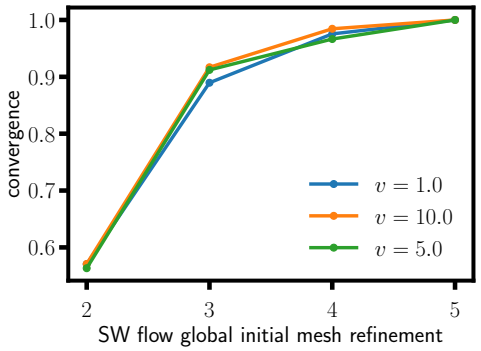
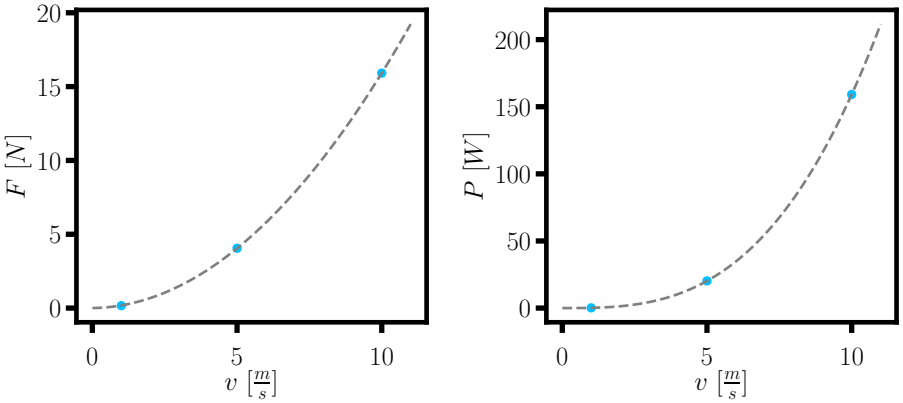
Aerodynamic simulation in SolidWorks Flow dink

Solidworks flow simulation for a simplified version of the tandem trike (simple wheels, no chairs). Increased "global initial mesh refinement" until results converge.
It is clear that predicted force F, and power P calculated by $P = Fv$ is low by a factor ≈ 3.





