

The European Commission and the Swiss State Secretariat for Education, Research and Innovation award funding for an €8.2 million project on cleaner urban air

In May 2022, the innovation project AeroSolfd started with a kick-off event in Ludwigsburg, Germany. The AeroSolfd consortium – led by MANN+HUMMEL – will deliver affordable, adaptable, and environmentally friendly retrofit solutions to reduce tailpipe and brake emissions and pollution in (semi-) closed environments. This will allow a quick transition towards cleaner mobility and a healthier environment.



AeroSolfd project partners at the kick-off meeting in the Technology Centre of project coordinator MANN+HUMMEL in Ludwigsburg, Germany (Picture: AeroSolfd project consortium)

Urgent need to reduce tailpipe emissions and brake wear

Based on the latest Harvard's epidemiologic research data (2021), globally 10.2 million people die prematurely only due to traffic-generated emissions per year¹. For the next decade, the existing vehicle fleet will continue emitting fine particles and ultrafine particles, as well as gaseous toxic compounds such as nitrogen oxide (NO_x) until a full transition to zero-exhaust-emission vehicles takes place.

While retrofit filters have been installed for diesel particle emissions in the past 20 years, the worldwide gasoline fleet segment prior to 2018 currently drives without any filtering technology (EURO 6c and earlier), even with the very high toxicity of gasoline particles. Also, in the EU after 2018 filters are only installed in direct injection engines. In contrast to exhaust emissions, toxic particles from brakes, tyres and rail-wheel contact have not yet been limited by legislation. These particles – especially in semi-open and closed environments like bus stops, tunnels, and train and metro stations – contribute to poor local air, soil, and water quality, severely impacting human

¹ Karn Vohra et al.: Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem, <https://doi.org/10.1016/j.envres.2021.110754>



AeroSolfd Press Release No 1

health. To limit these detrimental effects, immediate retrofit solutions to reduce tailpipe and brake wear emissions must be urgently developed and introduced to the market by 2025.

Smooth transition towards cleaner mobility through quick deployment of low-cost retrofit solutions

AeroSolfd is a fast-track innovation action established to tackle these challenges. A consortium - composed of large industrial players, renowned scientific institutes and lighthouse demo sites from 8 European countries - has joined forces to realise the quick deployment of three low-cost retrofit solutions so that people in Europe and beyond can benefit already by 2025 from cleaner mobility and a healthier environment.

“Retrofits are key enabling technologies during the transition to zero-exhaust vehicles by electrification and until reduced non-exhaust measures are implemented. Even beyond, brake and closed environment retrofits will continue to play an important role in the electrified road and rail fleet. Quick wins in the reduction of the overall health and environmental impact of the existing fleets can be realised by using our three retrofits for tailpipe, brake and (semi-) closed environments”, explained Dr. Martin Lehmann, Principal Expert Research Network and Public Funding at MANN+HUMMEL and coordinator of the AeroSolfd project. In gasoline combustion engines, fine particles and toxic secondary emissions will be reduced by an innovative Gasoline Particle Filter and NO_x exhaust emissions would be minimised by replacing the three-way-catalyst with new equipment. In addition, brake particles of long-lived road transport assets will be reduced by an advanced brake dust particle filter and fine particles in closed environments (bus stops, tunnels, metro stations) using a specially designed and enhanced stationary air purifier.

AeroSolfd will also put special focus on increasing public and political awareness of the detrimental impact of tailpipe and brake emissions on the environment and people’s health. “AeroSolfd will provide policymakers with recommendations on how to develop incentive schemes for the quick market uptake of these retrofit technologies by 2025”, added Lars Larsen, president of VERT Association.

During the three-year innovation project, the effectiveness of AeroSolfd’s solutions will be demonstrated in the field and during real driving conditions in lighthouse demo sites across Europe: Valladolid (Spain), Sofia (Bulgaria), Ancona and Fermo (Italy), Lisbon (Portugal), Rovaniemi (Finland), Haifa (Israel), and Biel (Switzerland). “This will enable us to bring these technologies to the market by 2025 and to move towards a cleaner and healthier environment in Europe” added Thomas Wolf, Innovation Manager at the ZF Group.

For further information contact:

Dr-Ing. Martin Lehmann
Project Coordinator
Martin.Lehmann@mann-hummel.com
Phone +49 7141 98 2271

Project partners:

1. MANN+HUMMEL GmbH, Germany
2. Steinbeis Innovation gGmbH, Germany
3. Institut für Energie und Umwelttechnik e.V. – IUTA, Germany
4. Agencia Estatal Consejo Superior de Investigaciones Científicas, Spain



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AeroSolfid Press Release No 1

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9. Assotsiatsia Za Razvitie na Sofia, Bulgaria
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11. Instituto de Tecnologia Comportamental Associacao para o Desenvolvimento Economico e Social, Portugal
12. Ayuntamiento de Valladolid, Spain
13. S.T.E.A.T. (Societa' Trasporti Ete-Asotenna) Pubblici Trasporti Spa, Italy
14. Conerobus SpA Societa' Per La Mobilita' Intercomunale, Italy
15. Autobuses Urbanos de Valladolid SA, Spain
16. Metropolitano de Lisboa EPE, Portugal
17. VERT-Verein, Switzerland



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