

LAMPIRAN

Hasil Simulasi

a. Percobaan 6

P.inlet uap = 108825 Pa T.inlet uap = 98,679 °C T.inlet air =
15,68 °C

P.outlet uap = 64728,02 Pa T.outlet uap = 95,239 °C T.outlet air =
25,29 °C

Mass flow = 0,00069 kg/s Dew point = 80,12 °C

sumbu z (cm)	temperatur			
	top	side	bottom	cooler
10	90,724	90,965	90,431	18,947
30	91,168	91,389	90,939	33,04
50	91,555	90,217	91,373	44,897
75	91,607	91,835	91,455	54,704
100	84,301	84,414	83,154	35,75
150	45,385	46,933	45,398	25,292

b. Percobaan 7

P.inlet uap = 108825 Pa T.inlet uap = 102,61 °C T.inlet air =
16,372 °C

P.outlet uap = 61198,56 Pa T.outlet uap = 60,866 °C T.outlet air =
25,332 °C

Mass flow = 0,001.4 kg/s Dew point = 57,02 °C

sumbu z (cm)	temperatur			
	top	side	bottom	cooler
10	71,984	74,739	70,433	23,039
30	66,891	69,498	65,484	23,035
50	64,226	66,762	62,957	22,461
75	60,892	63,251	59,707	21,75
100	56,99	59,158	55,908	21,049
150	51,27	52,865	50,788	25,334

c. Percobaan 8

P.inlet uap = 108825 Pa T.inlet uap = 98,548 °C T.inlet air = 16,921 °C

P.outlet uap = 62227,18 Pa T.outlet uap = 81,476 °C T.outlet air = 26,793 °C

Mass flow = 0.001,6 kg/s Dew point = 80,4 °C

sumbu z (cm)	temperatur			
	top	side	bottom	cooler
10	96,686	96,762	96,567	17,049
30	96,46	96,482	96,37	18,763
50	96,408	96,43	96,313	22,219
75	96,204	96,254	96,069	27,17
100	95,949	96,008	95,583	32,941
150	95,209	95,321	95,163	37,05

d. Percobaan 9

P.inlet uap = 108825 Pa T.inlet uap = 96,07 °C T.inlet air = 17,889 °C

P.outlet uap = 64988,75 Pa T.outlet uap = 94,198 °C T.outlet air = 27,761 °C

Mass flow = 0.002,7 kg/s Dew point = 68,34 °C

sumbu z (cm)	temperatur			
	top	side	bottom	cooler
10	94,525	94,572	94,467	17,87
30	94,434	94,482	94,382	17,859
50	94,332	94,385	94,282	17,933
75	94,125	94,185	94,75	18,689
100	93,817	93,89	93,767	20,233
150	93,034	93,142	92,983	23,716

e. Percobaan 13

P.inlet uap = 108825 Pa T.inlet uap = 99,252 °C T.inlet air = 21,346 °C

P.outlet uap = 65203,52 Pa T.outlet uap = 93,697 °C T.outlet air = 31,202 °C

Mass flow = 0,019 kg/s Dew point = 93,36 °C

sumbu z (cm)	temperatur			
	top	side	bottom	cooler
10	94,728	94,865	94,562	21,34
30	94,674	94,803	94,519	21,34
50	94,481	94,618	94,356	21,34
75	94,3	94,432	94,183	21,342
100	93,88	94,01	93,762	21,35
150	92,91	93,045	92,794	21,528

Hasil Perbandingan Eksperimental

a. Posisi Atas Percobaan 11 dan 12 Eksperimental dan simulasi

	6,9	1,4	1,6	2,7	1,9	11	12
10	90,724	71,984	96,686	94,525	94,728	98,67	98,90
30	91,168	66,891	96,46	94,434	94,674	96,62	96,83
55	91,618	63,612	96,401	94,298	94,444	9,73	92,16
100	84,301	56,99	95,949	93,817	93,88	94,80	95,21
150	45,385	51,27	95,209	93,034	92,91	90,47	91,35

b. Posisi Samping Percobaan 11 dan 12 Eksperimental dan simulasi

	6,9	1,4	1,6	2,7	1,9	11	12
10	90,965	74,739	96,762	94,572	94,865	97,25	97,43
30	91,389	69,498	96,482	94,482	94,803	95,20	95,36
55	91,837	66,127	96,419	94,353	94,58	95,66	95,71
100	84,414	59,158	96,008	93,89	94,01	96,29	96,37
150	46,933	52,865	95,321	93,142	93,045	94,84	95,11

