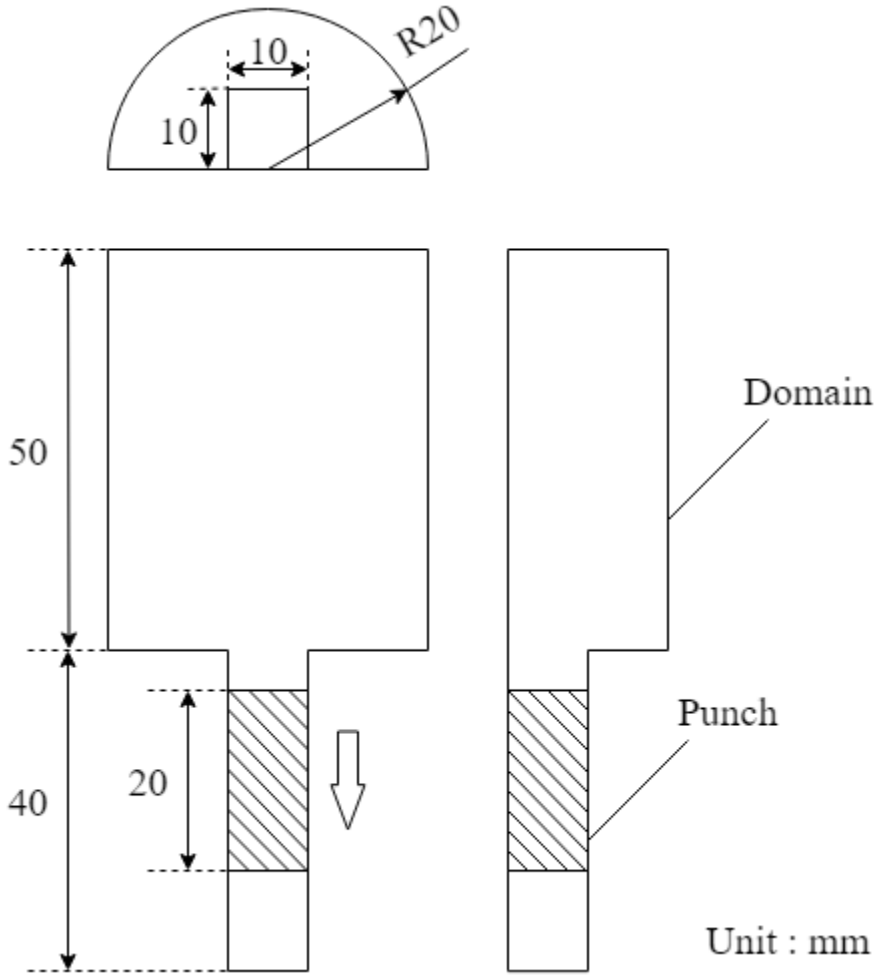

Figure 1. Schematic diagram

Table 1. Physical properties

Gas phase	
Viscosity	1.8×10^{-5} Pa・s
Density	1 kg/m^3
Solid phase	
Density	1500 kg/m^3
Spring constant	50 N/m
Coefficient of restitution	0.9
Coefficient of friction	0.3

Table 2. Calculation conditions

Particle diameter	250 μm
Number of particles	500,000
Grid size	0.5 mm
Calculation time	0.24 s

