	1.32E+09	3.26E+09
%SD =	41	38	23	25	59	63	63	21	77	14	8	64	

SUM

4.57E+14
4.23E+14
4.56E+14
5.08E+14
4.43E+14
4.03E+14
3.45E+14
3.58E+14
3.75E+14
3.55E+14
3.37E+14

4.05E+14
5.61E+13
14

Reproducibility limit

ECE Test

Peugeot 307 HDI.

ECE Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.660	176	0.083	0.470	0.550	0.023	6.69
	Test n°2	0.550	179	0.078	0.480	0.550	0.024	6.81
	Test n°3	0.460	180	0.067	0.460	0.530	0.026	6.84

Mean =	0.557	178	0.076	0.470	0.543	0.024	6.78
SD =	0.100	2.23	0.008	0.010	0.012	0.002	0.08
%SD =	18.0	1.3	10.8	2.1	2.1	6.3	1.2

LAB 2	Test n°1	0.655	181	0.078	0.487	0.565	0.026	6.90
	Test n°2	0.606	181	0.070	0.473	0.543	0.026	6.87

Mean =	0.631	181	0.074	0.480	0.554	0.026	6.89
SD =	0.035	0.35	0.006	0.010	0.016	0.000	0.02
%SD =	5.5	0.2	7.6	2.1	2.8	0.0	0.3

LAB 3	Test n°1	0.699	182	0.088	0.461	0.549	0.029	7.03
	Test n°2	0.602	179	0.075	0.452	0.527	0.031	6.90
	Test n°3	0.593	177	0.076	0.443	0.519	0.030	6.84

Mean =	0.631	180	0.080	0.452	0.532	0.030	6.92
SD =	0.059	2.53	0.007	0.009	0.016	0.001	0.10
%SD =	9.3	1.4	9.1	2.0	2.9	3.3	1.4

LAB 4	Test n°1	0.595	179	0.072	0.483	0.554	0.034	6.82
	Test n°2	0.556	180	0.069	0.485	0.554	0.033	6.85
	Test n°3	0.552	182	0.065	0.492	0.556	0.031	6.92

Mean =	0.568	181	0.069	0.487	0.555	0.033	6.86
SD =	0.024	1.41	0.004	0.005	0.001	0.002	0.05
%SD =	4.2	0.8	5.1	1.0	0.2	4.7	0.7

ECE Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
-----------------	--	--------------	---------------	--------------	---------------	------------------	------------------------	-----------------------------

LAB 1	Test n°1	0.660	176	0.083	0.470	0.550	0.023	6.69	LAB 1
	Test n°2	0.550	179	0.078	0.480	0.550	0.024	6.81	
	Test n°3	0.460	180	0.067	0.460	0.530	0.026	6.84	
LAB 2	Test n°1	0.655	181	0.078	0.487	0.565	0.026	6.90	LAB 2
	Test n°2	0.606	181	0.070	0.473	0.543	0.026	6.87	
LAB 3	Test n°1	0.699	182	0.088	0.461	0.549	0.029	7.03	LAB 3
	Test n°2	0.602	179	0.075	0.452	0.527	0.031	6.90	
	Test n°3	0.593	177	0.076	0.443	0.519	0.030	6.84	
LAB 4	Test n°1	0.595	179	0.072	0.483	0.554	0.034	6.82	LAB 4
	Test n°2	0.556	180	0.069	0.485	0.554	0.033	6.85	
	Test n°3	0.552	182	0.065	0.492	0.556	0.031	6.92	

Mean =	0.593	180	0.075	0.471	0.545	0.029	6.86
SD =	0.065	2.01	0.007	0.016	0.014	0.004	0.08
%SD =	11.0	1.1	9.3	3.3	2.6	13.1	1.2

ECE Test Peugeot 307 HDI tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

		SUM												
LAB 1	Test n°1	1.68E+14	4.02E+13	3.56E+13	1.05E+13	1.68E+12	1.93E+11	6.00E+10	2.74E+10	1.44E+10	8.06E+09	5.06E+09	No	2.57E+14
	Test n°2	1.36E+14	3.60E+13	3.61E+13	1.08E+13	1.83E+12	2.62E+11	8.03E+10	3.37E+10	1.55E+10	7.95E+09	4.98E+09		2.21E+14
	Test n°3	1.45E+14	4.09E+13	3.70E+13	1.20E+13	2.33E+12	3.32E+11	8.53E+10	3.48E+10	1.46E+10	7.34E+09	5.07E+09	measured	2.37E+14
	Mean =	1.50E+14	3.90E+13	3.63E+13	1.11E+13	1.94E+12	2.63E+11	7.52E+10	3.20E+10	1.48E+10	7.78E+09	5.04E+09	No	2.39E+14
SD =	1.67E+13	2.62E+12	6.93E+11	7.87E+11	3.41E+11	6.94E+10	1.34E+10	3.97E+09	5.65E+08	3.89E+08	4.71E+07		1.77E+13	
%SD =	11.2	6.7	1.9	7.1	17.5	26.4	17.8	12.4	3.8	5.0	0.9	calculated	7.4	
LAB 2	Test n°1	1.17E+14	5.28E+13	3.37E+13	7.77E+12	1.08E+12	1.28E+11	5.65E+10	3.05E+10	1.52E+10	8.12E+09	5.65E+09	4.32E+09	2.13E+14
	Test n°2	1.07E+14	5.46E+13	3.65E+13	9.04E+12	1.59E+12	1.77E+11	6.31E+10	3.18E+10	1.55E+10	8.30E+09	5.78E+09	4.38E+09	2.09E+14
	Mean =	1.12E+14	5.37E+13	3.51E+13	8.41E+12	1.34E+12	1.52E+11	5.98E+10	3.12E+10	1.53E+10	8.21E+09	5.71E+09	4.35E+09	2.11E+14
	SD =	7.36E+12	1.30E+12	1.99E+12	9.01E+11	3.64E+11	3.45E+10	4.67E+09	9.27E+08	1.84E+08	1.24E+08	8.96E+07	4.49E+07	2.76E+12
%SD =	6.6	2.4	5.7	10.7	27.2	22.6	7.8	3.0	1.2	1.5	1.6	1.0	1.3	
LAB 3	Test n°1	6.74E+13	3.13E+13	4.33E+13	2.02E+13	5.90E+12	6.68E+11	1.96E+11	4.22E+10	1.90E+10	8.74E+09	6.05E+09	4.42E+09	1.69E+14
	Test n°2	5.22E+13	2.37E+13	3.40E+13	2.01E+13	7.15E+12	8.20E+11	2.14E+11	4.28E+10	1.91E+10	8.73E+09	6.13E+09	4.26E+09	1.38E+14
	Test n°3	5.8E+13	2.2E+13	3.3E+13	2.1E+13	8.7E+12	1.1E+12	2.5E+11	4.8E+10	2.2E+10	9.8E+09	6.6E+09	4.7E+09	1.44E+14
	Mean =	5.93E+13	2.58E+13	3.67E+13	2.04E+13	7.24E+12	8.60E+11	2.19E+11	4.42E+10	1.99E+10	9.10E+09	6.26E+09	4.47E+09	1.51E+14
SD =	7.64E+12	4.86E+12	5.77E+12	4.62E+11	1.39E+12	2.15E+11	2.59E+10	3.03E+09	1.43E+09	6.30E+08	2.89E+08	2.52E+08	1.63E+13	
%SD =	12.9	18.9	15.7	2.3	19.3	25.0	11.8	6.8	7.2	6.9	4.6	5.6	10.8	
LAB 4	Test n°1	7.16E+13	3.87E+13	2.92E+13	1.63E+13	5.29E+12	6.27E+11	8.92E+10	3.55E+10	1.46E+10	7.14E+09	5.34E+09	4.73E+09	1.62E+14
	Test n°2	6.76E+13	3.23E+13	2.53E+13	1.73E+13	6.92E+12	7.48E+11	9.70E+10	3.85E+10	1.62E+10	7.94E+09	5.94E+09	5.12E+09	1.50E+14
	Test n°3	6.39E+13	2.90E+13	2.11E+13	1.68E+13	7.44E+12	7.32E+11	9.46E+10	3.71E+10	1.57E+10	7.69E+09	5.73E+09	4.89E+09	1.39E+14
	Mean =	6.77E+13	3.33E+13	2.52E+13	1.68E+13	6.55E+12	7.02E+11	9.36E+10	3.70E+10	1.55E+10	7.59E+09	5.67E+09	4.92E+09	1.50E+14
SD =	3.84E+12	4.97E+12	4.08E+12	5.24E+11	1.12E+12	6.55E+10	3.98E+09	1.46E+09	7.87E+08	4.08E+08	3.03E+08	1.95E+08	1.14E+13	
%SD =	5.7	14.9	16.2	3.1	17.2	9.3	4.3	4.0	5.1	5.4	5.3	4.0	7.6	

REPRODUCIBILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

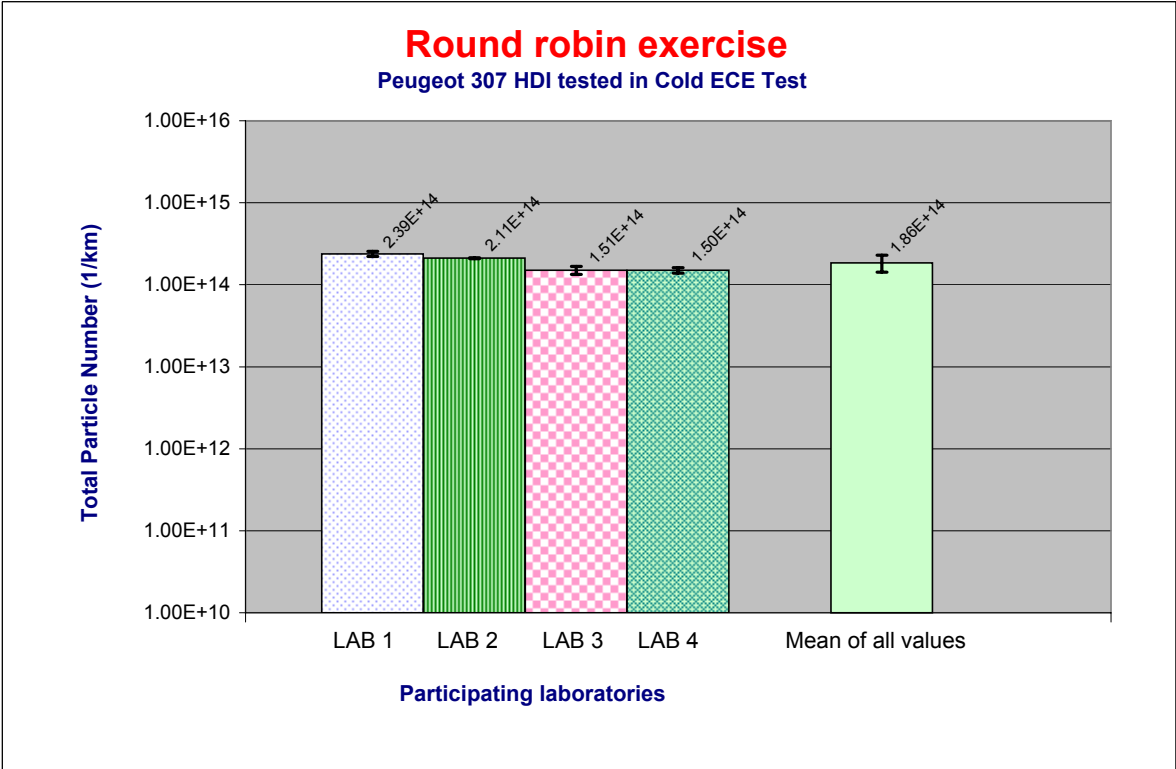
		SUM												
LAB 1	Test n°1	1.68E+14	4.02E+13	3.56E+13	1.05E+13	1.68E+12	1.93E+11	6.00E+10	2.74E+10	1.44E+10	8.06E+09	5.06E+09		2.57E+14
	Test n°2	1.36E+14	3.60E+13	3.61E+13	1.08E+13	1.83E+12	2.62E+11	8.03E+10	3.37E+10	1.55E+10	7.95E+09	4.98E+09		2.21E+14
	Test n°3	1.45E+14	4.09E+13	3.70E+13	1.20E+13	2.33E+12	3.32E+11	8.53E+10	3.48E+10	1.46E+10	7.34E+09	5.07E+09		2.37E+14
LAB 2	Test n°1	1.17E+14	5.28E+13	3.37E+13	7.77E+12	1.08E+12	1.28E+11	5.65E+10	3.05E+10	1.52E+10	8.12E+09	5.65E+09	4.32E+09	2.13E+14
	Test n°2	1.07E+14	5.46E+13	3.65E+13	9.04E+12	1.59E+12	1.77E+11	6.31E+10	3.18E+10	1.55E+10	8.30E+09	5.78E+09	4.38E+09	2.09E+14
	Mean =	1.12E+14	5.37E+13	3.51E+13	8.41E+12	1.34E+12	1.52E+11	5.98E+10	3.12E+10	1.53E+10	8.21E+09	5.71E+09	4.35E+09	2.11E+14
LAB 3	Test n°1	6.74E+13	3.13E+13	4.33E+13	2.02E+13	5.90E+12	6.68E+11	1.96E+11	4.22E+10	1.90E+10	8.74E+09	6.05E+09	4.42E+09	1.69E+14
	Test n°2	5.22E+13	2.37E+13	3.40E+13	2.01E+13	7.15E+12	8.20E+11	2.14E+11	4.28E+10	1.91E+10	8.73E+09	6.13E+09	4.26E+09	1.38E+14
	Test n°3	5.82E+13	2.22E+13	3.28E+13	2.10E+13	8.68E+12	1.09E+12	2.47E+11	4.77E+10	2.15E+10	9.82E+09	6.59E+09	4.75E+09	1.44E+14
LAB 4	Test n°1	7.16E+13	3.87E+13	2.92E+13	1.63E+13	5.29E+12	6.27E+11	8.92E+10	3.55E+10	1.46E+10	7.14E+09	5.34E+09	4.73E+09	1.62E+14
	Test n°2	6.76E+13	3.23E+13	2.53E+13	1.73E+13	6.92E+12	7.48E+11	9.70E+10	3.85E+10	1.62E+10	7.94E+09	5.94E+09	5.12E+09	1.50E+14
	Test n°3	6.39E+13	2.90E+13	2.11E+13	1.68E+13	7.44E+12	7.32E+11	9.46E+10	3.71E+10	1.57E+10	7.69E+09	5.73E+09	4.89E+09	1.39E+14
Mean =	9.59E+13	3.85E+13	3.32E+13	1.47E+13	4.54E+12	5.25E+11	1.17E+11	3.65E+10	1.65E+10	8.17E+09	5.67E+09	4.61E+09	1.86E+14	
SD =	4.05E+13	1.05E+13	6.07E+12	4.83E+12	2.86E+12	3.21E+11	6.81E+10	5.95E+09	2.32E+09	7.40E+08	5.10E+08	3.10E+08	4.30E+13	
%SD =	42	29	18	33	63	61	58	16	14	9	9	7	23	

Reproducibility limit

ECE Test Only the average results are presented

Etage n° =	Dp (µm)		LAB 1	LAB 2	LAB 3	LAB 4		Mean of all values
1	0.008		1.50E+14	1.12E+14	5.93E+13	6.77E+13		9.59E+13
2	0.030		3.90E+13	5.37E+13	2.58E+13	3.33E+13		3.65E+13
3	0.063		3.63E+13	3.51E+13	3.67E+13	2.52E+13		3.32E+13
4	0.109		1.11E+13	8.41E+12	2.04E+13	1.68E+13		1.47E+13
5	0.173		1.94E+12	1.34E+12	7.24E+12	6.55E+12		4.54E+12
6	0.267		2.63E+11	1.52E+11	8.60E+11	7.02E+11		5.25E+11
7	0.407		7.52E+10	5.98E+10	2.19E+11	9.36E+10		1.17E+11
8	0.655		3.20E+10	3.12E+10	4.42E+10	3.70E+10		3.65E+10
9	1.021		1.48E+10	1.53E+10	1.99E+10	1.55E+10		1.65E+10
10	1.655		7.78E+09	8.21E+09	9.10E+09	7.59E+09		8.17E+09
11	2.520		5.04E+09	5.71E+09	6.26E+09	5.67E+09		5.67E+09
12	4.085		Value no treated	4.35E+09	4.47E+09	4.92E+09		4.61E+09
Total Particulate Number (1/km) =			2.39E+14	2.11E+14	1.51E+14	1.50E+14		1.86E+14
SD =			1.77E+13	2.76E+12	1.63E+13	1.14E+13		4.30E+13

Note . = Value no treated



EUDC Test

Peugeot 307 HDI.

EUDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.000	113	0.010	0.260	0.270	0.022	4.26
	Test n°2	0.000	113	0.010	0.260	0.270	0.022	4.29
	Test n°3	0.000	113	0.009	0.250	0.260	0.024	4.29
Mean =		0.000	113	0.010	0.257	0.267	0.023	4.28
SD =		0.000	0.49	0.001	0.006	0.006	0.001	0.02
%SD =		#DIV/0!	0.4	6.0	2.2	2.2	5.1	0.4

LAB 2	Test n°1	0.007	112	0.007	0.257	0.264	0.028	4.23
	Test n°2	0.008	114	0.006	0.273	0.280	0.027	4.30
Mean =		0.008	113	0.007	0.265	0.272	0.028	4.27
SD =		0.001	1.27	0.001	0.011	0.011	0.001	0.05
%SD =		9.4	1.1	10.9	4.3	4.2	2.6	1.2

LAB 3	Test n°1	0.003	112	0.010	0.238	0.248	0.030	4.30
	Test n°2	0.003	110	0.007	0.248	0.255	0.035	4.22
	Test n°3	0.003	110	0.008	0.238	0.246	0.030	4.22
Mean =		0.003	111	0.008	0.241	0.250	0.032	4.25
SD =		0.000	1.16	0.002	0.006	0.005	0.003	0.05
%SD =		0.0	1.0	18.3	2.4	1.9	9.1	1.1

LAB 4	Test n°1	0.015	113	0.006	0.303	0.310	0.0331	4.26
	Test n°2	0.015	113	0.006	0.290	0.296	0.0323	4.28
	Test n°3	0.013	113	0.005	0.268	0.274	0.0287	4.27
Mean =		0.014	113	0.006	0.287	0.293	0.031	4.27
SD =		0.001	0.31	0.001	0.018	0.018	0.002	0.01
%SD =		8.1	0.3	10.2	6.2	6.2	7.5	0.2

EUDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)	
LAB 1	Test n°1	0.000	113	0.010	0.260	0.270	0.022	4.26	LAB 1
	Test n°2	0.000	113	0.010	0.260	0.270	0.022	4.29	
	Test n°3	0.000	113	0.009	0.250	0.260	0.024	4.29	
LAB 2	Test n°1	0.007	112	0.007	0.257	0.264	0.028	4.23	LAB 2
	Test n°2	0.008	114	0.006	0.273	0.279	0.027	4.30	
LAB 3	Test n°1	0.003	112	0.010	0.238	0.248	0.030	4.30	LAB 3
	Test n°2	0.003	110	0.007	0.248	0.255	0.035	4.22	
	Test n°3	0.003	110	0.008	0.238	0.246	0.030	4.22	
LAB 4	Test n°1	0.015	113	0.006	0.303	0.310	0.033	4.26	LAB 4
	Test n°2	0.015	113	0.006	0.290	0.296	0.032	4.28	
	Test n°3	0.013	113	0.005	0.268	0.274	0.029	4.27	
Mean =		0.006	112	0.008	0.262	0.270	0.028	4.27	
SD =		0.006	1.21	0.002	0.020	0.019	0.004	0.03	
%SD =		97.26	1.07	24.34	7.76	7.21	15.34	0.71	

EUDC Test Peugeot 307 HDI tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

													SUM	
LAB 1	Test n°1	3.57E+13	2.79E+13	3.64E+13	1.12E+13	1.87E+12	2.65E+11	6.55E+10	1.68E+10	7.44E+09	4.00E+09	2.27E+09	2.52E+04	1.13E+14
	Test n°2	4.02E+13	2.33E+13	3.25E+13	1.19E+13	2.23E+12	3.23E+11	8.57E+10	2.14E+10	7.67E+09	3.70E+09	2.29E+09	9.92E+04	1.11E+14
	Test n°3	4.02E+13	2.33E+13	3.25E+13	1.19E+13	2.23E+12	3.23E+11	8.57E+10	2.14E+10	7.67E+09	3.70E+09	2.29E+09	9.92E+04	1.11E+14
	Mean =	3.87E+13	2.49E+13	3.38E+13	1.17E+13	2.11E+12	3.04E+11	7.90E+10	1.99E+10	7.60E+09	3.80E+09	2.29E+09	7.46E+04	1.12E+14
	SD =	2.60E+12	2.66E+12	2.24E+12	4.22E+11	2.12E+11	3.39E+10	1.17E+10	2.64E+09	1.32E+08	1.75E+08	1.20E+07	4.27E+04	1.61E+12
	%SD =	6.7	10.7	6.6	3.6	10.0	11.2	14.8	13.3	1.7	4.6	0.5	57.3	1.4
LAB 2	Test n°1	3.80E+13	4.62E+13	4.35E+13	1.11E+13	1.89E+12	1.88E+11	4.38E+10	1.61E+10	6.66E+09	3.53E+09	2.47E+09	1.63E+09	1.41E+14
	Test n°2	2.91E+13	3.41E+13	3.33E+13	9.37E+12	1.88E+12	1.95E+11	5.47E+10	1.52E+10	7.34E+09	4.69E+09	2.21E+09	1.52E+09	1.08E+14
	Mean =	3.35E+13	4.01E+13	3.84E+13	1.02E+13	1.88E+12	1.91E+11	4.93E+10	1.57E+10	4.00E+09	4.11E+09	2.34E+09	1.57E+09	1.24E+14
		SD =	6.30E+12	8.58E+12	7.22E+12	1.19E+12	4.66E+09	4.86E+09	7.64E+09	5.94E+08	4.72E+10	8.15E+08	1.84E+08	7.60E+07
	%SD =	18.8	21.4	18.8	11.6	0.2	2.5	15.5	3.8	117.9	19.8	7.9	4.8	18.7
LAB 3	Test n°1	1.55E+13	1.44E+13	3.06E+13	1.94E+13	7.41E+12	1.08E+12	2.37E+11	2.87E+10	9.96E+09	4.45E+09	2.85E+09	1.67E+09	8.86E+13
	Test n°2	1.22E+13	1.09E+13	2.50E+13	1.83E+13	8.37E+12	1.11E+12	2.55E+11	3.07E+10	1.10E+10	4.85E+09	2.99E+09	1.79E+09	7.62E+13
	Test n°3	1.45E+13	1.09E+13	2.52E+13	1.89E+13	9.40E+12	1.34E+12	2.79E+11	3.26E+10	1.16E+10	4.98E+09	3.07E+09	1.79E+09	8.05E+13
	Mean =	1.41E+13	1.20E+13	2.69E+13	1.89E+13	8.39E+12	1.18E+12	2.57E+11	3.06E+10	1.08E+10	4.76E+09	2.97E+09	1.75E+09	8.18E+13
	SD =	1.72E+12	2.02E+12	3.16E+12	5.30E+11	9.93E+11	1.47E+11	2.13E+10	1.95E+09	8.16E+08	2.75E+08	1.10E+08	6.99E+07	6.34E+12
	%SD =	12.2	16.8	11.7	2.8	11.8	12.5	8.3	6.4	7.5	5.8	3.7	4.0	7.8
LAB 4	Test n°1	1.74E+13	2.01E+13	2.25E+13	1.65E+13	7.34E+12	9.74E+11	1.08E+11	2.69E+10	7.53E+09	3.23E+09	2.59E+09	1.60E+09	8.50E+13
	Test n°2	1.62E+13	1.77E+13	2.04E+13	1.64E+13	7.86E+12	1.00E+12	1.12E+11	2.80E+10	8.19E+09	3.59E+09	2.88E+09	1.67E+09	7.97E+13
	Test n°3	2.24E+13	1.70E+13	1.76E+13	1.56E+13	7.87E+12	8.74E+11	9.47E+10	2.50E+10	7.34E+09	3.11E+09	2.44E+09	1.44E+09	8.14E+13
	Mean =	1.87E+13	1.82E+13	2.02E+13	1.62E+13	7.69E+12	9.51E+11	1.05E+11	2.67E+10	7.69E+09	3.31E+09	2.64E+09	1.57E+09	8.20E+13
	SD =	3.27E+12	1.60E+12	2.48E+12	5.14E+11	3.07E+11	6.85E+10	9.18E+09	1.52E+09	4.47E+08	2.52E+08	2.21E+08	1.16E+08	2.88E+12
	%SD =	17.5	8.7	12.3	3.2	4.0	7.2	8.7	5.7	5.8	7.6	8.4	7.4	3.3

REPRODUCIBILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

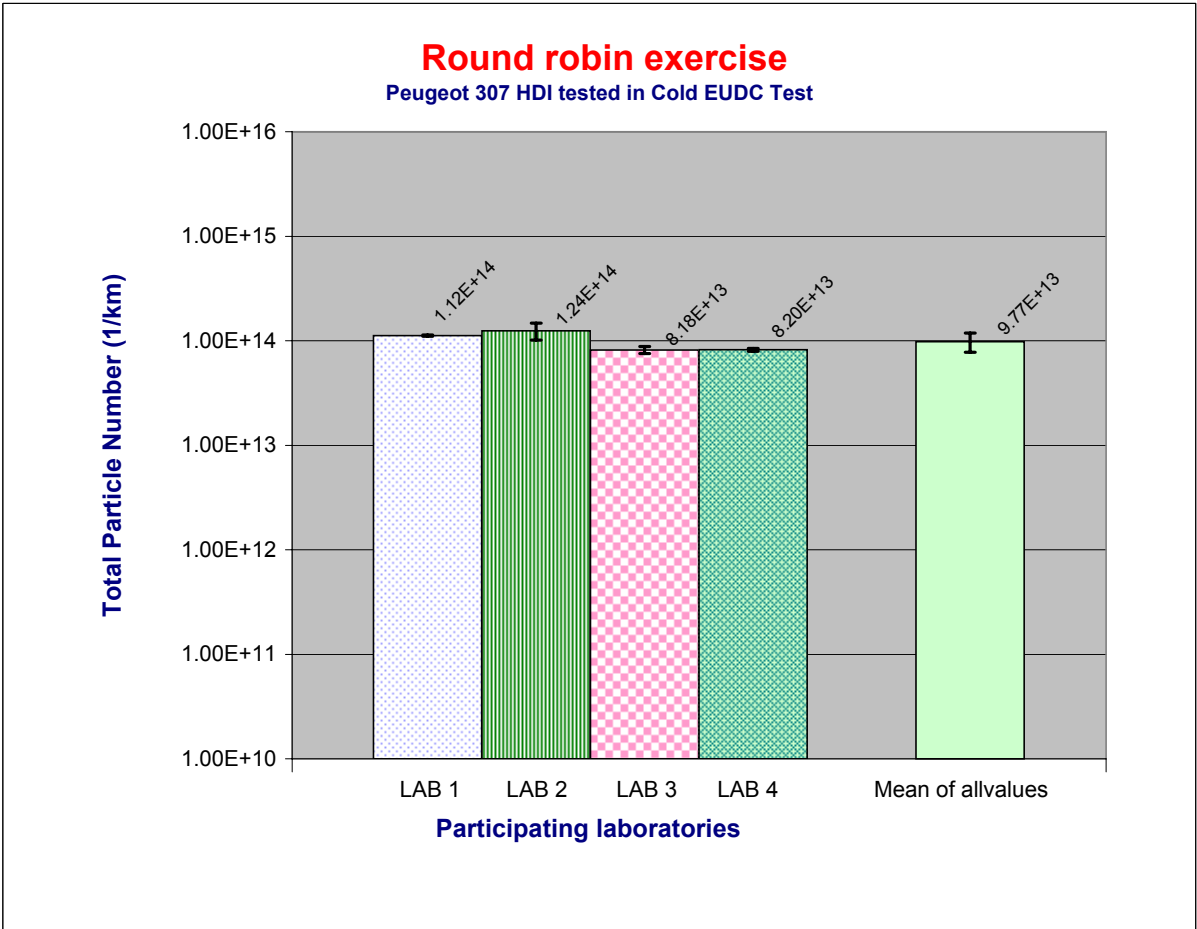
													SUM		
LAB 1	Test n°1	3.57E+13	2.79E+13	3.64E+13	1.12E+13	1.87E+12	2.65E+11	6.55E+10	1.68E+10	7.44E+09	4.00E+09	2.27E+09	2.52E+04	1.13E+14	LAB 1
	Test n°2	4.02E+13	2.33E+13	3.25E+13	1.19E+13	2.23E+12	3.23E+11	8.57E+10	2.14E+10	7.67E+09	3.70E+09	2.29E+09	9.92E+04	1.11E+14	
	Test n°3	4.02E+13	2.33E+13	3.25E+13	1.19E+13	2.23E+12	3.23E+11	8.57E+10	2.14E+10	7.67E+09	3.70E+09	2.29E+09	9.92E+04	1.11E+14	
LAB 2	Test n°1	3.80E+13	4.62E+13	4.35E+13	1.11E+13	1.89E+12	1.88E+11	4.38E+10	1.61E+10	6.66E+09	3.53E+09	2.47E+09	1.63E+09	1.41E+14	LAB 2
	Test n°2	2.91E+13	3.41E+13	3.33E+13	9.37E+12	1.88E+12	1.95E+11	5.47E+10	1.52E+10	7.34E+09	4.69E+09	2.21E+09	1.52E+09	1.08E+14	
	Test n°3	1.45E+13	1.09E+13	2.50E+13	1.83E+13	8.37E+12	1.11E+12	2.55E+11	3.07E+10	1.10E+10	4.85E+09	2.99E+09	1.79E+09	7.62E+13	
LAB 3	Test n°1	1.55E+13	1.44E+13	3.06E+13	1.94E+13	7.41E+12	1.08E+12	2.37E+11	2.87E+10	9.96E+09	4.45E+09	2.85E+09	1.67E+09	8.86E+13	LAB 3
	Test n°2	1.22E+13	1.09E+13	2.50E+13	1.83E+13	8.37E+12	1.11E+12	2.55E+11	3.07E+10	1.10E+10	4.85E+09	2.99E+09	1.79E+09	7.62E+13	
	Test n°3	1.45E+13	1.09E+13	2.52E+13	1.89E+13	9.40E+12	1.34E+12	2.79E+11	3.26E+10	1.16E+10	4.98E+09	3.07E+09	1.79E+09	8.05E+13	
LAB 4	Test n°1	1.74E+13	2.01E+13	2.25E+13	1.65E+13	7.34E+12	9.74E+11	1.08E+11	2.69E+10	7.53E+09	3.23E+09	2.59E+09	1.60E+09	8.50E+13	LAB 4
	Test n°2	1.62E+13	1.77E+13	2.04E+13	1.64E+13	7.86E+12	1.00E+12	1.12E+11	2.80E+10	8.19E+09	3.59E+09	2.88E+09	1.67E+09	7.97E+13	
	Test n°3	2.24E+13	1.70E+13	1.76E+13	1.56E+13	7.87E+12	8.74E+11	9.47E+10	2.50E+10	7.34E+09	3.11E+09	2.44E+09	1.44E+09	8.14E+13	
	Mean =	2.56E+13	2.23E+13	2.90E+13	1.46E+13	5.31E+12	6.97E+11	1.29E+11	2.39E+10	1.44E+10	3.98E+09	2.58E+09	1.19E+09	9.77E+13	
	SD =	1.12E+13	1.06E+13	7.66E+12	3.59E+12	3.19E+12	4.37E+11	8.52E+10	6.09E+09	1.96E+10	6.56E+08	3.15E+08	7.71E+08	2.04E+13	
	%SD =	44	47	26	25	60	63	66	25	136	16	12	65	21	

Reproducibility limit

EUDC Test Only the average results are presented

Etage n° =	Dp (µm)		LAB 1	LAB 2	LAB 3	LAB 4		Mean of all values
1	0.008		3.87E+13	3.35E+13	1.41E+13	1.87E+13		2.56E+13
2	0.030		2.49E+13	4.01E+13	1.20E+13	1.82E+13		2.23E+13
3	0.063		3.38E+13	3.84E+13	2.69E+13	2.02E+13		2.90E+13
4	0.109		1.17E+13	1.02E+13	1.89E+13	1.62E+13		1.46E+13
5	0.173		2.11E+12	1.88E+12	8.39E+12	7.69E+12		5.31E+12
6	0.267		3.04E+11	1.91E+11	1.18E+12	9.51E+11		6.97E+11
7	0.407		7.90E+10	4.93E+10	2.57E+11	1.05E+11		1.29E+11
8	0.655		1.99E+10	1.57E+10	3.06E+10	2.67E+10		2.39E+10
9	1.021		7.60E+09	4.00E+10	1.08E+10	7.69E+09		1.44E+10
10	1.655		3.80E+09	4.11E+09	4.76E+09	3.31E+09		3.98E+09
11	2.520		2.29E+09	2.34E+09	2.97E+09	2.64E+09		2.58E+09
12	4.085			1.57E+09	1.75E+09	1.57E+09		1.19E+09
Total Particulate Number (1/km) =			1.12E+14	1.24E+14	8.18E+13	8.20E+13		9.77E+13
SD =			1.61E+12	2.32E+13	6.34E+12	2.68E+12		2.04E+13

Note . = Value no treated



Graph : Particle Size Distribution

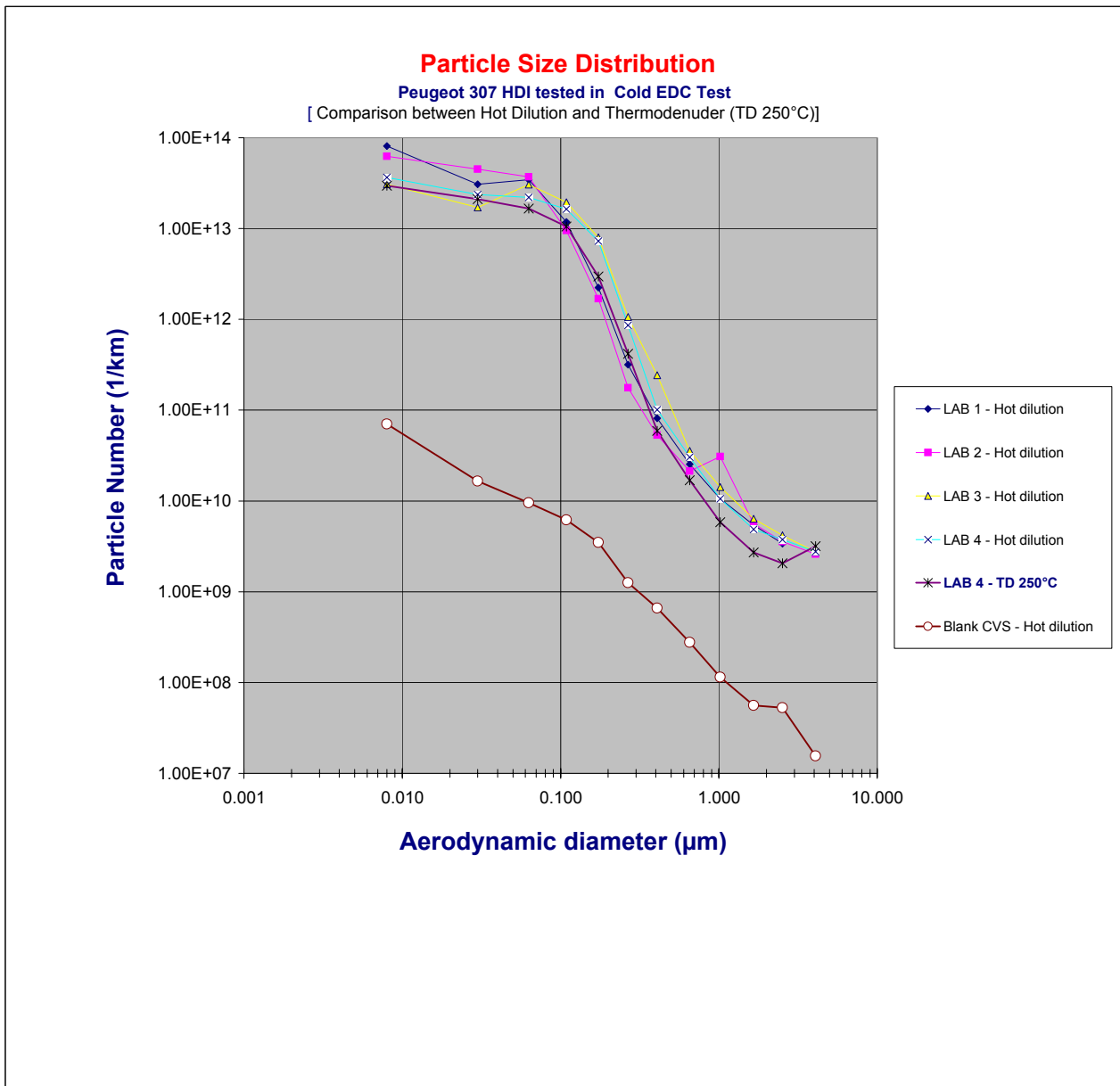
Cold EDC Test

Cold EDC Test **Particle Size Distribution**

Etage n° =	Dp (µm)	LAB 1 - Hot dilution	LAB 2 - Hot dilution	LAB 3 - Hot dilution	LAB 4	
					Hot dilution	TD 250°C
1	0.008	8.11E+13	6.23E+13	3.07E+13	3.66E+13	2.96E+13
2	0.030	3.07E+13	4.51E+13	1.71E+13	2.37E+13	2.11E+13
3	0.063	3.46E+13	3.72E+13	3.05E+13	2.20E+13	1.66E+13
4	0.109	1.18E+13	9.55E+12	1.95E+13	1.64E+13	1.05E+13
5	0.173	2.23E+12	1.68E+12	7.97E+12	7.27E+12	2.97E+12
6	0.267	3.17E+11	1.77E+11	1.06E+12	8.60E+11	4.17E+11
7	0.407	8.12E+10	5.32E+10	2.43E+11	1.01E+11	5.91E+10
8	0.655	2.54E+10	2.14E+10	3.56E+10	3.04E+10	1.69E+10
9	1.021	1.06E+10	3.09E+10	1.42E+10	1.05E+10	5.84E+09
10	1.655	5.42E+09	5.62E+09	6.35E+09	4.87E+09	2.71E+09
11	2.520	3.38E+09	3.58E+09	4.18E+09	3.74E+09	2.06E+09
12	4.085		2.59E+09	2.75E+09	2.76E+09	3.18E+09
Total Particle Number (1/km) =		1.61E+14	1.56E+14	1.07E+14	1.07E+14	8.13E+13
SD =		8.02E+12	1.53E+13	9.93E+12	5.41E+12	2.17E+12
%SD =		5.0	9.8	9.3	5.1	2.7

Blank CVS / Mean of all values before the tests - Hot dilution
7.06E+10
1.66E+10
9.53E+09
6.19E+09
3.50E+09
1.26E+09
6.59E+08
2.78E+08
1.15E+08
5.60E+07
5.27E+07
1.56E+07
1.09E+11
6.15E+10
56.5

Note : = Value no treated
 TD 250°C = Thermodenuder set at 250°C, this given for information



APPENDIX 2

5.2 PEUGEOT 307 HDI – Diesel engine with DPF

5.2.1 Blank CVS

5.2.2 Repeatability and Reproducibility

- Cold EDC test
- ECE (urban cycle) test
- EUDC (extra-urban cycle) test

Blank CVS

**Blank CVS before the test with Hot dilution (around 120°C to prevent recondensation of the vapor),
Particle Number (1/km)**

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

LAB 1	Test n°1	4.59E+10	9.34E+09	2.84E+09	1.62E+09	8.76E+08	6.25E+08	2.69E+08	1.29E+08	7.99E+07	3.65E+07	2.95E+07	2.26E+07
	Test n°2	3.60E+10	4.62E+09	3.12E+09	1.30E+09	8.72E+08	5.38E+08	2.53E+08	8.81E+07	6.27E+07	3.60E+07	2.54E+07	1.09E+07
	Test n°3	4.54E+10	9.30E+09	2.89E+09	1.37E+09	8.78E+08	6.59E+08	2.53E+08	1.54E+08	7.25E+07	2.36E+07	2.94E+07	1.78E+07
LAB 2	Test n°1	7.09E+11	1.27E+11	1.79E+07	3.43E+08	3.67E+08	2.23E+09	1.63E+09	3.83E+08	1.68E+08	5.28E+07	7.08E+07	1.45E+07
	Test n°2	1.60E+11	5.43E+10	1.89E+10	1.01E+10	4.17E+09	1.77E+09	7.15E+08	4.00E+08	2.45E+08	8.08E+07	4.53E+07	1.70E+07
LAB 3	Test n°1	5.69E+10	1.61E+10	1.23E+10	8.92E+09	4.59E+09	1.42E+09	4.28E+08	2.60E+08	1.42E+08	1.35E+08	4.25E+07	2.57E+07
	Test n°2	3.41E+09	5.95E+08	4.95E+09	3.81E+09	2.00E+09	1.33E+08	2.55E+08	7.35E+07	7.48E+07	3.17E+07	4.21E+07	1.54E+07
	Test n°3	2.71E+10	2.28E+09	4.11E+09	3.45E+09	1.16E+09	3.93E+08	1.29E+08	1.55E+08	7.59E+07	3.68E+07	2.34E+07	1.24E+07
LAB 4	Test n°1	6.67E+10	5.69E+09	3.35E+09	3.99E+09	5.77E+08	9.87E+08	5.13E+08	1.72E+08	1.93E+08	7.89E+07	2.31E+07	4.27E+07
	Test n°2	1.98E+11	3.58E+10	8.95E+09	5.01E+09	3.38E+09	1.63E+09	1.00E+09	4.77E+08	3.48E+08	1.85E+08	6.54E+07	6.57E+07
	Test n°3	1.14E+11	5.31E+09	3.56E+09	1.41E+09	6.78E+08	3.83E+08	6.90E+07	2.01E+08	9.38E+07	3.50E+07	2.31E+07	3.24E+07

SUM

6.18E+10	LAB 1
4.69E+10	
6.10E+10	
8.42E+11	LAB 2
2.50E+11	
2.55E+11	LAB 3
1.01E+11	
1.54E+10	
3.89E+10	LAB 4
8.23E+10	
2.55E+11	
1.26E+11	

Mean =	1.37E+11	2.71E+10	6.34E+09	3.93E+09	1.78E+09	9.97E+08	5.11E+08	2.33E+08	1.41E+08	6.72E+07	3.80E+07	2.44E+07
SD =	1.91E+11	3.71E+10	5.40E+09	3.10E+09	1.47E+09	6.53E+08	4.41E+08	1.31E+08	8.66E+07	4.87E+07	1.62E+07	1.59E+07
%SD =	140	137	85	79	82	66	86	56	61	72	43	65

1.78E+11
2.27E+11
127.4

Cold EDC Test

Peugeot 307 HDI+DPF

Cold EDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.132	135.6	0.035	0.245	0.280	0.0005	5.11
	Test n°2	0.118	137.5	0.033	0.257	0.290	0.0008	5.18
	Test n°3	0.102	136.4	0.032	0.260	0.292	0.0004	5.14
Mean =		0.117	137	0.033	0.254	0.287	0.001	5.14
SD =		0.015	0.95	0.002	0.008	0.006	0.000	0.04
%SD =		12.7	0.7	5.0	3.1	2.2	36.7	0.7

LAB 2	Test n°1	0.300	136.0	0.058	0.305	0.363	0.0010	5.10
	Test n°2	0.271	135.6	0.052	0.283	0.335	0.0000	5.08
	Test n°3	0.280	136.0	0.051	0.297	0.348	0.0010	5.10
Mean =		0.284	135.9	0.054	0.295	0.349	0.0007	5.09
SD =		0.015	0.2	0.004	0.011	0.014	0.0006	0.01
%SD =		5.2	0.2	7.1	3.8	4.0	86.6	0.2

LAB 3	Test n°1	0.177	135.1	0.040	0.283	0.323	0.0004	5.16
	Test n°2	0.108	135.4	0.028	0.108	0.136	0.0024	5.16
	Test n°3	0.076	137.1	0.025	0.284	0.309	0.0001	5.22
Mean =		0.120	135.9	0.031	0.225	0.256	0.0010	5.18
SD =		0.052	1.1	0.008	0.101	0.104	0.0013	0.03
%SD =		42.9	0.8	25.6	45.0	40.7	133.2	0.7

LAB 4	Test n°1	0.081	138.8	0.022	0.319	0.341	0.0004	5.25
	Test n°2	0.095	139.9	0.031	0.300	0.331	0.0009	5.29
	Test n°3	0.122	140.7	0.030	0.303	0.333	0.0016	5.32
Mean =		0.099	139.8	0.028	0.307	0.335	0.0010	5.29
SD =		0.021	1.0	0.005	0.010	0.005	0.0006	0.04
%SD =		21.0	0.7	17.8	3.3	1.6	62.4	0.7

