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FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA

Department of Enviornmental Sciences and Engineering

Transport System's Optimization

CENSE - Center for Environmental and Sustainability Research
Sustainability engineering (SustE) - Air Quality

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Objectives

Several transport-related instruments have been subjected to environmental evaluation. The different performances of measures like: the implementation of a Low Emission Zone in Lisboa, the introduction of a Congestion Charge Scheme in the city, the application of PM traps retrofitting older vehicles (buses and/or heavy duty) amongst other options were compared.
From all the cases and taken into account the Lisboa reality the introduction of PM traps was one of the most politically feasible to implement… But several doubts related with it's application was raised by stakeholders. The project objective was to develop "real tests scenarios" using vehicles from the transport sector and real PM traps technology while measuring several performance indicators to characterize the effects of applying PM traps.

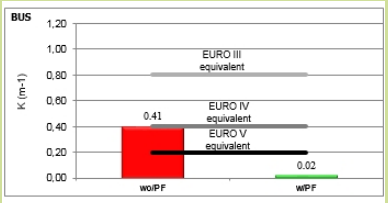
Methodology

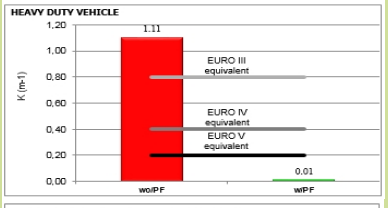
Real operation tests were performed through monitoring several indicators (diesel consumption, engine power, emissions' opacity,…) before and after the installation of PM traps/filters in 5 different vehicles. Vehicles were selected in function of vehicle type making a pool of heavy duty vehicles from buses to road cleaning trucks or urban waste and sanitation management vehicles. All cases were selected from the actual fleet from project stakeholders.
The routes as well as other potential confounding factors like maintenance procedures and routines were strictly maintained between time periods (before and after PM filter instalattion).

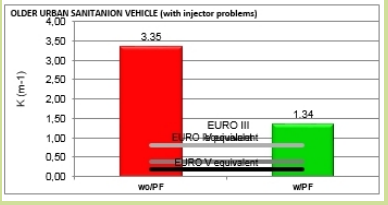
Expected Results

The results show:

1) the adequacy of PM trap retrofitting especially in older fleet fractions
2) the possibility of using opacity (K) measurement as a reasonable proxy for diesel PM emissions, especially because Inspection & Maintenance (I&M) centers are already well knows users of the procedure
3) the awareness of major stakeholders in improving their environmental performance
4) the need for "carrot and stick" policies that enhance modifications, delivering benefits for stakeholders that install PM traps or renew their fleets while introducing barriers for those with no interest in optimizing their activities







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