

The Eulerian–Lagrangian approach Mistral/PartFlow–3D — II

Characteristics of the numerical approach PartFlow–3D :

- 3–dimensional Lagrangian approach for the disperse phase
- equation of motion includes drag force, lift force due to fluid velocity shear (Saffman force), gravity and added mass force
- Magnus force has been neglected due to the very small particle sizes
- Lagrangian stochastic–deterministic turbulence model (LSD or discret eddy model) as proposed by Sommerfeld, Schönung, Milojević
- combination of irregular bouncing model of Frank (1991) and Sommerfeld (1992) – virtual wall model based on real wall roughness parameters
- wall erosion prediction based on erosion intensity functions experimentally predicted e.g. by Grant & Tabakoff / Elfeki (1975, 1987)
- neglect of two–way coupling source terms with respect to the assumed low particle concentrations

Parallelization of Mistral/PartFlow–3D :

- parallelization of the numerical approach using Domain Decomposition method
- variable assignment of grid blocks and processor nodes
- support of PVM and MPI message passing standards
- use of Linux clusters (e.g. 4 Siemens Celsius 630 with Dual Pentium III Xeon 550 Mhz) and high performance computing architectures (e.g. Cray T3E, etc.)



Investigation of Particle Separation in Symmetrical Double Cyclone Separators

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