

Figure 1. Schematic Geometry

Table 1. Physical Properties

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

Table 2. Calculation conditions

Particle diameter	$250 \text{ } \mu\text{m}$
Number of particles	500,000
Grid size	0.5 mm
Calculation time	0.24 s

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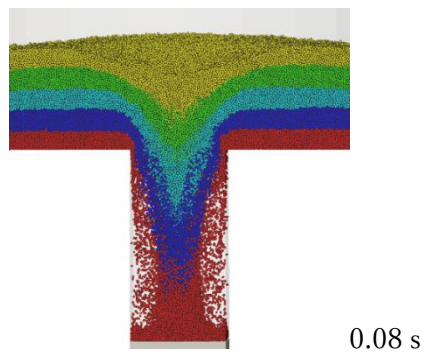
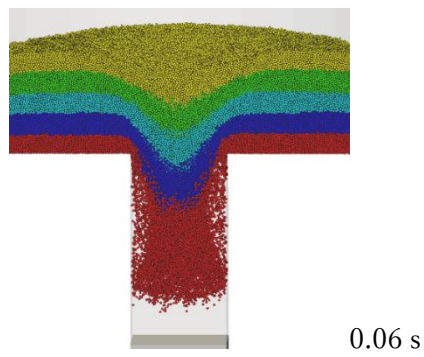
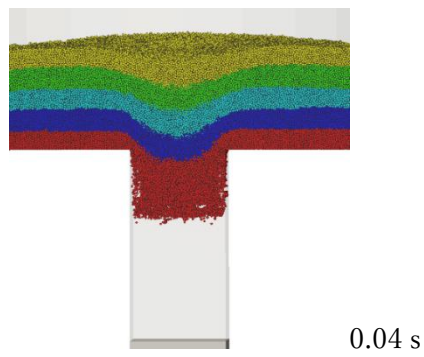
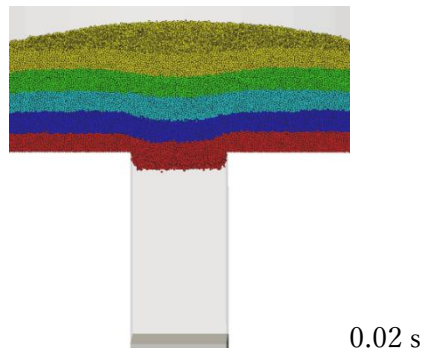