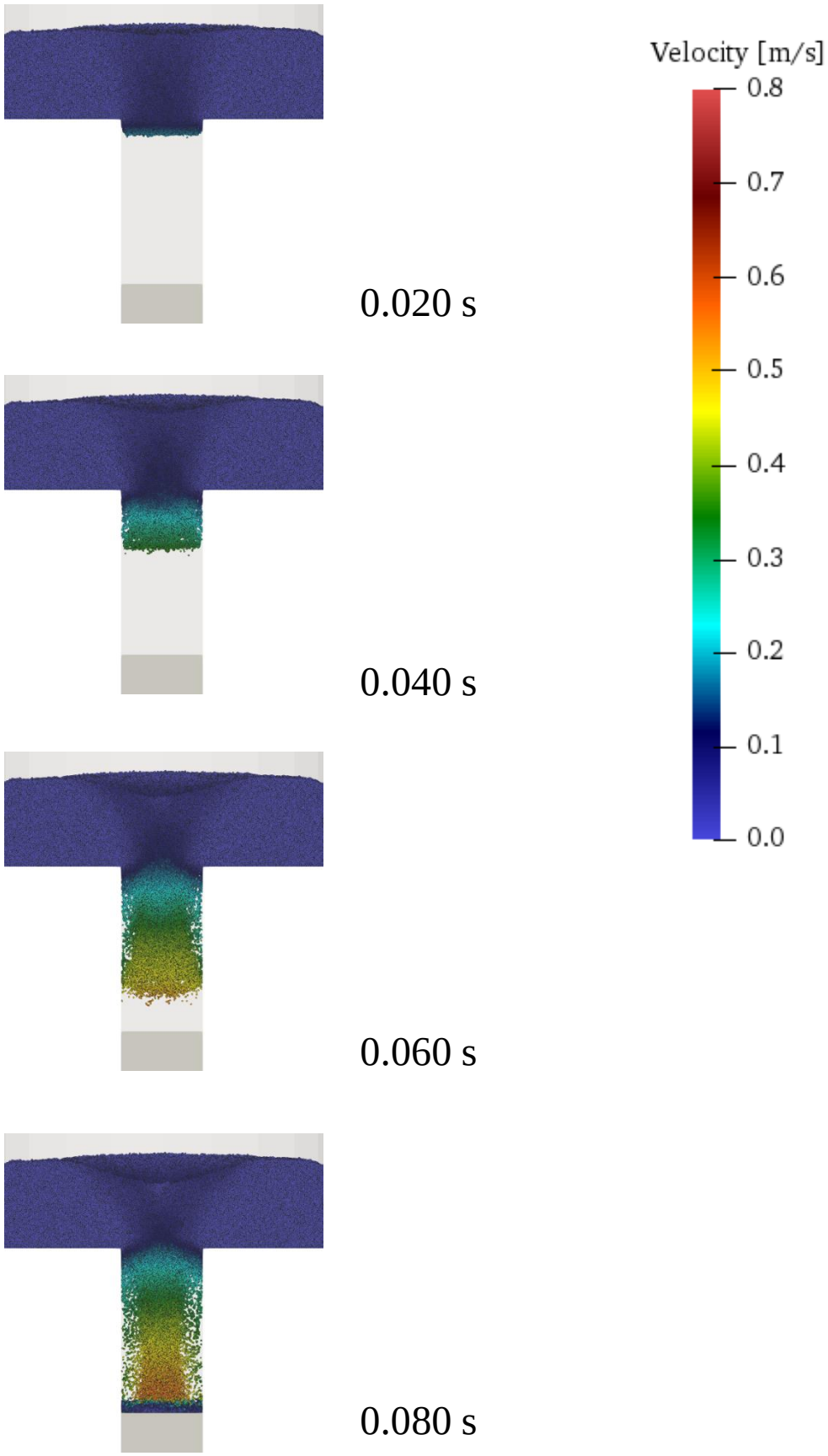

Figure 2. Powder velocity

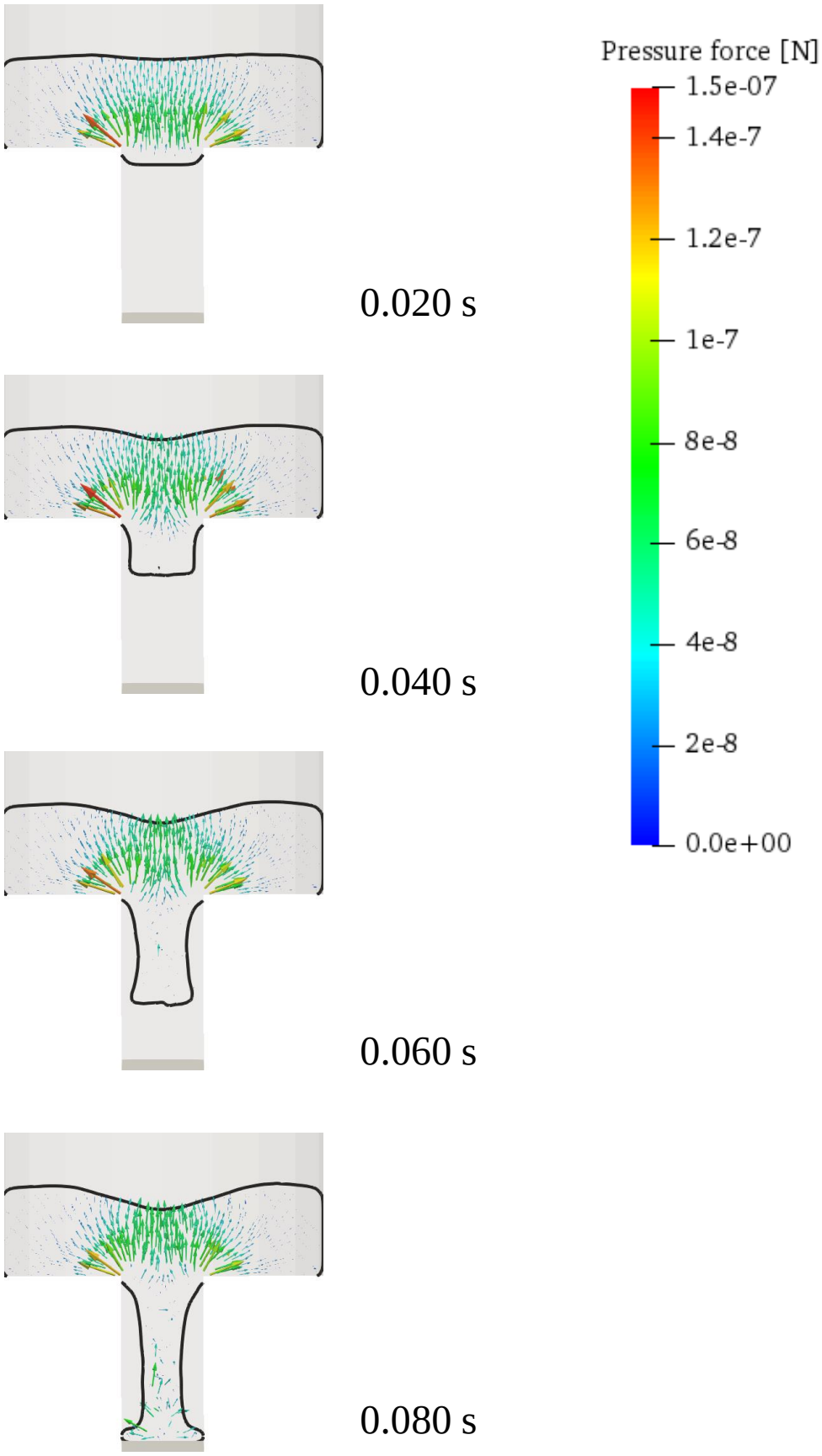

