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

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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.