Sideview velocity contour plots

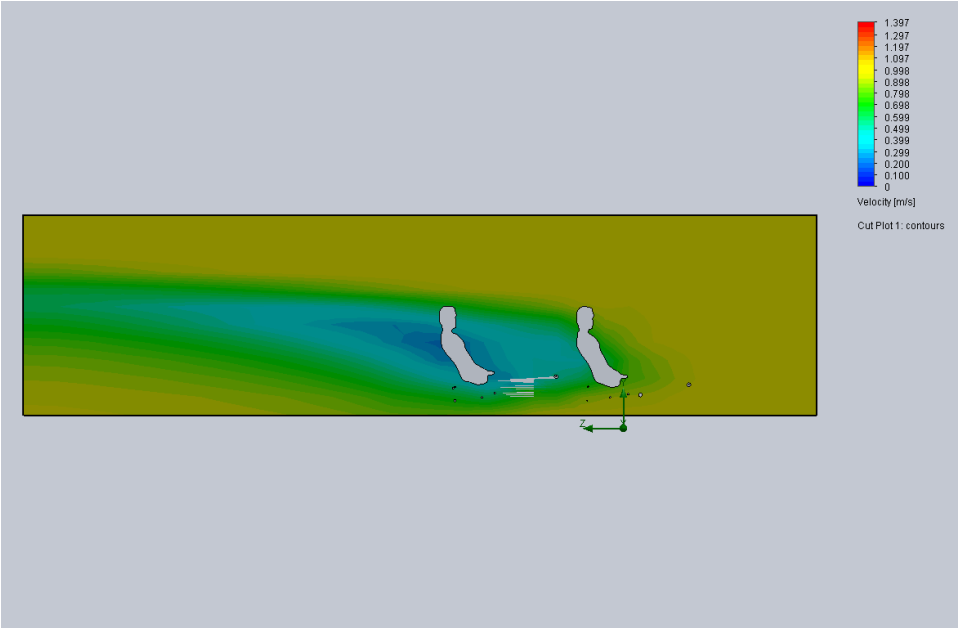


Figure 1: $v = 1m/s$, global initial mesh = 2

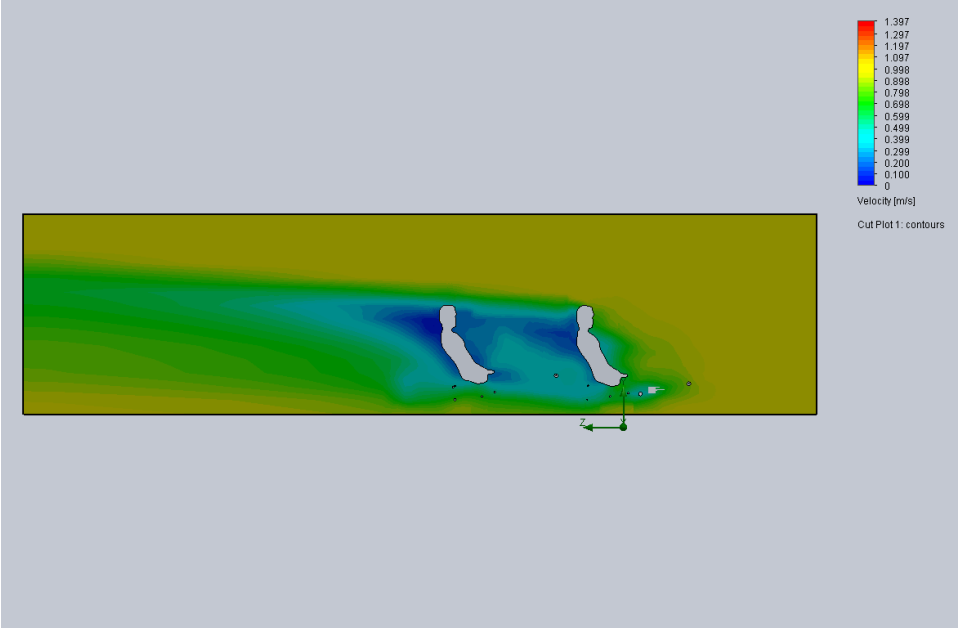


Figure 2: $v = 1m/s$, global initial mesh = 3

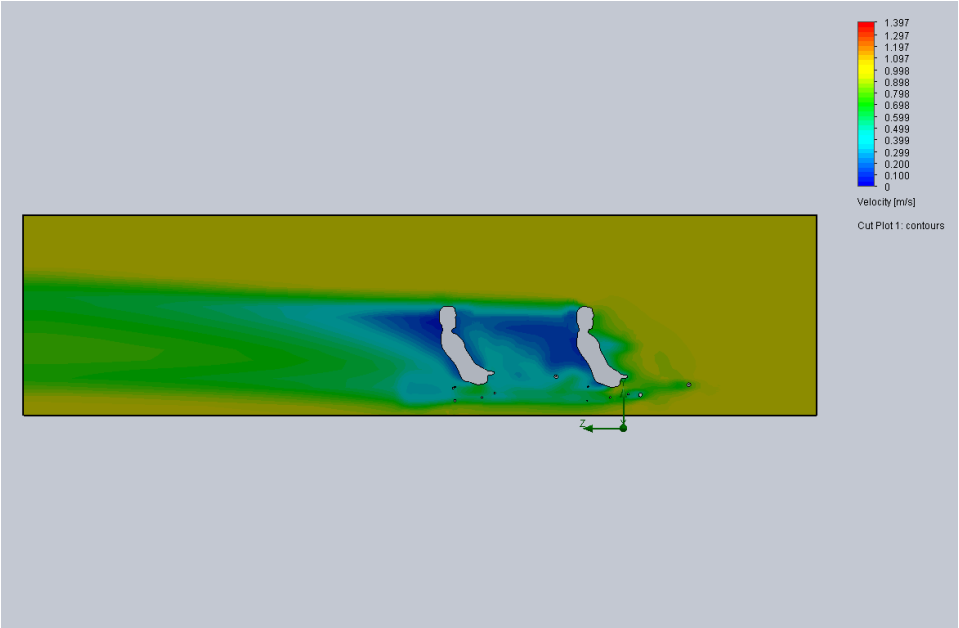


Figure 3: $v = 1m/s$, global initial mesh = 4