Figure 3. Pressure force

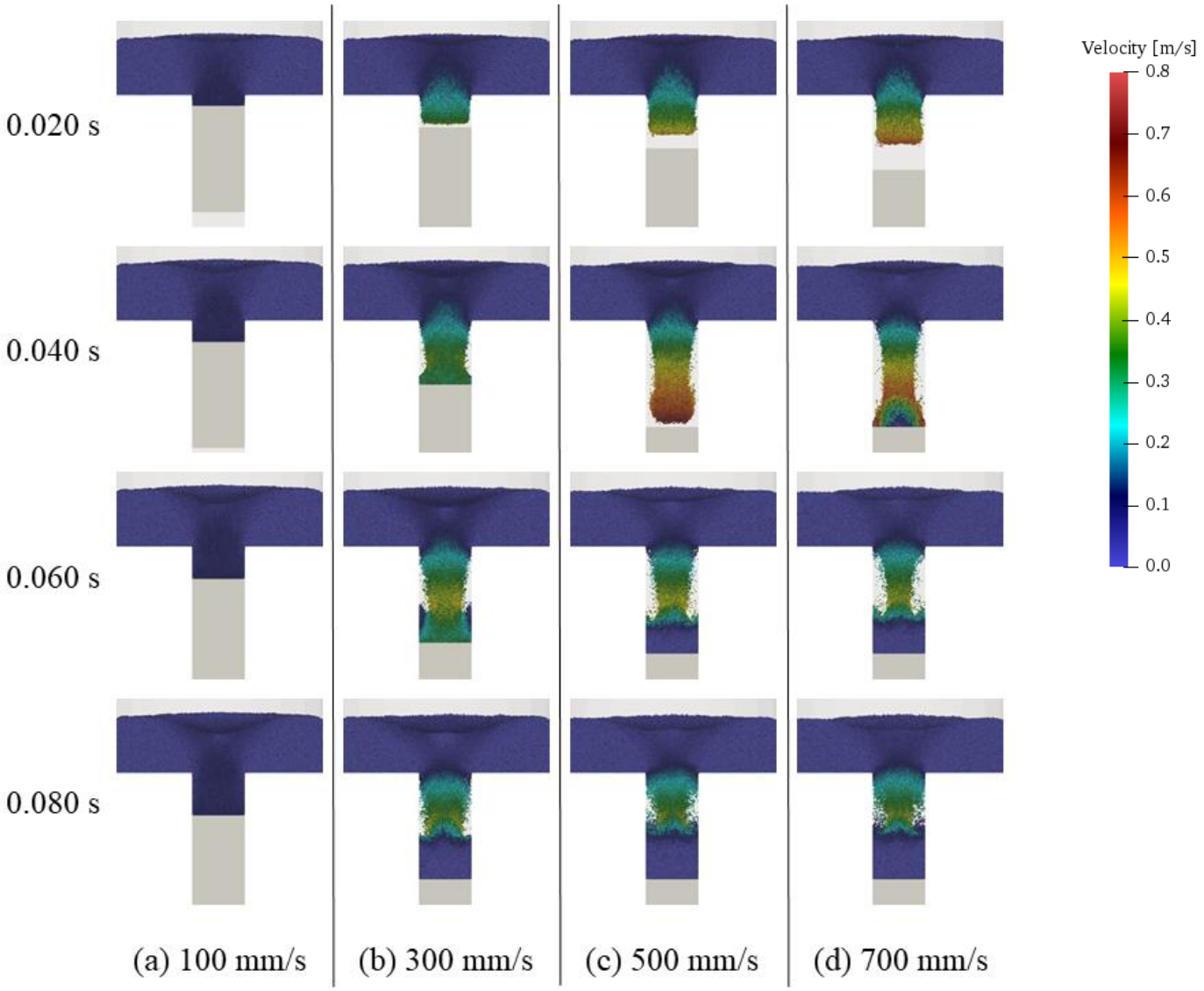