c. Posisi Bawah Percobaan 11 dan 12 Eksperimental dan simulasi

	6,9	1,4	1,6	2,7	1,9	11	12
10	90,431	70,433	96,567	94,467	94,562	100,67	100,72
30	90,939	65,484	96,37	94,382	94,519	94,86	94,95
55	91,444	62,363	96,306	94,249	94,232	99,70	99,80
100	83,154	55,908	95,583	93,767	93,762	98,41	98,47
150	45,398	50,788	95,163	92,983	92,794	96,94	97,10

d. Posisi Atas Percobaan 6 dan 7 Eksperimental dan simulasi

	6,9	1,4	1,6	2,7	1,9	6	7
10	90,724	71,984	96,686	94,525	94,728	97,97	97,84
30	91,168	66,891	96,46	94,434	94,674	94,49	94,04
55	91,618	63,612	96,401	94,298	94,444	88,96	87,78
100	84,301	56,99	95,949	93,817	93,88	89,82	85,21
150	45,385	51,27	95,209	93,034	92,91	81,56	58,14

e. Posisi Samping Percobaan 6 dan 7 Eksperimental dan simulasi

	6,9	1,4	1,6	2,7	1,9	6	7
10	90,965	74,739	96,762	94,572	94,865	95,74	95,53
30	91,389	69,498	96,482	94,482	94,803	94,27	94,17
55	91,837	66,127	96,419	94,353	94,58	94,82	94,31
100	84,414	59,158	96,008	93,89	94,01	95,04	89,95
150	46,933	52,865	95,321	93,142	93,045	90,49	55,91

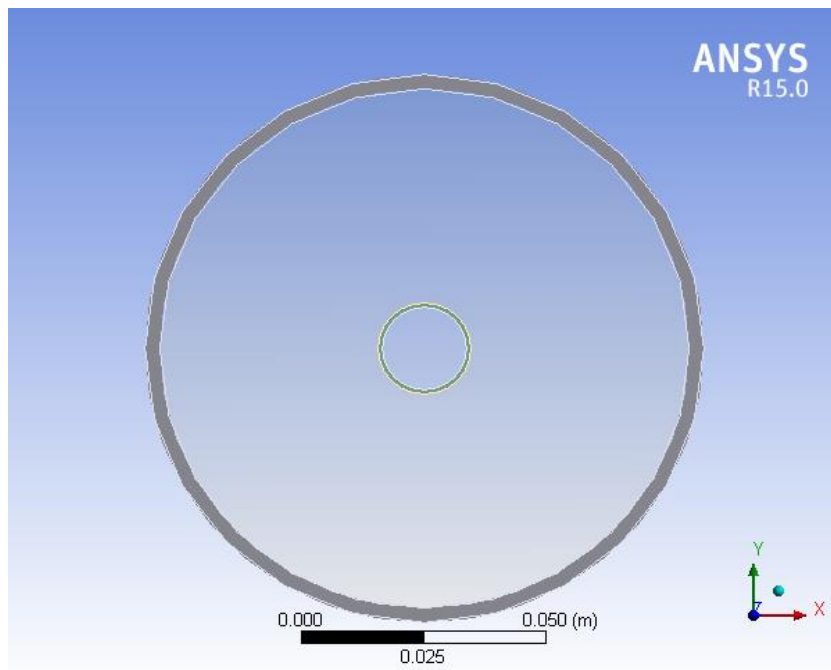
f. Posisi Bawah Percobaan 6 dan 7 Eksperimental dan simulasi

	6,9	1,4	1,6	2,7	1,9	6	7
10	90,431	70,433	96,567	94,467	94,562	100,24	100,22
30	90,939	65,484	96,37	94,382	94,519	94,15	94,02
55	91,444	62,363	96,306	94,249	94,232	98,85	98,81
100	83,154	55,908	95,583	93,767	93,762	98,30	94,61
150	45,398	50,788	95,163	92,983	92,794	94,43	55,54



Project

First Saved	Tuesday, March 1, 2016
Last Saved	Sunday, May 29, 2016
Product Version	15.0 Release
Save Project Before Solution	No
Save Project After Solution	No



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Units

TABLE 1

Unit System	Metric (m, kg, N, s, V, A) Degrees rad/s Celsius
Angle	Degrees
Rotational Velocity	rad/s
Temperature	Celsius

