

Large-Eddy Simulation of Particle Dispersion in the Duct with Fluid Injection

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The numerical calculations are performed by the Eulerian-Lagrangian approach for the fluid and dispersed phases respectively. The fluid flow calculations are based on filtered Navier–Stokes equations. Subgrid turbulent viscosity is computed with the dynamic model. The solid phase is treated by the Lagrangian approach, which means that particles are followed in time along their trajectories through the flow field. At every given time step, the new position of the particles and the new translational velocity are calculated according to the forces acting on the particles. The influence of inflow conditions, size of particles and place of particles injection on their dispersion pattern in the turbulent duct flow are investigated. The obtained results have a good agreement with the results computed on the base of Reynolds averaged Navier–Stokes equations and experimental data.

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