Figure 4. Powder velocity

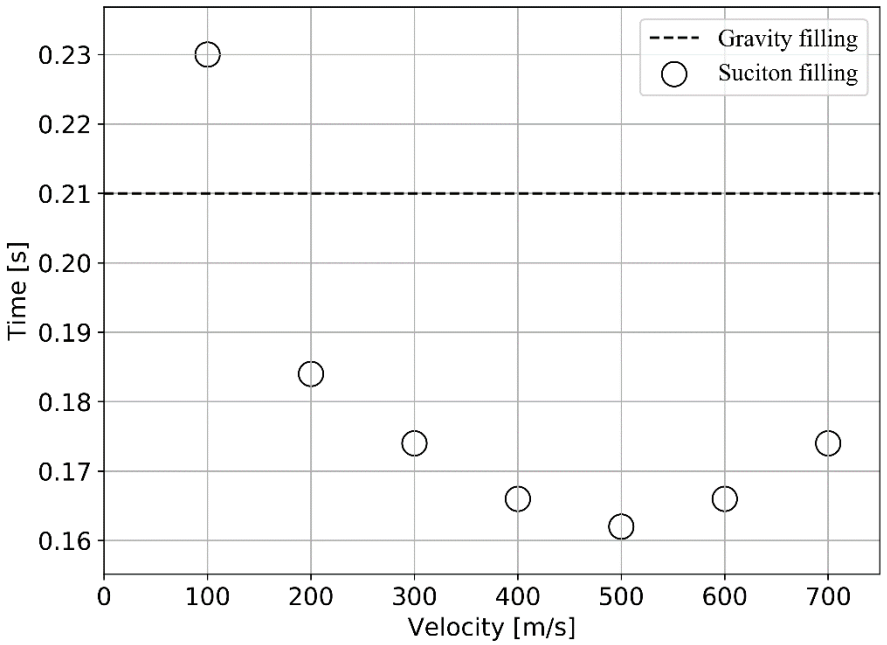

Figure 5. Filling time

