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SOLIDWORKS

Fluid Flow Simulation Project Report

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SOLIDWORKS Flow Simulation Project Report

April 22, 2025

[Model Picture here]

Learn more about SOLIDWORKS Flow Simulation

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1 General Information

Objective of the simulation: Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut a pulvinar lacus. Vivamus adipiscing adipiscing eleifend. Pellentesque eget ante in ante suscipit gravida in non lorem. Suspendisse hendrerit sagittis lacus non aliquam. Proin pellentesque, lorem quis consequat porta, lectus nunc vestibulum lectus, nec rhoncus libero dui ut felis. Vestibulum eu aliquet tellus. Curabitur suscipit ornare sem. Suspendisse pulvinar pharetra ultrices. Suspendisse a quam massa

1.1 Analysis Environment

Software Product:	Flow Simulation 2025 SP1.0. Build: 6588
CPU Type:	AMD Ryzen 5 7600 6-Core Processor
CPU Speed:	3801 MHz
RAM:	15509 MB / 4973 MB
Operating System:	Windows 11 (or higher) (Version 10.0.26100)

1.2 Model Information

Model Name:	montagemFoguete.SLDASM
Project Name:	Tunel de Vento

1.3 Project Comments:

Unit System:	SI (m-kg-s)
Analysis Type:	External (not exclude internal spaces)

1.4 Size of Computational Domain

Size

X min	0.425 m
X max	0.924 m
Y min	0.595 m
Y max	2.074 m
Z min	1.143 m
Z max	1.615 m
X size	0.499 m
Y size	1.479 m
Z size	0.471 m

1.5 Simulation Parameters

1.5.1 Mesh Settings

1.5.1.1 Basic Mesh

Basic Mesh Dimensions

Number of cells in X	24
Number of cells in Y	66

Number of cells in Z	25

1.5.1.2 Analysis Mesh

Total Cell count: 41955
Fluid Cells: 41955
Solid Cells: 1774
Partial Cells: 2442
Trimmed Cells: 0

1.5.1.3 Additional Physical Calculation Options

Heat Transfer Analysis: Fluid Flow: OnConduction: Off
Flow Type: Laminar and turbulent
Time-Dependent Analysis: Off
Gravity: On
Radiation:
Humidity: Off
Default Wall Roughness: 0 micrometer

1.5.2 Material Settings

Material Settings

Fluids

Air

1.5.3 Initial Conditions

Ambient Conditions

Thermodynamic parameters	Static Pressure: 101325.00 Pa Temperature: 293.20 K
Velocity parameters	Velocity vector Velocity in X direction: 0 m/s Velocity in Y direction: 56.000 m/s Velocity in Z direction: 0 m/s
Turbulence parameters	Turbulence intensity and length Intensity: 0.10 % Length: 0.001 m

1.5.4 Boundary Conditions

1.5.5 Volumetric Heat Sources

1.5.6 Engineering Goals

Goals

Global Goals

GG Maximum Total Pressure 1

Type	Global Goal
Goal type	Total Pressure
Calculate	Maximum value
Coordinate system	Global Coordinate System
Use in convergence	On

GG Maximum Total Temperature 2

Type	Global Goal
Goal type	Total Temperature
Calculate	Maximum value
Coordinate system	Global Coordinate System
Use in convergence	On

GG Maximum Velocity 3

Type	Global Goal
Goal type	Velocity
Calculate	Maximum value
Coordinate system	Global Coordinate System
Use in convergence	On

GG Maximum Turbulence Intensity 4

Type	Global Goal
Goal type	Turbulence Intensity
Calculate	Maximum value
Coordinate system	Global Coordinate System
Use in convergence	On

GG Normal Force 5

Type	Global Goal
Goal type	Normal Force
Coordinate system	Global Coordinate System
Use in convergence	On

GG Force 6

Type	Global Goal
Goal type	Force
Coordinate system	Global Coordinate System
Use in convergence	On

GG Force (X) 7

Type	Global Goal
Goal type	Force (X)
Coordinate system	Global Coordinate System
Use in convergence	On

GG Force (Y) 8

Type	Global Goal

Goal type	Force (Y)
Coordinate system	Global Coordinate System
Use in convergence	On

GG Force (Z) 9

Type	Global Goal
Goal type	Force (Z)
Coordinate system	Global Coordinate System
Use in convergence	On

GG Torque (X) 10

Type	Global Goal
Goal type	Torque (X)
Coordinate system	Global Coordinate System
Use in convergence	On

GG Torque (Y) 11

Type	Global Goal
Goal type	Torque (Y)
Coordinate system	Global Coordinate System
Use in convergence	On

GG Torque (Z) 12

Type	Global Goal
Goal type	Torque (Z)
Coordinate system	Global Coordinate System
Use in convergence	On

1.6 Analysis Time

Calculation Time: 58 s
Number of Iterations: 278
Warnings:

