



- Project title:** Functionalized mineral composite materials as dielectric barrier in the process combination of dielectrically hindered gas discharge, mineral adsorber and bioscrubber for the treatment of exhaust air streams (MiCoPIAST)
- Partners:** PlasmaAir AG, Weil der Stadt-Hausen
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Institut für Grenzflächenverfahrenstechnik und Plasmatechnologie der Universität Stuttgart
Institut für Textiltechnik der RWTH Aachen University
- Duration:** 04/2018 – 06/2020
- Funding agency:** Zentrales Innovationsprogramm Mittelstand (ZIM) of the Federal Ministry for Economic Affairs and Energy (BMWi)

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19.11.2018

Mission Statement

Exhaust air streams from animal husbandry, sewage sludge drying and composting are large-volume, odorous streams with low freight of VOCs, NH₃ and CH₄ & N₂O as greenhouse gases. The TA-Luft specifications can only be implemented using energy-intensive thermal processes.

An innovative alternative are cold plasma processes, which feature a compact design, high flexibility, modularization, low pressure losses, low energy costs and simultaneous decomposition of org. / anorg. pollutants. To date, they have failed when confronted with exhaust air with high humidity, dust and aerosol loads as well as with the presence of inert gases such as CH₄ or N₂O. In addition, the energy transfer to the pollutants is inefficient and the production of the DBD plates is expensive.

The aim of the project is the development, testing, optimization and market implementation of innovative mineral, catalytically active DBD materials with given specifications, which are used in a process combination of cold plasma, mineral adsorbers and scrubbers for the treatment of large-volume, odor-intensive exhaust air streams with a low load of VOCs, NH₃, CH₄ & N₂O on a scale of 250 and 1250 m³/h respectively.

Solution:

First, the optimal specifications for the production and degradation efficiency of the DBD materials are developed. The metal oxide ceramic plates used so far are replaced by significantly cheaper textile reinforced concrete plates. Various reinforcement structures and materials are being investigated in the project. The plates are then implemented in an optimized housing. The process combination is used as a basis for later marketing in defined artificial and real exhaust air situations and the operating parameters are verified.

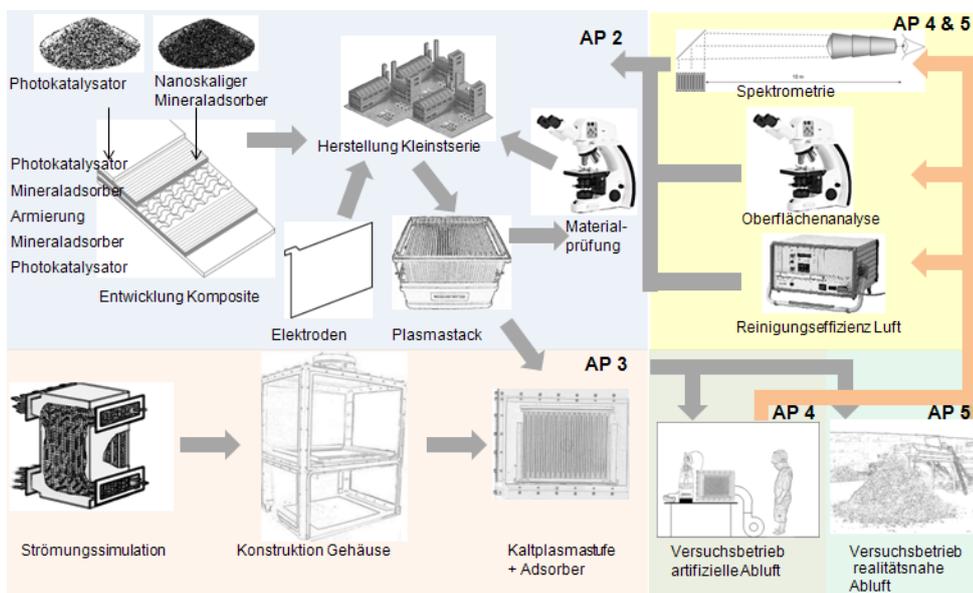


Fig.1: Project plan MiCoPIAST

Acknowledgement

We would like to thank the Federal Ministry for Economic Affairs and Energy for funding the project within the initiative Zentrales Innovationsprogramm Mittelstand.

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