Figure 2. Powder distribution

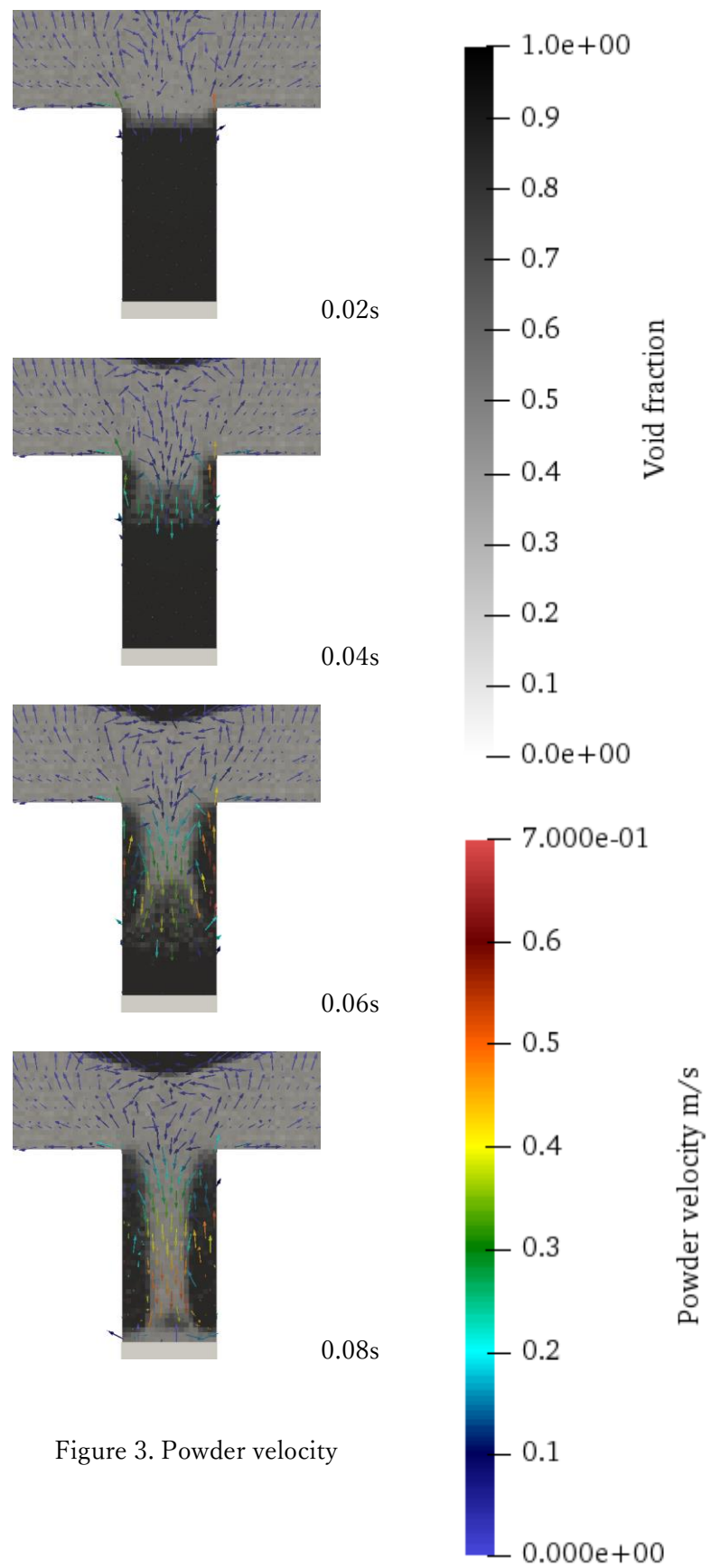


Figure 3. Powder velocity

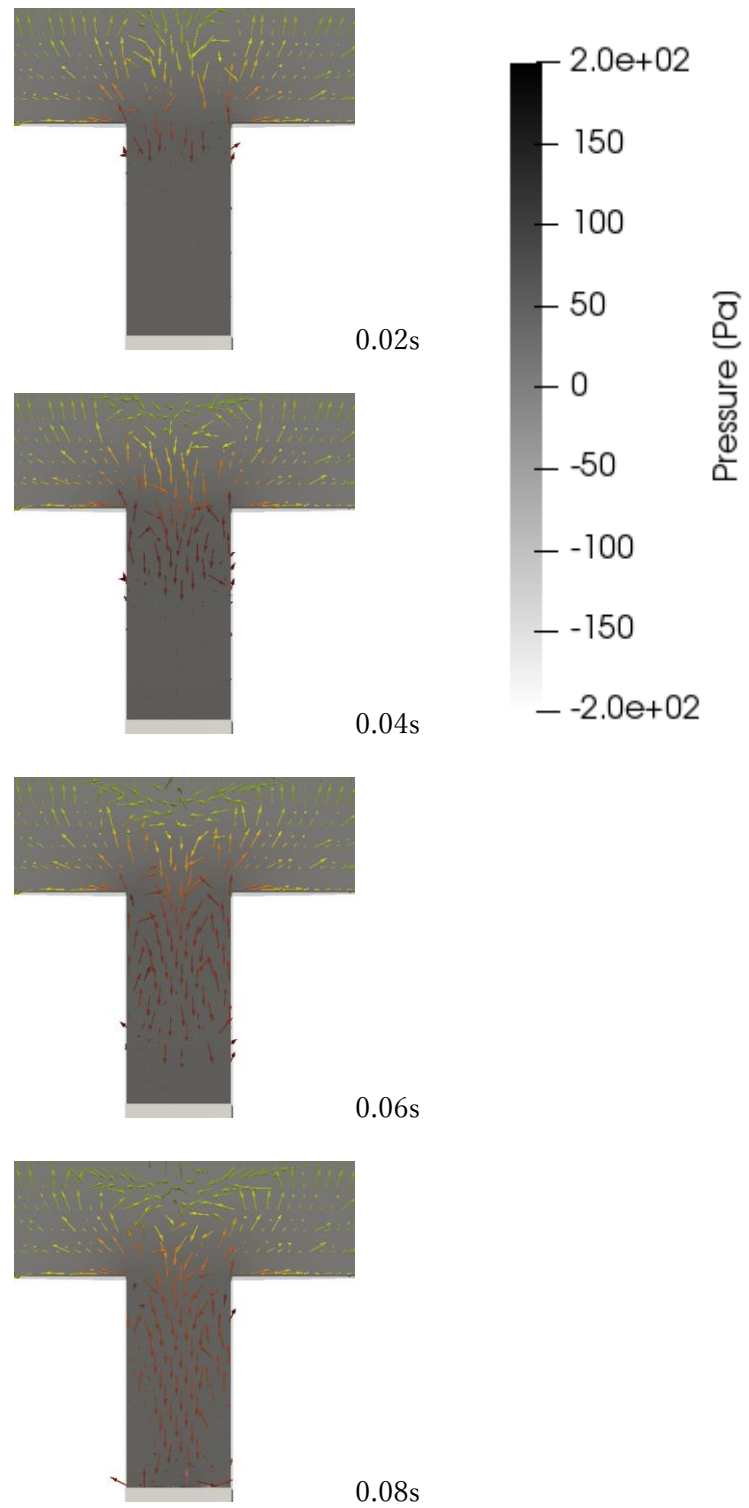


Figure 4. Air velocity

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下杵降下速度 100, 300, 500, 700 [mm/s]

