

Simulation Report: Muffler Flow Case

Automated Report

December 28, 2025

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Abstract

This report summarizes the results of the incompressible fluid simulation for the muffler case.

1 Fluid Properties

Kinematic viscosity: N/A

2 Mesh Statistics

Summary of mesh quality metrics:

Statistic	Value
num_points	5524
num_cells	4512
bounds	[0.0, 0.8100000023841858, -0.07999999821186066, 0.1599999964237213, -0.07999999821186066]
volume	0.009447480969487068
area	None

Figure 1: Mesh Quality Statistics

3 Velocity Field Statistics (Cell Region)

Statistics of the velocity field in the cell region.

Statistic	Value
mean	1.859032154083252
std	3.5957369804382324
min	-5.472109317779541
max	14.198135375976562
volume_weighted_mean	[5.467697041862737, 1.101903628387539, -2.666489601708383e-06]

Figure 2: Velocity Field ('U') Statistics

4 Visualizations

Figures representing flow, pressure, velocity vectors, and mesh.

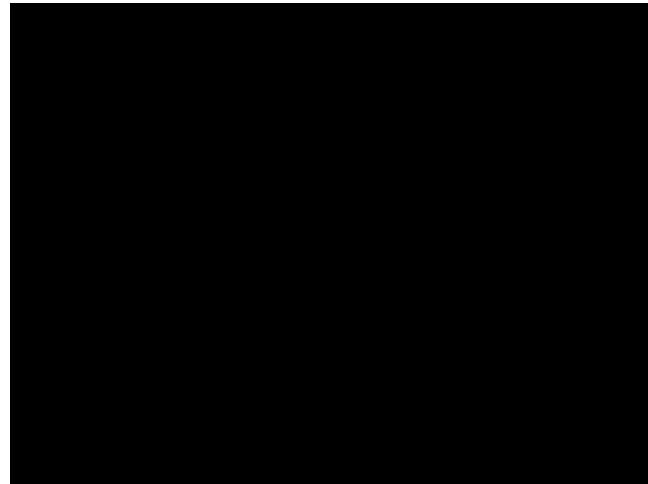


Figure 3: Slice Plot.Png

A Cell Data Export

The cell data has been exported to cell_data.csv for further analysis.

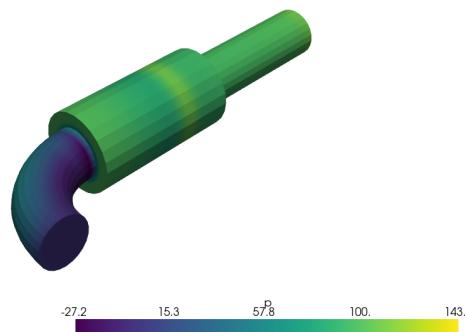


Figure 4: Contour Plot.Png

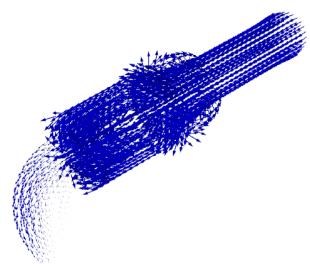


Figure 5: Vector Plot.Png

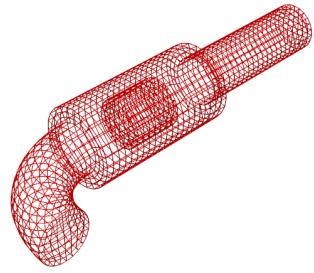


Figure 6: Mesh Style Plot.Png