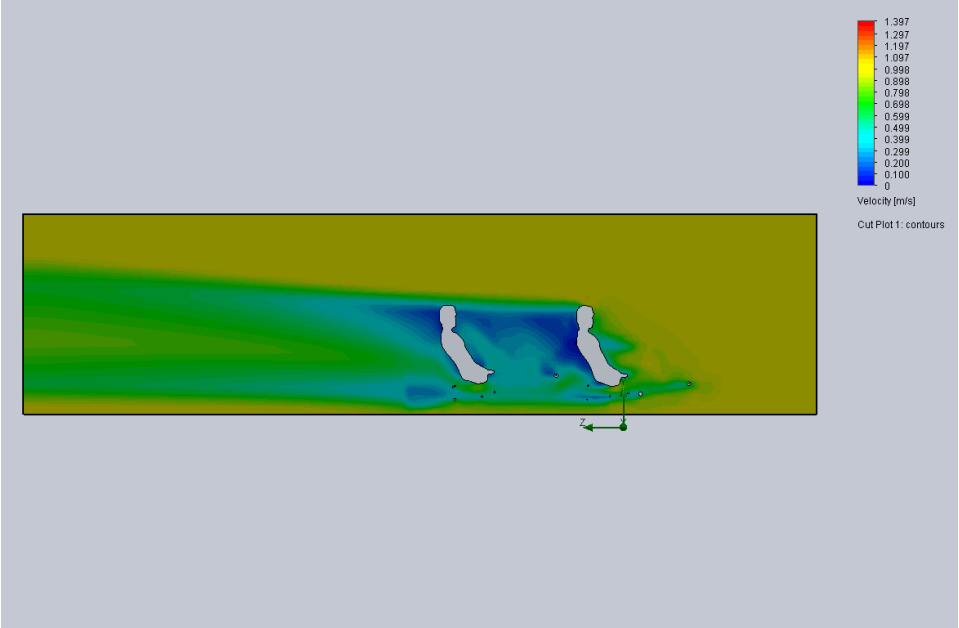


Figure 4: $v = 1m/s$, global initial mesh = 5

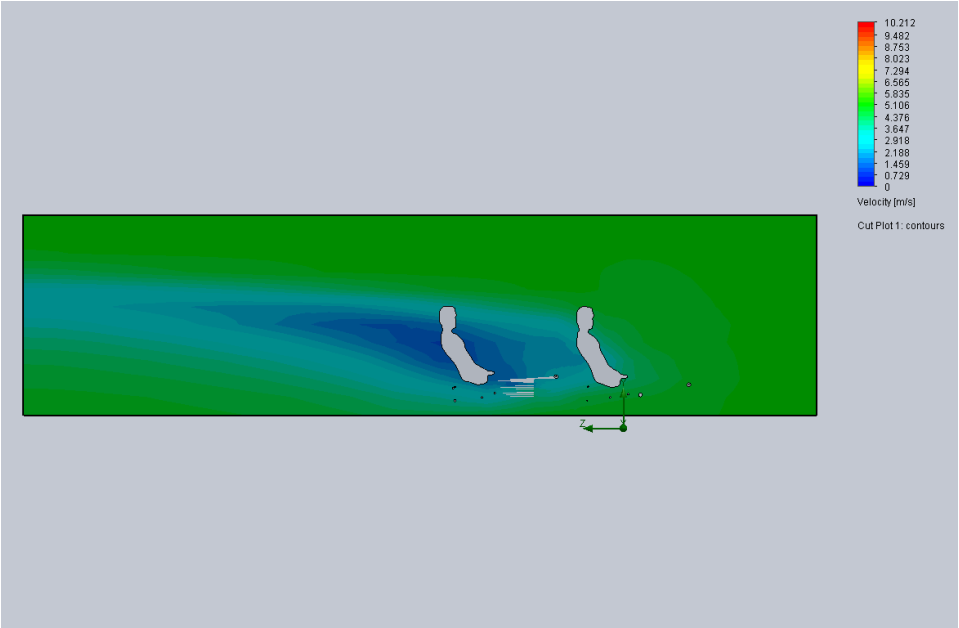


Figure 5: $v = 5m/s$, global initial mesh = 2

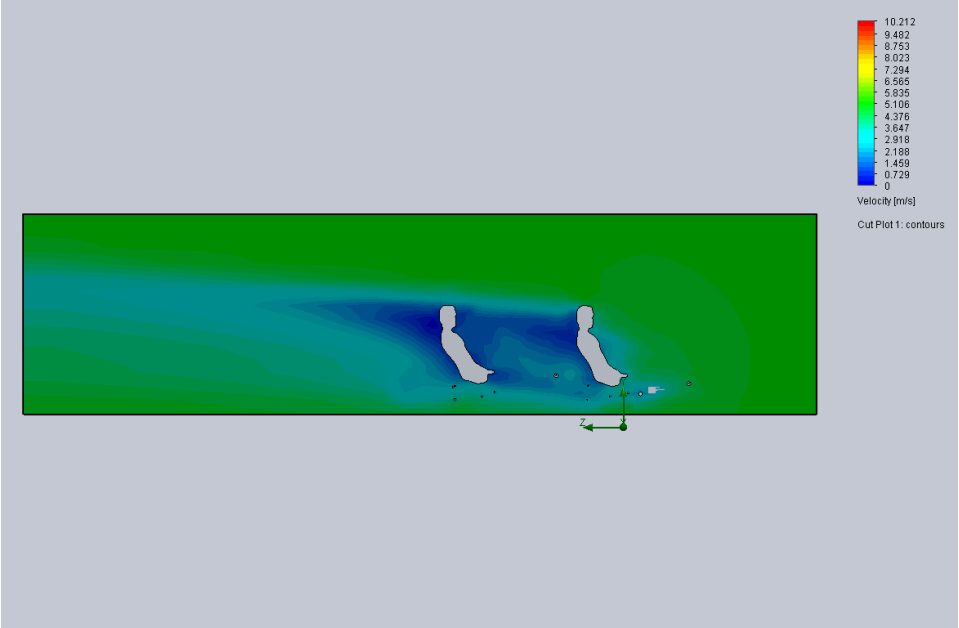


Figure 6: $v = 5m/s$, global initial mesh = 3

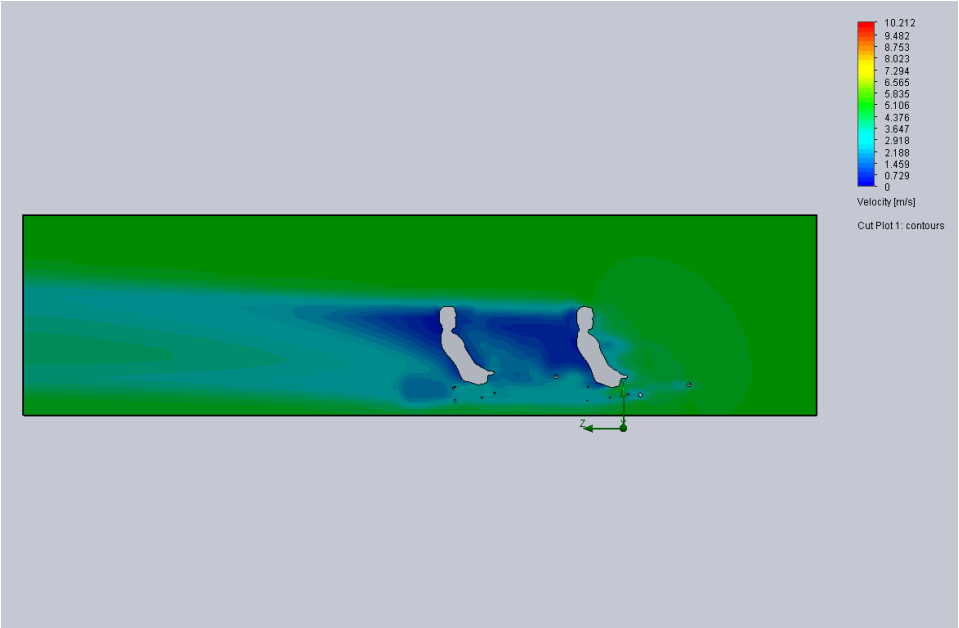