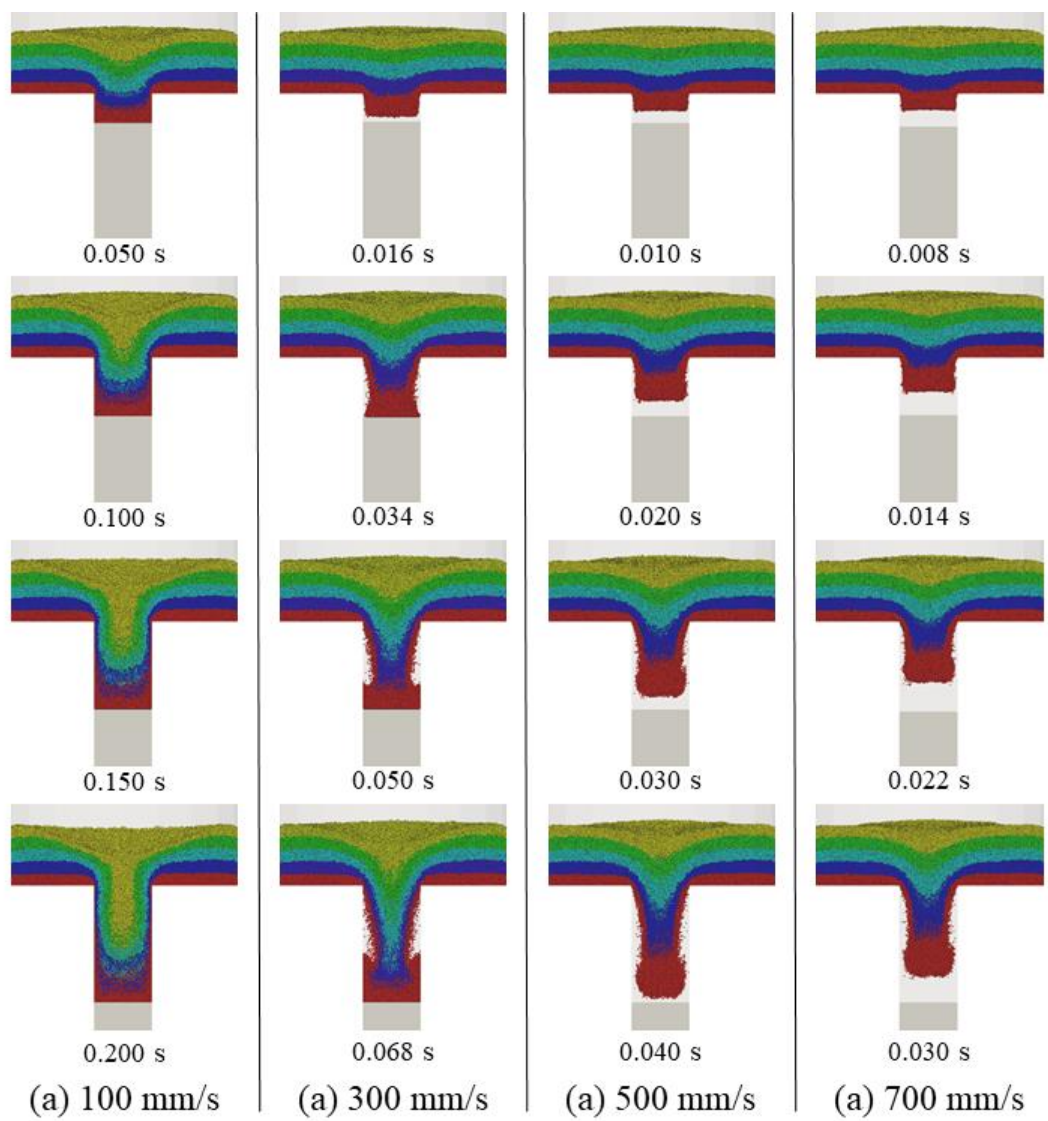


Figure 5. Particle distribution



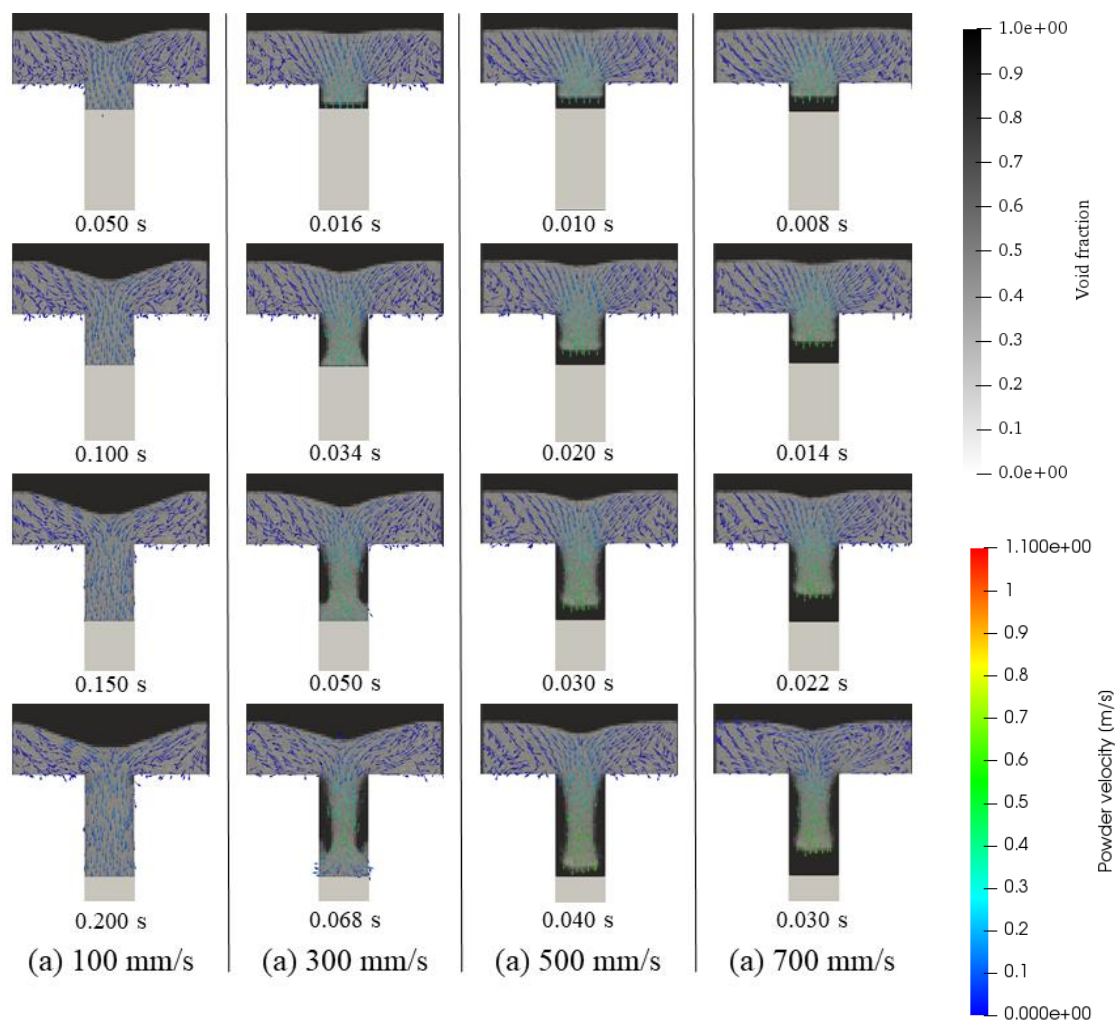


Figure 6. Particle velocity and void fraction rate