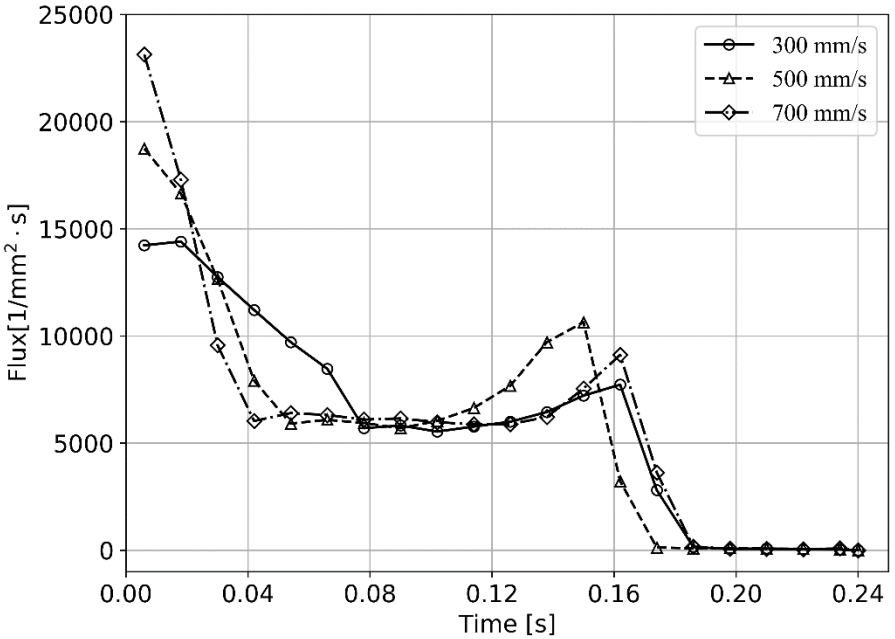

Figure 6. Flux of powder flow