2 Results

2.1 Analysis Goals

Goals

Name	Unit	Value	Progress	Criteria	Delta	Use in convergence
GG Maximum Total Pressure 1	Pa	104301.23	100	597.067018	0.0921285607	On
GG Maximum Total Temperature 2	K	294.77	100	0.00287333159	0.0020580346	On
GG Maximum Velocity 3	m/s	61.985	100	0.0628752382	0.00143148044	On
GG Maximum Turbulence Intensity 4	%	1000.00	100	1e-05	0	On
GG Normal Force 5	N	1.742	100	0.571939642	0.0134211125	On
GG Force 6	N	2.468	100	0.596910425	0.0056407232	On
GG Force (X) 7	N	0.052	19	0.0203358795	0.108957282	On
GG Force (Y) 8	N	2.467	100	0.5976084	0.00636874272	On
GG Force (Z) 9	N	0.076	10	0.0119390065	0.11564002	On
GG Torque (X) 10	N*m	-3.253	100	0.820670445	0.163655475	On
GG Torque (Y) 11	N*m	0.016	39	0.0297136458	0.0763773064	On
GG Torque (Z) 12	N*m	1.568	100	0.398280818	0.15536657	On

2.2 Global Min-Max-Table

Min/Max Table

Name	Minimum	Maximum
Density (Fluid) [kg/m^3]	1.19	1.23
Pressure [Pa]	100119.29	104048.30
Temperature [K]	292.85	294.76
Temperature (Fluid) [K]	292.85	294.76

Velocity [m/s]	0	61.825
Velocity (X) [m/s]	-19.809	19.102
Velocity (Y) [m/s]	-6.771	61.094
Velocity (Z) [m/s]	-20.722	20.681
Mach Number [ ]	0	0.18
Velocity RRF [m/s]	0	61.825
Velocity RRF (X) [m/s]	-19.809	19.102
Velocity RRF (Y) [m/s]	-6.771	61.094
Velocity RRF (Z) [m/s]	-20.722	20.681
Vorticity [1/s]	0.03	5570.95
Relative Pressure [Pa]	-1205.71	2723.30
Shear Stress [Pa]	0	44.66
Bottleneck Number [ ]	3.9990545e-12	1.0000000
Heat Transfer Coefficient [W/m^2/K]	0	0
ShortCut Number [ ]	2.4778754e-11	1.0000000
Surface Heat Flux [W/m^2]	0	0
Surface Heat Flux (Convective) [W/m^2]	0	0
Total Enthalpy Flux [W/m^2]	-2.032e+07	2.019e+07
Acoustic Power [W/m^3]	0	3.566e-06
Acoustic Power Level [dB]	0	65.52

2.3 Results

2.4 Conclusion

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3 Appendix

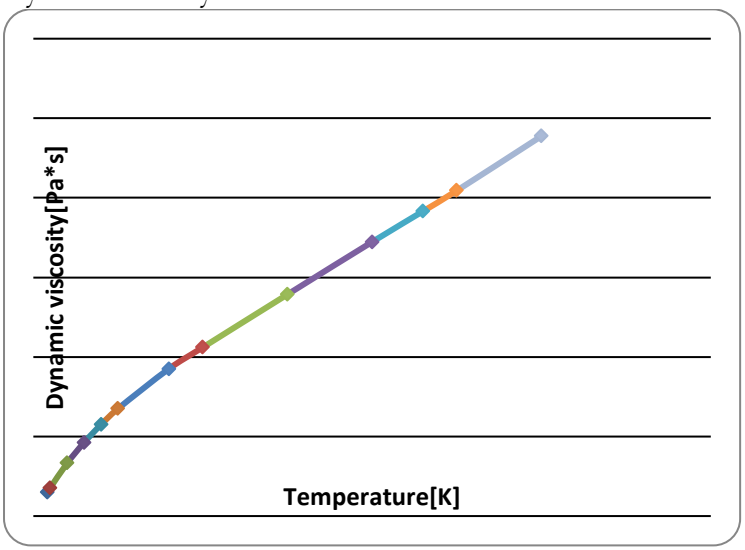
3.1 Material Data

Engineering Database

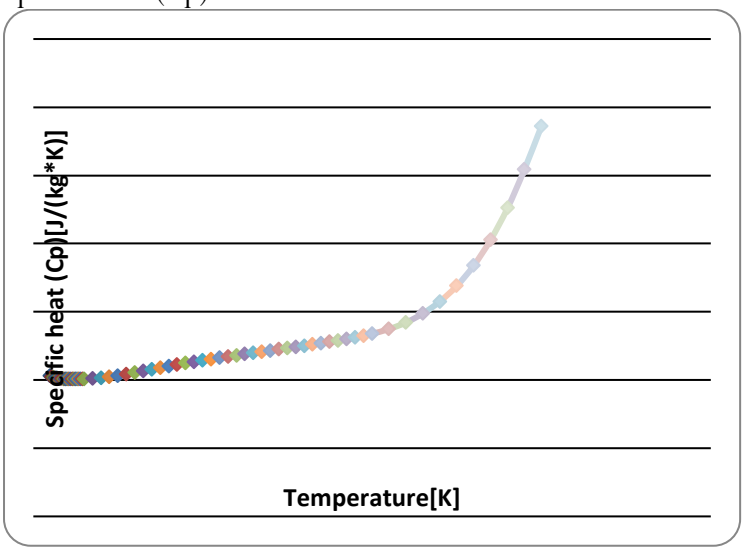
Gases

Air

Path: Gases Pre-Defined
Specific heat ratio (Cp/Cv): 1.399
Molecular mass: 0.0290 kg/mol
Dynamic viscosity



Specific heat (Cp)



Thermal conductivity