Model (A3)

Geometry

TABLE 2
Model (A3) > Geometry

Object Name	<i>Geometry</i>
State	Fully Defined
Definition	
Source	D:\dise n fluent\hasil riset\percoban 7.3_files\dp0\FFF\DM\FFF.agdb
Type	DesignModeler
Length Unit	Meters
Bounding Box	
Length X	0.1143 m
Length Y	0.1143 m
Length Z	1.6 m
Properties	
Volume	1.6417e-002 m ³
Scale Factor Value	1.
Statistics	

Bodies	4
Active Bodies	4
Nodes	162146
Elements	158500
Mesh Metric	None
Basic Geometry Options	
Parameters	Yes
Parameter Key	DS
Attributes	No
Named Selections	No
Material Properties	No
Advanced Geometry Options	
Use Associativity	Yes
Coordinate Systems	No
Reader Mode Saves Updated File	No
Use Instances	Yes
Smart CAD Update	No
Compare Parts On Update	No
Attach File Via Temp File	Yes
Temporary Directory	C:\Users\Lucky\AppData\Roaming\Ansys\v150
Analysis Type	3-D
Decompose Disjoint Geometry	Yes
Enclosure and Symmetry Processing	No

TABLE 3
Model (A3) > Geometry > Body Groups

Object Name	<i>Part</i>
State	Meshed
Graphics Properties	
Visible	Yes
Definition	
Suppressed	No
Coordinate System	Default Coordinate System
Bounding Box	
Length X	0.1143 m
Length Y	0.1143 m
Length Z	1.6 m

Properties	
Volume	1.6417e-002 m ³
Statistics	
Nodes	162146
Elements	158500
Mesh Metric	None

TABLE 4
Model (A3) > Geometry > Part > Parts

Object Name	<i>uap</i>	<i>copper</i>	<i>air</i>	<i>steel</i>
State	Meshed			
Graphics Properties				
Visible	Yes			
Transparency	0.1	1	0.1	1
Definition				
Suppressed	No			
Coordinate System	Default Coordinate System			
Reference Frame	Lagrangian			
Material				
Fluid/Solid	Defined By Geometry (Fluid)	Defined By Geometry (Solid)	Defined By Geometry (Fluid)	Defined By Geometry (Solid)
Bounding Box				
Length X	1.72e-002 m	1.9e-002 m	0.1083 m	0.1143 m
Length Y	1.72e-002 m	1.9e-002 m	0.1083 m	0.1143 m
Length Z	1.6 m			
Properties				
Volume	3.7176e-004 m ³	8.1882e-005 m ³	1.4285e-002 m ³	1.6784e-003 m ³
Centroid X	9.5418e-020 m	2.6399e-019 m	-3.9917e-019 m	-5.4952e-018 m
Centroid Y	-2.6836e-019 m	-9.3074e-020 m	-6.0312e-019 m	-9.4898e-018 m
Centroid Z	0.8 m			
Statistics				
Nodes	44176	10542	109687	15562
Elements	41250	5500	103250	8500
Mesh Metric	None			

Coordinate Systems

TABLE 5
Model (A3) > Coordinate Systems > Coordinate System

Object Name	<i>Global Coordinate System</i>
State	Fully Defined
Definition	
Type	Cartesian
Coordinate System ID	0.
Origin	
Origin X	0. m
Origin Y	0. m
Origin Z	0. m
Directional Vectors	
X Axis Data	[1. 0. 0.]
Y Axis Data	[0. 1. 0.]
Z Axis Data	[0. 0. 1.]

Connections

TABLE 6
Model (A3) > Connections

Object Name	<i>Connections</i>
State	Fully Defined
Auto Detection	
Generate Automatic Connection On Refresh	Yes
Transparency	
Enabled	Yes

TABLE 7
Model (A3) > Connections > Contacts

Object Name	<i>Contacts</i>
State	Fully Defined
Definition	
Connection Type	Contact
Scope	
Scoping Method	Geometry Selection
Geometry	All Bodies
Auto Detection	
Tolerance Type	Slider
Tolerance Slider	0.
Tolerance Value	4.0204e-003 m
Use Range	No
Face/Face	Yes

Face/Edge	No
Edge/Edge	No
Priority	Include All
Group By	Bodies
Search Across	Bodies

