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| *[Company logo here]* | | | Description: Description: sw_vert_gray_short |
| [company name here] | [city, state here] | [company url here] | Fluid Flow Simulation Project Report |
| |  |  |  |  | | --- | --- | --- | --- | | [name] ∙ | [title] | ∙ ∙ [email address] ∙ | (###) ###-#### | | | | |
| **SOLIDWORKS Flow Simulation**  **Project Report**  March 26, 2014  *[Model Picture here]* | | | |
| [**Learn more about SOLIDWORKS Flow Simulation**](https://www.solidworks.com/sw/products/simulation/flow-simulation.htm) | | | |

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# 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

## Analysis Environment

Software Product: Flow Simulation 2021 SP3.0. Build: 5251

CPU Type: Intel(R) Xeon(R) E-2276M CPU @ 2.80GHz

CPU Speed: 2808 MHz

RAM: 32460 MB / 18401 MB

Operating System: Windows 10 (or higher) (Version 10.0.19043)

## Model Information

Model Name: shroude top.SLDPRT

Project Name: Project(3)

## Project Comments:

Unit System: SI (m-kg-s)

Analysis Type: External (not exclude internal spaces)

## Size of Computational Domain

Size

|  |  |
| --- | --- |
| X min | -0.293 m |
| X max | 0.294 m |
| Y min | -0.227 m |
| Y max | 0.273 m |
| Z min | -0.295 m |
| Z max | 0.293 m |
| X size | 0.587 m |
| Y size | 0.500 m |
| Z size | 0.588 m |

## Simulation Parameters

### Mesh Settings

#### Basic Mesh

Basic Mesh Dimensions

|  |  |
| --- | --- |
| Number of cells in X | 72 |
| Number of cells in Y | 64 |
| Number of cells in Z | 72 |

#### Analysis Mesh

Total Cell count: 536298

Fluid Cells: 536298

Solid Cells: 72243

Partial Cells: 60827

Trimmed Cells: 1

#### Additional Physical Calculation Options

Heat Transfer Analysis: Heat conduction in solids: Off

Flow Type: Laminar and turbulent

Time-Dependent Analysis: Off

Gravity: Off

Radiation:

Humidity:

Default Wall Roughness: 0 micrometer

### Material Settings

Material Settings

Fluids

[Water](#A4815914268C478AAA8A6F235100F5BC)

### 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: 0 m/s  Velocity in Z direction: 0 m/s |
| Turbulence parameters | Turbulence intensity and length  Intensity: 0.10 %  Length: 1.225e-04 m |

### Boundary Conditions

Boundary Conditions

Inlet Mass Flow 1

|  |  |
| --- | --- |
| Type | Inlet Mass Flow |
| Faces | Fillet1//Face |
| Coordinate system | Face Coordinate System |
| Reference axis | X |
| Flow parameters | Flow vectors direction: Normal to face  Mass flow rate: 0.0001 kg/s  Fully developed flow: No  Inlet profile: 0 |
| Thermodynamic parameters | Temperature type: Temperature of initial components  Temperature: 293.20 K |
| Turbulence parameters | Turbulence intensity and length  Intensity: 0.10 %  Length: 1.225e-04 m |
| Boundary layer parameters | Boundary layer type: Turbulent |

### Volumetric Heat Sources

### Engineering Goals

## Analysis Time

Calculation Time: 572 s

Number of Iterations: 164

Warnings:

# Results

## Analysis Goals

Goals

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Unit | Value | Progress | Criteria | Delta | Use in convergence |