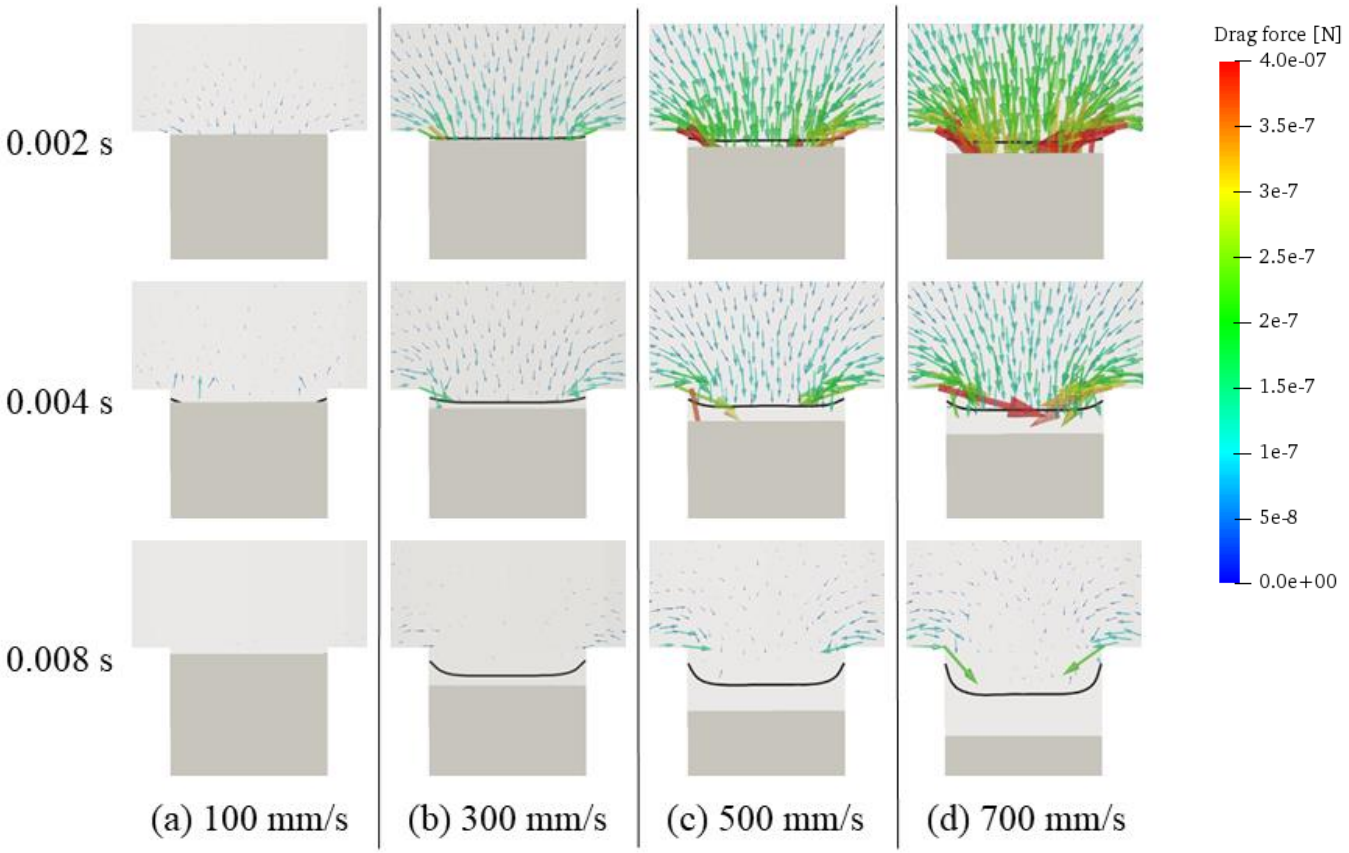

Figure 7. Drag force

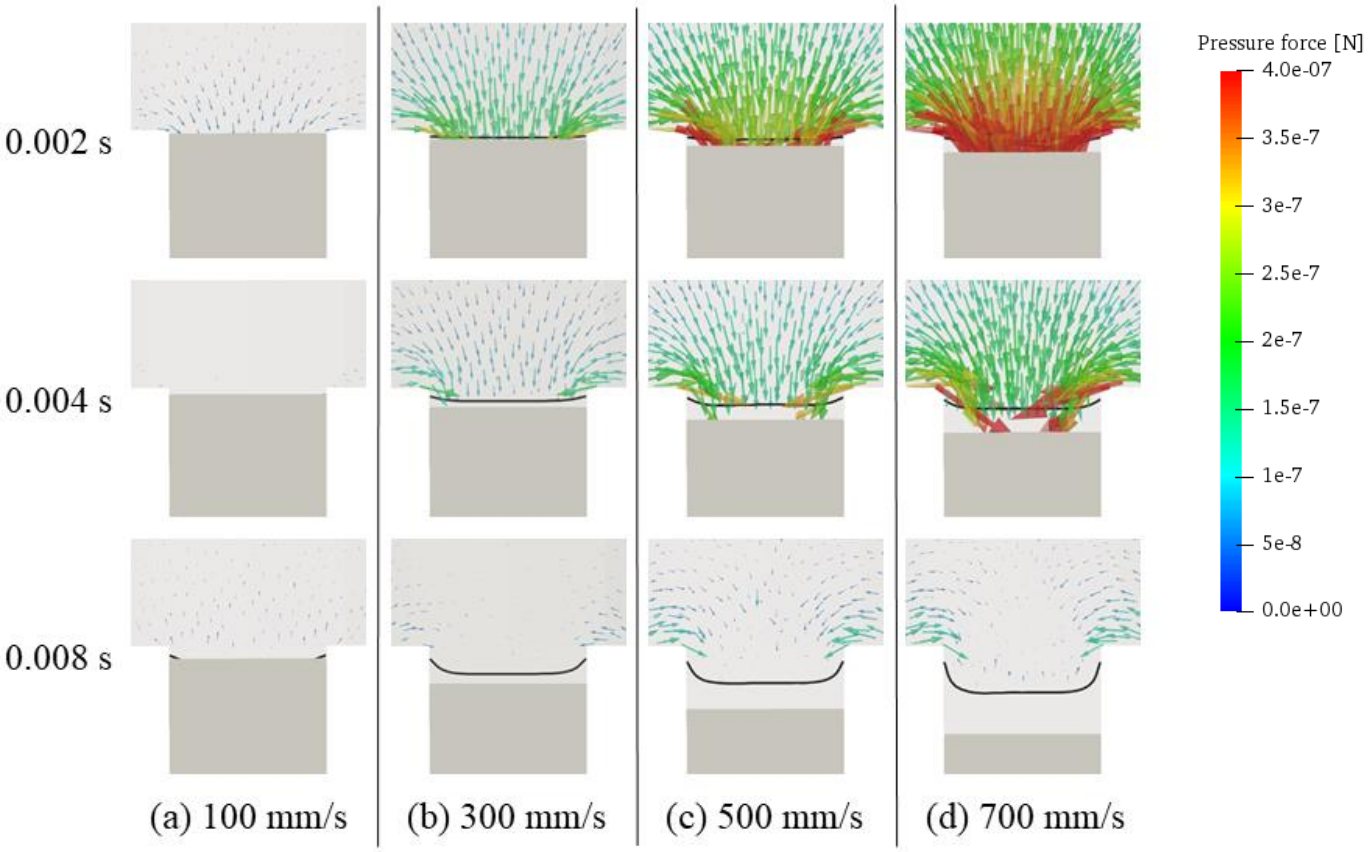

