

Permeodynamic Particulate Matter Filtration for Improved Air Quality

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Abstract : Particulate matter (PM) in the air we breathe is detrimental to health. Overcoming this problem has attracted interest and prompted research on the use of PM filtration in commercial buildings and homes to be carried out. The consensus is that tangible health benefits can result from the use of PM filters in most urban environments, to clean up the building's fresh air supply and thereby reduce exposure of residents to airborne PM. The authors have investigated and are developing a new large-scale Permeodynamic Filtration Technology (PFT) capable of permanently filtering and removing airborne PMs from outdoor spaces, thus also benefiting internal spaces such as the interiors of buildings. Theoretical models were developed, and laboratory trials carried out to determine, and validate through measurement permeodynamic filtration efficiency and pressure drop as functions of PM particle size distributions. The conclusion is that PFT offers a potentially viable, cost effective end of pipe solution to the problem of airborne PM.

Keywords : air filtration, particulate matter, particle size distribution, permeodynamic

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