Figure 7: $v = 5m/s$, global initial mesh = 4

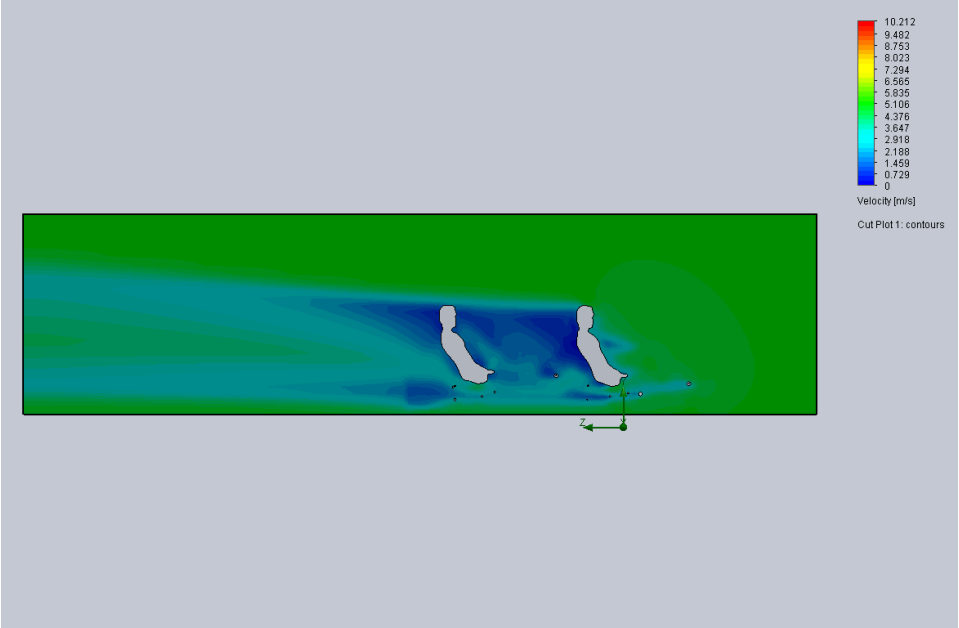


Figure 8: $v = 5m/s$, global initial mesh = 5

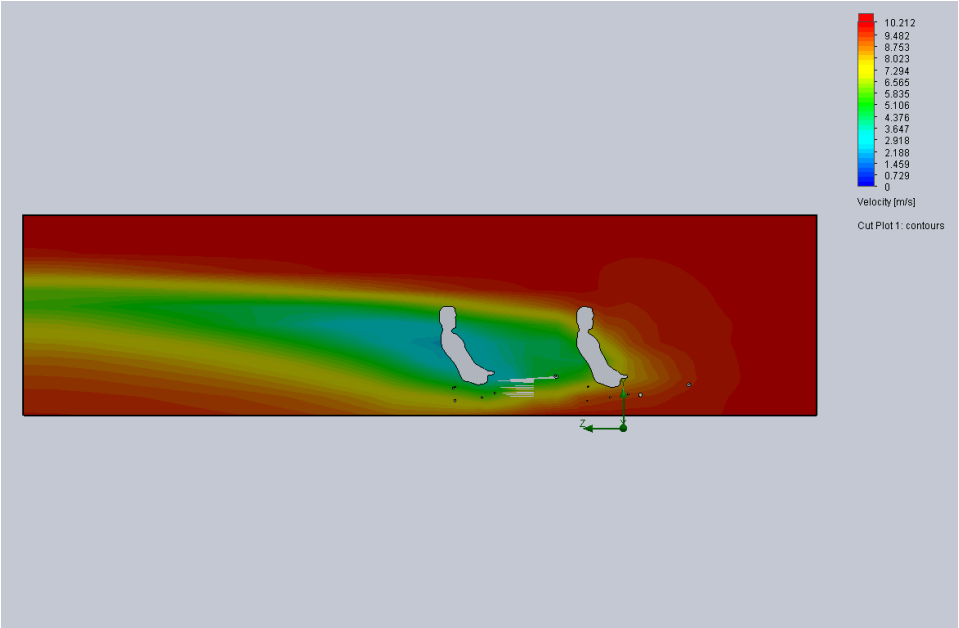


Figure 9: $v = 10m/s$, global initial mesh = 2

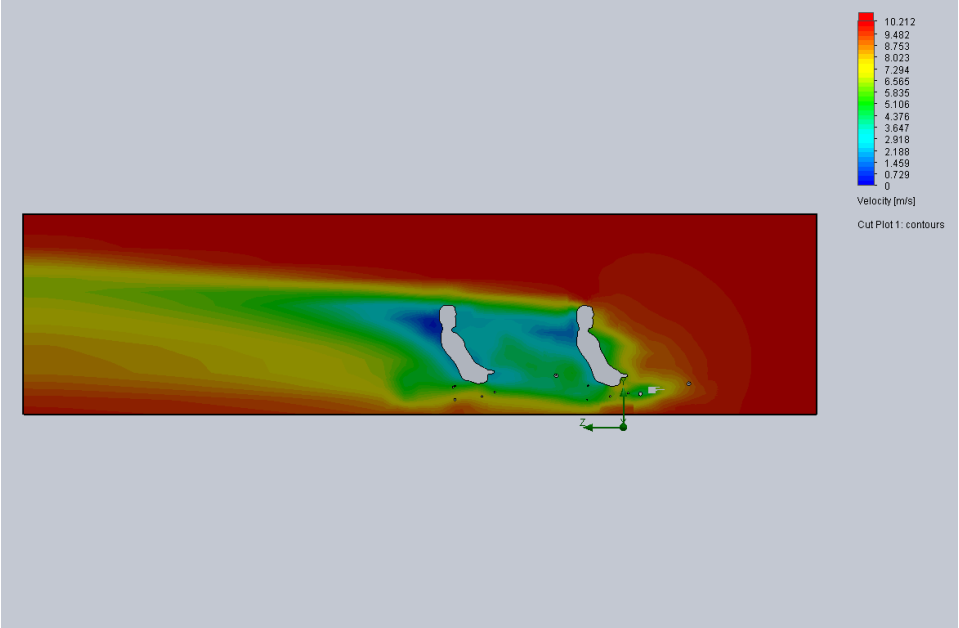


Figure 10: $v = 10m/s$, global initial mesh = 3