## Global Min-Max-Table

Min/Max Table

|  |  |  |
| --- | --- | --- |
| Name | Minimum | Maximum |
| Density (Fluid) [kg/m^3] | 997.56 | 997.56 |
| Pressure [Pa] | 101325.00 | 101325.00 |
| Temperature [K] | 293.20 | 293.20 |
| Temperature (Fluid) [K] | 293.20 | 293.20 |
| Velocity [m/s] | 0 | 2.189e-04 |
| Velocity (X) [m/s] | -3.090e-05 | 3.575e-05 |
| Velocity (Y) [m/s] | -2.189e-04 | 6.132e-06 |
| Velocity (Z) [m/s] | -3.412e-05 | 3.681e-05 |
| Gap Size [m] | 1.005e-04 | 0.453 |
| Normal (X) [ ] | -1.0000000 | 1.0000000 |
| Normal (Y) [ ] | -1.0000000 | 1.0000000 |
| Normal (Z) [ ] | -1.0000000 | 1.0000000 |
| Wall Distance [m] | 1.876e-04 | 0.845 |
| Axial Velocity [m/s] | -3.412e-05 | 3.681e-05 |
| Circumferential Velocity [m/s] | -2.059e-04 | 2.052e-04 |
| Lambda2-Criterion [1/s^2] | -3.59e-03 | 1.09e-03 |
| Normal Velocity [m/s] | -2.189e-04 | 2.189e-04 |
| Radial Velocity [m/s] | -2.189e-04 | 2.443e-05 |
| Tangential Velocity [m/s] | 0 | 2.189e-04 |
| Velocity RRF [m/s] | 0 | 2.189e-04 |
| Velocity RRF (X) [m/s] | -3.090e-05 | 3.575e-05 |
| Velocity RRF (Y) [m/s] | -2.189e-04 | 6.132e-06 |
| Velocity RRF (Z) [m/s] | -3.412e-05 | 3.681e-05 |
| Vorticity [1/s] | 1.27e-08 | 0.15 |
| Vorticity (X) [1/s] | -0.15 | 0.15 |
| Vorticity (Y) [1/s] | -0.03 | 0.02 |
| Vorticity (Z) [1/s] | -0.14 | 0.14 |
| Distributed Force (X) [Pa] | -101324.99 | 101325.00 |
| Distributed Force (Y) [Pa] | -101325.00 | 101324.98 |
| Distributed Force (Z) [Pa] | -101325.00 | 101325.00 |
| Dynamic Pressure [Pa] | 0 | 2.39e-05 |
| Friction Coefficient [ ] | 0 | 3.4186e+08 |
| Reference Density [kg/m^3] | 997.56 | 997.56 |
| Reference Pressure [Pa] | 101325.00 | 101325.00 |
| Reference Velocity [m/s] | 0 | 7.775e-05 |
| Relative Pressure [Pa] | -9.66e-04 | 4.08e-04 |
| Shear Stress [Pa] | 0 | 8.84e-04 |
| Shear Stress (X) [Pa] | -6.09e-04 | 3.77e-04 |
| Shear Stress (Y) [Pa] | -6.39e-04 | 3.04e-05 |
| Shear Stress (Z) [Pa] | -3.81e-04 | 5.26e-04 |
| Total Pressure [Pa] | 101325.00 | 101325.00 |
| Dynamic Viscosity [Pa\*s] | 0.0010 | 0.0010 |
| Fluid Thermal Conductivity [W/(m\*K)] | 0.5985 | 0.5985 |
| Prandtl Number [ ] | 6.9949939 | 6.9949939 |
| Specific Heat (Cp) [J/(kg\*K)] | 4184.4 | 4184.4 |
| Absolute Total Enthalpy [J/kg] | 1236834.510 | 1236834.510 |
| Adiabatic Fluid Temperature [K] | 293.20 | 293.20 |
| Bottleneck Number [ ] | 0 | 0 |
| Heat Transfer Coefficient [W/m^2/K] | 0 | 0 |
| Heat Transfer Coefficient (Adiabatic Temperature) [W/m^2/K] | 0 | 0 |
| Reference Fluid Temperature [K] | 293.20 | 293.20 |
| ShortCut Number [ ] | 0 | 0 |
| Stanton Number [ ] | 0 | 0 |
| Surface Heat Flux [W/m^2] | 0 | 0 |
| Surface Heat Flux (Convective) [W/m^2] | 0 | 0 |
| Total Enthalpy Flux [W/m^2] | -13038.040 | 270094.220 |
| Wall Temperature [K] | 293.20 | 293.20 |
| Turbulence Intensity [%] | 5.66e-11 | 1000.00 |
| Turbulence Length [m] | 0 | 0.001 |
| Turbulent Dissipation [W/kg] | 1.85e-28 | 1.55e-05 |
| Turbulent Energy [J/kg] | 0 | 3.206e-10 |
| Turbulent Time [s] | 0 | 44535.252 |
| Turbulent Viscosity [Pa\*s] | 0 | 1.7950e-08 |
| Boundary Layer Thickness [m] | 5.036e-05 | 0.207 |
| Boundary Layer Thickness (Thermal) [m] | 5.036e-05 | 0.143 |
| Boundary Layer Type [ ] | 0 | 1.0000000 |
| Thin Channel Mode [ ] | 0 | 1 |
| Acoustic Power [W/m^3] | 0 | 6.209e-46 |
| Acoustic Power Level [dB] | 0 | 0 |

## Results

## Conclusion

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

# Appendix

## Material Data

Engineering Database

Liquids

Water

Path: Liquids Pre-Defined

Density

Dynamic viscosity

Specific heat (Cp)

Thermal conductivity

Cavitation effect: Yes

Temperature: 0 K

Saturation pressure: 0 Pa

Radiation properties: No