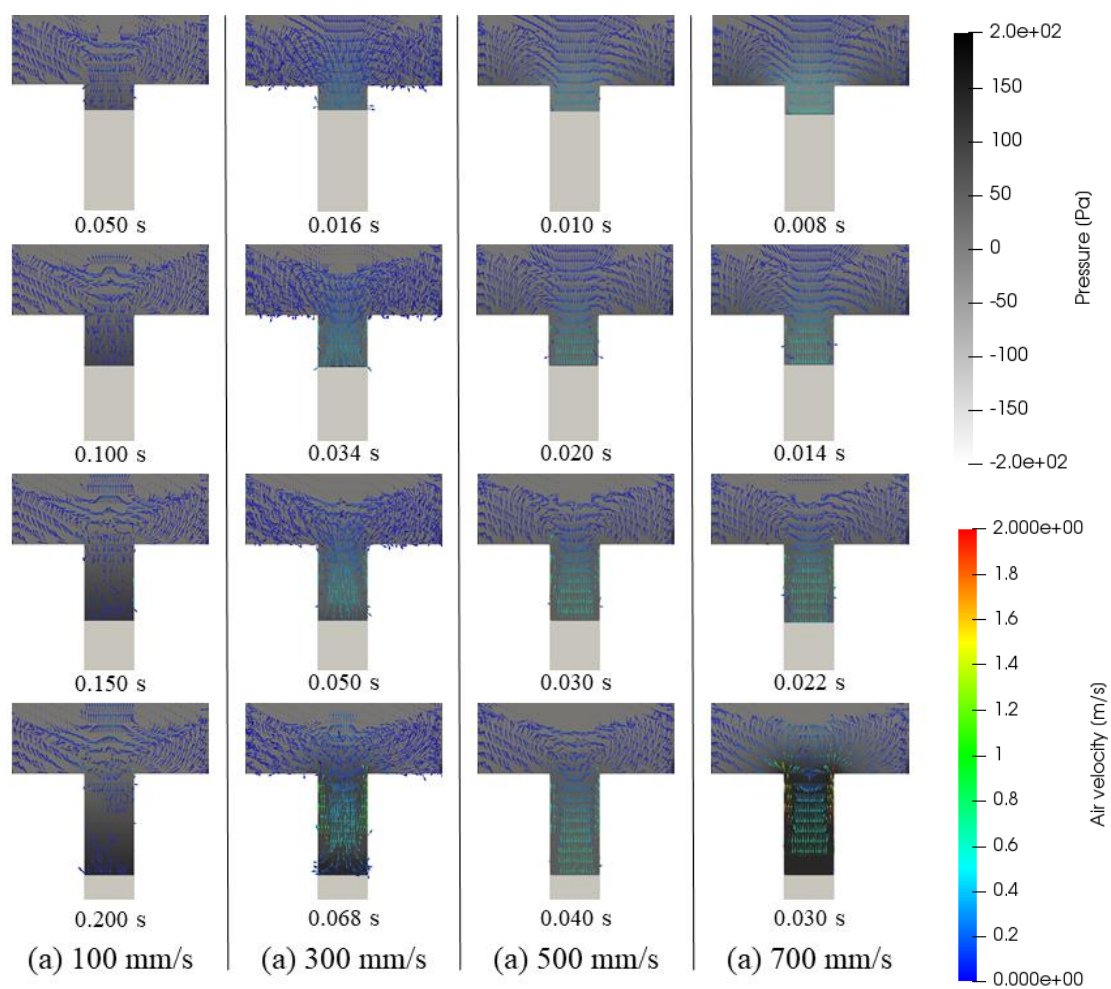


Figure 7. Air velocity and pressure

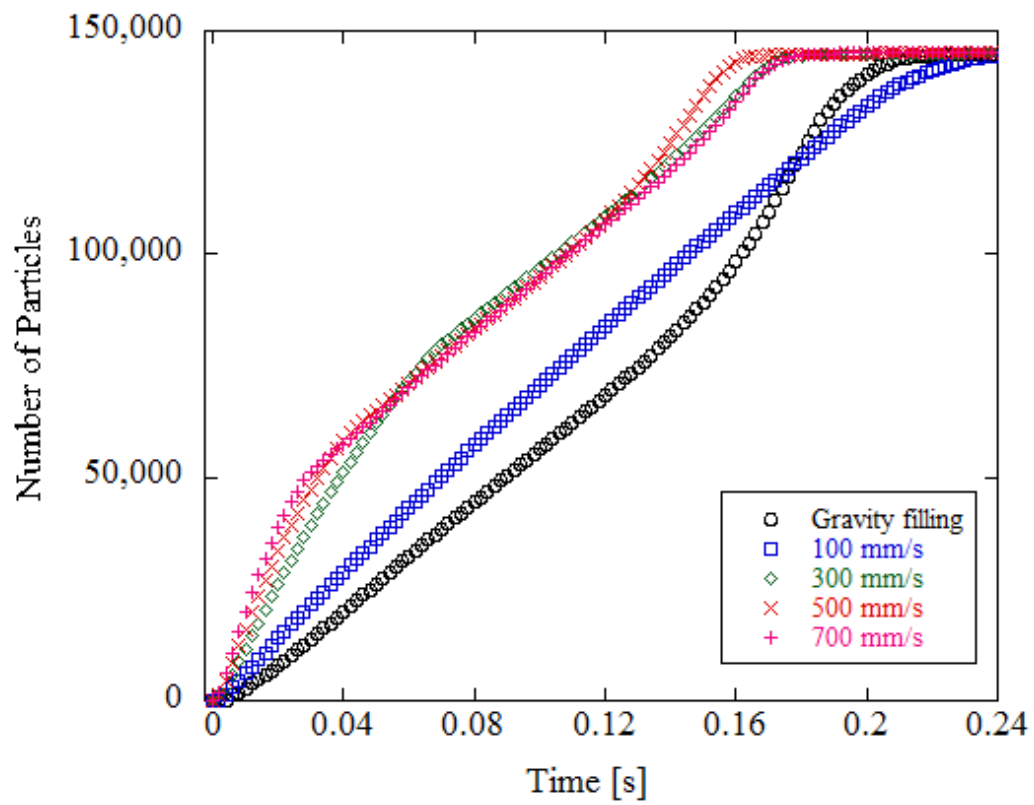


Figure 8. Number of powder particles in die region