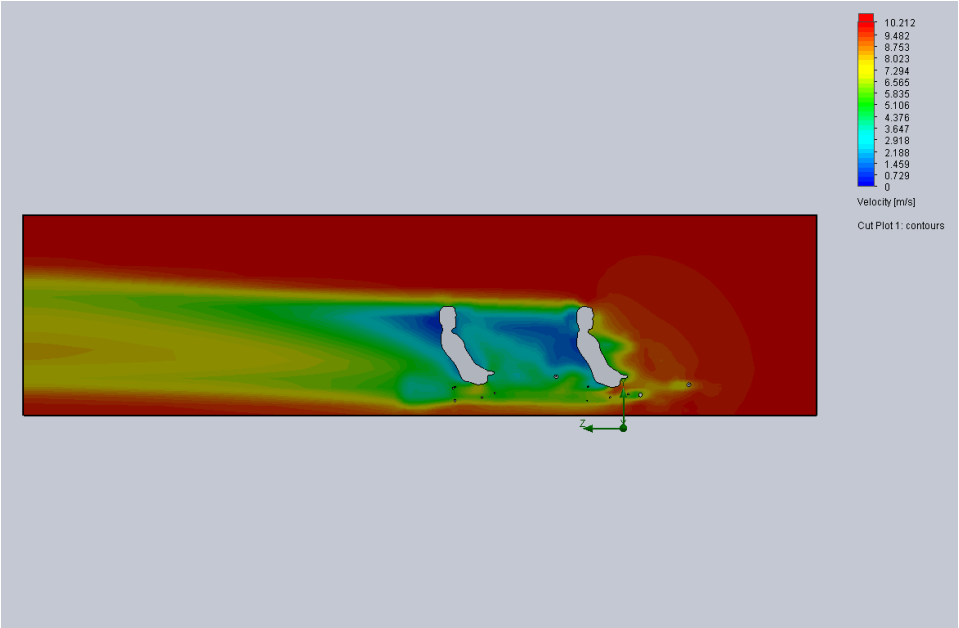


Figure 11: $v = 10m/s$, global initial mesh = 4

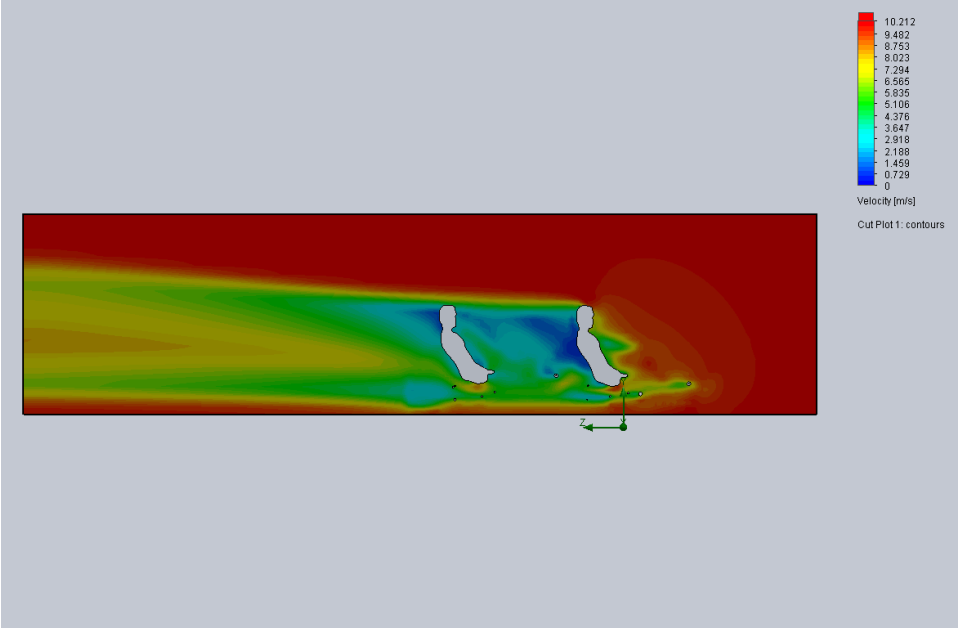


Figure 12: $v = 10m/s$, global initial mesh = 5

1 roof tests

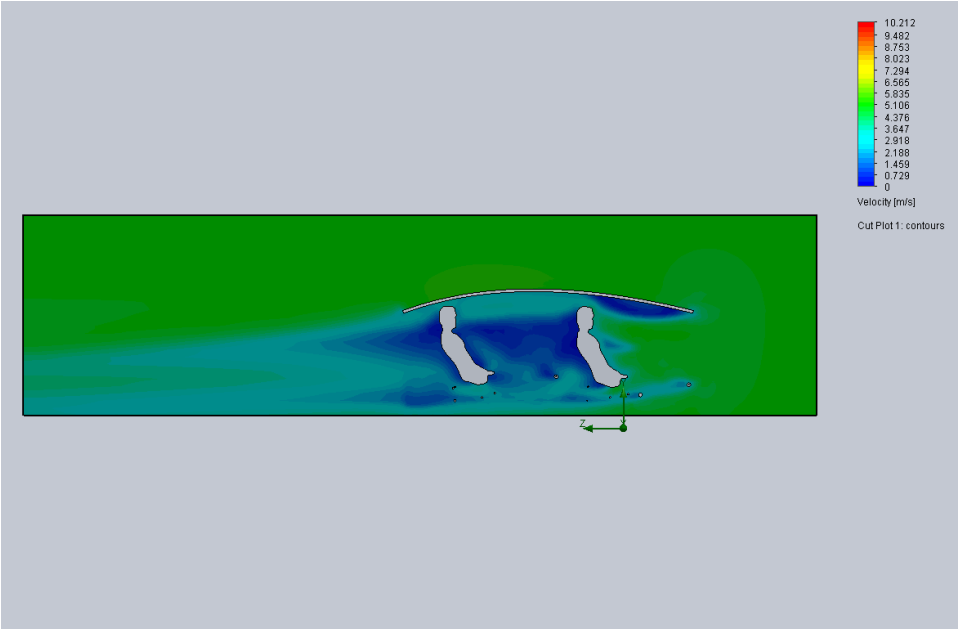


Figure 13: $v = 5m/s$, global initial mesh = 