Cold EDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.132	135.6	0.035	0.245	0.280	0.0005	5.11
	Test n°2	0.118	137.5	0.033	0.257	0.290	0.0008	5.18
	Test n°3	0.102	136.4	0.032	0.260	0.292	0.0004	5.14
LAB 2	Test n°1	0.300	136.0	0.058	0.305	0.363	0.0010	5.10
	Test n°2	0.271	135.6	0.052	0.283	0.335	0.0000	5.08
	Test n°3	0.280	136.0	0.051	0.297	0.348	0.0010	5.10
LAB 3	Test n°1	0.177	135.1	0.040	0.283	0.323	0.0004	5.16
	Test n°2	0.108	135.4	0.028	0.108	0.136	0.0024	5.16
	Test n°3	0.076	137.1	0.025	0.284	0.309	0.0001	5.22
LAB 4	Test n°1	0.081	138.8	0.022	0.319	0.341	0.0004	5.25
	Test n°2	0.095	139.9	0.031	0.300	0.331	0.0009	5.29
	Test n°3	0.122	140.7	0.030	0.303	0.333	0.0016	5.32
Mean =		0.155	137.0	0.036	0.270	0.307	0.0008	5.17
SD =		0.082	1.9	0.011	0.056	0.059	0.0007	0.08
%SD =		52.8	1.4	31.6	20.6	19.4	86.3	1.5

Cold EDC Test Peugeot 307 HDI+DPF tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n:o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

		SUM												
LAB 1	Test n°1	4.44E+10	8.91E+09	2.68E+09	1.86E+09	9.06E+08	6.51E+08	2.15E+08	9.79E+07	5.93E+07	4.32E+07	1.77E+07	2.39E+07	5.98E+10
	Test n°2	5.74E+10	7.19E+09	3.22E+09	1.58E+09	7.06E+08	3.90E+08	3.45E+08	1.39E+08	8.31E+07	3.08E+07	3.16E+07	1.93E+07	7.11E+10
	Test n°3	5.39E+10	7.59E+09	3.37E+09	1.86E+09	1.07E+09	4.72E+08	2.79E+08	1.16E+08	9.08E+07	3.20E+07	3.21E+07	1.97E+07	6.88E+10
	Mean =	5.19E+10	7.90E+09	3.09E+09	1.77E+09	8.94E+08	5.04E+08	2.80E+08	1.18E+08	7.77E+07	3.53E+07	2.71E+07	2.10E+07	6.66E+10
	SD =	6.71E+09	8.99E+08	3.65E+08	1.62E+08	1.83E+08	1.33E+08	6.47E+07	2.06E+07	1.64E+07	6.82E+06	8.19E+06	2.58E+06	5.95E+09
	%SD =	12.9	11.4	11.8	9.2	20.5	26.4	23.1	17.5	21.1	19.3	30.2	12.3	8.9
LAB 1	Test n°1	1.95E+11	4.89E+10	1.22E+10	8.72E+09	2.10E+09	2.33E+09	7.50E+08	3.98E+08	2.31E+08	9.17E+07	5.56E+07	2.31E+07	2.71E+11
	Test n°2	2.13E+11	6.67E+10	1.25E+10	7.55E+09	2.82E+09	1.09E+09	8.99E+08	2.98E+08	2.04E+08	7.20E+07	2.56E+07	1.91E+07	3.05E+11
	Test n°3	2.87E+11	5.26E+10	1.42E+10	5.98E+09	2.15E+09	1.89E+09	5.92E+08	3.73E+08	1.16E+08	8.92E+07	4.26E+07	2.41E+07	3.65E+11
	Mean =	2.32E+11	5.61E+10	1.30E+10	7.42E+09	2.36E+09	1.77E+09	7.47E+08	3.56E+08	1.83E+08	8.43E+07	4.13E+07	2.21E+07	3.14E+11
	SD =	4.88E+10	9.39E+09	1.11E+09	1.38E+09	4.05E+08	6.27E+08	1.54E+08	5.23E+07	6.00E+07	1.08E+07	1.50E+07	2.67E+06	4.77E+10
	%SD =	21.0	16.7	8.5	18.6	17.2	35.4	20.6	14.7	32.7	12.8	36.5	12.1	15.2
LAB 3	Test n°1	1.45E+11	4.01E+10	3.01E+10	1.57E+10	7.34E+09	2.87E+09	1.34E+09	8.63E+08	4.39E+08	3.90E+08	1.25E+08	7.36E+07	2.44E+11
	Test n°2	1.58E+10	5.54E+09	2.55E+10	2.38E+10	1.00E+10	9.10E+08	7.20E+08	2.97E+08	2.45E+08	1.16E+08	1.08E+08	4.84E+07	8.30E+10
	Test n°3	4.62E+10	8.02E+09	1.58E+10	1.41E+10	4.46E+09	8.89E+08	3.13E+08	4.56E+08	1.21E+08	8.56E+07	5.49E+07	2.95E+07	9.06E+10
	Mean =	6.88E+10	1.79E+10	2.38E+10	1.79E+10	7.28E+09	1.55E+09	7.90E+08	5.39E+08	2.69E+08	1.97E+08	9.61E+07	5.05E+07	1.39E+11
	SD =	6.73E+10	1.93E+10	7.26E+09	5.17E+09	2.79E+09	1.14E+09	5.15E+08	2.92E+08	1.60E+08	1.68E+08	3.66E+07	2.21E+07	9.07E+10
	%SD =	97.7	107.7	30.5	29.0	38.4	73.0	65.2	54.2	59.6	85.0	38.1	43.8	65.2
LAB 4	Test n°1	9.49E+10	7.02E+09	4.22E+09	3.97E+09	6.53E+08	6.73E+08	2.22E+08	1.38E+08	1.95E+08	4.46E+07	1.96E+07	3.02E+07	1.12E+11
	Test n°2	3.06E+11	3.84E+10	1.63E+10	9.49E+09	3.64E+09	3.04E+09	1.71E+09	8.20E+08	5.45E+08	2.64E+08	1.09E+08	8.92E+07	3.81E+11
	Test n°3	1.27E+11	1.05E+10	1.44E+09	2.36E+09	3.94E+08	5.65E+08	1.06E+08	1.54E+08	6.85E+07	3.40E+07	3.48E+07	3.24E+07	1.43E+11
	Mean =	1.76E+11	1.86E+10	7.31E+09	5.27E+09	1.56E+09	1.43E+09	6.79E+08	3.71E+08	2.70E+08	1.14E+08	5.46E+07	5.06E+07	2.12E+11
	SD =	1.14E+11	1.72E+10	7.89E+09	3.74E+09	1.80E+09	1.40E+09	8.93E+08	3.89E+08	2.47E+08	1.30E+08	4.81E+07	3.35E+07	1.47E+11
	%SD =	64.6	92.3	107.9	70.9	115.5	98.2	131.6	104.9	91.6	113.8	88.1	66.2	69.3

REPRODUCIBILITY Particle Number (1/km)

Stage n:o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

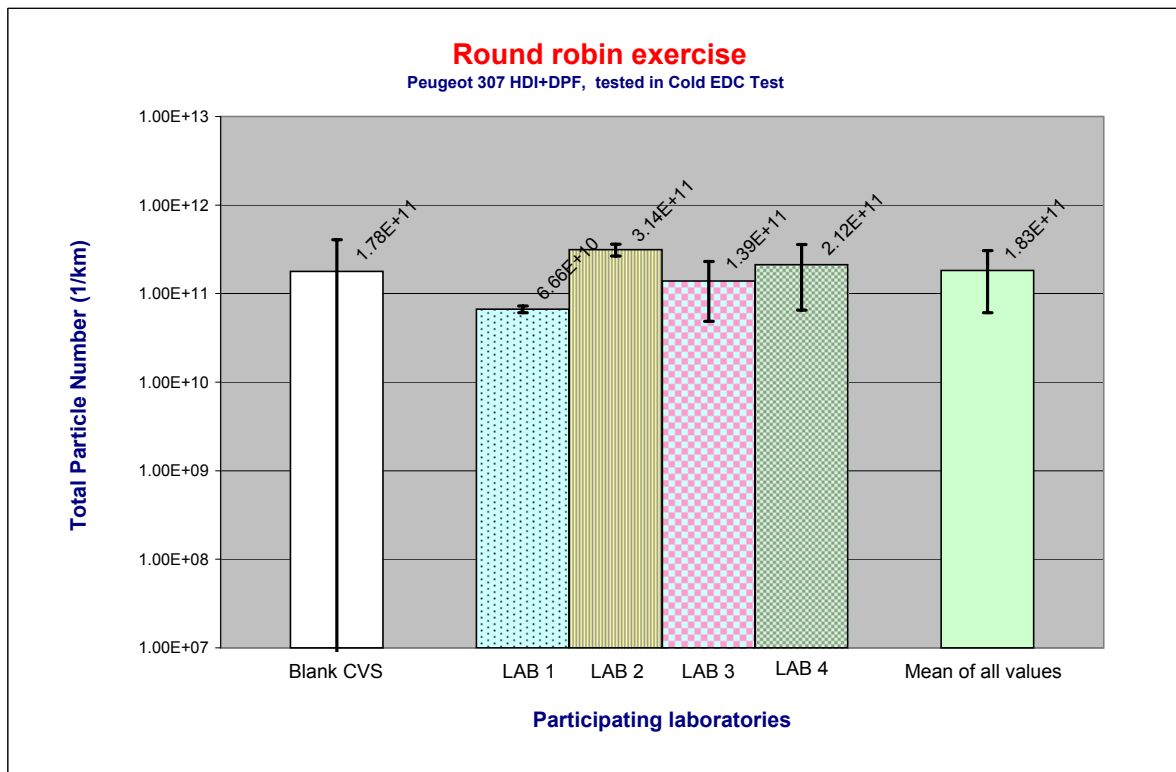
		SUM													
LAB 1	Test n°1	4.44E+10	8.91E+09	2.68E+09	1.86E+09	9.06E+08	6.51E+08	2.15E+08	9.79E+07	5.93E+07	4.32E+07	1.77E+07	2.39E+07	5.98E+10	LAB 1
	Test n°2	5.74E+10	7.19E+09	3.22E+09	1.58E+09	7.06E+08	3.90E+08	3.45E+08	1.39E+08	8.31E+07	3.08E+07	3.16E+07	1.93E+07	7.11E+10	
	Test n°3	5.39E+10	7.59E+09	3.37E+09	1.86E+09	1.07E+09	4.72E+08	2.79E+08	1.16E+08	9.08E+07	3.20E+07	3.21E+07	1.97E+07	6.88E+10	
LAB 2	Test n°1	1.95E+11	4.89E+10	1.22E+10	8.72E+09	2.10E+09	2.33E+09	7.50E+08	3.98E+08	2.31E+08	9.17E+07	5.56E+07	2.31E+07	2.71E+11	LAB 2
	Test n°2	2.13E+11	6.67E+10	1.25E+10	7.55E+09	2.82E+09	1.09E+09	8.99E+08	2.98E+08	2.04E+08	7.20E+07	2.56E+07	1.91E+07	3.05E+11	
	Test n°3	2.87E+11	5.26E+10	1.42E+10	5.98E+09	2.15E+09	1.89E+09	5.92E+08	3.73E+08	1.16E+08	8.92E+07	4.26E+07	2.41E+07	3.65E+11	
LAB 3	Test n°1	1.45E+11	4.01E+10	3.01E+10	1.57E+10	7.34E+09	2.87E+09	1.34E+09	8.63E+08	4.39E+08	3.90E+08	1.25E+08	7.36E+07	2.44E+11	LAB 3
	Test n°2	1.58E+10	5.54E+09	2.55E+10	2.38E+10	1.00E+10	9.10E+08	7.20E+08	2.97E+08	2.45E+08	1.16E+08	1.08E+08	4.84E+07	8.30E+10	
	Test n°3	4.62E+10	8.02E+09	1.58E+10	1.41E+10	4.46E+09	8.89E+08	3.13E+08	4.56E+08	1.21E+08	8.56E+07	5.49E+07	2.95E+07	9.06E+10	
LAB 4	Test n°1	9.49E+10	7.02E+09	4.22E+09	3.97E+09	6.53E+08	6.73E+08	2.22E+08	1.38E+08	1.95E+08	4.46E+07	1.96E+07	3.02E+07	1.12E+11	LAB 4
	Test n°2	3.06E+11	3.84E+10	1.63E+10	9.49E+09	3.64E+09	3.04E+09	1.71E+09	8.20E+08	5.45E+08	2.64E+08	1.09E+08	8.92E+07	3.81E+11	
	Test n°3	1.27E+11	1.05E+10	1.44E+09	2.36E+09	3.94E+08	5.65E+08	1.06E+08	1.54E+08	6.85E+07	3.40E+07	3.48E+07	3.24E+07	1.43E+11	
	Mean =	1.32E+11	2.51E+10	1.18E+10	8.08E+09	3.02E+09	1.31E+09	6.24E+08	3.46E+08	2.00E+08	1.08E+08	5.48E+07	3.60E+07	1.83E+11	
	SD =	9.86E+10	2.25E+10	9.32E+09	6.86E+09	2.99E+09	9.59E+08	4.93E+08	2.61E+08	1.52E+08	1.10E+08	3.79E+07	2.29E+07	1.22E+11	
	%SD =	74.6	89.5	79.0	84.9	98.8	73.0	79.1	75.5	76.2	101.6	69.3	63.6	66.9	

Reproducibility limit

Cold EDC Test

Only the average results are presented

Etage n° =	Dp (µm)	Blank CVS before the test	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	1.37E+11	5.19E+10	2.32E+11	6.88E+10	1.76E+11	1.32E+11
2	0.030	2.71E+10	7.90E+09	5.61E+10	1.79E+10	1.86E+10	2.51E+10
3	0.063	6.34E+09	3.09E+09	1.30E+10	2.38E+10	7.31E+09	1.18E+10
4	0.109	3.93E+09	1.77E+09	7.42E+09	1.79E+10	5.27E+09	8.08E+09
5	0.173	1.78E+09	8.94E+08	2.36E+09	7.28E+09	1.56E+09	3.02E+09
6	0.267	9.97E+08	5.04E+08	1.77E+09	1.55E+09	1.43E+09	1.31E+09
7	0.407	5.11E+08	2.80E+08	7.47E+08	7.90E+08	6.79E+08	6.24E+08
8	0.655	2.33E+08	1.18E+08	3.56E+08	5.39E+08	3.71E+08	3.46E+08
9	1.021	1.41E+08	7.77E+07	1.83E+08	2.69E+08	2.70E+08	2.00E+08
10	1.655	6.72E+07	3.53E+07	8.43E+07	1.97E+08	1.14E+08	1.08E+08
11	2.520	3.80E+07	2.71E+07	4.13E+07	9.61E+07	5.46E+07	5.48E+07
12	4.085	2.44E+07	2.10E+07	2.21E+07	5.05E+07	5.06E+07	3.60E+07
Total Particle Number (1/km) =		1.78E+11	6.66E+10	3.14E+11	1.39E+11	2.12E+11	1.83E+11
SD =		2.27E+11	5.95E+09	4.77E+10	9.07E+10	1.47E+11	1.22E+11



For information

Cold EDC Test

Peugeot 307 HDI+DPF, tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY

dN/dlogDp (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

													SUM	
LAB 1	Test n°1	7.19E+10	2.96E+10	1.09E+10	8.88E+09	4.79E+09	3.49E+09	1.02E+09	5.11E+08	2.81E+08	2.35E+08	8.47E+07	5.84E+07	1.32E+11
	Test n°2	9.29E+10	2.39E+10	1.31E+10	7.56E+09	3.73E+09	2.09E+09	1.63E+09	7.26E+08	3.94E+08	1.67E+08	1.51E+08	4.71E+07	1.46E+11
	Test n°3	8.73E+10	2.52E+10	1.38E+10	8.92E+09	5.67E+09	2.53E+09	1.32E+09	6.08E+08	4.30E+08	1.74E+08	1.54E+08	4.79E+07	1.46E+11
	Mean =	8.40E+10	2.62E+10	1.26E+10	8.45E+09	4.73E+09	2.70E+09	1.33E+09	6.15E+08	3.68E+08	1.92E+08	1.30E+08	5.11E+07	1.41E+11
	SD =	1.09E+10	2.99E+09	1.49E+09	7.77E+08	9.68E+08	7.14E+08	3.07E+08	1.08E+08	7.77E+07	3.70E+07	3.92E+07	6.29E+06	8.37E+09
	%SD =	12.9	11.4	11.8	9.2	20.5	26.4	23.1	17.5	21.1	19.3	30.2	12.3	5.9
LAB 2	Test n°1	3.17E+11	1.67E+11	5.49E+10	4.00E+10	9.19E+09	1.43E+10	3.65E+09	2.10E+09	1.01E+09	5.26E+08	2.50E+08	1.03E+08	9.09E+10
	Test n°2	3.45E+11	2.27E+11	5.64E+10	3.46E+10	1.23E+10	6.69E+09	4.38E+09	1.57E+09	8.97E+08	4.13E+08	1.15E+08	8.54E+07	1.02E+11
	Test n°3	4.65E+11	1.79E+11	6.42E+10	2.74E+10	9.37E+09	1.16E+10	2.88E+09	1.97E+09	5.10E+08	5.12E+08	1.92E+08	1.08E+08	1.22E+11
	Mean =	3.76E+11	1.91E+11	5.85E+10	3.40E+10	1.03E+10	1.09E+10	3.64E+09	1.88E+09	8.07E+08	4.84E+08	1.85E+08	9.89E+07	1.05E+11
	SD =	7.90E+10	3.20E+10	4.99E+09	6.31E+09	1.77E+09	3.85E+09	7.50E+08	2.76E+08	2.64E+08	6.17E+07	6.76E+07	1.19E+07	1.60E+10
	%SD =	21.0	16.7	8.5	18.6	17.2	35.4	20.6	14.7	32.7	12.8	36.5	12.1	15.2
LAB 3	Test n°1	1.45E+11	4.01E+10	3.01E+10	1.57E+10	7.34E+09	2.87E+09	1.34E+09	8.63E+08	4.39E+08	3.90E+08	1.25E+08	7.36E+07	2.44E+11
	Test n°2	1.58E+10	5.54E+09	2.55E+10	2.38E+10	1.00E+10	9.10E+08	7.20E+08	2.97E+08	2.45E+08	1.16E+08	1.08E+08	4.84E+07	8.30E+10
	Test n°3	4.62E+10	8.02E+09	1.58E+10	1.41E+10	4.46E+09	8.89E+08	3.13E+08	4.56E+08	1.21E+08	8.56E+07	5.49E+07	2.95E+07	9.06E+10
	Mean =	6.88E+10	1.79E+10	2.38E+10	1.79E+10	7.28E+09	1.55E+09	7.90E+08	5.39E+08	2.69E+08	1.97E+08	9.61E+07	5.05E+07	1.39E+11
	SD =	6.73E+10	1.93E+10	7.26E+09	5.17E+09	2.79E+09	1.14E+09	5.15E+08	2.92E+08	1.60E+08	1.68E+08	3.66E+07	2.21E+07	9.07E+10
	%SD =	97.7	107.7	30.5	29.0	38.4	73.0	65.2	54.2	59.6	85.0	38.1	43.8	65.2
LAB 4	Test n°1	1.65E+11	2.18E+10	1.77E+10	1.98E+10	3.46E+09	3.67E+09	1.08E+09	7.17E+08	9.31E+08	2.44E+08	9.32E+07	7.77E+07	2.35E+11
	Test n°2	5.34E+11	1.19E+11	6.84E+10	4.73E+10	1.93E+10	1.66E+10	8.27E+09	4.25E+09	2.80E+09	1.45E+09	5.22E+08	2.30E+08	8.22E+11
	Test n°3	2.22E+11	3.26E+10	6.06E+09	1.18E+10	2.09E+09	3.09E+09	5.13E+08	7.99E+08	3.27E+08	1.86E+08	1.66E+08	8.34E+07	2.80E+11
	Mean =	3.07E+11	5.79E+10	3.07E+10	2.63E+10	8.28E+09	7.79E+09	3.28E+09	1.92E+09	1.29E+09	6.26E+08	2.60E+08	1.30E+08	4.45E+11
	SD =	1.98E+11	5.34E+10	3.31E+10	1.86E+10	9.57E+09	7.65E+09	4.32E+09	2.02E+09	1.18E+09	7.12E+08	2.29E+08	8.62E+07	3.27E+11
	%SD =	64.6	92.3	107.9	70.9	115.5	98.2	131.6	104.9	91.6	113.8	88.1	66.2	73.4

REPRODUCIBILITY

dN/dlogDp (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

													SUM	
LAB 1	Test n°1	7.19E+10	2.96E+10	1.09E+10	8.88E+09	4.79E+09	3.49E+09	1.02E+09	5.11E+08	2.81E+08	2.35E+08	8.47E+07	5.84E+07	1.32E+11
	Test n°2	9.29E+10	2.39E+10	1.31E+10	7.56E+09	3.73E+09	2.09E+09	1.63E+09	7.26E+08	3.94E+08	1.67E+08	1.51E+08	4.71E+07	1.46E+11
	Test n°3	8.73E+10	2.52E+10	1.38E+10	8.92E+09	5.67E+09	2.53E+09	1.32E+09	6.08E+08	4.30E+08	1.74E+08	1.54E+08	4.79E+07	1.46E+11
LAB 2	Test n°1	3.17E+11	1.67E+11	5.49E+10	4.00E+10	9.19E+09	1.43E+10	3.65E+09	2.10E+09	1.01E+09	5.26E+08	2.50E+08	1.03E+08	9.09E+10
	Test n°2	3.45E+11	2.27E+11	5.64E+10	3.46E+10	1.23E+10	6.69E+09	4.38E+09	1.57E+09	8.97E+08	4.13E+08	1.15E+08	8.54E+07	1.02E+11
	Test n°3	4.65E+11	1.79E+11	6.42E+10	2.74E+10	9.37E+09	1.16E+10	2.88E+09	1.97E+09	5.10E+08	5.12E+08	1.92E+08	1.08E+08	1.22E+11
LAB 3	Test n°1	1.45E+11	4.01E+10	3.01E+10	1.57E+10	7.34E+09	2.87E+09	1.34E+09	8.63E+08	4.39E+08	3.90E+08	1.25E+08	7.36E+07	2.44E+11
	Test n°2	1.58E+10	5.54E+09	2.55E+10	2.38E+10	1.00E+10	9.10E+08	7.20E+08	2.97E+08	2.45E+08	1.16E+08	1.08E+08	4.84E+07	8.30E+10
	Test n°3	4.62E+10	8.02E+09	1.58E+10	1.41E+10	4.46E+09	8.89E+08	3.13E+08	4.56E+08	1.21E+08	8.56E+07	5.49E+07	2.95E+07	9.06E+10
LAB 4	Test n°1	1.65E+11	2.18E+10	1.77E+10	1.98E+10	3.46E+09	3.67E+09	1.08E+09	7.17E+08	9.31E+08	2.44E+08	9.32E+07	7.77E+07	2.35E+11
	Test n°2	5.34E+11	1.19E+11	6.84E+10	4.73E+10	1.93E+10	1.66E+10	8.27E+09	4.25E+09	2.80E+09	1.45E+09	5.22E+08	2.30E+08	8.22E+11
	Test n°3	2.22E+11	3.26E+10	6.06E+09	1.18E+10	2.09E+09	3.09E+09	5.13E+08	7.99E+08	3.27E+08	1.86E+08	1.66E+08	8.34E+07	2.80E+11
	Mean =	2.09E+11	7.33E+10	3.14E+10	2.16E+10	7.65E+09	5.73E+09	2.26E+09	1.24E+09	6.82E+08	3.75E+08	1.68E+08	8.27E+07	2.08E+11
	SD =	1.70E+11	7.79E+10	2.30E+10	1.32E+10	4.81E+09	5.41E+09	2.28E+09	1.12E+09	6.69E+08	3.69E+08	1.23E+08	5.21E+07	2.04E+11
	%SD =	81	106	73	61	63	94	101	90	98	99	73	63	98.3

Reproducibility limit

ECE Test

Peugeot 307 HDI+DPF.

