Lampiran 2 : Tabel hasil perhitungan fluida kerja

Tabel hasil perhitungan fluida kerja air pada suhu 40°C

Q (L/mnt)	D (mm)	L (m)	∏	rho(air)	Cp	v(viskositas)	v(viskositas dinding)	K	Pr	A(luas Penampang)	A(luas perukaan)
0.1	0.0049	1.1	3.14	1008.2	4178.6	0.0006566	0.0008034	0.6316	4.344	1.88479E-05	0.0169246
0.15	0.0049	1.1	3.14	1008.2	4178.6	0.0006566	0.0008034	0.6316	4.344	1.88479E-05	0.0169246
0.2	0.0049	1.1	3.14	1008.2	4178.6	0.0006566	0.0008034	0.6316	4.344	1.88479E-05	0.0169246
0.25	0.0049	1.1	3.14	1008.2	4178.6	0.0006566	0.0008034	0.6316	4.344	1.88479E-05	0.0169246
0.3	0.0049	1.1	3.14	1008.2	4178.6	0.0006566	0.0008034	0.6316	4.344	1.88479E-05	0.0169246
0.35	0.0049	1.1	3.14	1008.2	4178.6	0.0006566	0.0008034	0.6316	4.344	1.88479E-05	0.0169246

Q (m^3/s)	V (m/s)	ṁ	Re	Th in	Th out	TC in	TC out	ΔT	ΔT LMTD	Q (lpp)	U	Nu
1.66667E-06	0.088427	0.00168	665.32	40	34.32	25.6	27.05	5.68	10.43203	39.88178	225.884956	4.237912
0.0000025	0.132641	0.002521	997.98	40	35.65	25.6	27.12	4.35	11.21002	45.8149	241.480519	4.851198
3.33333E-06	0.176855	0.003361	1330.63	40	36.7	25.6	28.11	3.3	11.24597	46.34151	243.475244	5.339435
4.16667E-06	0.221069	0.004201	1663.29	40	37.31	25.6	28.51	2.69	11.3711	47.21919	245.356512	5.751732
0.000005	0.265282	0.005041	1995.95	40	37.64	25.6	28.72	2.36	11.44212	49.7118	256.705173	6.112127
5.83333E-06	0.309496	0.005881	2328.61	40	37.87	25.6	28.93	2.13	11.45392	52.34484	270.023312	6.434399

Tabel Hasil perhitungan kerja Nanofluid 0.15% pada suhu 40°C

Q (L/mnt)	D (mm)	L (m)	∏	rho (Nf) (kg/m³)	Cp (Nf) (J/kg.K)	v(viskosts) Nf (N.s/m²)	v(viskositas dinding)	k (Nf) (W/m.K)	Pr	A(luas Penampang)	A(luas permukaan)
0.1	0.0049	1.1	3.14	1012.6427	4156.736389	6.63E-04	0.0008034	0.6342	4.349	1.88479E-05	0.0169246
0.15	0.0049	1.1	3.14	1012.6427	4156.736389	6.63E-04	0.0008034	0.6342	4.349	1.88479E-05	0.0169246
0.2	0.0049	1.1	3.14	1012.6427	4156.736389	6.63E-04	0.0008034	0.6342	4.349	1.88479E-05	0.0169246
0.25	0.0049	1.1	3.14	1012.6427	4156.736389	6.63E-04	0.0008034	0.6342	4.349	1.88479E-05	0.0169246
0.3	0.0049	1.1	3.14	1012.6427	4156.736389	6.63E-04	0.0008034	0.6342	4.349	1.88479E-05	0.0169246
0.35	0.0049	1.1	3.14	1012.6427	4156.736389	6.63E-04	0.0008034	0.6342	4.349	1.88479E-05	0.0169246

Q (m³/s)	V (m/s)	ṁ	Re	Th In	Th Out	TC In	TC Out	ΔT	ΔT LMTD	Q (lpp)	U	Nu
1.66667E-06	0.088427	0.001688	661.46	40	34.23	25.6	27.16	5.77	10.30409	40.47933	232.115987	4.237381
0.0000025	0.132641	0.002532	992.19	40	35.57	25.6	27.89	4.43	10.69028	46.61787	257.658888	4.85059
3.33333E-06	0.176855	0.003375	1322.92	40	36.58	25.6	28.15	3.42	11.14989	47.98589	254.287312	5.338765
4.16667E-06	0.221069	0.004219	1653.65	40	36.84	25.6	28.21	3.16	11.26989	55.4223	290.567121	5.751011
0.000005	0.265282	0.005063	1984.38	40	36.93	25.6	28.88	3.07	10.91898	64.61258	349.636358	6.111361
5.83333E-06	0.309496	0.005907	2315.11	40	37.32	25.6	29.19	2.68	10.96792	65.80521	354.501185	6.433592