5. Note that with the roof the drag increases from 4N to 5N but turbulent tail is significantly suppressed.

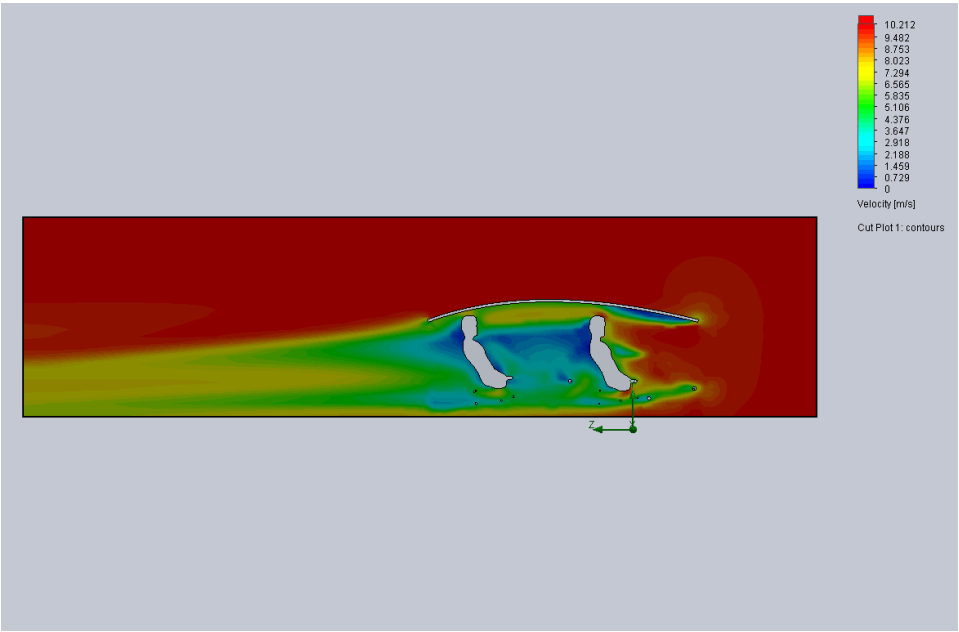


Figure 14: $v = 10m/s$, global initial mesh = 5. Note that with the roof the drag increases from 15N to 19N but turbulent tail is significantly suppressed.

