SRDE

System to Reduce Dust Emission from braking system of automotive vehicles.

Funding: European (Horizon 2020)
Duration: Oct 2014 - Oct 2017
Status: Complete

Background & policy context:

The subject of low environmental impact brake systems to reduce micro and nano particles emissions has also been a priority in the research and development works undertaken by the Automotive Industry Institute (PIMOT). One of the outcomes of such works is an innovative and PIMOT-patented technology and system to reduce dust emission from disc brake and drum brake mechanisms of motor vehicles.

It has been proven by scientific research that air pollution leads to many dangerous diseases. One of the most important air pollutants is dust and a significant share in the dust emission from road transport is taken by brake mechanisms of automotive vehicles. Statistical surveys show that an average motor vehicle annually consumes as much as about 0.5 kg of the friction material incorporated in vehicle brakes! This translates into liberation of harmful dusts, which include toxic organic compounds and heavy metals, to the environment. Investigations carried out at PIMOT have revealed that an overwhelming majority of the particulate matter emitted from brake mechanisms consists of respirable dust with an equivalent particle diameter smaller than 2 µm. Such a particle size fraction is most dangerous for human health. This serious hazard posed by the dusts generated during braking processes has confirmed the advisability of undertaking an initiative to develop a system that would reduce the emission of particulate matter from vehicle braking mechanisms.

In the method developed at PIMOT, the dust emitted from a braking mechanism is absorbed by a filter thanks to the use of forced air flow around friction linings. Within the research and development works, prototype systems were engineered and built to reduce dust emissions from disc brake and drum brake mechanisms. These systems were tested with satisfactory results on laboratory test stands, on a chassis dynamometer, and in the conditions of real operation in road traffic. The effectiveness of operation of the systems having been built was found to be good. In result of the experimental tests, the emission of the particulate matter generated during the braking process was found to be reduced by as much as about 50-70%.

Objectives:

The project involves the development of the system to the different type of vehicles: passenger car and bus. The system research on real traffic conditions, at least a 50% reduction of particle emissions should be demonstrated. Thereby the project can contribute to improving urban air quality in the midterm and strengthen the competitiveness of the EU car industry in this increasingly significant market segment.

Parent Programmes:
Horizon2020 - Horizon2020 - The EU Framework Programme for Research and Innovation

Funding type: Public (EU)

Partners:
- Brake system manufacturers,
- Vehicle manufacturers,
- Pneumatic system manufacturers,
- SME and Large company from automotive industry
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Technologies:

- Road vehicle design and manufacturing
- Low environmental impact brake system

**Development phase:** Validation

**STRIA Roadmaps:** specified

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Societal/Economic issues, Environmental/Emissions aspects

**Geo-spatial type:** Other