Mesh

TABLE 8
Model (A3) > Mesh

Object Name	<i>Mesh</i>
State	Solved
Defaults	
Physics Preference	CFD
Solver Preference	Fluent
Relevance	0
Sizing	
Use Advanced Size Function	On: Curvature
Relevance Center	Medium
Initial Size Seed	Active Assembly
Smoothing	Medium
Transition	Slow
Span Angle Center	Fine
Curvature Normal Angle	Default (18.0 °)
Min Size	Default (4.0078e-004 m)
Max Face Size	Default (4.0078e-002 m)
Max Size	Default (8.0156e-002 m)
Growth Rate	Default (1.20)
Minimum Edge Length	5.4035e-002 m
Inflation	
Use Automatic Inflation	None
Inflation Option	Smooth Transition
Transition Ratio	0.272
Maximum Layers	5
Growth Rate	1.2
Inflation Algorithm	Pre
View Advanced Options	No
Assembly Meshing	
Method	None
Patch Conforming Options	
Triangle Surface Mesher	Program Controlled

Patch Independent Options	
Topology Checking	Yes
Advanced	
Number of CPUs for Parallel Part Meshing	Program Controlled
Shape Checking	CFD
Element Midside Nodes	Dropped
Straight Sided Elements	
Number of Retries	0
Extra Retries For Assembly	Yes
Rigid Body Behavior	Dimensionally Reduced
Mesh Morphing	Disabled
Defeaturing	
Pinch Tolerance	Default (3.607e-004 m)
Generate Pinch on Refresh	No
Automatic Mesh Based Defeaturing	On
Defeaturing Tolerance	Default (2.0039e-004 m)
Statistics	
Nodes	162146
Elements	158500
Mesh Metric	None

TABLE 9
Model (A3) > Mesh > Mesh Controls

Object Name	<i>Inflation</i>	<i>Inflation 2</i>	<i>Inflation 3</i>
State	Fully Defined		
Scope			
Scoping Method	Geometry Selection		
Geometry	1 Face		
Definition			
Suppressed	No		
Boundary Scoping Method	Geometry Selection		
Boundary	1 Edge		
Inflation Option	Smooth Transition		
Transition Ratio	Default (0.272)		
Maximum Layers	5		
Growth Rate	1.2		
Inflation Algorithm	Pre		

Named Selections

TABLE 10
Model (A3) > Named Selections > Named Selections

Object Name	<i>inlet_uap</i>	<i>inlet_air</i>	<i>outlet_uap</i>	<i>outlet_air</i>	<i>Insulation_surface</i>
State	Fully Defined				
Scope					
Scoping Method	Geometry Selection				
Geometry	1 Face				
Definition					
Send to Solver	Yes				
Visible	Yes				
Program Controlled Inflation	Exclude				
Statistics					
Type	Manual				
Total Selection	1 Face				
Suppressed	0				
Used by Mesh Worksheet	No				

Date

2016/08/08 19:02:07

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1. File Report

Table 1. File Information for FFF

Case	FFF
File Path	D:\disen fluent\hasil riset\percoban 7.3_files\dp0\FFF\Fluent\FFF-15-00511.dat.gz
File Date	01 August 2016
File Time	07:04:38 PM
File Type	FLUENT
File Version	15.0.0

2. Mesh Report

Table 2. Mesh Information for FFF

Domain	Nodes	Elements
part air	109687	103250
part copper	10542	5500
part steel	15562	8500
part uap	44176	41250
All Domains	179967	158500

3. Physics Report

Table 3. Domain Physics for FFF

Domain - part air	
Type	cell
Domain - part copper	
Type	solid
Domain - part steel	
Type	solid
Domain - part uap	
Type	cell

Table 4. Boundary Physics for FFF

Domain	Boundaries	
part air	Boundary - inlet_air	
	Type	MASS-FLOW-INLET
	Boundary - outlet_air	
	Type	PRESSURE-OUTLET
	Boundary - wall part air part copper shadow	
	Type	WALL
	Boundary - wall part air part steel	
part copper	Type	WALL
	Boundary - wall part copper	
	Type	WALL
	Boundary - wall part copper part uap shadow	
	Type	WALL
part steel	Boundary - insulation_surface	
	Type	WALL
	Boundary - wall part air part steel shadow	

	Type	WALL
	Boundary - wall part steel	
	Type	WALL
part uap	Boundary - inlet_uap	
	Type	PRESSURE-INLET
	Boundary - outlet_uap	
	Type	PRESSURE-OUTLET
	Boundary - wall part copper part uap	
	Type	WALL

4. User Data