ECE Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.356	178.4	0.078	0.303	0.382	0.0005	6.73
	Test n°2	0.320	180.4	0.074	0.318	0.392	0.0010	6.81
	Test n°3	0.276	178.0	0.070	0.320	0.391	0.0005	6.71
Mean =		0.32	179	0.074	0.314	0.388	0.001	6.75
SD =		0.04	1.29	0.004	0.009	0.006	0.000	0.05
%SD =		12.7	0.7	5.4	2.9	1.5	43.3	0.7

LAB 1	Test n°1	0.785	178.5	0.133	0.329	0.462	0.0000	6.72
	Test n°2	0.708	179.1	0.121	0.328	0.449	0.0000	6.74
	Test n°3	0.729	117.5	0.119	0.332	0.451	0.0000	6.68
Mean =		0.741	158.4	0.124	0.330	0.454	0.0000	6.71
SD =		0.040	35.4	0.008	0.002	0.007	0.0000	0.03
%SD =		5.4	22.3	6.1	0.6	1.5	#DIV/0!	0.5

LAB 3	Test n°1	0.466	178.3	0.092	0.338	0.430	0.0002	6.82
	Test n°2	0.284	179.8	0.064	0.314	0.378	0.0037	6.86
	Test n°3	0.199	184.0	0.057	0.346	0.403	0.0000	7.01
Mean =		0.316	180.7	0.071	0.333	0.404	0.0013	6.90
SD =		0.136	3.0	0.019	0.017	0.026	0.0021	0.10
%SD =		43.1	1.6	26.1	5.0	6.4	157.1	1.5

LAB 4	Test n°1	0.221	184.7	0.054	0.399	0.453	0.0006	6.99
	Test n°2	0.256	182.6	0.075	0.363	0.438	0.0012	6.92
	Test n°3	0.327	182.7	0.072	0.362	0.434	0.0022	6.93
Mean =		0.268	183.3	0.067	0.375	0.442	0.0013	6.95
SD =		0.054	1.2	0.011	0.021	0.010	0.0008	0.04
%SD =		20.2	0.6	17.0	5.6	2.3	60.6	0.5

ECE Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)	
LAB 1	Test n°1	0.356	178.4	0.078	0.303	0.382	0.0005	6.73	LAB 1
	Test n°2	0.320	180.4	0.074	0.318	0.392	0.0010	6.81	
	Test n°3	0.276	178.0	0.070	0.320	0.391	0.0005	6.71	
LAB 2	Test n°1	0.785	178.5	0.133	0.329	0.462	0.0000	6.72	LAB 2
	Test n°2	0.708	179.1	0.121	0.328	0.449	0.0000	6.74	
	Test n°3	0.729	117.5	0.119	0.332	0.451	0.0000	6.68	
LAB 3	Test n°1	0.466	178.3	0.092	0.338	0.430	0.0002	6.82	LAB 3
	Test n°2	0.284	179.8	0.064	0.314	0.378	0.0037	6.86	
	Test n°3	0.199	184.0	0.057	0.346	0.403	0.0000	7.01	
LAB 4	Test n°1	0.221	184.7	0.054	0.399	0.453	0.0006	6.99	LAB 4
	Test n°2	0.256	182.6	0.075	0.363	0.438	0.0012	6.92	
	Test n°3	0.327	182.7	0.072	0.362	0.434	0.0022	6.93	
Mean =		0.411	175.3	0.084	0.338	0.422	0.0008	6.83	
SD =		0.211	18.4	0.026	0.026	0.031	0.0011	0.11	
%SD =		51.4	10.5	31.3	7.8	7.3	134.2	1.7	

ECE Test

Peugeot 307 HDI+DPF, tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY

Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

													SUM	
LAB 1	Test n°1	8.06E+10	1.60E+10	4.70E+09	3.27E+09	1.63E+09	1.20E+09	4.07E+08	1.66E+08	1.02E+08	7.66E+07	3.22E+07	4.35E+07	1.08E+11
	Test n°2	9.98E+10	1.28E+10	5.77E+09	2.85E+09	1.15E+09	7.01E+08	6.13E+08	2.47E+08	1.52E+08	5.23E+07	5.31E+07	3.55E+07	1.24E+11
	Test n°3	9.23E+10	1.42E+10	6.14E+09	3.36E+09	1.87E+09	8.64E+08	4.96E+08	2.06E+08	1.52E+08	5.47E+07	5.58E+07	3.58E+07	1.20E+11
	Mean =	9.09E+10	1.43E+10	5.54E+09	3.16E+09	1.55E+09	9.21E+08	5.05E+08	2.06E+08	1.36E+08	6.12E+07	4.70E+07	3.83E+07	1.17E+11
	SD =	9.69E+09	1.61E+09	7.46E+08	2.72E+08	3.69E+08	2.53E+08	1.03E+08	4.04E+07	2.91E+07	1.34E+07	1.29E+07	4.53E+06	8.25E+09
	%SD =	10.7	11.3	13.5	8.6	23.8	27.5	20.5	19.5	21.5	21.9	27.5	11.9	7.0
LAB 1	Test n°1	3.53E+11	8.23E+10	2.19E+10	1.53E+10	3.70E+09	4.05E+09	1.37E+09	6.80E+08	4.07E+08	1.72E+08	9.79E+07	4.02E+07	4.83E+11
	Test n°2	3.87E+11	1.12E+11	2.37E+10	1.42E+10	5.49E+09	1.98E+09	1.60E+09	5.63E+08	3.74E+08	1.31E+08	4.53E+07	3.46E+07	5.47E+11
	Test n°3	5.08E+11	9.47E+10	2.54E+10	1.07E+10	3.95E+09	3.28E+09	1.02E+09	6.60E+08	2.12E+08	1.65E+08	8.03E+07	4.33E+07	6.48049E+11
	Mean =	4.16E+11	9.63E+10	2.37E+10	1.34E+10	4.38E+09	3.10E+09	1.33E+09	6.35E+08	3.31E+08	1.56E+08	7.45E+07	3.94E+07	5.59E+11
	SD =	8.15E+10	1.49E+10	1.75E+09	2.37E+09	9.73E+08	1.04E+09	2.89E+08	6.25E+07	1.04E+08	2.21E+07	2.67E+07	4.39E+06	8.34E+10
	%SD =	19.6	15.5	7.4	17.7	22.2	33.7	21.8	9.8	31.5	14.2	35.9	11.1	14.9
LAB 3	Test n°1	2.81E+11	7.07E+10	5.26E+10	2.84E+10	1.37E+10	5.27E+09	2.33E+09	1.51E+09	7.85E+08	6.97E+08	2.26E+08	1.33E+08	4.57E+11
	Test n°2	3.94E+10	1.38E+10	5.97E+10	5.28E+10	2.06E+10	1.84E+09	1.26E+09	4.90E+08	3.99E+08	1.87E+08	1.83E+08	8.18E+07	1.91E+11
	Test n°3	1.20E+11	2.1E+10	3.7E+10	3.3E+10	1.1E+10	1.9E+09	6.1E+08	8.2E+08	2.4E+08	1.6E+08	1.0E+08	5.4E+07	2.25E+11
	Mean =	1.47E+11	3.52E+10	4.98E+10	3.80E+10	1.50E+10	3.01E+09	1.40E+09	9.40E+08	4.73E+08	3.47E+08	1.70E+08	8.95E+07	2.91E+11
	SD =	1.23E+11	3.10E+10	1.16E+10	1.30E+10	5.10E+09	1.96E+09	8.66E+08	5.19E+08	2.82E+08	3.03E+08	6.28E+07	4.02E+07	1.45E+11
	%SD =	83.9	88.1	23.2	34.2	33.9	65.0	61.7	55.2	59.6	87.2	36.9	44.9	49.8
LAB 4	Test n°1	1.69E+11	1.63E+10	8.75E+09	7.87E+09	1.29E+09	1.09E+09	4.19E+08	2.23E+08	3.47E+08	7.21E+07	3.42E+07	4.92E+07	2.06E+11
	Test n°2	5.34E+11	7.00E+10	2.93E+10	1.73E+10	6.66E+09	5.43E+09	2.98E+09	1.46E+09	9.72E+08	4.68E+08	1.93E+08	1.57E+08	6.69E+11
	Test n°3	2.20E+11	1.88E+10	2.83E+09	3.95E+09	6.87E+08	9.78E+08	1.59E+08	2.50E+08	1.26E+08	6.38E+07	6.21E+07	5.56E+07	2.48E+11
	Mean =	3.08E+11	3.50E+10	1.36E+10	9.71E+09	2.88E+09	2.50E+09	1.18E+09	6.43E+08	4.82E+08	2.01E+08	9.65E+07	8.72E+07	3.74E+11
	SD =	1.98E+11	3.03E+10	1.39E+10	6.87E+09	3.29E+09	2.54E+09	1.56E+09	7.04E+08	4.39E+08	2.31E+08	8.48E+07	6.03E+07	2.56E+11
	%SD =	64.2	86.6	102.0	70.7	114.1	101.7	131.4	109.6	91.1	114.8	87.9	69.2	68.4

REPRODUCIBILITY

Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

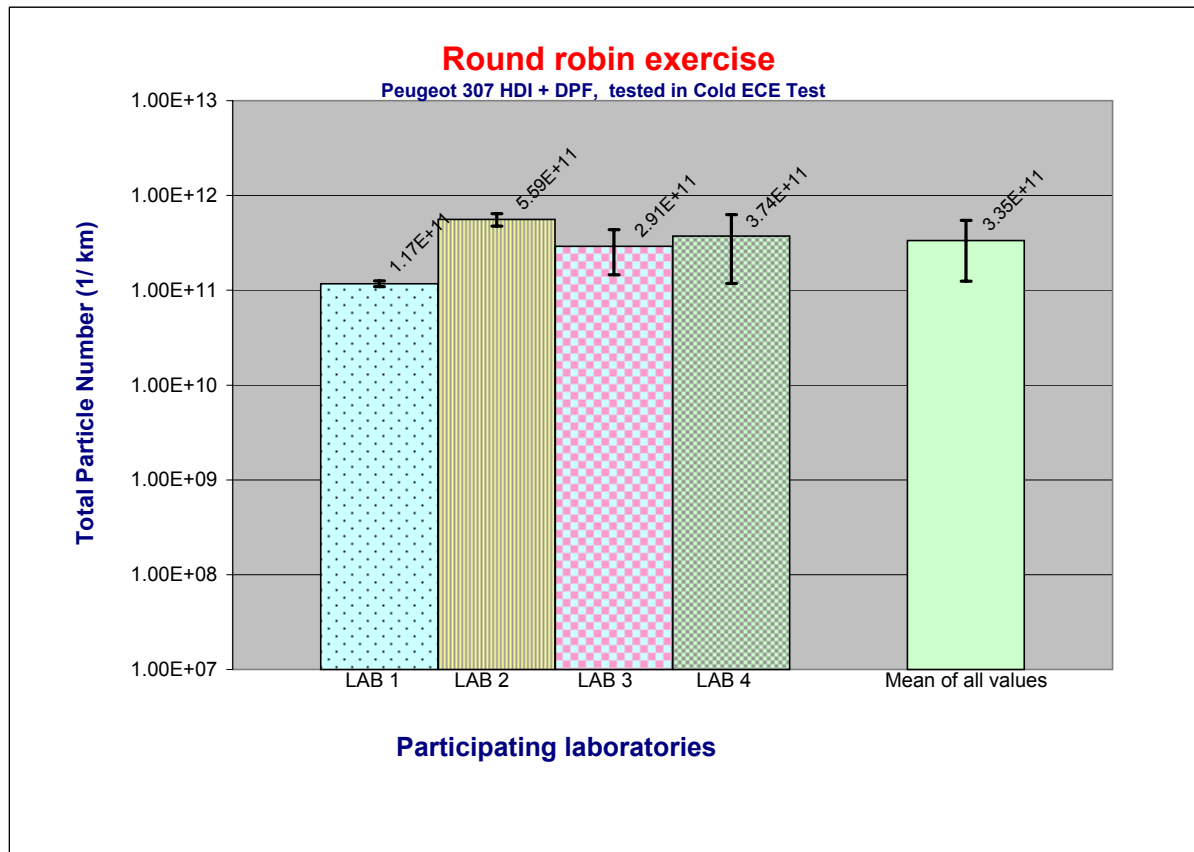
													SUM	
LAB 1	Test n°1	8.06E+10	1.60E+10	4.70E+09	3.27E+09	1.63E+09	1.20E+09	4.07E+08	1.66E+08	1.02E+08	7.66E+07	3.22E+07	4.35E+07	1.08E+11
	Test n°2	9.98E+10	1.28E+10	5.77E+09	2.85E+09	1.15E+09	7.01E+08	6.13E+08	2.47E+08	1.52E+08	5.23E+07	5.31E+07	3.55E+07	1.24E+11
	Test n°3	9.23E+10	1.42E+10	6.14E+09	3.36E+09	1.87E+09	8.64E+08	4.96E+08	2.06E+08	1.52E+08	5.47E+07	5.58E+07	3.58E+07	1.20E+11
LAB 2	Test n°1	3.53E+11	8.23E+10	2.19E+10	1.53E+10	3.70E+09	4.05E+09	1.37E+09	6.80E+08	4.07E+08	1.72E+08	9.79E+07	4.02E+07	4.83E+11
	Test n°2	3.87E+11	1.12E+11	2.37E+10	1.42E+10	5.49E+09	1.98E+09	1.60E+09	5.63E+08	3.74E+08	1.31E+08	4.53E+07	3.46E+07	5.47E+11
	Test n°3	5.08E+11	9.47E+10	2.54E+10	1.07E+10	3.95E+09	3.28E+09	1.02E+09	6.60E+08	2.12E+08	1.65E+08	8.03E+07	4.33E+07	6.48E+11
LAB 3	Test n°1	2.81E+11	7.07E+10	5.26E+10	2.84E+10	1.37E+10	5.27E+09	2.33E+09	1.51E+09	7.85E+08	6.97E+08	2.26E+08	1.33E+08	4.57E+11
	Test n°2	3.94E+10	1.38E+10	5.97E+10	5.28E+10	2.06E+10	1.84E+09	1.26E+09	4.90E+08	3.99E+08	1.87E+08	1.83E+08	8.18E+07	1.91E+11
	Test n°3	1.20E+11	2.10E+10	3.71E+10	3.29E+10	1.07E+10	1.92E+09	6.15E+08	8.23E+08	2.36E+08	1.58E+08	1.02E+08	5.37E+07	2.25E+11
LAB 4	Test n°1	1.69E+11	1.63E+10	8.75E+09	7.87E+09	1.29E+09	1.09E+09	4.19E+08	2.23E+08	3.47E+08	7.21E+07	3.42E+07	4.92E+07	2.06E+11
	Test n°2	5.34E+11	7.00E+10	2.93E+10	1.73E+10	6.66E+09	5.43E+09	2.98E+09	1.46E+09	9.72E+08	4.68E+08	1.93E+08	1.57E+08	6.69E+11
	Test n°3	2.20E+11	1.88E+10	2.83E+09	3.95E+09	6.87E+08	9.78E+08	1.59E+08	2.50E+08	1.26E+08	6.38E+07	6.21E+07	5.56E+07	2.48E+11
	Mean =	2.40E+11	4.52E+10	2.32E+10	1.61E+10	5.96E+09	2.38E+09	1.11E+09	6.06E+08	3.55E+08	1.91E+08	9.71E+07	6.36E+07	3.35E+11
	SD =	1.71E+11	3.76E+10	1.91E+10	1.52E+10	6.15E+09	1.71E+09	8.55E+08	4.63E+08	2.70E+08	1.95E+08	6.68E+07	4.04E+07	2.11E+11
	%SD =	71	83	82	94	103	72	77	76	76	102	69	64	62.9

Reproducibility limit

ECE Test

Only the average results are presented

Etage n° =	Dp (µm)	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	9.09E+10	4.16E+11	1.47E+11	3.08E+11	2.40E+11
2	0.030	1.43E+10	9.63E+10	3.52E+10	3.50E+10	4.52E+10
3	0.063	5.54E+09	2.37E+10	4.98E+10	1.36E+10	2.32E+10
4	0.109	3.16E+09	1.34E+10	3.80E+10	9.71E+09	1.61E+10
5	0.173	1.55E+09	4.38E+09	1.50E+10	2.88E+09	5.96E+09
6	0.267	9.21E+08	3.10E+09	3.01E+09	2.50E+09	2.38E+09
7	0.407	5.05E+08	1.33E+09	1.40E+09	1.18E+09	1.11E+09
8	0.655	2.06E+08	6.35E+08	9.40E+08	6.43E+08	6.06E+08
9	1.021	1.36E+08	3.31E+08	4.73E+08	4.82E+08	3.55E+08
10	1.655	6.12E+07	1.56E+08	3.47E+08	2.01E+08	1.91E+08
11	2.520	4.70E+07	7.45E+07	1.70E+08	9.65E+07	9.71E+07
12	4.085	3.83E+07	3.94E+07	8.95E+07	8.72E+07	6.36E+07
Total Particulate Number (1/km) =		1.17E+11	5.59E+11	2.91E+11	3.74E+11	3.35E+11
SD =		8.25E+09	8.34E+10	1.45E+11	2.56E+11	2.11E+11



EUDC Test

Peugeot 307 HDI+DPF.

EUDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.000	110.5	0.009	0.211	0.220	0.0006	4.15
	Test n°2	0.000	112.4	0.009	0.221	0.230	0.0007	4.22
	Test n°3	0.000	112.1	0.009	0.225	0.234	0.0003	4.21
Mean =		0.000	112	0.009	0.219	0.228	0.001	4.20
SD =		0.000	1.02	0.000	0.007	0.007	0.000	0.04
%SD =		#DIV/0!	0.9	3.3	3.2	3.0	39.0	0.9

LAB 1	Test n°1	0.015	111.0	0.014	0.291	0.305	0.0000	4.14
	Test n°2	0.015	110.1	0.012	0.256	0.268	0.0000	4.11
	Test n°3	0.017	117.7	0.011	0.277	0.288	0.0010	4.17
Mean =		0.016	112.9	0.012	0.275	0.287	0.0003	4.14
SD =		0.001	4.2	0.002	0.018	0.019	0.0006	0.03
%SD =		7.4	3.7	12.4	6.4	6.5	173.2	0.7

LAB 3	Test n°1	0.010	110.20	0.011	0.250	0.261	0.0004	4.19
	Test n°2	0.006	109.50	0.007	0.246	0.253	0.0017	4.17
	Test n°3	0.005	109.80	0.006	0.247	0.253	0.0001	4.17
Mean =		0.007	109.8	0.008	0.248	0.256	0.0008	4.18
SD =		0.003	0.4	0.003	0.002	0.005	0.0008	0.01
%SD =		37.8	0.3	33.1	0.8	1.8	109.9	0.3

LAB 4	Test n°1	0.000	112.4	0.004	0.273	0.277	0.0003	4.24
	Test n°2	0.001	115.3	0.006	0.263	0.269	0.0007	4.35
	Test n°3	0.003	116.2	0.005	0.269	0.274	0.0013	4.39
Mean =		0.001	114.6	0.005	0.268	0.273	0.0008	4.33
SD =		0.002	2.0	0.001	0.005	0.004	0.0005	0.08
%SD =		114.6	1.7	20.0	1.9	1.5	65.7	1.8

EUDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)	
LAB 1	Test n°1	0.000	110.5	0.009	0.211	0.220	0.0006	4.15	LAB 1
	Test n°2	0.000	112.4	0.009	0.221	0.230	0.0007	4.22	
	Test n°3	0.000	112.1	0.009	0.225	0.234	0.0003	4.21	
LAB 2	Test n°1	0.015	111.0	0.014	0.291	0.305	0.0000	4.14	LAB 2
	Test n°2	0.015	110.1	0.012	0.256	0.268	0.0000	4.11	
	Test n°3	0.017	117.7	0.011	0.277	0.288	0.0010	4.17	
LAB 3	Test n°1	0.010	110.2	0.011	0.250	0.261	0.0004	4.19	LAB 3
	Test n°2	0.006	109.5	0.007	0.246	0.253	0.0017	4.17	
	Test n°3	0.005	109.8	0.006	0.247	0.253	0.0001	4.17	
LAB 4	Test n°1	0.000	112.4	0.004	0.273	0.277	0.0003	4.24	LAB 4
	Test n°2	0.001	115.3	0.006	0.263	0.269	0.0007	4.35	
	Test n°3	0.003	116.2	0.005	0.269	0.274	0.0013	4.39	
Mean =		0.006	112	0.009	0.252	0.261	0.001	4.21	
SD =		0.007	2.73	0.003	0.024	0.025	0.001	0.08	
%SD =		109.9	2.4	35.6	9.6	9.5	88.0	2.0	

EUDC Test Peugeot 307 HDI+DPF, tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

LAB 1	Test n°1	2.32E+10	4.74E+09	1.50E+09	1.02E+09	4.79E+08	3.32E+08	1.03E+08	5.76E+07	3.43E+07	2.36E+07	9.22E+06	1.25E+07	3.15E+10
	Test n°2	3.26E+10	3.93E+09	1.74E+09	8.36E+08	4.46E+08	2.10E+08	1.88E+08	7.56E+07	4.26E+07	1.83E+07	1.90E+07	9.80E+06	4.01E+10
	Test n°3	3.13E+10	3.72E+09	1.75E+09	9.85E+08	6.02E+08	2.42E+08	1.51E+08	6.41E+07	5.47E+07	1.88E+07	1.83E+07	1.02E+07	3.90E+10
	Mean =	2.90E+10	4.13E+09	1.66E+09	9.49E+08	5.09E+08	2.61E+08	1.47E+08	6.58E+07	4.39E+07	2.02E+07	1.55E+07	1.08E+07	3.68E+10
	SD =	5.10E+09	5.41E+08	1.43E+08	9.95E+07	8.25E+07	6.33E+07	4.24E+07	9.14E+06	1.03E+07	2.95E+06	5.46E+06	1.46E+06	4.66E+09
	%SD =	17.6	13.1	8.6	10.5	16.2	24.2	28.8	13.9	23.4	14.6	35.2	13.5	12.7