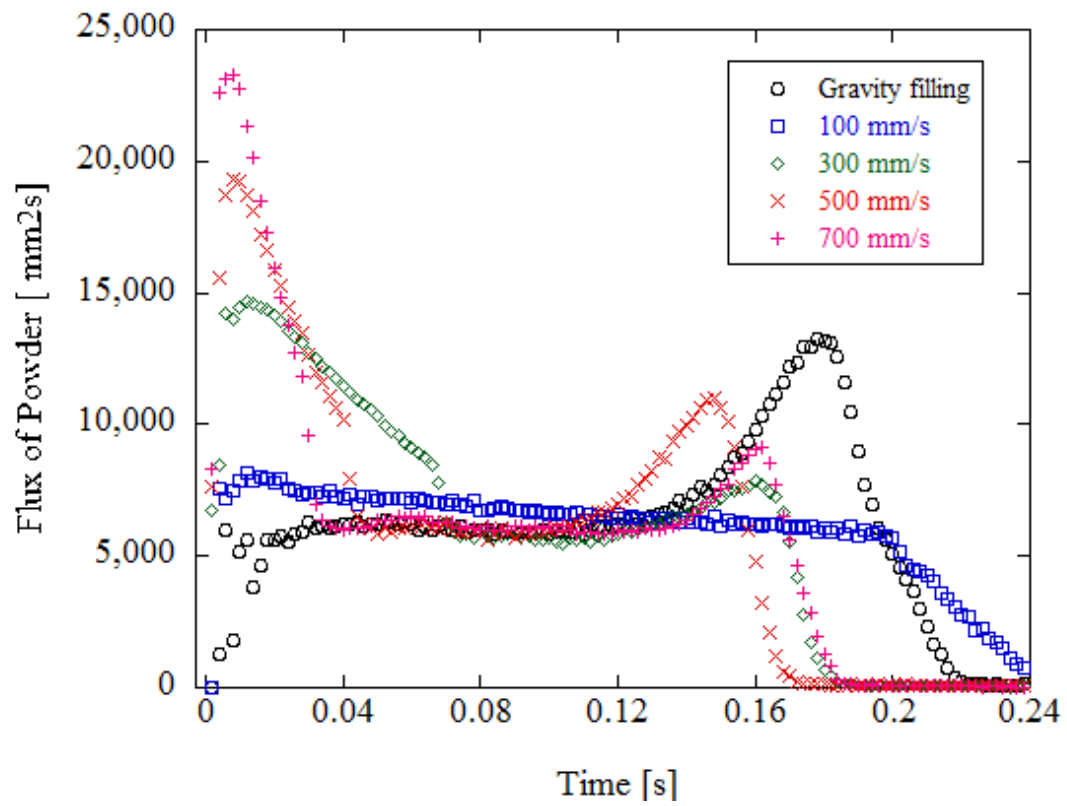


Figure 9. Flux of powder flow

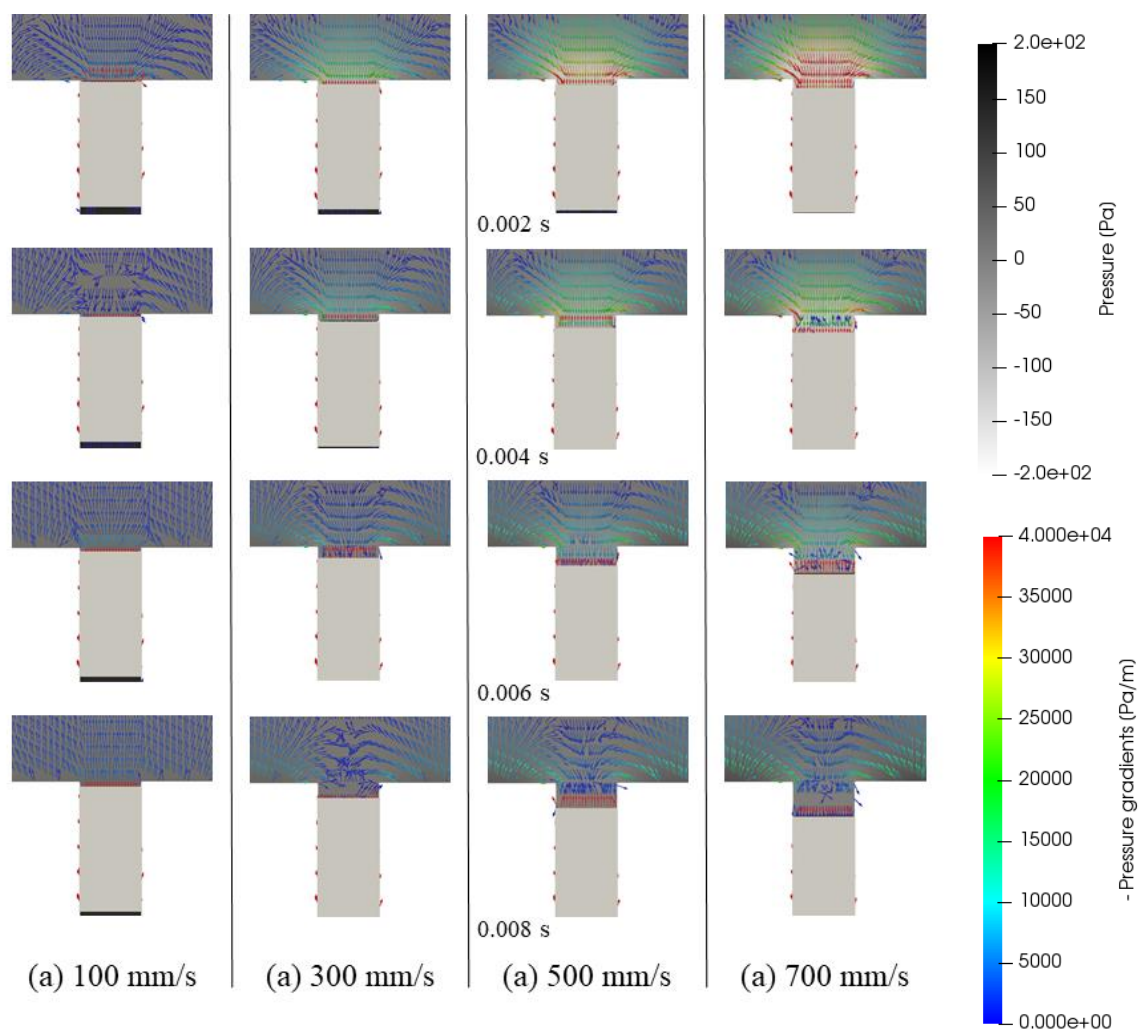


Figure 10. Pressure gradient

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