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Poster-Abstract Form

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Title: Particle Emission Reduction of 2-S Scooters with different technical measures.

Abstract: (min. 300 - max 500 words)

Several possibilities of reducing particle emissions of 2-S Scooters were studied on two different engine technologies during the Swiss Scooter Network Project 2004-2007.

The present poster shows examples of reduction potentials by combining several measures:

- higher lube oil quality
- lower lube oil dosing
- oxidation catalyst
- supplementary filtration & oxidation (WFC ... wiremesh-filter-catalyst)
- alkylat fuel Aspen

A reduction of emitted particle mass PM of 95% was obtained by combination of all these technical measures.

It was shown in the research that reduced PM lowers usually also the PAH & TEQ (polycyclic aromatics & toxicity equivalence).

Short CV:

BIOGRAPHICAL SKETCH Dr. J. Czerwinski:

- Study of Mechanical Engineering in Austria
- Assistant on the Technical University, Vienna Ph.D. about combustion in SI-engines
- R & D diesel injection systems, diesel combustion, Voest Alpine Friedmann, Austria
- R & D turbocharging systems, Asea Brown Boveri, Switzerland
- Since 1989, professor for thermodynamics and IC-engines, head of the Laboratory for Exhaust Gas Control, University of Applied Sciences, Biel-Bienne, Switzerland

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Potentials of Particle Emission Reduction of 2-S Scooters with Combinations of Technical Measures.

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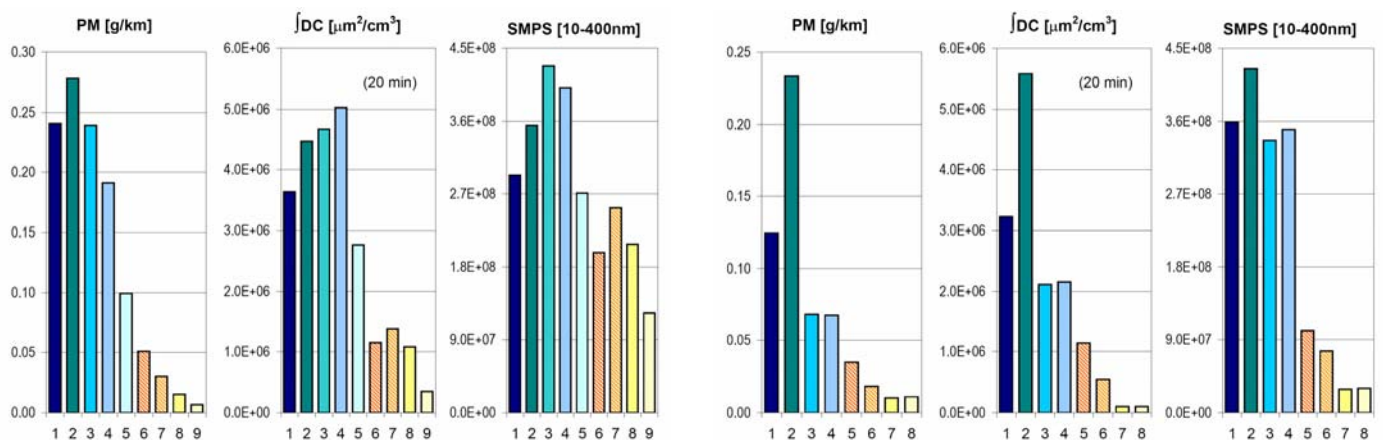
Investigated Combinations

- no catalyst (dummy), lower tier oil, overdosing, gasoline
- no catalyst (dummy), lower tier oil, 100% dosing, gasoline
- no catalyst (dummy), higher tier oil, 100% dosing, gasoline
- no catalyst (dummy), higher tier oil, 50% dosing, gasoline
- ox. catalyst (series), higher tier oil, 50% dosing, gasoline
- ox. cat. + WFC, higher tier oil, 50% dosing, gasoline
- ox. cat. + WFC, higher tier oil, 50% dosing, Aspen



Muffler able to be dismantled for WFC research

Particle Mass & Nanoparticle Emissions



Peugeot TSDI

- 1: dummy, lower oil, 100%, gas. 4: dummy, higher oil, 100%, gas. 7: oxi cat+WFC, higher oil, 50%, gas.
2: dummy, lower oil, 150%, gas. 5: dummy, higher oil, 50%, gas. 8: oxi cat+WFC, higher oil, 50%, gas.
3: dummy, lower oil, 200%, gas. 6: oxi cat, higher oil, 50%, gas. 9: oxi cat+WFC, higher oil, 50%, Aspen.

Peugeot Carb.

- 1: dummy, lower oil, 100%, gas. 4: dummy, higher oil, 50%, gas. 7: oxi cat+WFC, higher oil, 50%, gas.
2: dummy, lower oil, 200%, gas. 5: oxi cat, higher oil, 50%, gas. 8: oxi cat+WFC, higher oil, 50%, Aspen.
3: dummy, higher oil, 100%, gas. 6: oxi cat, higher oil, 50%, gas.

► **PM-Reduction from standard to the best case 95%**