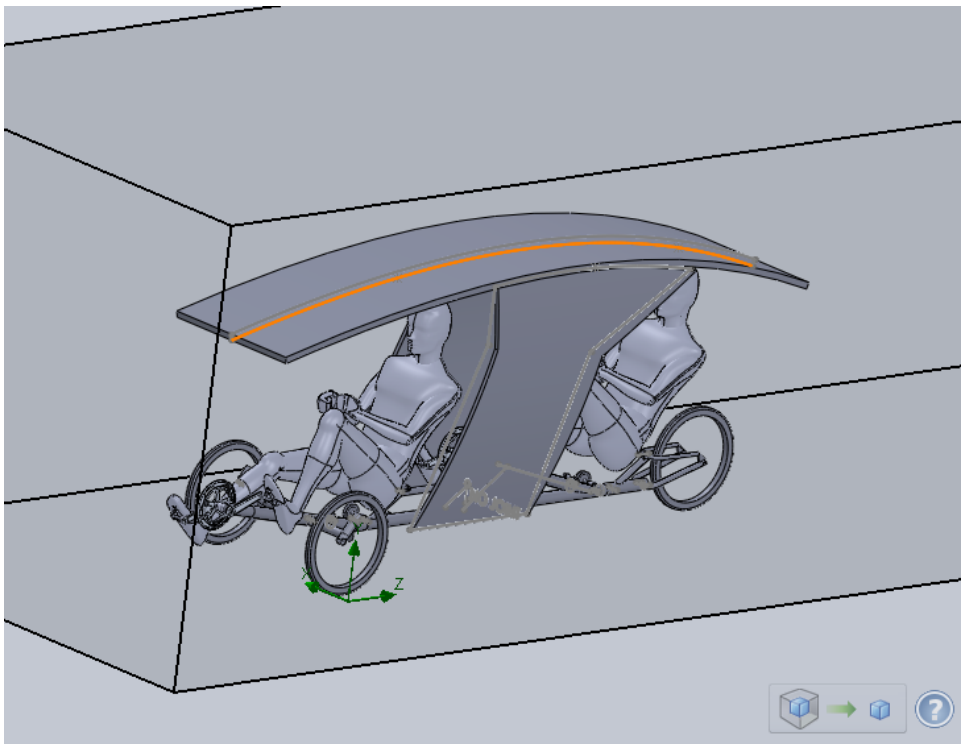


Figure 15: roof and sidefender

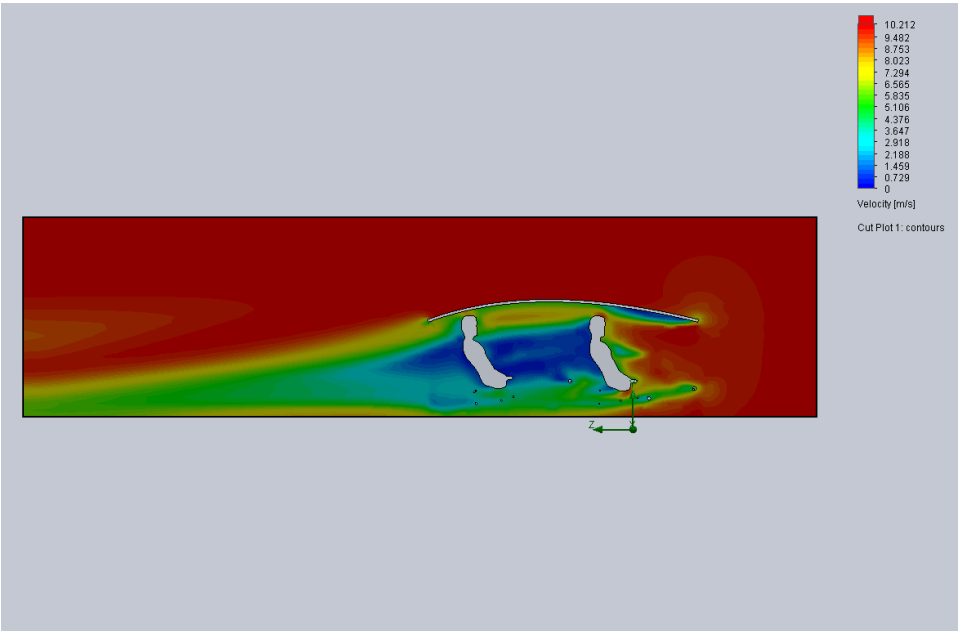


Figure 16: $v = 10m/s$, global initial mesh = 5. Adding sidefenders reduces drag force from 19N to 18.5N