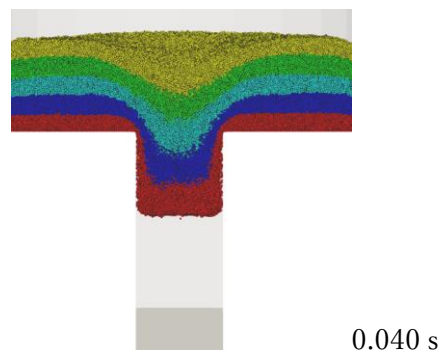
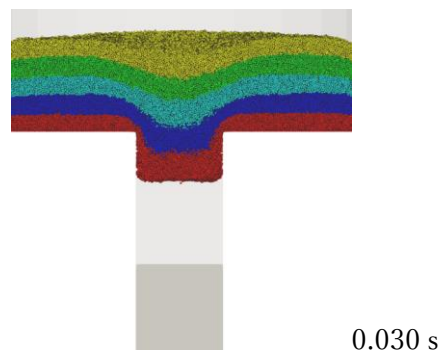
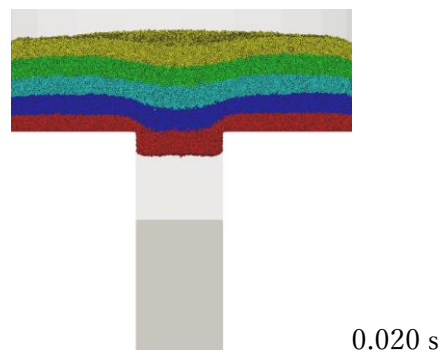
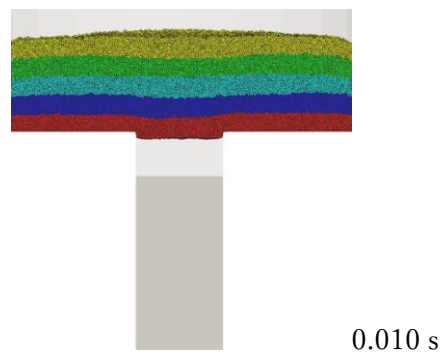