LAB 1	Test n°1	1.03E+11	2.94E+10	6.49E+09	4.87E+09	1.17E+09	1.31E+09	3.89E+08	2.32E+08	1.27E+08	4.45E+07	3.08E+07	1.30E+07	1.47E+11
	Test n°2	1.11E+11	4.02E+10	5.96E+09	3.67E+09	1.26E+09	5.68E+08	4.89E+08	1.42E+08	1.04E+08	3.76E+07	1.40E+07	9.97E+06	1.64E+11
	Test n°3	1.58E+11	2.79E+10	7.73E+09	3.19E+09	1.09E+09	1.07E+09	3.38E+08	2.05E+08	5.93E+07	4.50E+07	2.06E+07	1.29E+07	2.00E+11
	Mean =	1.24E+11	3.25E+10	6.73E+09	3.91E+09	1.17E+09	9.86E+08	4.06E+08	1.93E+08	9.67E+07	4.24E+07	2.18E+07	1.20E+07	1.70E+11
	SD =	2.97E+10	6.72E+09	9.09E+08	8.66E+08	8.51E+07	3.81E+08	7.69E+07	4.64E+07	3.43E+07	4.17E+06	8.43E+06	1.73E+06	2.70E+10
	%SD =	23.9	20.7	13.5	22.1	7.3	38.7	18.9	24.0	35.5	9.8	38.7	14.5	15.9

LAB 3	Test n°1	6.57E+10	2.24E+10	1.70E+10	8.41E+09	3.64E+09	1.48E+09	7.63E+08	4.91E+08	2.40E+08	2.13E+08	6.69E+07	3.93E+07	1.20E+11
	Test n°2	5.14E+06	1.45E+06	2.58E+09	4.34E+09	2.95E+09	2.87E+08	3.57E+08	1.67E+08	1.43E+08	6.87E+07	5.82E+07	2.62E+07	1.10E+10
	Test n°3	3.33E+09	4.37E+08	3.45E+09	3.13E+09	8.12E+08	2.88E+08	1.37E+08	2.43E+08	5.45E+07	4.33E+07	2.75E+07	1.55E+07	1.20E+10
	Mean =	2.30E+10	7.61E+09	7.69E+09	5.29E+09	2.47E+09	6.85E+08	4.19E+08	3.00E+08	1.46E+08	1.08E+08	5.09E+07	2.70E+07	4.78E+10
	SD =	3.70E+10	1.28E+10	8.11E+09	2.77E+09	1.48E+09	6.88E+08	3.17E+08	1.69E+08	9.26E+07	9.16E+07	2.07E+07	1.20E+07	6.29E+10
	%SD =	160.8	168.2	105.5	52.3	59.8	100.4	75.7	56.3	63.6	84.5	40.6	44.3	131.6

LAB 4	Test n°1	5.22E+10	1.71E+09	1.62E+09	1.73E+09	2.84E+08	4.34E+08	1.10E+08	8.97E+07	1.08E+08	2.88E+07	1.11E+07	1.92E+07	5.84E+10
	Test n°2	1.75E+11	2.02E+10	8.75E+09	4.96E+09	1.89E+09	1.66E+09	9.75E+08	4.52E+08	2.99E+08	1.46E+08	6.10E+07	5.01E+07	2.14E+11
	Test n°3	7.34E+10	5.67E+09	6.34E+08	1.43E+09	2.23E+08	3.24E+08	7.52E+07	9.82E+07	3.49E+07	1.66E+07	1.89E+07	1.89E+07	8.19E+10
	Mean =	1.00E+11	9.19E+09	3.67E+09	2.71E+09	7.98E+08	8.06E+08	3.86E+08	2.13E+08	1.47E+08	6.39E+07	3.03E+07	2.94E+07	1.18E+11
	SD =	6.55E+10	9.72E+09	4.43E+09	1.96E+09	9.45E+08	7.42E+08	5.10E+08	2.07E+08	1.36E+08	7.16E+07	2.69E+07	1.79E+07	8.40E+10
	%SD =	65.4	105.8	120.8	72.3	118.4	92.1	131.9	96.9	92.4	112.1	88.5	61.0	71.1

REPRODUCIBILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

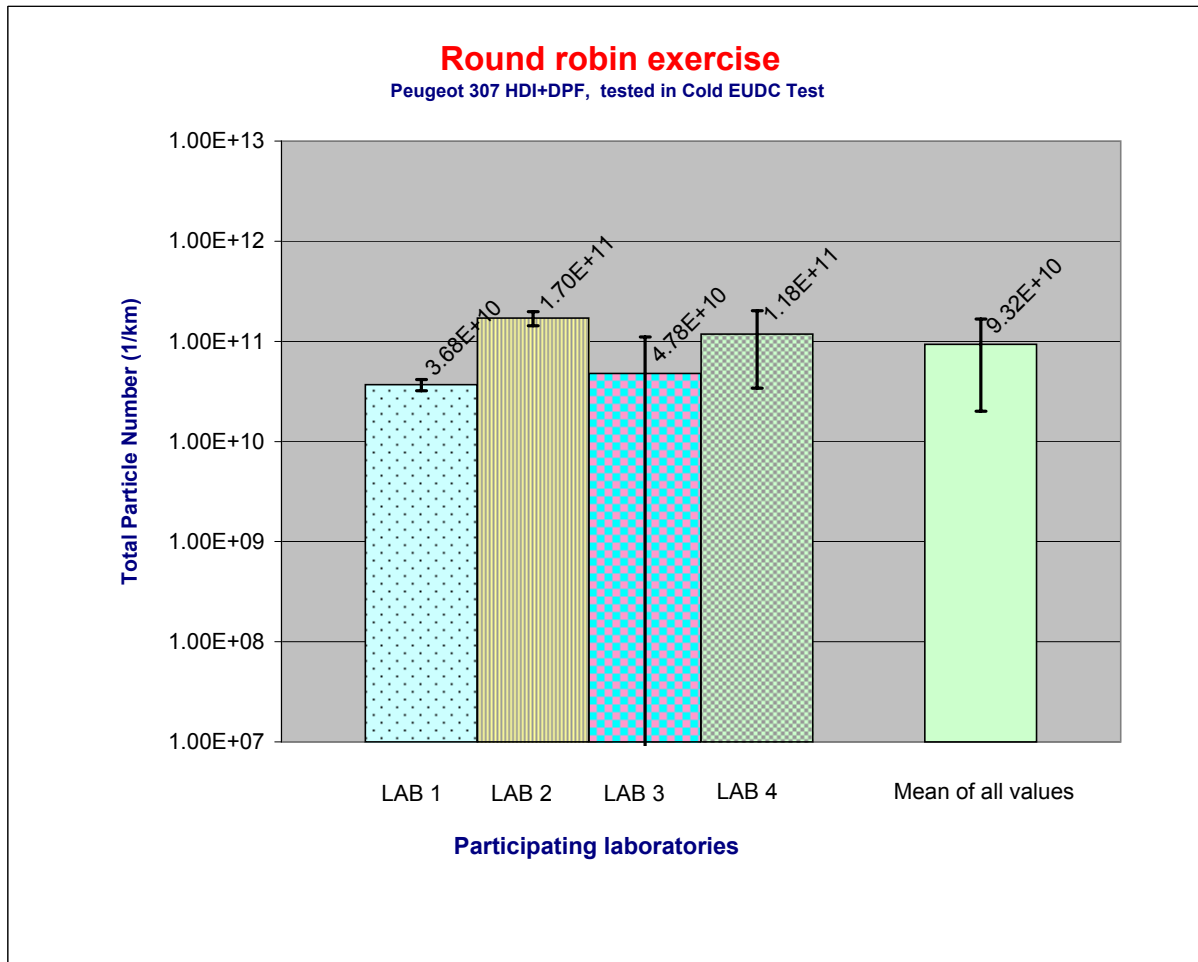
LAB 1	Test n°1	2.32E+10	4.74E+09	1.50E+09	1.02E+09	4.79E+08	3.32E+08	1.03E+08	5.76E+07	3.43E+07	2.36E+07	9.22E+06	1.25E+07	3.15E+10	LAB 1
	Test n°2	3.26E+10	3.93E+09	1.74E+09	8.36E+08	4.46E+08	2.10E+08	1.88E+08	7.56E+07	4.26E+07	1.83E+07	1.90E+07	9.80E+06	4.01E+10	
	Test n°3	3.13E+10	3.72E+09	1.75E+09	9.85E+08	6.02E+08	2.42E+08	1.51E+08	6.41E+07	5.47E+07	1.88E+07	1.83E+07	1.02E+07	3.90E+10	
LAB 2	Test n°1	1.03E+11	2.94E+10	6.49E+09	4.87E+09	1.17E+09	1.31E+09	3.89E+08	2.32E+08	1.27E+08	4.45E+07	3.08E+07	1.30E+07	1.47E+11	LAB 2
	Test n°2	1.11E+11	4.02E+10	5.96E+09	3.67E+09	1.26E+09	5.68E+08	4.89E+08	1.42E+08	1.04E+08	3.76E+07	1.40E+07	9.97E+06	1.64E+11	
	Test n°3	1.58E+11	2.79E+10	7.73E+09	3.19E+09	1.09E+09	1.07E+09	3.38E+08	2.05E+08	5.93E+07	4.50E+07	2.06E+07	1.29E+07	2.00E+11	
LAB 3	Test n°1	6.57E+10	2.24E+10	1.70E+10	8.41E+09	3.64E+09	1.48E+09	7.63E+08	4.91E+08	2.40E+08	2.13E+08	6.69E+07	3.93E+07	1.20E+11	LAB 3
	Test n°2	5.14E+06	1.45E+06	2.58E+09	4.34E+09	2.95E+09	2.87E+08	3.57E+08	1.67E+08	1.43E+08	6.87E+07	5.82E+07	2.62E+07	1.10E+10	
	Test n°3	3.33E+09	4.37E+08	3.45E+09	3.13E+09	8.12E+08	2.88E+08	1.37E+08	2.43E+08	5.45E+07	4.33E+07	2.75E+07	1.55E+07	1.20E+10	
LAB 4	Test n°1	5.22E+10	1.71E+09	1.62E+09	1.73E+09	2.84E+08	4.34E+08	1.10E+08	8.97E+07	1.08E+08	2.88E+07	1.11E+07	1.92E+07	5.84E+10	LAB 4
	Test n°2	1.75E+11	2.02E+10	8.75E+09	4.96E+09	1.89E+09	1.66E+09	9.75E+08	4.52E+08	2.99E+08	1.46E+08	6.10E+07	5.01E+07	2.14E+11	
	Test n°3	7.34E+10	5.67E+09	6.34E+08	1.43E+09	2.23E+08	3.24E+08	7.52E+07	9.82E+07	3.49E+07	1.66E+07	1.89E+07	1.89E+07	8.19E+10	
	Mean =	6.91E+10	1.34E+10	4.94E+09	3.22E+09	1.24E+09	6.84E+08	3.40E+08	1.93E+08	1.08E+08	5.87E+07	2.96E+07	1.98E+07	9.32E+10	
	SD =	5.74E+10	1.39E+10	4.69E+09	2.24E+09	1.08E+09	5.39E+08	2.84E+08	1.45E+08	8.44E+07	6.02E+07	2.05E+07	1.28E+07	7.32E+10	
	%SD =	83	104	95	70	88	79	84	75	78	102	69	65	78.5	

Reproducibility limit

EUDC Test

Only the average results are presented

Etage n° =	Dp (µm)	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	2.90E+10	1.24E+11	2.30E+10	1.00E+11	6.91E+10
2	0.030	4.13E+09	3.25E+10	7.61E+09	9.19E+09	1.34E+10
3	0.063	1.66E+09	6.73E+09	7.69E+09	3.67E+09	4.94E+09
4	0.109	9.49E+08	3.91E+09	5.29E+09	2.71E+09	3.22E+09
5	0.173	5.09E+08	1.17E+09	2.47E+09	7.98E+08	1.24E+09
6	0.267	2.61E+08	9.86E+08	6.85E+08	8.06E+08	6.84E+08
7	0.407	1.47E+08	4.06E+08	4.19E+08	3.86E+08	3.40E+08
8	0.655	6.58E+07	1.93E+08	3.00E+08	2.13E+08	1.93E+08
9	1.021	4.39E+07	9.67E+07	1.46E+08	1.47E+08	1.08E+08
10	1.655	2.02E+07	4.24E+07	1.08E+08	6.39E+07	5.87E+07
11	2.520	1.55E+07	2.18E+07	5.09E+07	3.03E+07	2.96E+07
12	4.085	1.08E+07	1.20E+07	2.70E+07	2.94E+07	1.98E+07
Total Particulate Number (1/km) =		3.68E+10	1.70E+11	4.78E+10	1.18E+11	9.32E+10
SD =		4.66E+09	2.70E+10	6.29E+10	8.40E+10	7.32E+10

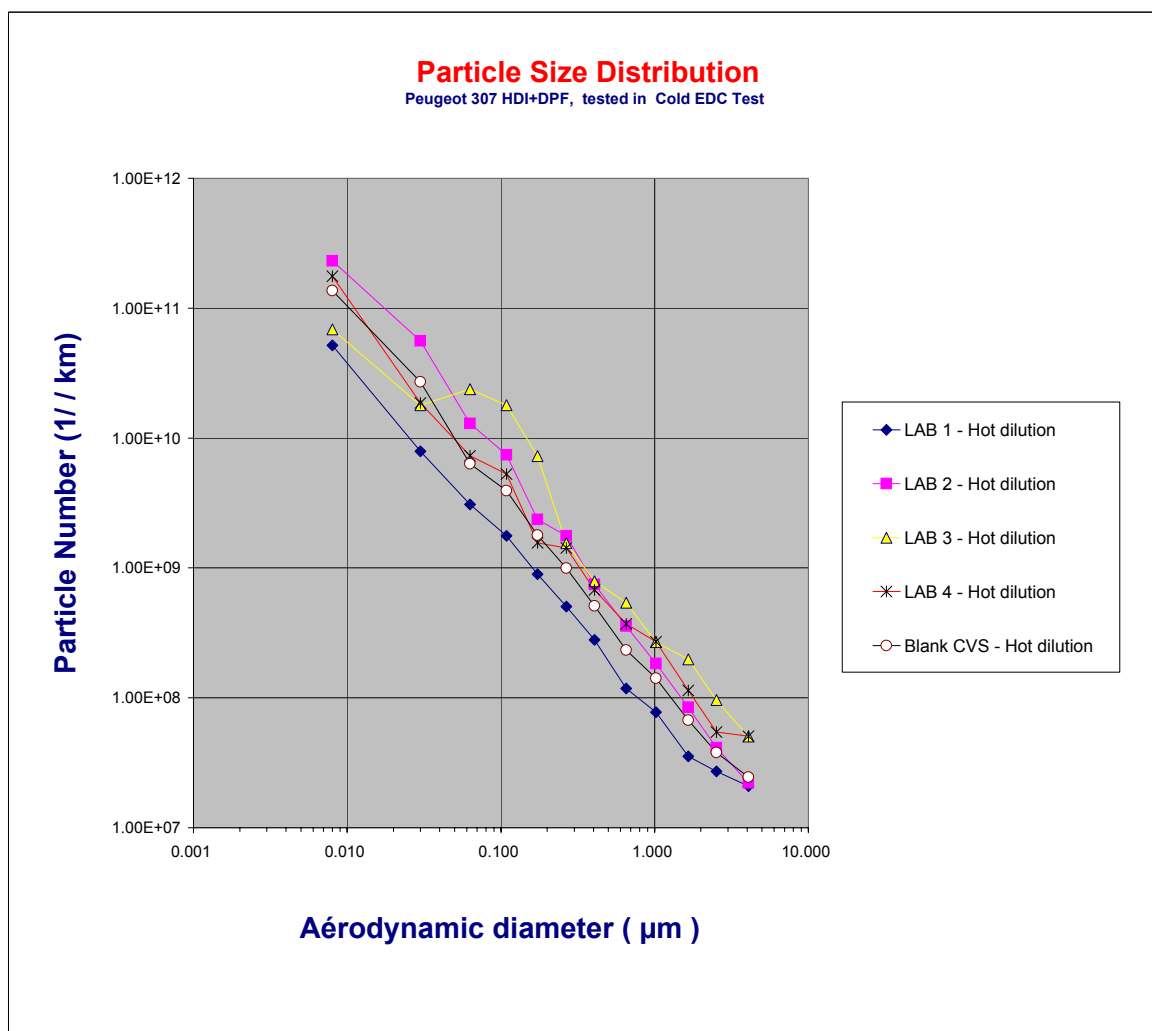


Graph : Particle Size Distribution

Cold EDC Test

Cold EDC Test Particle Size Distribution

Etage n°	Dp (µm)	LAB 1 - Hot dilution	LAB 2 - Hot dilution	LAB 3 - Hot dilution	LAB 4 - Hot dilution	Blank CVS / Mean of all values before the tests - Hot dilution
1	0.008	5.19E+10	2.32E+11	6.88E+10	1.76E+11	1.37E+11
2	0.030	7.90E+09	5.61E+10	1.79E+10	1.86E+10	2.71E+10
3	0.063	3.09E+09	1.30E+10	2.38E+10	7.31E+09	6.34E+09
4	0.109	1.77E+09	7.42E+09	1.79E+10	5.27E+09	3.93E+09
5	0.173	8.94E+08	2.36E+09	7.28E+09	1.56E+09	1.78E+09
6	0.267	5.04E+08	1.77E+09	1.55E+09	1.43E+09	9.97E+08
7	0.407	2.80E+08	7.47E+08	7.90E+08	6.79E+08	5.11E+08
8	0.655	1.18E+08	3.56E+08	5.39E+08	3.71E+08	2.33E+08
9	1.021	7.77E+07	1.83E+08	2.69E+08	2.70E+08	1.41E+08
10	1.655	3.53E+07	8.43E+07	1.97E+08	1.14E+08	6.72E+07
11	2.520	2.71E+07	4.13E+07	9.61E+07	5.46E+07	3.80E+07
12	4.085	2.10E+07	2.21E+07	5.05E+07	5.06E+07	2.44E+07
Total Particle Number (1/km) =		6.66E+10	3.14E+11	1.39E+11	2.12E+11	1.78E+11
SD =		5.95E+09	4.77E+10	9.07E+10	1.47E+11	2.27E+11
%SD =		8.9	15.2	65.2	69.3	127.4



APPENDIX 3

5.3 RENAULT Megane Gasoline engine

5.3.1 Blank CVS

5.3.2 Repeatability and Reproducibility

- Cold EDC test
- ECE (urban cycle) test
- EUDC (extra-urban cycle) test

Blank CVS

**Blank CVS before the test with Hot dilution (around 120°C to prevent recondensation of the vapor),
Particle Number (1/km)**

Stage n.º	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

LAB 1	Test n°1	6.63E+10	1.08E+10	3.41E+09	1.06E+09	1.06E+09	4.86E+08	3.67E+08	1.11E+08	8.68E+07	3.03E+07	2.12E+07	2.82E+07
	Test n°2	4.07E+10	7.41E+09	4.25E+09	8.88E+08	6.49E+08	5.32E+08	8.62E+08	3.31E+07	6.97E+07	2.91E+07	1.26E+07	2.60E+07
	Test n°3	5.95E+10	7.20E+09	2.79E+09	1.20E+09	4.04E+08	5.31E+08	2.05E+08	1.30E+08	6.17E+07	1.94E+07	1.43E+07	2.83E+07
LAB 2	Test n°1	1.94E+11	9.71E+10	3.48E+08	2.54E+07	1.04E+07	7.22E+08	1.42E+08	2.01E+07	1.44E+06	4.83E+06	3.28E+06	4.03E+06
	Test n°2	1.21E+11	3.20E+10	1.44E+10	5.51E+09	1.94E+09	6.10E+08	4.21E+08	1.38E+08	1.01E+08	3.06E+07	1.94E+07	2.49E+07
	Test n°3	1.90E+11	2.91E+10	1.06E+10	7.60E+09	2.43E+09	1.03E+09	6.08E+08	2.60E+08	1.05E+08	6.06E+07	2.79E+07	3.72E+07
LAB 3	Test n°1	1.54E+09	9.92E+07	3.62E+08	7.94E+08	2.82E+08	5.11E+07	2.89E+07	6.49E+07	2.37E+07	7.24E+06	7.84E+06	3.03E+05
	Test n°2	2.09E+09	1.69E+09	4.57E+08	6.34E+08	1.43E+08	8.63E+07	2.13E+07	7.41E+07	3.65E+07	7.79E+06	8.93E+06	2.11E+06
	Test n°3	4.28E+09	2.13E+09	1.18E+09	5.59E+08	2.80E+08	1.63E+08	4.10E+07	6.43E+07	2.42E+07	1.21E+07	9.19E+06	9.79E+05
LAB 4	Test n°1	5.86E+10	3.65E+10	1.77E+10	1.12E+10	5.14E+09	1.87E+09	9.32E+08	3.13E+08	1.16E+08	9.43E+07	4.33E+07	3.12E+07
	Test n°2	7.61E+10	2.14E+10	1.67E+10	1.13E+10	4.61E+09	2.27E+09	8.26E+08	4.24E+08	1.62E+08	1.03E+08	6.33E+07	2.74E+07
	Test n°3	1.01E+11	2.37E+10	1.90E+10	1.27E+10	4.96E+09	1.85E+09	8.65E+08	4.14E+08	1.75E+08	9.51E+07	6.38E+07	1.08E+07
Mean =	7.62E+10	2.24E+10	7.60E+09	4.45E+09	1.83E+09	8.50E+08	4.43E+08	1.71E+08	8.02E+07	4.12E+07	2.46E+07	1.85E+07	
SD =	6.57E+10	2.67E+10	7.50E+09	4.94E+09	2.00E+09	7.51E+08	3.61E+08	1.45E+08	5.46E+07	3.73E+07	2.11E+07	1.37E+07	
%SD =	86	119	99	111	109	88	81	85	68	90	86	74	

SUM

8.38E+10	LAB 1
5.55E+10	
7.21E+10	
2.92E+11	LAB 2
1.76E+11	
2.41E+11	
3.26E+09	LAB 3
5.25E+09	
8.74E+09	
1.33E+11	LAB 4
1.34E+11	
1.65E+11	
1.14E+11	
9.36E+10	
82.0	

Cold EDC Test

Renault MEGANE

Cold EDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	*Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.650	157	0.124	0.050	0.174	0.001	6.65
	Test n°2	0.639	158	0.113	0.038	0.151	0.001	6.69
	Test n°3	0.709	155	0.111	0.047	0.158	0.001	6.57
Mean =		0.666	156	0.116	0.045	0.161	0.001	6.64
SD =		0.038	1.44	0.007	0.006	0.012	0.000	0.06
%SD =		5.6	0.9	5.8	14.0	7.3	45.1	0.9

LAB 1	Test n°1	0.723	156	0.154	0.040	0.194	0.000	6.59
	Test n°2	0.738	155	0.133	0.035	0.168	0.002	6.57
	Test n°3	0.720	156	0.153	0.036	0.189	0.000	6.62
Mean =		0.727	156	0.147	0.037	0.184	0.001	6.59
SD =		0.010	0.60	0.012	0.003	0.014	0.001	0.03
%SD =		1.3	0.4	8.1	7.2	7.5	173.2	0.38

LAB 3	Test n°1	0.645	159	0.130	0.048	0.178	0.001	6.67
	Test n°2	0.718	159	0.123	0.036	0.159	0.001	6.68
	Test n°3	0.650	161	0.113	0.035	0.148	0.001	6.75
Mean =		0.67	160	0.122	0.040	0.162	0.001	6.70
SD =		0.041	1.15	0.009	0.007	0.015	0.000	0.04
%SD =		6.1	0.7	7.0	18.2	9.4	19.0	0.7

LAB 4	Test n°1	0.787	162	0.120	0.070	0.190	-	6.83
	Test n°2	0.714	162	0.104	0.035	0.139	-	6.82
	Test n°3	0.676	161	0.112	0.049	0.161	-	6.78
Mean =		0.726	162	0.112	0.051	0.163	-	6.81
SD =		0.056	0.55	0.008	0.018	0.026	-	0.03
%SD =		7.8	0.3	7.1	34.3	15.7	-	0.4

Cold EDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	*Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.650	157	0.124	0.050	0.174	0.001	6.65
	Test n°2	0.639	158	0.113	0.038	0.151	0.001	6.69
	Test n°3	0.709	155	0.111	0.047	0.158	0.001	6.57
LAB 2	Test n°1	0.723	156	0.154	0.040	0.194	0.000	6.59
	Test n°2	0.738	155	0.133	0.035	0.168	0.002	6.57
	Test n°3	0.720	156	0.153	0.036	0.189	0.000	6.62
LAB 3	Test n°1	0.645	159	0.130	0.048	0.178	0.001	6.67
	Test n°2	0.718	159	0.123	0.036	0.159	0.001	6.68
	Test n°3	0.650	161	0.113	0.035	0.148	0.001	6.75
LAB 4	Test n°1	0.787	162	0.120	0.070	0.190	-	6.83
	Test n°2	0.714	162	0.104	0.035	0.139	-	6.82
	Test n°3	0.676	161	0.112	0.049	0.161	-	6.78
Mean =		0.697	158	0.124	0.043	0.167	0.001	6.68
SD =		0.046	2.67	0.016	0.010	0.018	0.001	0.09
%SD =		6.5	1.7	12.9	23.9	10.7	74.9	1.4

Note . (*) = Values, given for information.

