

FULL REPORT

System Info

Product	Flow Simulation 2009 4.0. Build: 910
Computer name	BOZHOMIRA
User name	Meletiev
Processors	Intel(R) Core(TM)2 Duo CPU T7250 @ 2.00GHz
Memory	2046 MB / 2047 MB
Operating system	Professional (Build 7600)
CAD version	SolidWorks 2009 SP425301296
CPU speed	2001 MHz

General Info

Model	C:\Users\Meletiev\Documents\Floworks\Zylinder.SLDPRT
Project name	Zylinder
Project path	C:\Users\Meletiev\Documents\Floworks\10
Units system	SI (m-kg-s)
Analysis type	External (not exclude internal spaces)
Exclude cavities without flow conditions	Off
Coordinate system	Global coordinate system
Reference axis	X

INPUT DATA

Initial Mesh Settings

Automatic initial mesh: On

Result resolution level: 6

Advanced narrow channel refinement: Off

Refinement in solid region: Off

Geometry Resolution

Evaluation of minimum gap size: Automatic

Evaluation of minimum wall thickness: Automatic

Computational Domain

Size

X min	-6.02750536 m
X max	6.02750536 m
Y min	-6.02750536 m
Y max	6.02750536 m
Z min	-1 m
Z max	1 m

Boundary Conditions

2D plane flow	None
At X min	Default
At X max	Default
At Y min	Default
At Y max	Default
At Z min	Default
At Z max	Default

Physical Features

Heat conduction in solids: On
Heat conduction in solids only: Off
Radiation: Off
Time dependent: Off
Gravitational effects: On
Flow type: Laminar and turbulent
High Mach number flow: Off
Humidity: Off
Default roughness: 0 micrometer

Gravitational Settings

X component	0 m/s ²
Y component	-9.81 m/s ²
Z component	0 m/s ²

Ambient Conditions

Thermodynamic parameters	Static Pressure: 101325 Pa Temperature: 35 °C
Velocity parameters	Velocity vector Velocity in X direction: 4 m/s Velocity in Y direction: 0 m/s Velocity in Z direction: 0 m/s
Solid parameters	Default material: Steel Stainless 321 Initial solid temperature: 60 °C
Turbulence parameters	Turbulence intensity and length Intensity: 0.1 % Length: 0.004 m

Material Settings

Fluids

Air

Solids

Steel Stainless 321

Solid Materials

Steel Stainless 321 Solid Material 1

Components	Linear austragen1
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Solid substance	Steel Stainless 321
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Heat Volume Sources

VS Temperature 1

Source type	Temperature
Temperature	60 °C
Components	Linear austragen1
Coordinate system	Global coordinate system
Reference axis	X

Goals

Global Goals

GG Max Temperature of Fluid 1

Type	Global Goal
Goal type	Temperature of Fluid
Calculate	Maximum value
Coordinate system	Global coordinate system
Use in convergence	On

GG Max Velocity 1

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

GG Heat Transfer Rate 1

Type	Global Goal
Goal type	Heat Transfer Rate
Coordinate system	Global coordinate system
Use in convergence	On

GG Max Temperature of Solid 1

Type	Global Goal
Goal type	Temperature of Solid
Calculate	Maximum value
Coordinate system	Global coordinate system
Use in convergence	On

Point Goals

PG Temperature of Fluid 1

Type	Point Goal
Goal type	Temperature of Fluid
Coordinate system	Global coordinate system
Use in convergence	On

PG Velocity 1

Type	Point Goal
Goal type	Velocity
Coordinate system	Global coordinate system
Use in convergence	On

PG Temperature of Fluid 2

Type	Point Goal
Goal type	Temperature of Fluid
Coordinate system	Global coordinate system
Use in convergence	On

PG Velocity 2

Type	Point Goal
Goal type	Velocity
Coordinate system	Global coordinate system
Use in convergence	On

Calculation Control Options

Finish Conditions

Finish conditions	If one is satisfied
Maximum travels	4
Goals convergence	Analysis interval: 0.5

Solver Refinement

Refinement: Disabled

Results Saving

Save before refinement	On
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Advanced Control Options

Flow Freezing

Flow freezing strategy	Disabled
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RESULTS

General Info

Iterations: 297
CPU time: 950 s

Log

Mesh generation started	16:18:02 , Jul 20
Mesh generation normally finished	16:18:06 , Jul 20
Preparing data for calculation	16:18:07 , Jul 20
Calculation started 0	16:18:16 , Jul 20
Calculation has converged since the following criteria are satisfied: 296	16:35:37 , Jul 20
Max. travel is reached 296	

Calculation finished 297	16:35:41 , Jul 20
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Calculation Mesh

Basic Mesh Dimensions

Number of cells in X	61
Number of cells in Y	52
Number of cells in Z	16

Number Of Cells

Total cells	50752
Fluid cells	49280
Solid cells	832
Partial cells	640
Irregular cells	0
Trimmed cells	0

Maximum refinement level: 0

Goals

Name	Unit	Value	Progress	Use in convergence	Delta	Criteria
GG Max Temperature of Fluid 1	°C	60	100	On	0	3.33150001e-006
GG Max Velocity 1	m/s	5.59681	100	On	0.00823357033	0.00891903965
GG Heat Transfer Rate 1	W	1764.89	39.4	On	40.0561084	15.811506
GG Max Temperature of Solid 1	°C	60	100	On	0	3.33150001e-006
PG Temperature of Fluid 1	°C	35	100	On	1.53555033e-006	3.0814997e-006
PG Velocity 1	m/s	4.00753	45.1	On	0.000385890282	0.000174284987
PG Temperature of Fluid 2	°C	34.9998	10.5	On	5.57541928e-005	5.85435453e-006
PG Velocity 2	m/s	4.03806	10.3	On	0.0139265611	0.00144777505

Min/Max Table

Name	Minimum	Maximum
Pressure [Pa]	101259	101391
Temperature [°C]	34.9969	60
Velocity [m/s]	0	5.49394

X-velocity [m/s]	-0.566068	5.46455
Y-velocity [m/s]	-2.80374	2.84993
Z-velocity [m/s]	-2.41385	2.41435
Fluid Temperature [°C]	34.9969	60
Solid Temperature [°C]	60	60
Melting Temperature Exceed [K]	-1350	-1350
Mach Number []	0	0.0156142
Shear Stress [Pa]	0	0.080449
Heat Transfer Coefficient [W/m ² /K]	0.496205	20.886
Surface Heat Flux [W/m ²]	0	522.151
Density [kg/m ³]	1.13197	1.14538
Surface Electric Current Density [A/m ²]	0	0