VERT GPF-Retrofit Program for Cleaner Urban Mobility within the HORIZON Europe AeroSolfd Project

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Emissions of ultrafine particles, from petrol engine combustion are a threat to human health and the environment. In particular sub-100 nm can deposit in the lung and reach other organs including the brain [1]. Above all in urban areas, the presence of high concentrations of toxic air contaminants needs to be drastically reduced. Clean urban mobility is the main goal of the HORIZON Europe AeroSolfd project launched by the European Commission that runs over a three years period until mid-2025. AeroSolfd will deliver affordable, adaptable, and sustainable retrofit solutions to reduce exhaust tailpipe emissions from petrol engines, brake emissions and pollution in semi-closed environments. The Swiss-based VERT association, with long expertise in nanoparticle emissions reduction via filtration, within AeroSolfd is in charge of reducing tailpipe emissions of gasoline vehicles by using best available retrofit filtration technology (BAT), and in particular the most efficient available GPF technology [2,3,4]. VERT with its member partners HJS, CPK and BFH will investigate the performance and deliver a TRL8 GPF retrofit system for future market applications. VERT is investigating the GPF-retrofit system performance in three different high mileage fleets, in Germany, Switzerland and Israel with totally 50 vehicles. The project not only provides a platform to continue research on PN and nanoparticle emissions but also on secondary emissions from GDI and PFI petrol engines. Moreover, a NPTI testing campaign of 1000 gasoline vehicles is conducted. Preliminary results of the VERT GPF-retrofit program within the AeroSolfd project are presented.

[1] Lilian Calderón-Garcidueñas, Alberto Ayala, Environ. Sci. Technol. 2022, 56, 11, 6847–6856 acs.est.1c04706_PMbrainpubblication.pdf.
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[3] Boger, T., Glasson, T., Rose, D., Ingram-Ogunwumi, R. et al., "Next Generation Gasoline Particulate Filters for Uncatalyzed Applications and Lowest Particulate Emissions," SAE Int. J. Adv. & Curr. Prac. in Mobility 3(5):2452-2461,2021, https://doi.org/10.4271/2021-01-0584.
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