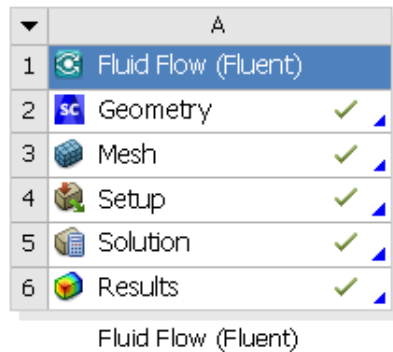




Summary

Project:	roughDraftHeating2
Date:	7/30/2020
Time:	10:08:02 AM
Product Version:	2019 R3
Last Saved Version:	2019 R3

Project Schematic Pane



Files

Name	Size	Type	Date Modified	Location
FFF.scdoc	1 MB	Geometry File	4/7/2020 1:48:43 AM	dp0\FFF\DM
FFF.mshdb	12 MB	Mesh Database File	4/7/2020 2:54:03 AM	dp0\global\MECH
roughDraftHeating2.wbpj	45 KB	Workbench Project File	6/9/2020 8:45:46 AM	C:\Users\bmb00\Documents\Inventor\HeatEvaporator\heater
FFF.set	305 KB	FLUENT Model File	4/7/2020 3:25:26 AM	dp0\FFF\Fluent
FFF.msh	16 MB	Fluent Mesh File	4/7/2020 2:43:44 AM	dp0\FFF\MECH
FFF-Setup-Output.cas.gz	15 MB	FLUENT Case File	4/7/2020 2:50:04 AM	dp0\FFF\Fluent
FFF.ip	33	FLUENT	4/7/2020	dp0\FFF\Fluent

	MB	Interpolation Data File	3:29:11 AM	
 FFF-1.cas.gz	17 MB	FLUENT Case File	4/7/2020 3:30:21 AM	dp0\FFF\Fluent
 FFF-1-00142.dat.gz	24 MB	FLUENT Data File	4/7/2020 3:30:27 AM	dp0\FFF\Fluent
 Fluid Flow Fluent.cst	38 KB	CFD-Post State File	6/2/2020 3:14:41 AM	dp0\FFF\Post
 fluent-0-error.log	165 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-1-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-2-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-3-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-4-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-5-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-6-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-7-error.log	110 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 fluent-999999-error.log	180 B	.log	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 MPT_Monitor_system.0.dbg	130 B	.dbg	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 MPT_Monitor_system.999999.dbg	616 B	.dbg	4/7/2020 2:28:17 AM	dp0\FFF\MECH
 designPoint.wbdp	43 KB	Workbench Design Point File	6/9/2020 8:45:46 AM	dp0
 report.xml	10 KB	.xml	4/7/2020 3:25:29 AM	progress_files\dp0\FFF\Fluent
 Solution.trn	1 KB	.trn	4/7/2020 2:13:32 AM	progress_files\dp0\FFF\Fluent
 AnsysReportLogo.png	6 KB	.png	7/28/2019 1:02:44 PM	user_files\roughDraftHeating2_report_images
 ProjectSchematic.png	8 KB	.png	7/30/2020 10:08:02 AM	user_files\roughDraftHeating2_report_images

FFF : Solution : dp0

Fluent

Version: 3d, dp, pbns, ske (3d, double precision, pressure-based, standard k-epsilon)

Release: 19.5.0

Title:

Models

Model	Settings

Space	3D
Time	Steady
Viscous	Standard k-epsilon turbulence model
Wall Treatment	Standard Wall Functions
Heat Transfer	Enabled
Solidification and Melting	Disabled
Radiation	None
Species	Disabled
Coupled Dispersed Phase	Disabled
NOx Pollutants	Disabled
SOx Pollutants	Disabled
Soot	Disabled
Mercury Pollutants	Disabled
Structure	Disabled

Material Properties

Material: water-liquid (fluid)

Property	Units	Method	Value(s)

Density	kg/m3	constant	998.2
Cp (Specific Heat)	j/kg-k	constant	4182
Thermal Conductivity	w/m-k	constant	0.6
Viscosity	kg/m-s	constant	0.001003
Molecular Weight	kg/kmol	constant	18.0152
Thermal Expansion Coefficient	1/k	constant	0
Speed of Sound	m/s	none	#f

Material: fluid-1 (fluid)

Property	Units	Method	Value(s)

Density	kg/m3	constant	1.225
Cp (Specific Heat)	j/kg-k	constant	1006.43
Thermal Conductivity	w/m-k	constant	0.0242
Viscosity	kg/m-s	constant	1.7894e-05
Molecular Weight	kg/kmol	constant	28.966
Thermal Expansion Coefficient	1/k	constant	0
Speed of Sound	m/s	none	#f