Figure 11. Particle distribution

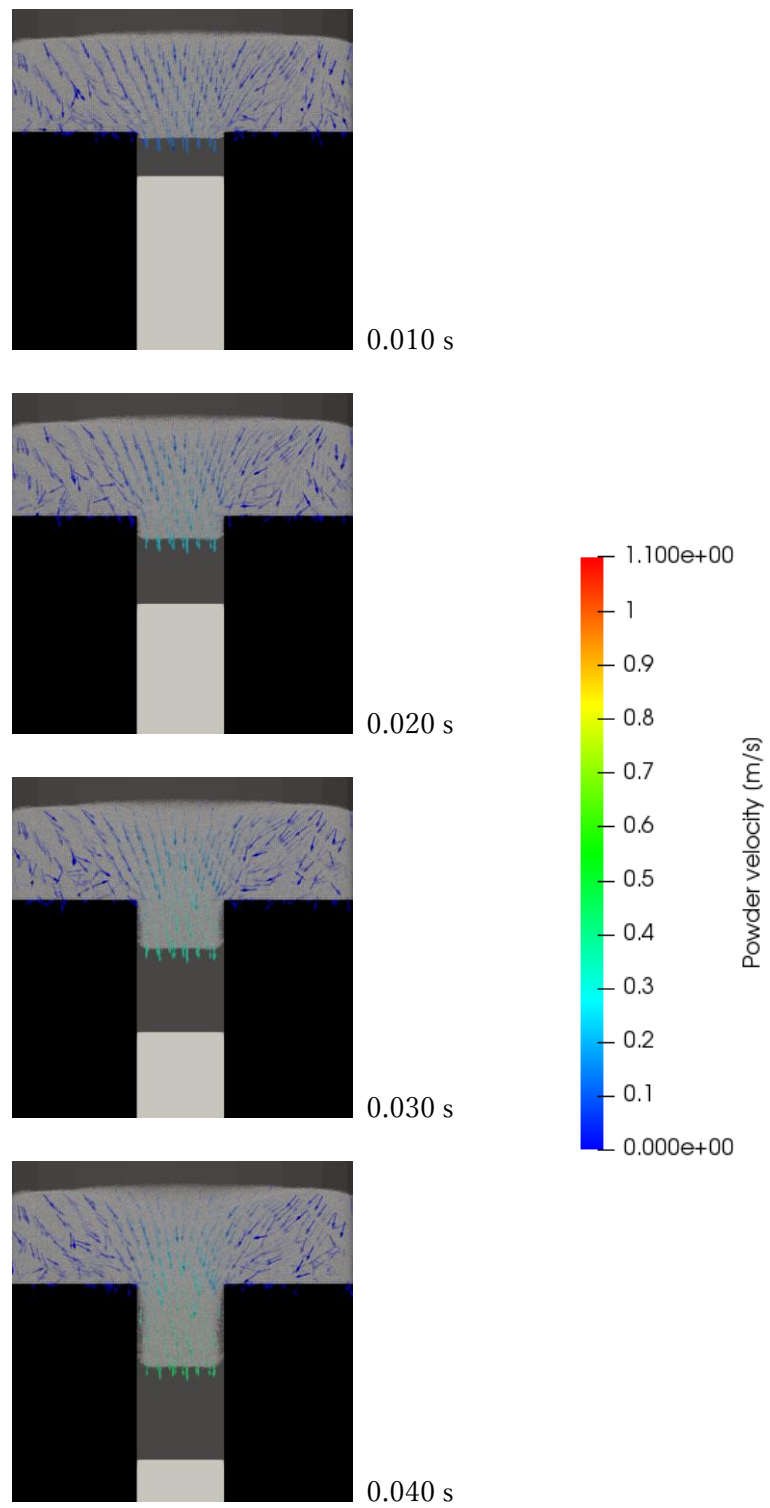


Figure 12. Powder velocity



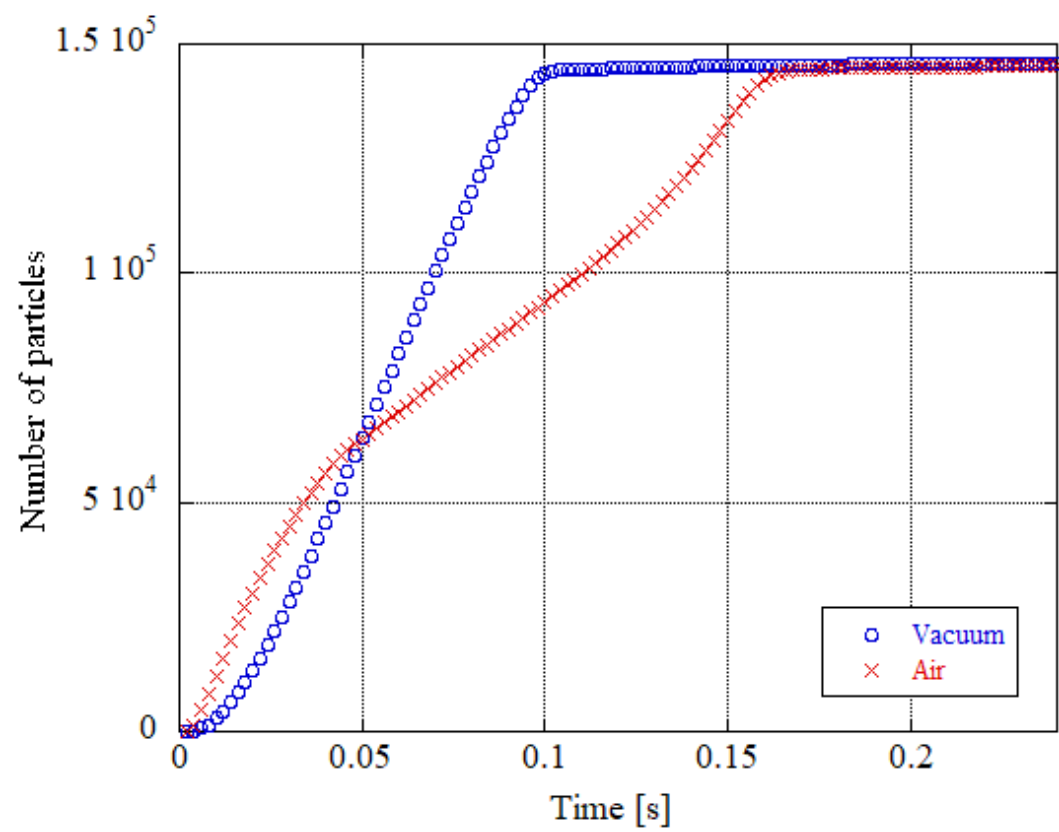


Figure 13. Number of powder particles in die region

