

## **INTEGRATING A PARTICULATE FILTER SYSTEM IN THE FRONTEND: A STEP TOWARDS ACHIEVING EMISSION-NEUTRAL VEHICLES**

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### **ABSTRACT**

The European Environmental Agency (EEA) has identified fine dust as a major environmental threat to human health (EEA, Healthy Environment, Healthy Lives: How the Environment Influences Health and Well-Being in Europe, 2020). While current regulations focus primarily on vehicle exhaust emissions, up to 85% of fine dust emissions come from unregulated sources such as brakes, tires, and road abrasion (Barlow et al., Non-exhaust particulate matter emissions from road traffic: summary report. Published project report PPR231, 2007).

To address this issue, a comprehensive approach has been developed that involves an integrated fine dust particle filter. This filter can be installed in unused spaces in the front end of vehicles and is an effective and sustainable way to improve the emission balance of vehicles and promote better air quality, regardless of the drive system used.

However, the implementation of this filter requires the development of specific, high-efficiency filter elements that have a low-pressure loss level to ensure proper thermal management. Additionally, the filter must have a high dust holding capacity to ensure customer-friendly service intervals and must be reinforced to withstand harsh operating conditions.

### **KEYWORDS**

fine dust filtration, integrated fine dust particle filter, non-exhaust emissions