Material: copper (solid)

Property	Units	Method	Value(s)

Density	kg/m3	constant	8978
Cp (Specific Heat)	j/kg-k	constant	381
Thermal Conductivity	w/m-k	constant	387.6

Material: solid-1 (solid)

Property	Units	Method	Value(s)

Density	kg/m3	constant	2719
Cp (Specific Heat)	j/kg-k	constant	871
Thermal Conductivity	w/m-k	constant	202.4

Material: air (fluid)

Property	Units	Method	Value(s)
Density	kg/m3	constant	1.225
Cp (Specific Heat)	j/kg-k	constant	1006.43
Thermal Conductivity	w/m-k	constant	0.0242
Viscosity	kg/m-s	constant	1.7894e-05
Molecular Weight	kg/kmol	constant	28.966
Thermal Expansion Coefficient	1/k	constant	0
Speed of Sound	m/s	none	#f

Material: aluminum (solid)

Property	Units	Method	Value(s)
Density	kg/m3	constant	2719
Cp (Specific Heat)	j/kg-k	constant	871
Thermal Conductivity	w/m-k	constant	202.4

Cell Zone Conditions

Zones

name	id	type
walls_2_walls_1	5	solid
volume_pipes	4	fluid

Setup Conditions

walls_2_walls_1

Condition	Value
Frame Motion?	no

volume_pipes

Condition	Value
Frame Motion?	no

Boundary Conditions

Zones

name	id	type
contact_region-wall1-1-1-shadow	24	wall
contact_region-wall1-1-1	21	wall
contact_region-trg-non-overlapping	23	wall
conductance_walls-contact_region-src-non-overlapping	22	wall
wall-walls_2_walls_1	1	wall
inlet	8	velocity-inlet
outlet	9	pressure-outlet
conductance_walls	10	wall
radiative_walls	11	wall
conductance_walls-contact_region-src	12	interface
contact_region-trg	13	interface

Setup Conditions

contact_region-wall1-1-1-shadow

Condition	Value
-----------	-------

```

-----
Thermal BC Type    3

contact_region-wall1-1-1

Condition          Value
-----
Thermal BC Type    3
Wall Motion        0
Shear Boundary Condition  0

contact_region-trg-non-overlapping

Condition          Value
-----
Thermal BC Type    1

conductance_walls-contact_region-src-non-overlapping

Condition          Value
-----
Thermal BC Type    1
Wall Motion        0
Shear Boundary Condition  0

wall-walls_2_walls_1

Condition          Value
-----
Material Name      aluminum
Thermal BC Type    1

inlet

Condition          Value
-----
Velocity Magnitude (m/s)  1

outlet

Condition  Value
-----

conductance_walls

Condition          Value
-----
Material Name      aluminum
Thermal BC Type    1
Wall Motion        0
Shear Boundary Condition  0

radiative_walls

Condition          Value
-----
Thermal BC Type    1
Heat Flux (w/m2)   26000

conductance_walls-contact_region-src

Condition  Value
-----

contact_region-trg

Condition  Value
-----

```

Solver Settings

Equations

Equation	Solved
Flow	yes
Turbulence	yes
Energy	yes

Numerics

Numeric	Enabled
Absolute Velocity Formulation	yes

Relaxation

Variable	Relaxation Factor
Density	1
Body Forces	1
Turbulent Kinetic Energy	0.75
Turbulent Dissipation Rate	0.75
Turbulent Viscosity	1
Energy	0.75

Linear Solver

Variable	Solver Type	Termination Criterion	Residual Reduction Tolerance
Flow	F-Cycle	0.1	
Turbulent Kinetic Energy	F-Cycle	0.1	
Turbulent Dissipation Rate	F-Cycle	0.1	
Energy	F-Cycle	0.1	

Pressure-Velocity Coupling

Parameter	Value
Type	Coupled
Pseudo Transient	yes
Explicit momentum under-relaxation	0.5
Explicit pressure under-relaxation	0.5

Discretization Scheme

Variable	Scheme
Pressure	Second Order
Momentum	Second Order Upwind
Turbulent Kinetic Energy	First Order Upwind
Turbulent Dissipation Rate	First Order Upwind
Energy	Second Order Upwind

Solution Limits

Quantity	Limit
Minimum Absolute Pressure	1
Maximum Absolute Pressure	5e+10
Minimum Temperature	1
Maximum Temperature	5000
Minimum Turb. Kinetic Energy	1e-14
Minimum Turb. Dissipation Rate	1e-20
Maximum Turb. Viscosity Ratio	100000