Cold EDC Test Renault MEGANE tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n°0	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

LAB 1	Test n°1	7.48E+11	2.37E+11	1.55E+11	3.10E+10	5.41E+09	1.67E+09	7.18E+08	2.45E+08	1.35E+08	6.67E+07	5.57E+07	4.12E+07
	Test n°2	6.66E+11	2.07E+11	1.44E+11	3.01E+10	5.64E+09	1.40E+09	5.95E+08	2.78E+08	1.22E+08	9.69E+07	4.96E+07	3.42E+07
	Test n°3	1.29E+12	4.56E+11	1.79E+11	3.23E+10	5.80E+09	1.97E+09	8.25E+08	3.88E+08	2.14E+08	1.15E+08	7.65E+07	7.21E+07
	Mean =	9.01E+11	3.00E+11	1.60E+11	3.11E+10	5.61E+09	1.68E+09	7.12E+08	3.03E+08	1.57E+08	9.27E+07	6.06E+07	4.92E+07
	SD =	3.39E+11	1.36E+11	1.80E+10	1.07E+09	1.94E+08	2.84E+08	1.15E+08	7.50E+07	4.96E+07	2.42E+07	1.41E+07	2.01E+07
	%SD =	37.6	45.3	11.3	3.4	3.5	16.9	16.2	24.7	31.7	26.1	23.3	41.0

1.18E+12
1.06E+12
1.97E+12
1.40E+12
4.94E+11
35.3

LAB 1	Test n°1	6.92E+11	2.68E+11	6.36E+10	1.52E+10	2.07E+09	1.74E+09	6.34E+08	1.49E+07	1.09E+06	2.58E+06	3.61E+06	2.65E+07
	Test n°2	7.79E+11	2.84E+11	1.37E+11	3.28E+10	6.10E+09	1.68E+09	1.47E+09	1.09E+08	7.28E+07	3.30E+07	1.99E+07	7.52E+07
	Test n°3	4.12E+11	1.16E+11	8.65E+10	2.85E+10	6.12E+09	1.67E+09	1.15E+09	2.41E+08	1.14E+08	5.76E+07	2.92E+07	6.41E+07
	Mean =	6.28E+11	2.23E+11	9.58E+10	2.55E+10	4.77E+09	1.70E+09	1.08E+09	1.22E+08	6.26E+07	3.11E+07	1.76E+07	5.53E+07
	SD =	1.92E+11	9.24E+10	3.76E+10	9.18E+09	2.33E+09	4.09E+07	4.20E+08	1.14E+08	5.72E+07	2.76E+07	1.30E+07	2.56E+07
	%SD =	30.6	41.5	39.3	36.0	49.0	2.4	38.8	93.2	91.3	88.8	73.8	46.1

1.04E+12
1.24E+12
6.52E+11
9.79E+11
3.00E+11
30.7

LAB 3	Test n°1	8.79E+11	8.45E+10	8.39E+10	5.58E+10	2.63E+10	3.67E+09	1.53E+09	5.89E+08	2.49E+08	1.03E+08	6.49E+07	3.40E+07
	Test n°2	9.09E+11	1.12E+11	1.12E+11	6.49E+10	2.82E+10	3.79E+09	1.47E+09	6.08E+08	2.61E+08	8.90E+07	5.75E+07	4.17E+07
	Test n°3	7.59E+11	7.76E+10	7.40E+10	4.30E+10	1.89E+10	3.06E+09	1.20E+09	5.63E+08	2.27E+08	1.01E+08	7.36E+07	2.41E+07
	Mean =	8.49E+11	9.15E+10	9.00E+10	5.46E+10	2.45E+10	3.50E+09	1.40E+09	5.87E+08	2.46E+08	9.76E+07	6.53E+07	3.33E+07
	SD =	7.93E+10	1.85E+10	1.98E+10	1.10E+10	4.91E+09	3.89E+08	1.75E+08	2.26E+07	1.76E+07	7.53E+06	8.04E+06	8.83E+06
	%SD =	9.3	20.2	22.0	20.2	20.1	11.1	12.5	3.9	7.1	7.7	12.3	26.5

1.14E+12
1.23E+12
9.78E+11
1.12E+12
1.29E+11
11.9

LAB 4	Test n°1	1.02E+12	4.05E+11	2.37E+11	1.37E+11	3.90E+10	6.94E+09	1.77E+09	6.75E+08	2.06E+08	1.56E+08	1.07E+08	7.94E+07
	Test n°2	1.39E+12	1.77E+11	1.24E+11	4.67E+10	9.91E+09	2.90E+09	1.38E+09	6.89E+08	2.54E+08	1.61E+08	8.63E+07	5.41E+07
	Test n°3	9.24E+11	1.93E+11	1.44E+11	4.60E+10	8.50E+09	2.98E+09	1.42E+09	6.54E+08	2.80E+08	1.37E+08	8.84E+07	6.38E+07
	Mean =	1.11E+12	2.59E+11	1.68E+11	7.66E+10	1.91E+10	4.27E+09	1.52E+09	6.73E+08	2.47E+08	1.51E+08	9.39E+07	6.58E+07
	SD =	2.48E+11	1.27E+11	6.03E+10	5.24E+10	1.72E+10	2.31E+09	2.18E+08	1.74E+07	3.74E+07	1.30E+07	1.15E+07	1.27E+07
	%SD =	22.2	49.3	35.9	68.4	89.9	54.0	14.3	2.6	15.2	8.6	12.2	19.4

1.85E+12
1.76E+12
1.32E+12
1.64E+12
2.82E+11
17.2

REPRODUCIBILITY Particle Number (1/km)

Stage n°0	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

LAB 1	Test n°1	7.48E+11	2.37E+11	1.55E+11	3.10E+10	5.41E+09	1.67E+09	7.18E+08	2.45E+08	1.35E+08	6.67E+07	5.57E+07	4.12E+07
	Test n°2	6.66E+11	2.07E+11	1.44E+11	3.01E+10	5.64E+09	1.40E+09	5.95E+08	2.78E+08	1.22E+08	9.69E+07	4.96E+07	3.42E+07
	Test n°3	1.29E+12	4.56E+11	1.79E+11	3.23E+10	5.80E+09	1.97E+09	8.25E+08	3.88E+08	2.14E+08	1.15E+08	7.65E+07	7.21E+07
LAB 2	Test n°1	6.92E+11	2.68E+11	6.36E+10	1.52E+10	2.07E+09	1.74E+09	6.34E+08	1.49E+07	1.09E+06	2.58E+06	3.61E+06	2.65E+07
	Test n°2	7.79E+11	2.84E+11	1.37E+11	3.28E+10	6.10E+09	1.68E+09	1.47E+09	1.09E+08	7.28E+07	3.30E+07	1.99E+07	7.52E+07
	Test n°3	4.12E+11	1.16E+11	8.65E+10	2.85E+10	6.12E+09	1.67E+09	1.15E+09	2.41E+08	1.14E+08	5.76E+07	2.92E+07	6.41E+07
LAB 3	Test n°1	8.79E+11	8.45E+10	8.39E+10	5.58E+10	2.63E+10	3.67E+09	1.53E+09	5.89E+08	2.49E+08	1.03E+08	6.49E+07	3.40E+07
	Test n°2	9.09E+11	1.12E+11	1.12E+11	6.49E+10	2.82E+10	3.79E+09	1.47E+09	6.08E+08	2.61E+08	8.90E+07	5.75E+07	4.17E+07
	Test n°3	7.59E+11	7.76E+10	7.40E+10	4.30E+10	1.89E+10	3.06E+09	1.20E+09	5.63E+08	2.27E+08	1.01E+08	7.36E+07	2.41E+07
LAB 4	Test n°1	1.02E+12	4.05E+11	2.37E+11	1.37E+11	3.90E+10	6.94E+09	1.77E+09	6.75E+08	2.06E+08	1.56E+08	1.07E+08	7.94E+07
	Test n°2	1.39E+12	1.77E+11	1.24E+11	4.67E+10	9.91E+09	2.90E+09	1.38E+09	6.89E+08	2.54E+08	1.61E+08	8.63E+07	5.41E+07
	Test n°3	9.24E+11	1.93E+11	1.44E+11	4.60E+10	8.50E+09	2.98E+09	1.42E+09	6.54E+08	2.80E+08	1.37E+08	8.84E+07	6.38E+07
	Mean =	8.73E+11	2.18E+11	1.28E+11	4.70E+10	1.35E+10	2.79E+09	1.18E+09	4.21E+08	1.78E+08	9.32E+07	5.93E+07	5.09E+07
	SD =	2.69E+11	1.21E+11	4.93E+10	3.14E+10	1.18E+10	1.55E+09	3.95E+08	2.38E+08	8.75E+07	4.76E+07	3.02E+07	1.97E+07
	%SD =	30.8	55.3	38.4	66.9	87.2	55.7	33.5	56.4	49.1	51.1	51.0	38.6

1.18E+12
1.06E+12
1.97E+12
1.04E+12
1.24E+12
6.52E+11
1.14E+12
1.23E+12
9.78E+11
1.85E+12
1.76E+12
1.32E+12
1.28E+12
3.87E+11
30.2

Reproducibility limit

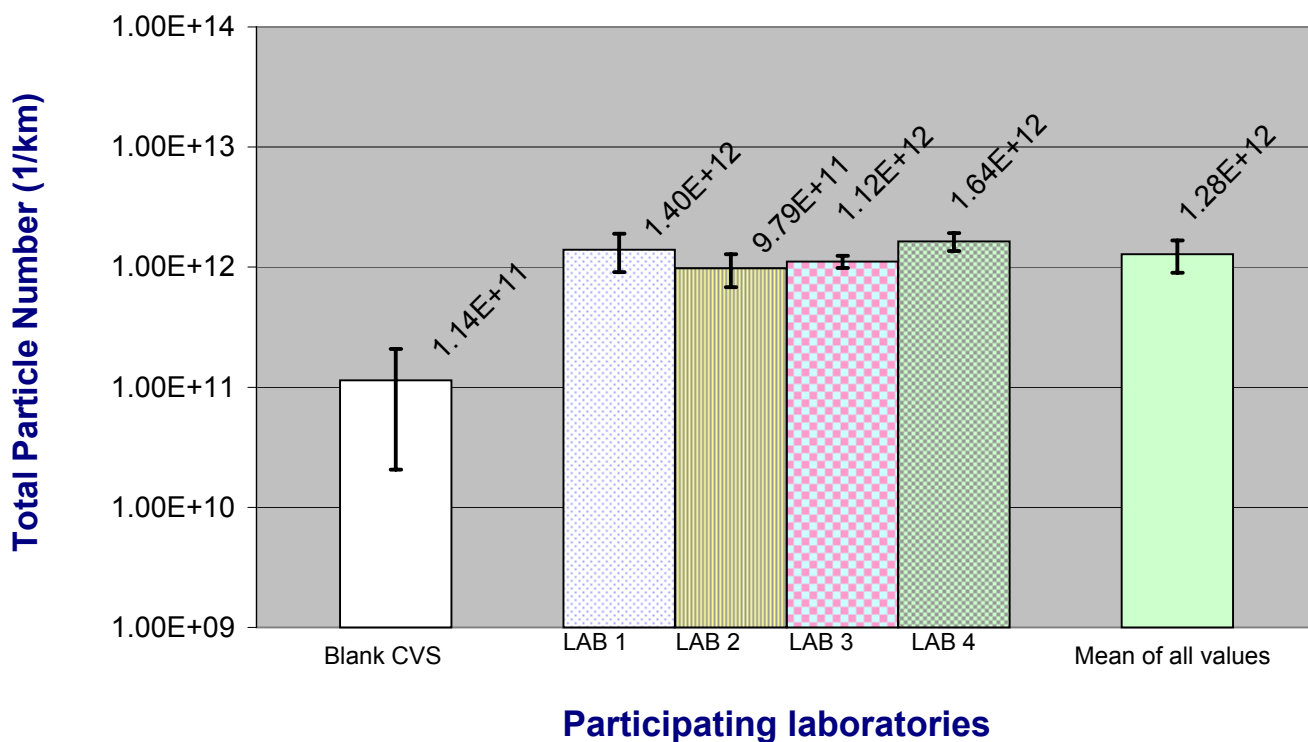
Cold EDC Test

Only the average results are presented

Etage n° =	Dp (µm)	Blank CVS before the test	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	7.62E+10	9.01E+11	6.28E+11	8.49E+11	1.11E+12	8.73E+11
2	0.030	2.24E+10	3.00E+11	2.23E+11	9.15E+10	2.59E+11	2.18E+11
3	0.063	7.60E+09	1.60E+11	9.58E+10	9.00E+10	1.68E+11	1.28E+11
4	0.109	4.45E+09	3.11E+10	2.55E+10	5.46E+10	7.66E+10	4.70E+10
5	0.173	1.83E+09	5.61E+09	4.77E+09	2.45E+10	1.91E+10	1.35E+10
6	0.267	8.50E+08	1.68E+09	1.70E+09	3.50E+09	4.27E+09	2.79E+09
7	0.407	4.43E+08	7.12E+08	1.08E+09	1.40E+09	1.52E+09	1.18E+09
8	0.655	1.71E+08	3.03E+08	1.22E+08	5.87E+08	6.73E+08	4.21E+08
9	1.021	8.02E+07	1.57E+08	6.26E+07	2.46E+08	2.47E+08	1.78E+08
10	1.655	4.12E+07	9.27E+07	3.11E+07	9.76E+07	1.51E+08	9.32E+07
11	2.520	2.46E+07	6.06E+07	1.76E+07	6.53E+07	9.39E+07	5.93E+07
12	4.085	1.85E+07	4.92E+07	5.53E+07	3.33E+07	6.58E+07	5.09E+07
Total Particle Number (1/km) =		1.14E+11	1.40E+12	9.79E+11	1.12E+12	1.64E+12	1.28E+12
SD =		9.36E+10	4.94E+11	3.00E+11	1.29E+11	2.82E+11	3.87E+11

Round robin exercise

Renault MEGANE tested in Cold EDC Test



For information

Cold EDC Test

Renault MEGANE tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY

dN/dlogDp (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12		
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085		
													SUM	
LAB 1	Test n°1	1.21E+12	7.88E+11	6.34E+11	1.48E+11	2.86E+10	8.94E+09	3.41E+09	1.28E+09	6.37E+08	3.62E+08	2.66E+08	1.00E+08	2.83E+12
	Test n°2	1.08E+12	6.88E+11	5.88E+11	1.44E+11	2.98E+10	7.50E+09	2.82E+09	1.45E+09	5.78E+08	5.26E+08	2.37E+08	8.35E+07	2.54E+12
	Test n°3	2.09E+12	1.51E+12	7.32E+11	1.54E+11	3.07E+10	1.05E+10	3.91E+09	2.03E+09	1.01E+09	6.22E+08	3.66E+08	1.76E+08	4.54E+12
	Mean =	1.46E+12	9.97E+11	6.51E+11	1.49E+11	2.97E+10	8.99E+09	3.38E+09	1.58E+09	7.42E+08	5.04E+08	2.90E+08	1.20E+08	3.30E+12
SD =	5.48E+11	4.51E+11	7.34E+10	5.14E+09	1.03E+09	1.52E+09	5.46E+08	3.92E+08	2.35E+08	1.32E+08	6.75E+07	4.91E+07	1.08E+12	
%SD =	37.6	45.3	11.3	3.4	3.5	16.9	16.2	24.7	31.7	26.1	23.3	41.0	32.7	
LAB 1	Test n°1	1.12E+12	9.12E+11	2.87E+11	6.96E+10	9.05E+09	1.07E+10	3.09E+09	7.90E+07	4.78E+06	1.48E+07	1.62E+07	6.73E+07	2.41E+12
	Test n°2	1.26E+12	9.67E+11	6.18E+11	1.50E+11	2.67E+10	1.03E+10	7.14E+09	5.78E+08	3.20E+08	1.89E+08	8.93E+07	1.91E+08	3.04E+12
	Test n°3	6.67E+11	3.96E+11	3.90E+11	1.31E+11	2.67E+10	1.02E+10	5.59E+09	1.27E+09	5.02E+08	3.31E+08	1.31E+08	1.62E+08	1.63E+12
	Mean =	1.02E+12	7.58E+11	4.32E+11	1.17E+11	2.08E+10	1.04E+10	5.27E+09	6.44E+08	2.76E+08	1.78E+08	7.89E+07	1.40E+08	2.36E+12
SD =	3.11E+11	3.15E+11	1.70E+11	4.21E+10	1.02E+10	2.51E+08	2.05E+09	6.00E+08	2.52E+08	1.58E+08	5.82E+07	6.46E+07	7.09E+11	
%SD =	30.6	41.5	39.3	36.0	49.0	2.4	38.8	93.2	91.3	88.8	73.8	46.1	30.0	
LAB 3	Test n°1	1.46E+12	3.05E+11	3.57E+11	2.39E+11	1.15E+11	2.25E+10	7.41E+09	3.12E+09	1.09E+09	5.95E+08	2.90E+08	8.64E+07	2.51E+12
	Test n°2	1.51E+12	4.06E+11	4.78E+11	2.77E+11	1.24E+11	2.33E+10	7.12E+09	3.22E+09	1.15E+09	5.14E+08	2.57E+08	1.06E+08	2.83E+12
	Test n°3	1.26E+12	2.80E+11	3.15E+11	1.84E+11	8.28E+10	1.88E+10	5.82E+09	2.98E+09	9.96E+08	5.80E+08	3.28E+08	6.11E+07	2.15E+12
	Mean =	1.41E+12	3.30E+11	3.83E+11	2.33E+11	1.07E+11	2.15E+10	6.78E+09	3.11E+09	1.08E+09	5.63E+08	2.92E+08	8.44E+07	2.50E+12
SD =	1.32E+11	6.66E+10	8.43E+10	4.71E+10	2.15E+10	2.39E+09	8.48E+08	1.20E+08	7.71E+07	4.34E+07	3.59E+07	2.24E+07	3.39E+11	
%SD =	9.3	20.2	22.0	20.2	20.1	11.1	12.5	3.9	7.1	7.7	12.3	26.5	13.6	
LAB 4	Test n°1	1.78E+12	1.26E+12	9.94E+11	6.84E+11	2.07E+11	3.79E+10	8.59E+09	3.50E+09	9.84E+08	8.57E+08	5.11E+08	2.04E+08	4.97E+12
	Test n°2	2.43E+12	5.51E+11	5.20E+11	2.33E+11	5.26E+10	1.58E+10	6.68E+09	3.57E+09	1.21E+09	8.83E+08	4.11E+08	1.39E+08	3.81E+12
	Test n°3	1.61E+12	5.99E+11	6.03E+11	2.29E+11	4.51E+10	1.63E+10	6.86E+09	3.39E+09	1.34E+09	7.49E+08	4.21E+08	1.64E+08	3.12E+12
	Mean =	1.94E+12	8.03E+11	7.06E+11	3.82E+11	1.02E+11	2.33E+10	7.38E+09	3.49E+09	1.18E+09	8.29E+08	4.48E+08	1.69E+08	3.97E+12
SD =	4.31E+11	3.95E+11	2.53E+11	2.61E+11	9.13E+10	1.26E+10	1.05E+09	9.00E+07	1.78E+08	7.11E+07	5.48E+07	3.28E+07	9.39E+11	
%SD =	22.2	49.3	35.9	68.4	89.9	54.0	14.3	2.6	15.2	8.6	12.2	19.4	23.7	

