Simulation Report: Muffler Flow Case

Automated Report

September 14, 2025

Contents

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, 0.810000023841858, -0.0799999821186066, 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	1.8200982809066772
std	3.4640614986419678
min	-4.677606105804443
max	12.572113037109375
volume_weighted_mean	[5.307658297250772, 1.094723060860277, -1.055348874386327e-05]

Figure 2: Velocity Field ('U') Statistics

4 Visualizations

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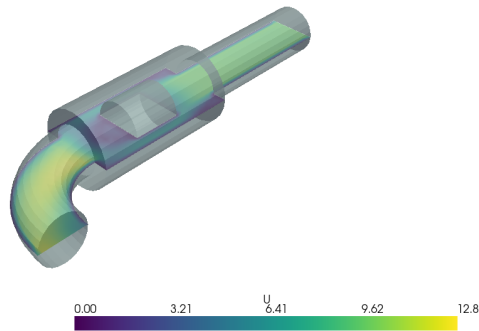

Figure 3: Slice Plot.Png

A Cell Data Export

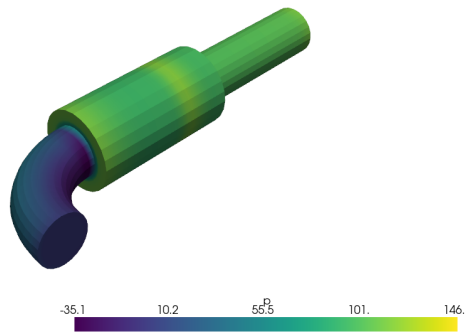The cell data has been exported to cell_data.csv for further analysis.
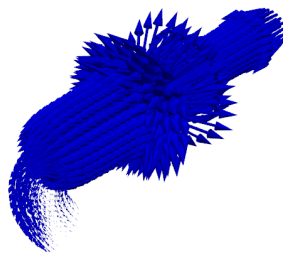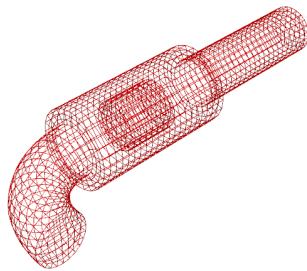
Figure 4: Contour Plot.Png

Figure 5: Vector Plot.Png

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Figure 6: Mesh Style Plot.Png