Abstract

This case study focuses the flow patterns of dust particle parcels inside a 2D model room at different times. Air will drive the parcels inside the room from the inlet. The aim of this numerical study is to locate the positions of the parcels at various times. Also, the velocity of air at various positions as well as velocities of parcels wrt their locations can be investigated.

Problem Statement

Use a Lagrangian solver *DPMFoam* for this simulation. The continuous and discrete phases are air and dust respectively.

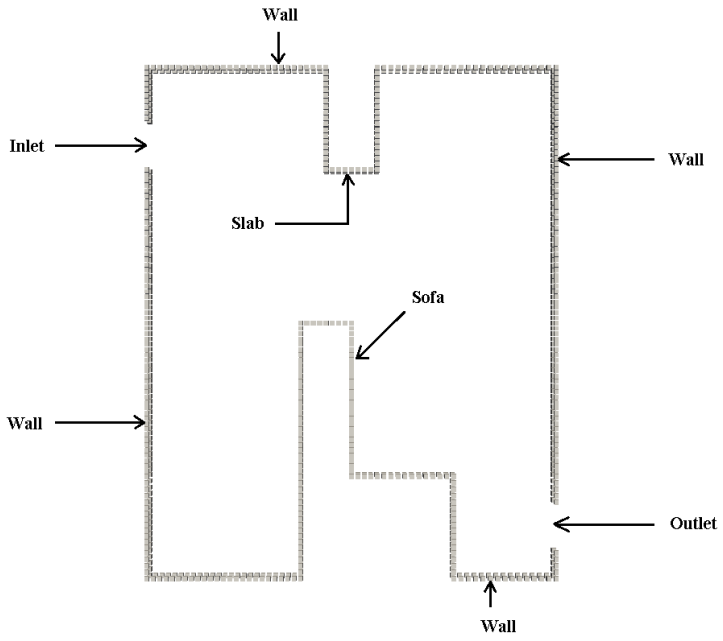

Fig.1. 2D model room

Properties and initial parameters:

ρ_{air} = 1.2 kg/m^3

$\rho_{particle}$ = 2600 kg/m^3

No. of particles in one parcel = 1e6

Inlet injection = 5000 parcels/sec

Initial parcel velocity = 5 m/sec

Air inlet velocity = 10 m/sec

Jishnu Handique

FOSSEE Fellow 2019