Figure 8. Pressure force

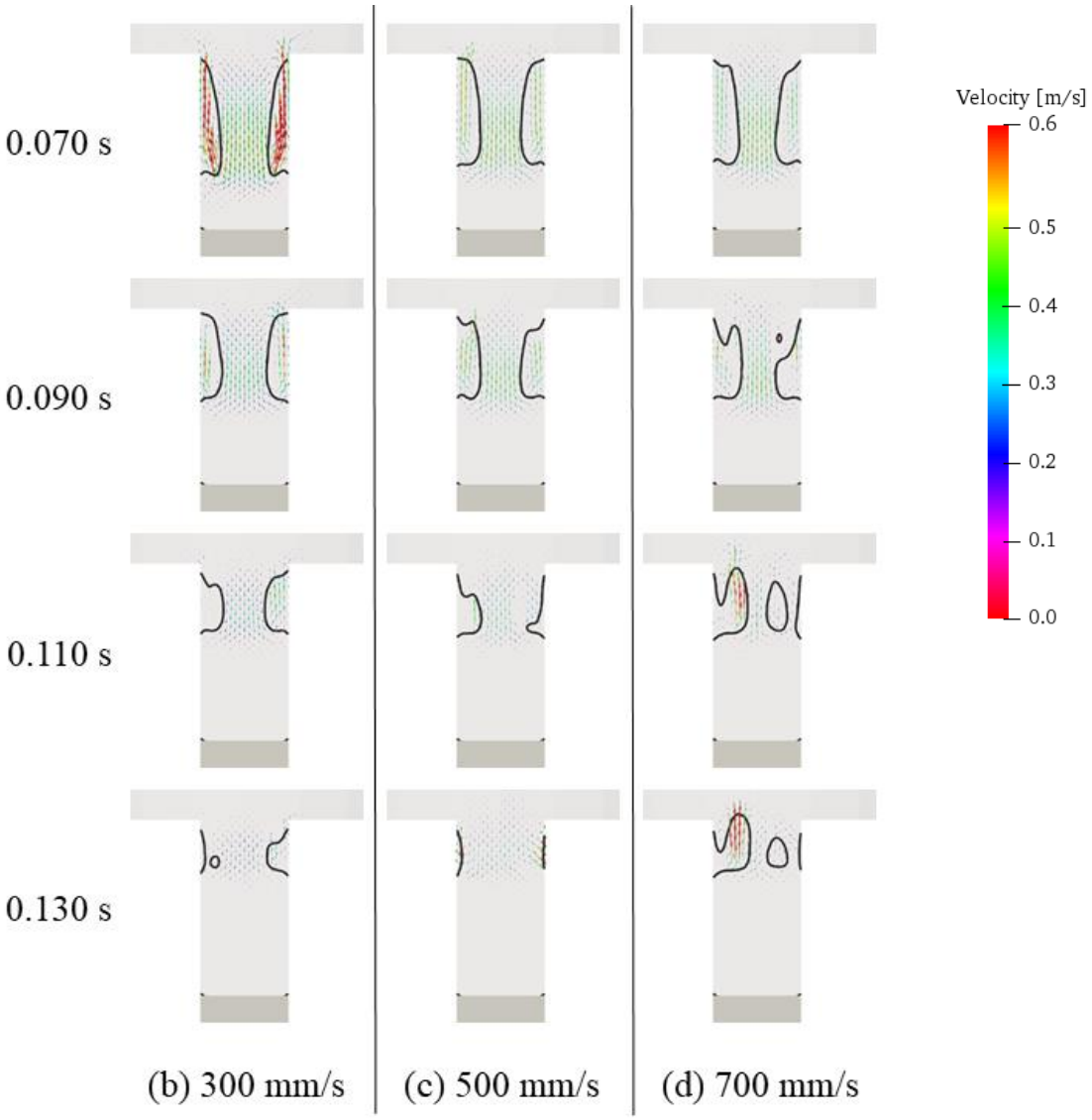

Figure 9. Air velocity