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Simulation on the Resistance of the Filter Media with Lattice Boltzmann Method

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on Heating, Ventilation and Air Conditioning
(ISHVAC)
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The 3rd International Conference
on Building Energy and Environment
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Abstracts

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T2-758 Simulation on the Resistance of the Filter Media with Lattice Boltzmann Method

Jiaqi Fan¹, Bin Zhou^{1*}, Paolo Tronville², Da Gong¹, Jinxiang Liu¹, and Liping Chen¹

¹Department of HVAC, College of Urban Construction, Nanjing Tech University, 210009 Nanjing, China;

²Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi 24, I-10129 Turin, Italy

*Corresponding email: zhoubinwx@hotmail.com

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SUMMARY

To simulate the resistance of fibrous air filter media it is first necessary to develop an accurate simulation model for the gas flow through the media structure. In this paper we use an approach making only one basic simplification to the media geometry. Then the flow through microscale porous geometries on the slip and no slip boundary conditions with Lattice Boltzmann method (LBM) is investigated. Our numerical simulations are performed for the resistance of two kinds of filter media (F6, F8) models with various inlet velocities. The computational predictions of the resistances are compared with the experimental and analytical data and their validity is discussed, which lay the foundation for further research on fibrous air filter media with LB method.