

Environment protection - Health protection: TO MAKE LIFE WORTH LIVING

To have clean air coming out of exhaust pipes

To avoid trade barriers: e.g. with the USA. Because of the current non-compliance of national emission requirements European car manufacturers will have export problems!

To reduce legal limits for air pollutants of vehicles



To make a traceable, quantifiable and comparable measurement of exhaust emissions possible

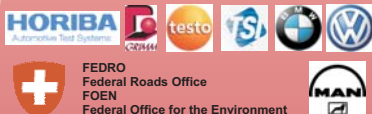
Internationally recognised calibration aerosol for automotive combustion

Common particle number concentration standards

Traceable service for CPC-calibration according to UNECE R83 (Euro 5/6)
Not possible now!

Traceable measurements of number concentration for diesel engine developments

Directive 715/2007/EC / UNECE R83 (Euro 5/6) can be implemented concerning traceable measurements
Not possible now!



Metrological background for the measurement of particle concentration in exhaust gases from modern diesel vehicles in periodic emission control

Validation of novel instruments, clue for new developments and improvement of instruments

Trusted periodic emission control for modern diesel vehicles
Not possible now!

Suggestion for future activities in periodical emission control and for the international standardisation
Not possible now!



Traceable and comparable PGE results on real life samples, obtained under controlled conditions
Not possible now!

Production of reference samples and materials, to be used by other NMIs for validation purposes
Not possible now!

Data to be used for assessing the release rates of automotive catalysts and for risk assessment regarding human health

Protocols of the primary methods as reference for these analyses



Improving the traceability of Hg vapour measurement to the SI system

Supplying robust sampling, storage and handling procedure for Hg vapour to limit and quantify losses of Hg vapour

Developing and validate suitably of low concentration Hg vapour calibration sources, using dynamic methods
Not possible now!

Providing traceable measurements of Hg vapour in ambient air and in exhaust emissions
Not possible now!



71 PM

WP1: Automotive particle emission metrics

Generation of automotive combustion calibration aerosols

1. Traceable size measurement of nanoparticles with TSEM, AFM
=> **Reference Material, Measurement Service**
2. Aerosol standards with electrically charged particles
=> **Measurement Service**
3. Assessment of aerosol standards used in CPC-calibration => **Report**



dynamometer of the JRC-IES

Traceability of particle number concentration for combustion aerosols

1. Particle number concentration calibration capabilities => **Report**
2. Validation of comparison protocol for national particle number concentration
=> **Protocol, Report**
3. Calibration protocol for common services and round robin test
=> **Measurement Service**

47 PM

WP2: Methods for periodic emissions control

Evaluation of novel measuring instruments for particle emission from modern diesel vehicle

1. Consistent requirements for novel measuring instruments (prototypes) and confrontation with European legislative requirements => **Report**
2. Applicability and performance of novel periodic emissions control instruments => **Report**



Applicability of novel measuring instruments in field tests

1. Field measurements with capable instruments under required conditions
=> **Report**
2. Practical usability tests and long term drift due to soot deposition with capable instruments => **Report**

JRP11e: Ambient Aerosols
WP3: New metrics for ultrafine particles

68 PM

WP3: Primary measurement of PGE

Sampling and partitioning of exhaust emissions

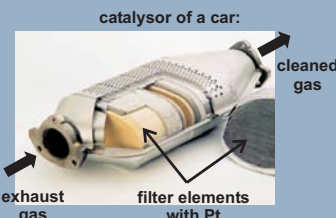
Specific sample requirements for PGE analysis => **Definitions**

Primary method for the quantification ($U(k=2) < 1\%$) of:

1. Pt in exhaust particles
2. Pd in exhaust particles
3. Rh in exhaust particles
=> **Protocol, Procedure**

Primary method for the quantification of other PGE (Ru, Ir, Os)

Screening procedure and analysis
=> **Data Set, Procedure**



65 PM

WP4: Traceability for Hg vapour measurement

Evaluation and testing of Hg resistant materials

Suitable materials for the sampling, handling and storage of samples
=> **Report**

Novel validated and traceable Hg vapour calibration sources
=> **Paper**

SI traceability of Hg vapour measurements results of improved SI traceability
=> **Paper**

Demonstration of accurate and traceable Hg measurement in exhaust emissions and in ambient air
=> **Data Set**



Hg vapour generator