REPRODUCIBILITY

dN/dlogDp (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12		
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085		
													SUM	
LAB 1	Test n°1	1.21E+12	7.88E+11	6.34E+11	1.48E+11	2.86E+10	8.94E+09	3.41E+09	1.28E+09	6.37E+08	3.62E+08	2.66E+08	1.00E+08	2.83E+12
	Test n°2	1.08E+12	6.88E+11	5.88E+11	1.44E+11	2.98E+10	7.50E+09	2.82E+09	1.45E+09	5.78E+08	5.26E+08	2.37E+08	8.35E+07	2.54E+12
	Test n°3	2.09E+12	1.51E+12	7.32E+11	1.54E+11	3.07E+10	1.05E+10	3.91E+09	2.03E+09	1.01E+09	6.22E+08	3.66E+08	1.76E+08	4.54E+12
LAB 2	Test n°1	1.12E+12	9.12E+11	2.87E+11	6.96E+10	9.05E+09	1.07E+10	3.09E+09	7.90E+07	4.78E+06	1.48E+07	1.62E+07	6.73E+07	2.41E+12
	Test n°2	1.26E+12	9.67E+11	6.18E+11	1.50E+11	2.67E+10	1.03E+10	7.14E+09	5.78E+08	3.20E+08	1.89E+08	8.93E+07	1.91E+08	3.04E+12
	Test n°3	6.67E+11	3.96E+11	3.90E+11	1.31E+11	2.67E+10	1.02E+10	5.59E+09	1.27E+09	5.02E+08	3.31E+08	1.31E+08	1.62E+08	1.63E+12
LAB 3	Test n°1	1.46E+12	3.05E+11	3.57E+11	2.39E+11	1.15E+11	2.25E+10	7.41E+09	3.12E+09	1.09E+09	5.95E+08	2.90E+08	8.64E+07	2.51E+12
	Test n°2	1.51E+12	4.06E+11	4.78E+11	2.77E+11	1.24E+11	2.33E+10	7.12E+09	3.22E+09	1.15E+09	5.14E+08	2.57E+08	1.06E+08	2.83E+12
	Test n°3	1.26E+12	2.80E+11	3.15E+11	1.84E+11	8.28E+10	1.88E+10	5.82E+09	2.98E+09	9.96E+08	5.80E+08	3.28E+08	6.11E+07	2.15E+12
LAB 4	Test n°1	1.78E+12	1.26E+12	9.94E+11	6.84E+11	2.07E+11	3.79E+10	8.59E+09	3.50E+09	9.84E+08	8.57E+08	5.11E+08	2.04E+08	4.97E+12
	Test n°2	2.43E+12	5.51E+11	5.20E+11	2.33E+11	5.26E+10	1.58E+10	6.68E+09	3.57E+09	1.21E+09	8.83E+08	4.11E+08	1.39E+08	3.81E+12
	Test n°3	1.61E+12	5.99E+11	6.03E+11	2.29E+11	4.51E+10	1.63E+10	6.86E+09	3.39E+09	1.34E+09	7.49E+08	4.21E+08	1.64E+08	3.12E+12
Mean =	1.46E+12	7.22E+11	5.43E+11	2.20E+11	6.48E+10	1.61E+10	5.70E+09	2.21E+09	8.18E+08	5.19E+08	2.77E+08	1.28E+08	3.03E+12	
SD =	4.75E+11	3.86E+11	2.00E+11	1.57E+11	5.78E+10	8.67E+09	1.94E+09	1.24E+09	4.05E+08	2.60E+08	1.45E+08	5.02E+07	9.71E+11	
%SD =	33	53	37	71	89	54	34	56	49	50	52	39	32	

Reproducibility limit

ECE Test

Renault MEGANE

ECE Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	1.76	205	0.332	0.050	0.382	0.001	8.781
	Test n°2	1.71	206	0.303	0.047	0.349	0.001	8.829
	Test n°3	1.93	202	0.298	0.052	0.350	0.002	8.653
Mean =		1.80	204	0.311	0.049	0.360	0.001	8.75
SD =		0.11	2.32	0.018	0.003	0.019	0.001	0.09
%SD =		6.2	1.1	5.9	5.3	5.2	45.3	1.0

LAB 1	Test n°1	1.88	202	0.411	0.061	0.472	-	8.64
	Test n°2	1.93	202	0.355	0.051	0.406	-	8.65
	Test n°3	1.89	203	0.409	0.058	0.467	-	8.670
Mean =		1.90	202	0.392	0.057	0.448	-	8.65
SD =		0.02	0.35	0.032	0.005	0.037	-	0.02
%SD =		1.2	0.2	8.1	9.1	8.2	-	0.2

LAB 3	Test n°1	1.72	207	0.341	0.066	0.406	0.002	8.76
	Test n°2	1.89	207	0.319	0.059	0.378	0.001	8.79
	Test n°3	1.74	212	0.297	0.068	0.365	0.001	8.97
Mean =		1.78	209	0.319	0.064	0.383	0.001	8.84
SD =		0.09	2.94	0.022	0.005	0.021	0.001	0.11
%SD =		5.2	1.4	6.8	7.3	5.5	43.3	1.3

LAB 4	Test n°1	2.06	213	0.315	0.060	0.375	-	9.07
	Test n°2	1.86	212	0.280	0.058	0.338	-	9.01
	Test n°3	1.77	210	0.298	0.059	0.357	-	8.93
Mean =		1.89	212	0.298	0.059	0.357	-	9.00
SD =		0.15	1.47	0.018	0.001	0.019	-	0.07
%SD =		7.9	0.7	5.9	1.7	5.2	-	0.8

ECE Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)	
LAB 1	Test n°1	1.76	205	0.332	0.050	0.382	0.001	8.781	LAB 1
	Test n°2	1.71	206	0.303	0.047	0.349	0.001	8.829	
	Test n°3	1.93	202	0.298	0.052	0.350	0.002	8.653	
LAB 2	Test n°1	1.88	202	0.411	0.061	0.472	-	8.64	LAB 2
	Test n°2	1.93	202	0.355	0.051	0.406	-	8.65	
	Test n°3	1.89	203	0.409	0.058	0.467	-	8.67	
LAB 3	Test n°1	1.72	207	0.341	0.066	0.406	0.002	8.76	LAB 3
	Test n°2	1.89	207	0.319	0.059	0.378	0.001	8.79	
	Test n°3	1.74	212	0.297	0.068	0.365	0.001	8.97	
LAB 4	Test n°1	2.06	213	0.315	0.060	0.375	-	9.07	LAB 4
	Test n°2	1.86	212	0.280	0.058	0.338	-	9.01	
	Test n°3	1.77	210	0.298	0.059	0.357	-	8.93	
Mean =		1.84	207	0.330	0.057	0.387	0.001	8.81	
SD =		0.11	4.20	0.043	0.006	0.044	0.001	0.15	
%SD =		5.7	2.0	13.0	11.3	11.3	40.6	1.7	

Cold ECE Test Renault MEGANE tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

LAB 1	Test n°1	1.82E+12	5.91E+11	4.05E+11	7.76E+10	1.00E+10	2.64E+09	1.32E+09	5.12E+08	2.79E+08	1.33E+08	1.16E+08	8.90E+07	2.91E+12
	Test n°2	1.54E+12	5.18E+11	3.80E+11	7.76E+10	1.17E+10	2.50E+09	1.21E+09	6.31E+08	2.67E+08	1.96E+08	1.13E+08	7.98E+07	2.53E+12
Test n°3	3.22E+12	1.19E+12	4.77E+11	8.46E+10	1.24E+10	3.86E+09	1.81E+09	9.44E+08	4.84E+08	2.55E+08	1.86E+08	1.67E+08	5.00E+12	
Mean =	2.19E+12	7.68E+11	4.21E+11	7.99E+10	1.13E+10	3.00E+09	1.45E+09	6.96E+08	3.43E+08	1.94E+08	1.38E+08	1.12E+08	3.48E+12	
SD =	9.02E+11	3.70E+11	5.05E+10	4.07E+09	1.20E+09	7.50E+08	3.19E+08	2.23E+08	1.22E+08	6.10E+07	4.11E+07	4.79E+07	1.33E+12	
%SD =	41.1	48.3	12.0	5.1	10.6	25.0	22.1	32.1	35.7	31.4	29.7	42.8	38.2	

LAB 1	Test n°1	1.55E+12	5.66E+11	1.72E+11	4.07E+10	5.10E+09	3.22E+09	1.34E+09	2.66E+07	2.35E+06	5.46E+06	7.07E+06	6.23E+07	2.34E+12
	Test n°2	1.98E+12	7.16E+11	3.48E+11	7.91E+10	1.29E+10	3.59E+09	3.32E+09	1.94E+08	1.33E+08	5.95E+07	3.87E+07	1.81E+08	3.14E+12
Test n°3	9.27E+11	2.76E+11	2.19E+11	6.75E+10	1.28E+10	3.30E+09	2.37E+09	4.28E+08	1.97E+08	1.01E+08	4.99E+07	1.34E+08	1.51E+12	
Mean =	1.48E+12	5.19E+11	2.46E+11	6.24E+10	1.03E+10	3.37E+09	2.34E+09	2.16E+08	1.11E+08	5.54E+07	3.19E+07	1.26E+08	2.33E+12	
SD =	5.28E+11	2.24E+11	9.15E+10	1.97E+10	4.49E+09	1.92E+08	9.87E+08	2.01E+08	9.92E+07	4.79E+07	2.22E+07	5.97E+07	8.16E+11	
%SD =	35.6	43.1	37.2	31.6	43.7	5.7	42.1	93.2	89.6	86.6	69.6	47.5	35.0	

LAB 3	Test n°1	1.79E+12	1.94E+11	2.03E+11	1.35E+11	6.28E+10	7.90E+09	2.76E+09	1.01E+09	4.26E+08	1.85E+08	1.24E+08	7.04E+07	2.39E+12
	Test n°2	1.61E+12	2.45E+11	2.59E+11	1.50E+11	6.41E+10	7.53E+09	2.34E+09	9.72E+08	4.14E+08	1.49E+08	1.11E+08	7.95E+07	2.34E+12
Test n°3	1.56E+12	1.7E+11	1.7E+11	1.0E+11	4.4E+10	6.2E+09	2.1E+09	9.6E+08	4.0E+08	1.8E+08	1.4E+08	5.3E+07	2.05E+12	
Mean =	1.65E+12	2.02E+11	2.12E+11	1.28E+11	5.69E+10	7.22E+09	2.39E+09	9.79E+08	4.13E+08	1.73E+08	1.24E+08	6.77E+07	2.28E+12	
SD =	1.20E+11	3.92E+10	4.40E+10	2.50E+10	1.14E+10	8.70E+08	3.46E+08	2.74E+07	1.36E+07	2.04E+07	1.31E+07	1.32E+07	1.84E+11	
%SD =	7.3	19.4	20.8	19.5	20.1	12.0	14.5	2.8	3.3	11.8	10.6	19.5	8.1	

LAB 4	Test n°1	1.63E+12	4.79E+11	3.20E+11	1.03E+11	1.61E+10	3.40E+09	1.89E+09	9.04E+08	2.45E+08	2.26E+08	1.55E+08	1.14E+08	2.55E+12
	Test n°2	1.20E+12	3.17E+11	2.72E+11	9.44E+10	1.66E+10	4.24E+09	2.09E+09	1.02E+09	3.61E+08	2.58E+08	1.45E+08	9.64E+07	1.91E+12
Test n°3	1.29E+12	4.52E+11	3.57E+11	1.04E+11	1.58E+10	4.94E+09	2.34E+09	1.05E+09	4.50E+08	2.28E+08	1.63E+08	1.24E+08	2.22E+12	
Mean =	1.37E+12	4.16E+11	3.16E+11	1.01E+11	1.62E+10	4.19E+09	2.10E+09	9.93E+08	3.52E+08	2.37E+08	1.54E+08	1.11E+08	2.23E+12	
SD =	2.28E+11	8.69E+10	4.23E+10	5.43E+09	4.10E+08	7.71E+08	2.24E+08	7.80E+07	1.03E+08	1.79E+07	8.67E+06	1.39E+07	3.24E+11	
%SD =	16.6	20.9	13.4	5.4	2.5	18.4	10.6	7.9	29.3	7.5	5.6	12.5	14.5	

REPRODUCIBILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

LAB 1	Test n°1	1.82E+12	5.91E+11	4.05E+11	7.76E+10	1.00E+10	2.64E+09	1.32E+09	5.12E+08	2.79E+08	1.33E+08	1.16E+08	8.90E+07	2.91E+12
	Test n°2	1.54E+12	5.18E+11	3.80E+11	7.76E+10	1.17E+10	2.50E+09	1.21E+09	6.31E+08	2.67E+08	1.96E+08	1.13E+08	7.98E+07	2.53E+12
Test n°3	3.22E+12	1.19E+12	4.77E+11	8.46E+10	1.24E+10	3.86E+09	1.81E+09	9.44E+08	4.84E+08	2.55E+08	1.86E+08	1.67E+08	5.00E+12	
LAB 2	Test n°1	1.55E+12	5.66E+11	1.72E+11	4.07E+10	5.10E+09	3.22E+09	1.34E+09	2.66E+07	2.35E+06	5.46E+06	7.07E+06	6.23E+07	2.34E+12
	Test n°2	1.98E+12	7.16E+11	3.48E+11	7.91E+10	1.29E+10	3.59E+09	3.32E+09	1.94E+08	1.33E+08	5.95E+07	3.87E+07	1.81E+08	3.14E+12
Test n°3	9.27E+11	2.76E+11	2.19E+11	6.75E+10	1.28E+10	3.30E+09	2.37E+09	4.28E+08	1.97E+08	1.01E+08	4.99E+07	1.34E+08	1.51E+12	
LAB 3	Test n°1	1.79E+12	1.94E+11	2.03E+11	1.35E+11	6.28E+10	7.90E+09	2.76E+09	1.01E+09	4.26E+08	1.85E+08	1.24E+08	7.04E+07	2.39E+12
	Test n°2	1.61E+12	2.45E+11	2.59E+11	1.50E+11	6.41E+10	7.53E+09	2.34E+09	9.72E+08	4.14E+08	1.49E+08	1.11E+08	7.95E+07	2.34E+12
Test n°3	1.56E+12	1.68E+11	1.72E+11	1.01E+11	4.37E+10	6.24E+09	2.07E+09	9.56E+08	3.99E+08	1.85E+08	1.37E+08	5.34E+07	2.05E+12	
LAB 4	Test n°1	1.63E+12	4.79E+11	3.20E+11	1.03E+11	1.61E+10	3.40E+09	1.89E+09	9.04E+08	2.45E+08	2.26E+08	1.55E+08	1.14E+08	2.55E+12
	Test n°2	1.20E+12	3.17E+11	2.72E+11	9.44E+10	1.66E+10	4.24E+09	2.09E+09	1.02E+09	3.61E+08	2.58E+08	1.45E+08	9.64E+07	1.91E+12
Test n°3	1.29E+12	4.52E+11	3.57E+11	1.04E+11	1.58E+10	4.94E+09	2.34E+09	1.05E+09	4.50E+08	2.28E+08	1.63E+08	1.24E+08	2.22E+12	
Mean =	1.68E+12	4.76E+11	2.99E+11	9.29E+10	2.37E+10	4.45E+09	2.07E+09	7.21E+08	3.05E+08	1.65E+08	1.12E+08	1.04E+08	2.57E+12	
SD =	5.65E+11	2.84E+11	9.81E+10	2.92E+10	2.08E+10	1.83E+09	6.17E+08	3.55E+08	1.45E+08	7.86E+07	5.39E+07	4.06E+07	8.75E+11	
%SD =	34	60	33	31	88	41	30	49	48	48	48	39	34.0	

Reproducibility limit

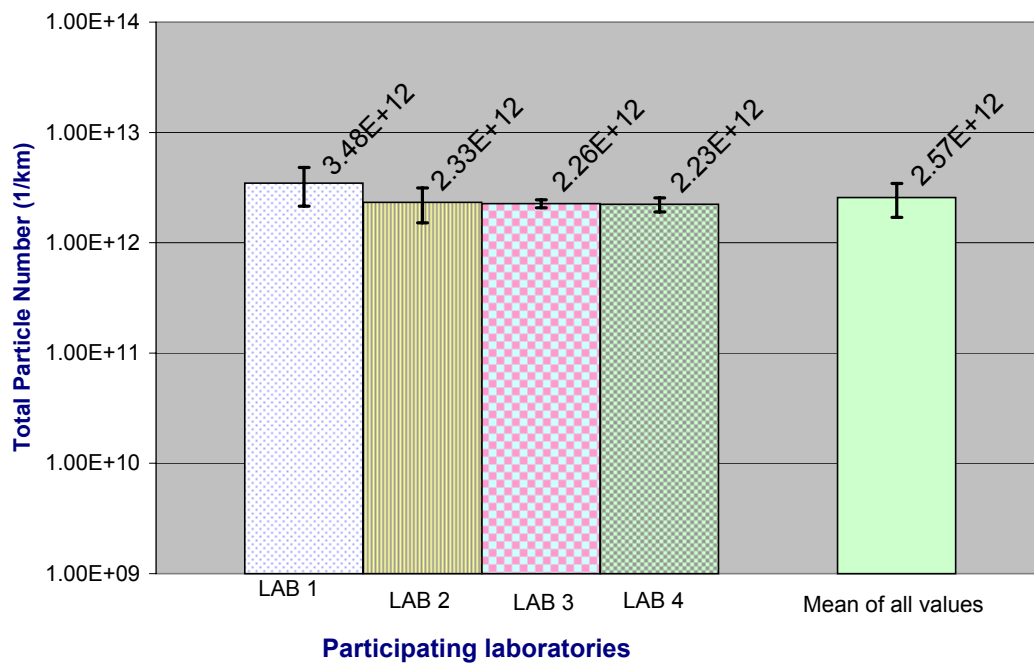
ECE Test

Only the average results are presented

Etage n° =	Dp (µm)	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	2.19E+12	1.48E+12	1.65E+12	1.37E+12	1.68E+12
2	0.030	7.68E+11	5.19E+11	2.02E+11	4.16E+11	4.76E+11
3	0.063	4.21E+11	2.46E+11	2.12E+11	3.16E+11	2.99E+11
4	0.109	7.99E+10	6.24E+10	1.28E+11	1.01E+11	9.29E+10
5	0.173	1.13E+10	1.03E+10	5.69E+10	1.62E+10	2.37E+10
6	0.267	3.00E+09	3.37E+09	7.22E+09	4.19E+09	4.45E+09
7	0.407	1.45E+09	2.34E+09	2.39E+09	2.10E+09	2.07E+09
8	0.655	6.96E+08	2.16E+08	9.79E+08	9.93E+08	7.21E+08
9	1.021	3.43E+08	1.11E+08	4.13E+08	3.52E+08	3.05E+08
10	1.655	1.94E+08	5.54E+07	1.73E+08	2.37E+08	1.65E+08
11	2.520	1.38E+08	3.19E+07	1.24E+08	1.54E+08	1.12E+08
12	4.085	1.12E+08	1.26E+08	6.77E+07	1.11E+08	1.04E+08
Total Particulate Number (1/km) =		3.48E+12	2.33E+12	2.26E+12	2.23E+12	2.57E+12
SD =		1.33E+12	8.16E+11	1.84E+11	3.24E+11	8.75E+11

Round robin exercise

Renault MEGANE tested in Cold ECE Test



EUDC Test

Renault MEGANE

EUDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)
LAB 1	Test n°1	0.007	129	0.003	0.051	0.054	0.001	5.421
	Test n°2	0.012	129	0.003	0.033	0.036	0.000	5.434
	Test n°3	0.000	128	0.002	0.044	0.046	0.001	5.362
Mean =		0.007	129	0.003	0.042	0.045	0.001	5.41
SD =		0.006	0.91	0.000	0.009	0.009	0.000	0.04
%SD =		90.79	0.7	10.2	21.0	20.2	50.0	0.7

LAB 1	Test n°1	0.041	128	0.003	0.028	0.031	0.000	5.38
	Test n°2	0.042	128	0.003	0.026	0.029	0.000	5.36
	Test n°3	0.031	129	0.003	0.023	0.026	0.000	5.42
Mean =		0.038	128	0.003	0.026	0.029	0.000	5.39
SD =		0.006	0.83	0.000	0.003	0.003	0.000	0.03
%SD =		16.0	0.6	0.0	9.8	8.8	-	0.6

LAB 3	Test n°1	0.016	131	0.007	0.038	0.045	0.001	5.46
	Test n°2	0.028	131	0.007	0.022	0.029	0.001	5.44
	Test n°3	0.012	131	0.005	0.016	0.021	0.001	5.46
Mean =		0.019	131	0.006	0.025	0.032	0.001	5.45
SD =		0.008	0.26	0.001	0.011	0.012	0.000	0.01
%SD =		44.6	0.2	18.2	44.9	38.6	0.00	0.2

LAB 4	Test n°1	0.048	133	0.007	0.076	0.083	-	5.53
	Test n°2	0.050	133	0.003	0.022	0.025	-	5.55
	Test n°3	0.044	133	0.004	0.043	0.047	-	5.54
Mean =		0.047	133	0.005	0.047	0.052	-	5.54
SD =		0.003	0.20	0.002	0.027	0.029	-	0.01
%SD =		6.5	0.2	44.6	57.9	56.7	-	0.2

EUDC Test		CO (g/km)	CO2 (g/km)	HC (g/km)	NOx (g/km)	HC+NOx (g/km)	Particulates (g/km)	Consumption BC (l/100km)	
LAB 1	Test n°1	0.007	129	0.003	0.051	0.054	0.001	5.42	LAB 1
	Test n°2	0.012	129	0.003	0.033	0.036	0.000	5.43	
	Test n°3	0.000	128	0.002	0.044	0.046	0.001	5.36	
LAB 2	Test n°1	0.041	128	0.003	0.028	0.031	0	5.38	LAB 2
	Test n°2	0.042	128	0.003	0.026	0.029	0	5.36	
	Test n°3	0.031	129	0.003	0.023	0.026	0	5.42	
LAB 3	Test n°1	0.016	131	0.007	0.038	0.045	0.001	5.46	LAB 3
	Test n°2	0.028	131	0.007	0.022	0.029	0.001	5.44	
	Test n°3	0.012	131	0.005	0.016	0.021	0.001	5.46	
LAB 4	Test n°1	0.048	133	0.007	0.076	0.083	-	5.53	LAB 4
	Test n°2	0.050	133	0.003	0.022	0.025	-	5.55	
	Test n°3	0.044	133	0.004	0.043	0.047	-	5.54	
Mean =		0.028	130	0.004	0.035	0.039	0.001	5.45	
SD =		0.017	1.93	0.002	0.017	0.017	0.000	0.07	
%SD =		63.2	1.5	44.6	47.4	43.9	86.4	1.2	

Cold EUDC Test Renault MEGANE tested with Hot dilution (around 120°C to prevent recondensation of the vapor).

REPEATABILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

LAB 1	Test n°1	1.28E+11	3.22E+10	1.07E+10	4.04E+09	2.73E+09	1.10E+09	3.67E+08	8.97E+07	5.09E+07	2.84E+07	2.08E+07	1.35E+07	1.80E+11
	Test n°2	1.56E+11	2.56E+10	6.81E+09	2.50E+09	2.13E+09	7.60E+08	2.39E+08	7.20E+07	3.78E+07	3.91E+07	1.25E+07	7.67E+06	1.94E+11
	Test n°3	1.64E+11	2.73E+10	6.31E+09	1.85E+09	1.98E+09	8.67E+08	2.53E+08	6.43E+07	5.60E+07	3.31E+07	1.30E+07	1.70E+07	2.03E+11
	Mean =	1.50E+11	2.84E+10	7.95E+09	2.80E+09	2.28E+09	9.11E+08	2.86E+08	7.53E+07	4.82E+07	3.35E+07	1.54E+07	1.27E+07	1.92E+11
	SD =	1.88E+10	3.40E+09	2.42E+09	1.12E+09	3.98E+08	1.76E+08	7.01E+07	1.30E+07	9.41E+06	5.38E+06	4.67E+06	4.72E+06	1.18E+10
	%SD =	12.6	12.0	30.5	40.2	17.5	19.4	24.5	17.3	19.5	16.0	30.2	37.1	6.1

LAB 1	Test n°1	1.87E+11	9.17E+10	1.12E+08	1.63E+08	2.91E+08	8.78E+08	2.16E+08	8.10E+06	3.42E+05	8.80E+05	1.56E+06	5.48E+06	2.80E+11
	Test n°2	7.70E+10	3.00E+10	1.33E+10	5.57E+09	2.11E+09	5.66E+08	3.81E+08	5.97E+07	3.77E+07	1.74E+07	8.84E+06	1.32E+07	1.29E+11
	Test n°3	1.09E+11	2.27E+10	8.89E+09	5.69E+09	2.18E+09	7.08E+08	4.33E+08	1.31E+08	6.54E+07	3.22E+07	1.71E+07	2.29E+07	1.50E+11
	Mean =	1.24E+11	4.81E+10	7.43E+09	3.81E+09	1.53E+09	7.17E+08	3.43E+08	6.64E+07	3.45E+07	1.68E+07	9.17E+06	1.39E+07	1.86E+11
	SD =	5.63E+10	3.79E+10	6.71E+09	3.16E+09	1.07E+09	1.56E+08	1.13E+08	6.19E+07	1.56E+07	7.77E+06	7.77E+06	8.73E+06	8.17E+10
	%SD =	45.3	78.7	90.3	82.9	70.2	21.8	33.1	93.3	94.7	93.1	84.8	63.0	43.8

LAB 3	Test n°1	3.57E+11	2.22E+10	1.62E+10	1.11E+10	5.60E+09	1.24E+09	8.06E+08	3.39E+08	1.44E+08	5.52E+07	3.08E+07	1.31E+07	4.15E+11
	Test n°2	4.99E+11	3.48E+10	2.59E+10	1.53E+10	7.21E+09	1.59E+09	9.52E+08	3.95E+08	1.72E+08	5.37E+07	2.61E+07	1.96E+07	5.85E+11
	Test n°3	2.95E+11	2.48E+10	1.66E+10	9.23E+09	4.48E+09	1.21E+09	6.92E+08	3.34E+08	1.26E+08	5.17E+07	3.64E+07	7.01E+06	3.52E+11
	Mean =	3.83E+11	2.73E+10	1.96E+10	1.19E+10	5.76E+09	1.35E+09	8.16E+08	3.56E+08	1.48E+08	5.35E+07	3.11E+07	1.32E+07	4.51E+11
	SD =	1.05E+11	6.61E+09	5.49E+09	3.12E+09	1.37E+09	2.14E+08	1.30E+08	3.36E+07	2.31E+07	1.77E+06	5.15E+06	6.28E+06	1.21E+11
	%SD =	27.3	24.2	28.0	26.3	23.9	15.9	16.0	9.4	15.7	3.3	16.6	47.4	26.8

LAB 4	Test n°1	6.68E+11	3.63E+11	1.88E+11	1.57E+11	5.23E+10	8.99E+09	1.71E+09	5.42E+08	1.84E+08	1.16E+08	7.93E+07	5.94E+07	1.44E+12
	Test n°2	1.51E+12	9.68E+10	3.77E+10	1.91E+10	6.04E+09	2.12E+09	9.70E+08	4.94E+08	1.91E+08	1.05E+08	5.20E+07	2.96E+07	1.67E+12
	Test n°3	7.15E+11	4.26E+10	2.01E+10	1.21E+10	4.28E+09	1.85E+09	8.87E+08	4.25E+08	1.82E+08	8.38E+07	4.53E+07	2.91E+07	7.97E+11
	Mean =	9.63E+11	1.67E+11	8.20E+10	6.27E+10	2.09E+10	4.32E+09	1.19E+09	4.87E+08	1.86E+08	1.02E+08	5.89E+07	3.94E+07	1.30E+12
	SD =	4.71E+11	1.71E+11	9.24E+10	8.17E+10	2.72E+10	4.05E+09	4.52E+08	5.90E+07	4.98E+06	1.65E+07	1.80E+07	1.74E+07	4.52E+11
	%SD =	48.9	102.4	112.7	130.2	130.5	93.7	38.0	12.1	2.7	16.2	30.6	44.1	34.7

REPRODUCIBILITY Particle Number (1/km)

Stage n.o	1	2	3	4	5	6	7	8	9	10	11	12
Dp (µm)	0.008	0.030	0.063	0.109	0.173	0.267	0.407	0.655	1.021	1.655	2.520	4.085

SUM

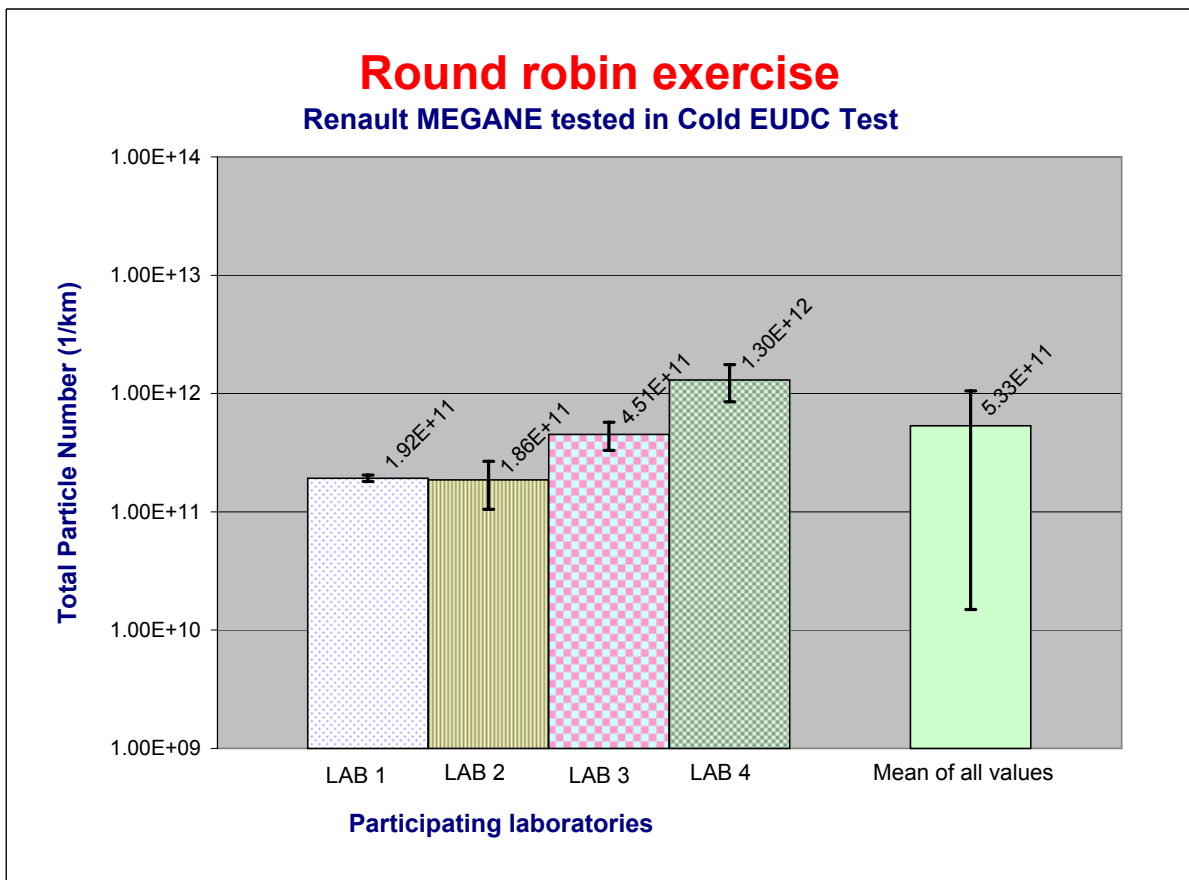
LAB 1	Test n°1	1.28E+11	3.22E+10	1.07E+10	4.04E+09	2.73E+09	1.10E+09	3.67E+08	8.97E+07	5.09E+07	2.84E+07	2.08E+07	1.35E+07	1.80E+11	LAB 1
	Test n°2	1.56E+11	2.56E+10	6.81E+09	2.50E+09	2.13E+09	7.60E+08	2.39E+08	7.20E+07	3.78E+07	3.91E+07	1.25E+07	7.67E+06	1.94E+11	
	Test n°3	1.64E+11	2.73E+10	6.31E+09	1.85E+09	1.98E+09	8.67E+08	2.53E+08	6.43E+07	5.60E+07	3.31E+07	1.30E+07	1.70E+07	2.03E+11	
LAB 2	Test n°1	1.87E+11	9.17E+10	1.12E+08	1.63E+08	2.91E+08	8.78E+08	2.16E+08	8.10E+06	3.42E+05	8.80E+05	1.56E+06	5.48E+06	2.80E+11	LAB 2
	Test n°2	7.70E+10	3.00E+10	1.33E+10	5.57E+09	2.11E+09	5.66E+08	3.81E+08	5.97E+07	3.77E+07	1.74E+07	8.84E+06	1.32E+07	1.29E+11	
	Test n°3	1.09E+11	2.27E+10	8.89E+09	5.69E+09	2.18E+09	7.08E+08	4.33E+08	1.31E+08	6.54E+07	3.22E+07	1.71E+07	2.29E+07	1.50E+11	
LAB 3	Test n°1	3.57E+11	2.22E+10	1.62E+10	1.11E+10	5.60E+09	1.24E+09	8.06E+08	3.39E+08	1.44E+08	5.52E+07	3.08E+07	1.31E+07	4.15E+11	LAB 3
	Test n°2	4.99E+11	3.48E+10	2.59E+10	1.53E+10	7.21E+09	1.59E+09	9.52E+08	3.95E+08	1.72E+08	5.37E+07	2.61E+07	1.96E+07	5.85E+11	
	Test n°3	2.95E+11	2.48E+10	1.66E+10	9.23E+09	4.48E+09	1.21E+09	6.92E+08	3.34E+08	1.26E+08	5.17E+07	3.64E+07	7.01E+06	3.52E+11	
LAB 4	Test n°1	6.68E+11	3.63E+11	1.88E+11	1.57E+11	5.23E+10	8.99E+09	1.71E+09	5.42E+08	1.84E+08	1.16E+08	7.93E+07	5.94E+07	1.44E+12	LAB 4
	Test n°2	1.51E+12	9.68E+10	3.77E+10	1.91E+10	6.04E+09	2.12E+09	9.70E+08	4.94E+08	1.91E+08	1.05E+08	5.20E+07	2.96E+07	1.67E+12	
	Test n°3	7.15E+11	4.26E+10	2.01E+10	1.21E+10	4.28E+09	1.85E+09	8.87E+08	4.25E+08	1.82E+08	8.38E+07	4.53E+07	2.91E+07	7.97E+11	
	Mean =	4.05E+11	6.78E+10	2.92E+10	2.03E+10	7.61E+09	1.82E+09	6.59E+08	2.46E+08	1.04E+08	5.14E+07	2.86E+07	1.98E+07	5.33E+11	
	SD =	4.09E+11	9.64E+10	5.10E+10	4.34E+10	1.42E+10	2.31E+09	4.38E+08	1.94E+08	6.94E+07	3.47E+07	2.19E+07	1.48E+07	5.18E+11	
	%SD =	101	142	175	214	187	126	66	79	67	68	77	75	97.3	

Reproducibility limit

EUDC Test

Only the average results are presented

Etage n° =	Dp (µm)	LAB 1	LAB 2	LAB 3	LAB 4	Mean of all values
1	0.008	1.50E+11	1.24E+11	3.83E+11	9.63E+11	4.05E+11
2	0.030	2.84E+10	4.81E+10	2.73E+10	1.67E+11	6.78E+10
3	0.063	7.95E+09	7.43E+09	1.96E+10	8.20E+10	2.92E+10
4	0.109	2.80E+09	3.81E+09	1.19E+10	6.27E+10	2.03E+10
5	0.173	2.28E+09	1.53E+09	5.76E+09	2.09E+10	7.61E+09
6	0.267	9.11E+08	7.17E+08	1.35E+09	4.32E+09	1.82E+09
7	0.407	2.86E+08	3.43E+08	8.16E+08	1.19E+09	6.59E+08
8	0.655	7.53E+07	6.64E+07	3.56E+08	4.87E+08	2.46E+08
9	1.021	4.82E+07	3.45E+07	1.48E+08	1.86E+08	1.04E+08
10	1.655	3.35E+07	1.68E+07	5.35E+07	1.02E+08	5.14E+07
11	2.520	1.54E+07	9.17E+06	3.11E+07	5.89E+07	2.86E+07
12	4.085	1.27E+07	1.39E+07	1.32E+07	3.94E+07	1.98E+07
Total Particulate Number (1/km) =		1.92E+11	1.86E+11	4.51E+11	1.30E+12	5.33E+11
SD =		1.18E+10	8.17E+10	1.21E+11	4.52E+11	5.18E+11



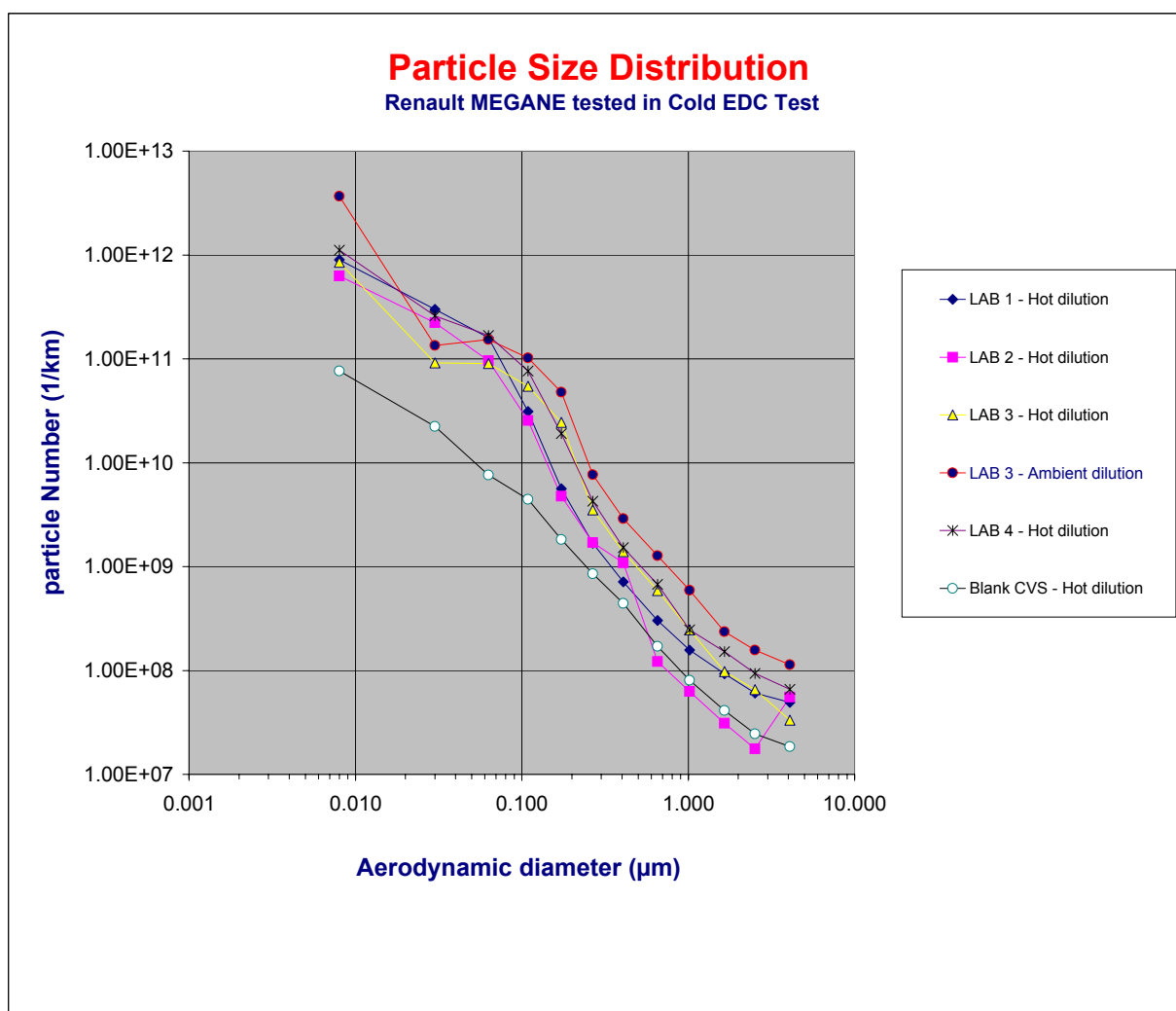
Graph : Particle Size Distribution

Cold EDC Test

Cold EDC Test Particle Size Distribution

Etage n°	Dp (µm)	LAB 3					LAB 4 - Hot dilution	Blank CVS / Mean of all values before the tests - Hot dilution
		LAB 1 - Hot dilution	LAB 2 - Hot dilution	Hot dilution	Ambient dilution	Ambient dilution		
1	0.008	9.01E+11	6.28E+11	8.49E+11	3.88E+12	1.11E+12	7.62E+10	
2	0.030	3.00E+11	2.23E+11	9.15E+10	1.34E+11	2.59E+11	2.24E+10	
3	0.063	1.60E+11	9.58E+10	9.00E+10	1.53E+11	1.68E+11	7.60E+09	
4	0.109	3.11E+10	2.55E+10	5.46E+10	1.02E+11	7.66E+10	4.45E+09	
5	0.173	5.61E+09	4.77E+09	2.45E+10	4.77E+10	1.91E+10	1.83E+09	
6	0.267	1.68E+09	1.70E+09	3.50E+09	7.64E+09	4.27E+09	8.50E+08	
7	0.407	7.12E+08	1.08E+09	1.40E+09	2.90E+09	1.52E+09	4.43E+08	
8	0.655	3.03E+08	1.22E+08	5.87E+08	1.28E+09	6.73E+08	1.71E+08	
9	1.021	1.57E+08	6.26E+07	2.46E+08	5.90E+08	2.47E+08	8.02E+07	
10	1.655	9.27E+07	3.11E+07	9.76E+07	2.37E+08	1.51E+08	4.12E+07	
11	2.520	6.06E+07	1.76E+07	6.53E+07	1.57E+08	9.39E+07	2.46E+07	
12	4.085	4.92E+07	5.53E+07	3.33E+07	1.13E+08	6.58E+07	1.85E+07	
Total Particle Number (1/km) =		1.40E+12	9.79E+11	1.12E+12	4.13E+12	1.64E+12	1.14E+11	
SD =		4.94E+11	3.00E+11	1.29E+11	-	2.82E+11	9.36E+10	
%SD =		35.3	30.7	11.5	-	17.2	82	

Note: "Ambient dilution" = Only one test performed in the Laboratory "LAB 3" (this, given for information).



APPENDIX 4

CHARACTERISTICS VEHICLES TESTED

Characteristics vehicles tested

Brand	Peugeot HDI	Peugeot HDI+DPF	Renault
Level	Euro 3	Euro 3	Euro 3
Model	307	307	MEGANE
Inertia Class (Kg)	1360	1360	1130
Transm	M5	M5	M5
Displ. (cm3)	1997	1997	1600
No. of Cyl.	4	4	4
Valves per Cyl.	2	4	4
Max. Power (kW)	66	80	66
Combust. Type	Diesel - DI	Diesel - DI	MPI
Injection Type	C - Rail	C - Rail	
EGR Type	Elect. Closed loop	Elect. Closed loop	
Catalyst. Type	Oxy.	Oxy.	LO+TWC
Required fuel	Diesel	Diesel	Petrol (Unleaded 98)

APPENDIX 5

FUELS AND LUBRICANT SPECIFICATIONS

Fuels and lubricant

Diesel Fuel

SPECIFICATIONS

Density 15°C	834 kg/m ³
Viscosity 40°C	3.00 cSt
Distillation :	
IBP	197°C
10%	222°C
20%	235°C
50%	278°C
90%	331°C
95%	347°C
FBP	359°C
E 250°C	30.4 (Vol. %)
E 300°C	69.6 (Vol. %)
E 350°C	95.9 (Vol. %)
Cetane number	53.8
Sulfur contents	8 mg/ kg
Flashpoint	82°C
Polyaromatics (Di+Tri+..)	4.5 (Wt. %)

Unlead Gasoline Fuel

SPECIFICATIONS

Density 15°C	762 kg/m ³
H/C ratio	1.82
Distillation :	
IBP	34,9 °C
10%	62,9 °C
20%	77,4 °C
50%	107,0 °C
90%	144,8 °C
95%	154,8 °C
FBP	184,8 °C
E 70 °C	15,0 (Vol. %)
E 100 °C	38,3 (Vol. %)
E 150 °C	92,5 (Vol. %)
E 180 °C	98,4 (Vol. %)
Benzene content	1,73 (Vol. %)
COMPOSITION :	
- Total Saturates/ Paraffins	59,4 (Vol. %)
- Total Ethylenics/ Olefins	0,0 (Vol. %)
- Total Aromatics	49,6 (Vol. %)
Octane number (MON)	89.1
Octane number (RON)	100.2
Sulfur contents	8 mg/ kg
Lead	< 2 mg/l
Total oxygenates	< 0,20
Polyaromatics (Di+Tri+..)	4.5 (Wt. %)

Lubricant

SPECIFICATIONS

Density 15°C	857.9 kg / m ³
Viscosity 40°C	55.67 mm ² / s
Viscosity 100°C	9.574 mm ² / s
Sulfur	3600 ppm (Wt.)
Ba	3 mg / kg
Ca	3231 mg / kg
Mg	209 mg / kg
Ba	449 mg / kg
Zn	1117 mg / kg
P	1009 mg / kg
Fe	1 mg / kg
Cr	0 mg / kg
Al	0 mg / kg
Cu	1 mg / kg
Sn	3 mg / kg
Pb	3 mg / kg
V	0 mg / kg
Mo	6 mg / kg
Si	0 mg / kg
Na	6 mg / kg
Ni	0 mg / kg
Ti	0 mg / kg
Ag	1 mg / kg
Co	- mg / kg
Mn	- mg / kg

Note. (-) = No detected