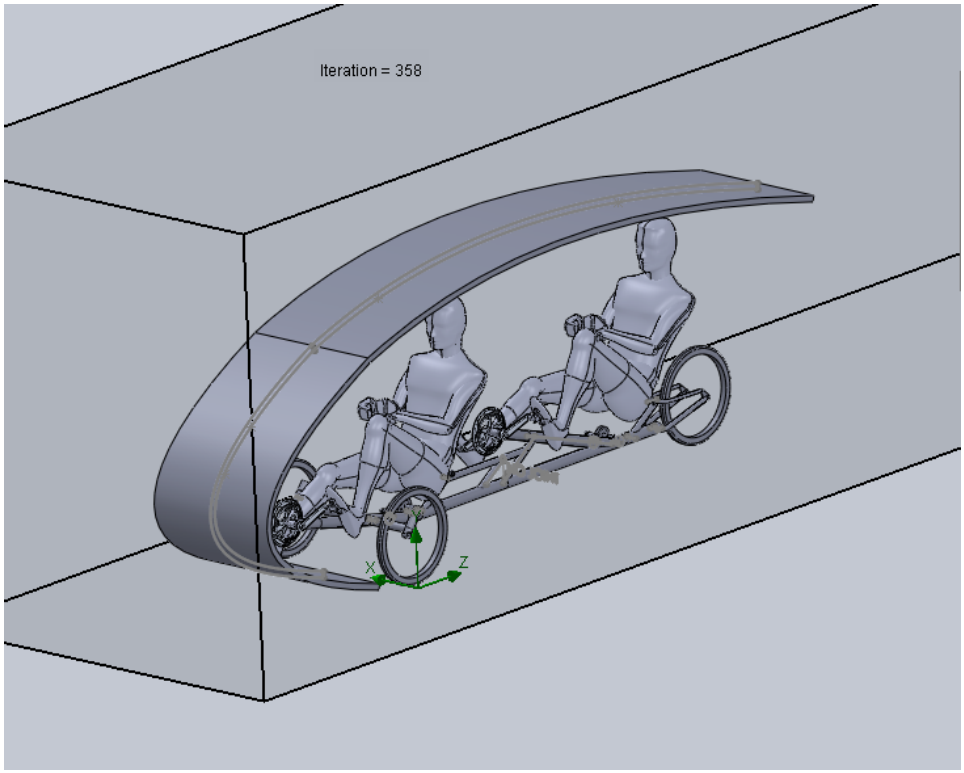


Figure 17: roof and sidefender

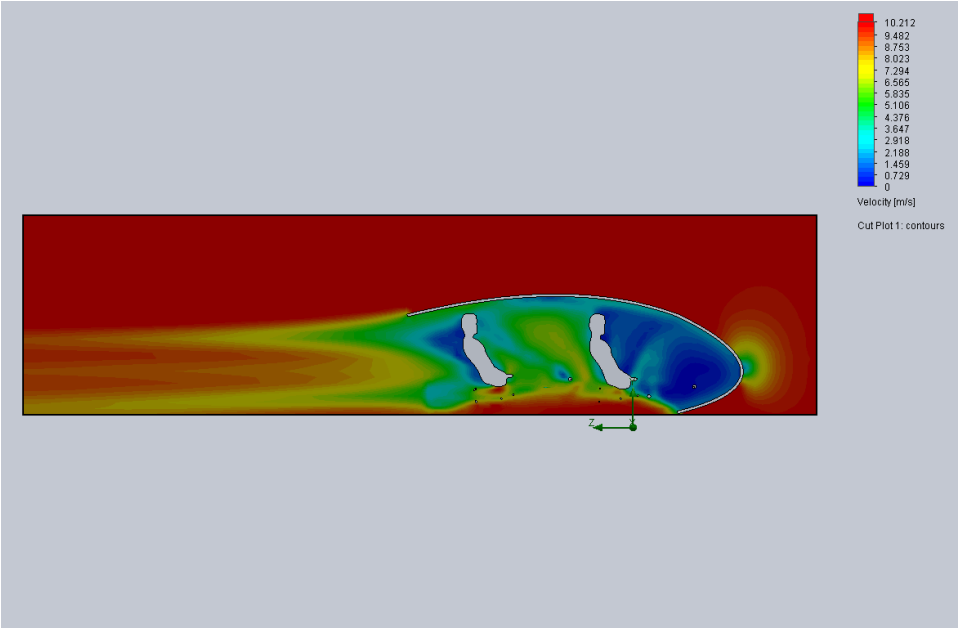


Figure 18: $v = 10m/s$, global initial mesh = 5. Drag force is 34N

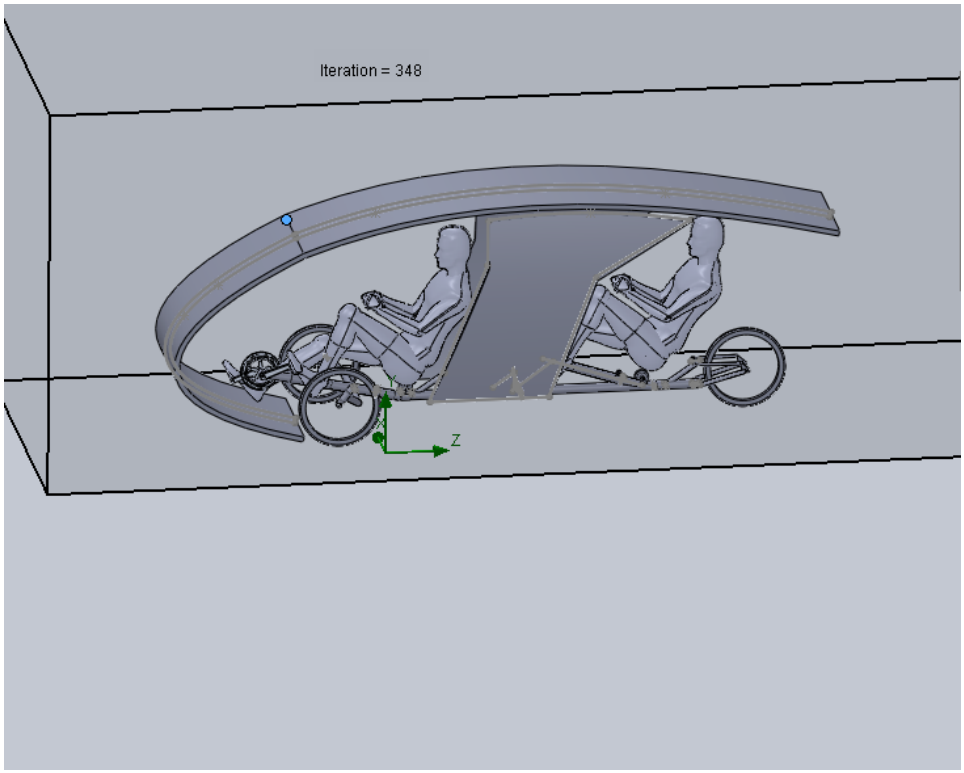


Figure 19: roof and sidefender

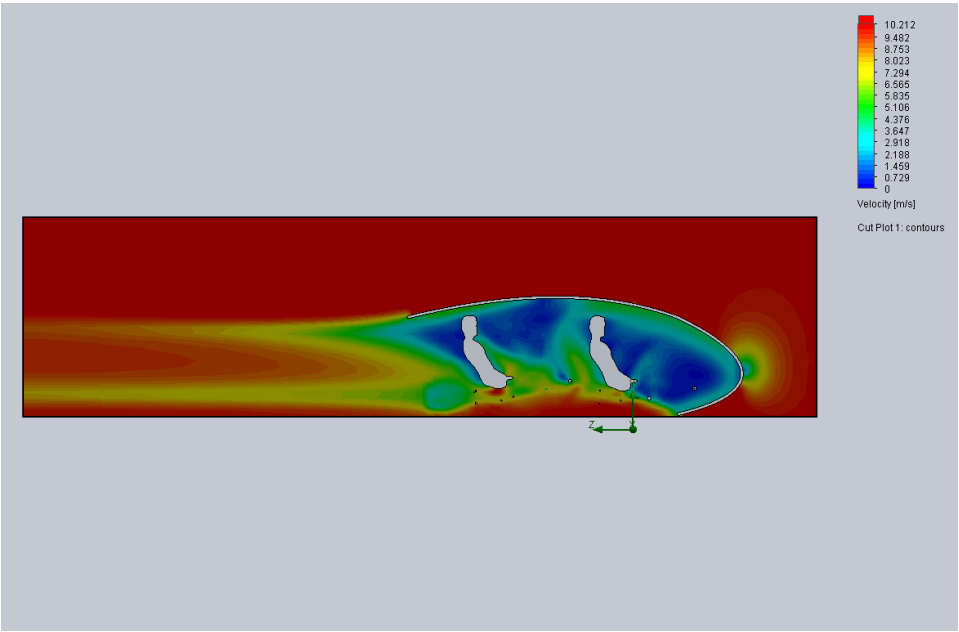


Figure 20: $v = 10m/s$, global initial mesh = 5. Adding sidefenders reduces drag from 34N to 30N.