

# **Impact Of The External Electric Field On Filter Performance**

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## **ABSTRACT**

Electrostatically enhanced filter media are commonly used in number of filtration applications such as residential and commercial HVAC systems, automobile passenger compartments and respiratory protection. External electric field can enhance performance of charged and mechanical filter media and achieve higher filtration efficiency at similar pressure drop.

This paper provides an overview of electrostatically charged media and their physical properties. Particle capture mechanisms are theoretically analyzed and compared with the experimental results. Their effectiveness depends strongly on the aerosol parameters such as velocity, particle charge and dielectric constant. The filtration process in filters with an external electric field is investigated and theoretical calculations compared with experimental results. A significant increase of efficiency was observed when the external field was applied.