Tabel Hasil perhitungan kerja Nanofluid 0.25% pada suhu 40°C

Q (L/mnt)	D (mm)	L (m)	∏	rho (Nf) (kg/m³)	Cp (Nf) (J/kg.K)	v(viskosts)Nf (N.s/m²)	v(viskositas dinding)	k (Nf) (W/m.K)	Pr	A(luas Penampang)	A(luas permukaan)
0.1	0.0049	1.1	3.14	1015.6045	4145.239962	6.81E-04	0.0008034	0.6359	4.361	1.88479E-05	0.0169246
0.15	0.0049	1.1	3.14	1015.6045	4145.239962	6.81E-04	0.0008034	0.6359	4.361	1.88479E-05	0.0169246
0.2	0.0049	1.1	3.14	1015.6045	4145.239962	6.81E-04	0.0008034	0.6359	4.361	1.88479E-05	0.0169246
0.25	0.0049	1.1	3.14	1015.6045	4145.239962	6.81E-04	0.0008034	0.6359	4.361	1.88479E-05	0.0169246
0.3	0.0049	1.1	3.14	1015.6045	4145.239962	6.81E-04	0.0008034	0.6359	4.361	1.88479E-05	0.0169246
0.35	0.0049	1.1	3.14	1015.6045	4145.239962	6.81E-04	0.0008034	0.6359	4.361	1.88479E-05	0.0169246

Q (m³/s)	V (m/s)	ṁ	Re	Th In	Th Out	TC In	TC Out	ΔT	ΔT LMTD	Q (lpp)	U ΔTlm	Nu
1.66667E-06	0.088427	0.001693	646.12	40	33.79	25.6	27.65	6.21	9.690247	43.57272	265.681545	4.22381
0.0000025	0.132641	0.002539	969.19	40	35.23	25.6	27.86	4.77	10.49551	50.20335	282.625207	4.835055
3.33333E-06	0.176855	0.003385	1292.25	40	36.24	25.6	28.26	3.76	10.87601	52.76439	286.650509	5.321667
4.16667E-06	0.221069	0.004232	1615.31	40	36.59	25.6	28.47	3.41	10.96181	59.81601	322.416099	5.732592
0.000005	0.265282	0.005078	1938.37	40	36.82	25.6	28.91	3.18	10.83291	66.9378	365.096723	6.091788
5.83333E-06	0.309496	0.005924	2261.43	40	37.21	25.6	29.24	2.79	10.86986	68.51652	372.436938	6.412987

Tabel Hasil perhitungan kerja Nanofluid 0.5% pada suhu 40°C

Q (L/mnt)	D (mm)	L (m)	∏	rho (Nf) (kg/m³)	Cp (Nf) (J/kg.K)	v(viskosts)Nf (N.s/m²)	v(viskositas dinding)	k (Nf) (W/m.K)	Pr	A(luas Penampang)	A(luas permukaan)
0.1	0.0049	1.1	3.14	1023.009	4122.364063	6.83E-04	0.0008034	0.6403	4.349	1.88479E-05	0.0169246
0.15	0.0049	1.1	3.14	1023.009	4122.364063	6.83E-04	0.0008034	0.6403	4.349	1.88479E-05	0.0169246
0.2	0.0049	1.1	3.14	1023.009	4122.364063	6.83E-04	0.0008034	0.6403	4.349	1.88479E-05	0.0169246
0.25	0.0049	1.1	3.14	1023.009	4122.364063	6.83E-04	0.0008034	0.6403	4.349	1.88479E-05	0.0169246
0.3	0.0049	1.1	3.14	1023.009	4122.364063	6.83E-04	0.0008034	0.6403	4.349	1.88479E-05	0.0169246
0.35	0.0049	1.1	3.14	1023.009	4122.364063	6.83E-04	0.0008034	0.6403	4.349	1.88479E-05	0.0169246

Q (m³/s)	V (m/s)	ṁ	Re	Th In	Th Out	TC In	TC Out	ΔT	ΔT LMTD	Q (lpp)	U	Nu
1.66667E-06	0.088427	0.001705	649.39	40	32.93	25.6	27.16	7.07	9.436272	49.69286	311.153805	4.228353
0.0000025	0.132641	0.002558	974.09	40	34.89	25.6	27.89	5.11	10.259	53.87493	310.286856	4.840256
3.33333E-06	0.176855	0.00341	1298.79	40	35.78	25.6	28.29	4.22	10.57125	59.32217	331.567573	5.327391
4.16667E-06	0.221069	0.004263	1623.49	40	36.34	25.6	28.41	3.66	10.84524	64.31254	350.379043	5.738758
0.000005	0.265282	0.005115	1948.18	40	36.73	25.6	29.01	3.27	10.71519	68.95147	380.211388	6.09834
5.83333E-06	0.309496	0.005968	2272.88	40	36.82	25.6	29.29	3.18	10.5964	78.22935	436.20717	6.419885