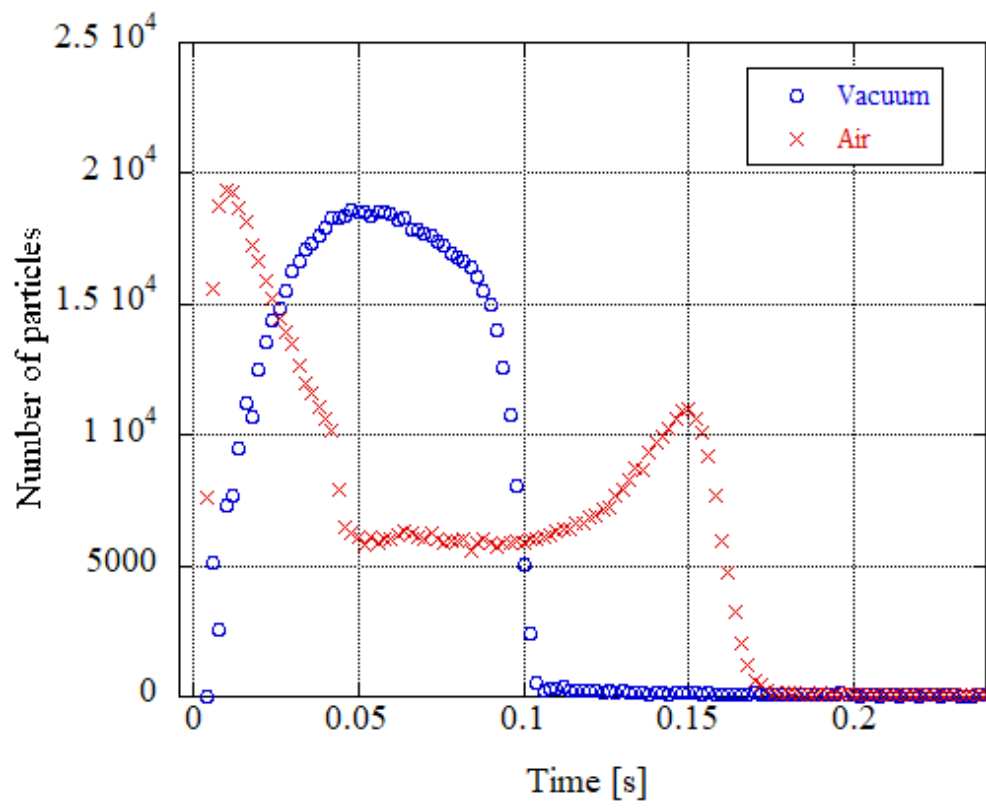


Figure 13. Flux of powder flow






	Vacuum	Air
	31655	30792
	31062	31521
	31812	30974
	27332	27153
	24051	24797

Table 3. Number of particle in each layer