LAMPIRAN 1

Tabel Data Hasil Pengujian

Tabel data hasil pengujian tanpa *static radial fin*

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
400	65.7	61.6	900	25.5	28.7	1	4.1	3.2	1852.5652	96.254052
	65.6	61.5		25.4	28.5	1	4.1	3.1	1852.657	96.259742
	65.6	61.6		25.4	28.5	1	4	3.1	1807.4255	96.256897
	65.6	61.6		25.5	28.5	1	4	3	1807.4255	96.256897
	65.6	61.5		25.5	28.5	1	4.1	3	1852.657	96.259742

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.46	981.183	0.00044218	2.8148	0.6577	4179.16	996.58	0.000852	5.8376
4186.42	981.241	0.00044286	2.8196	0.6576	4179.22	996.61	0.000855	5.8592
4186.44	981.212	0.00044252	2.8172	0.6576	4179.22	996.61	0.000855	5.8592
4186.44	981.212	0.00044252	2.8172	0.6576	4179.2	996.6	0.000854	5.852
4186.42	981.241	0.00044286	2.8196	0.6576	4179.2	996.6	0.000854	5.852

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
500	65.7	61.8	900	25.5	28.9	1.2	3.9	3.4	2082.4923	115.49804
	65.6	61.9		25.6	28.9	1.2	3.7	3.3	1975.6978	115.49804
	65.6	61.9		25.6	28.8	1.2	3.7	3.2	1975.6978	115.49804
	65.6	61.8		25.5	28.8	1.2	3.8	3.3	2029.1453	115.50145
	65.6	61.9		25.5	28.8	1.2	3.7	3.3	1975.6978	115.49804

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.5	981.125	0.0004415	2.81	0.6578	4179.12	996.56	0.00085	5.8232
4186.5	981.125	0.0004415	2.81	0.6578	4179.1	996.55	0.000849	5.816
4186.5	981.125	0.0004415	2.81	0.6578	4179.12	996.56	0.00085	5.8232
4186.48	981.154	0.00044184	2.8124	0.6577	4179.14	996.57	0.000851	5.8304
4186.5	981.125	0.0004415	2.81	0.6578	4179.14	996.57	0.000851	5.8304

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
600	65.7	62.1	900	25.5	29.3	1.5	3.6	3.8	1922.1576	144.35974
	65.6	62.2		25.6	29.3	1.5	3.4	3.7	1815.3711	144.35974
	65.6	62.1		25.6	29.4	1.5	3.5	3.8	1868.8107	144.36401
	65.6	62.1		25.5	29.3	1.5	3.5	3.8	1868.8107	144.36401
	65.6	62.1		25.5	29.3	1.5	3.5	3.8	1868.8107	144.36401

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.56	981.038	0.00044048	2.8028	0.6579	4179.04	996.52	0.000846	5.7944

4186.56	981.038	0.00044048	2.8028	0.6579	4179.02	996.51	0.000845	5.7872
4186.54	981.067	0.00044082	2.8052	0.6579	4179	996.5	0.000845	5.78
4186.54	981.067	0.00044082	2.8052	0.6579	4179.04	996.52	0.000846	5.7944
4186.54	981.067	0.00044082	2.8052	0.6579	4179.04	996.52	0.000846	5.7944

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
700	65.7	62.4	900	25.5	29.3	1.8	3.3	3.8	2575.0069	173.21633
	65.6	62.4		25.6	29.4	1.8	3.2	3.8	2497.0383	173.22145
	65.6	62.4		25.6	29.3	1.8	3.2	3.7	2497.0383	173.22145
	65.6	62.5		25.5	29.4	1.8	3.1	3.9	2418.9459	173.21633
	65.6	62.5		25.5	29.4	1.8	3.1	3.9	2418.9459	173.21633

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.62	980.951	0.00043946	2.7956	0.6581	4179.04	996.52	0.000846	5.7944
4186.6	980.98	0.0004398	2.798	0.658	4179	996.5	0.000845	5.78
4186.6	980.98	0.0004398	2.798	0.658	4179.02	996.51	0.000845	5.7872
4186.62	980.951	0.00043946	2.7956	0.6581	4179.02	996.51	0.000845	5.7872
4186.62	980.951	0.00043946	2.7956	0.6581	4179.02	996.51	0.000845	5.7872

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
800	65.7	62.6	900	25.5	29.6	2.3	3.1	4.1	2800.7459	221.31889
	65.6	62.7		25.6	29.6	2.3	2.9	4	2620.0526	221.31889
	65.6	62.7		25.6	29.7	2.3	2.9	4.1	2620.0526	221.31889
	65.6	62.6		25.5	29.7	2.3	3	4.2	2710.4664	221.32543
	65.6	62.7		25.5	29.6	2.3	2.9	4.1	2620.0526	221.31889

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.66	980.893	0.00043878	2.7908	0.6582	4178.98	996.49	0.000844	5.7728
4186.66	980.893	0.00043878	2.7908	0.6582	4178.96	996.48	0.000843	5.7656
4186.66	980.893	0.00043878	2.7908	0.6582	4178.94	996.47	0.000842	5.7584
4186.64	980.922	0.00043912	2.7932	0.6581	4178.96	996.48	0.000843	5.7656
4186.66	980.893	0.00043878	2.7908	0.6582	4178.98	996.49	0.000844	5.7728

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
900	65.7	62.9	900	25.5	30.2	2.5	2.8	4.7	2874.4521	240.54267
	65.6	62.9		25.6	30.3	2.5	2.7	4.7	2771.8618	240.54978
	65.6	62.8		25.6	30.3	2.5	2.8	4.7	2874.5946	240.5569
	65.6	62.8		25.5	30.3	2.5	2.8	4.8	2874.5946	240.5569
	65.6	62.8		25.5	30.3	2.5	2.8	4.8	2874.5946	240.5569

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c

4186.72	980.806	0.00043776	2.7836	0.6583	4178.86	996.43	0.000838	5.7296
4186.7	980.835	0.0004381	2.786	0.6583	4178.82	996.41	0.000836	5.7152
4186.68	980.864	0.00043844	2.7884	0.6582	4178.82	996.41	0.000836	5.7152
4186.68	980.864	0.00043844	2.7884	0.6582	4178.84	996.42	0.000837	5.7224
4186.68	980.864	0.00043844	2.7884	0.6582	4178.84	996.42	0.000837	5.7224

Tabel data hasil pengujian dengan *static radial fin* 2 sudu

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
400	65.6	59.3	900	25.5	29.2	1.6	6.3	3.7	2848.3172	154.11573
	65.5	59.2		25.5	29.2	1.6	6.3	3.7	2848.4583	154.12483
	65.6	59.3		25.5	29.3	1.6	6.3	3.8	2848.3172	154.11573
	65.5	59.4		25.4	29.3	1.6	6.1	3.9	2757.8944	154.11573
	65.5	59.2		25.5	29.2	1.6	6.3	3.7	2848.4583	154.12483

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.98	981.879	0.00045034	2.8724	0.65645	4179.06	996.53	0.000847	5.8016
4185.94	981.937	0.00045102	2.8772	0.65635	4179.06	996.53	0.000847	5.8016
4185.98	981.879	0.00045034	2.8724	0.65645	4179.04	996.52	0.000846	5.7944
4185.98	981.879	0.00045034	2.8724	0.65645	4179.06	996.53	0.000847	5.8016
4185.94	981.937	0.00045102	2.8772	0.65635	4179.06	996.53	0.000847	5.8016

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
500	65.6	59.7	900	25.4	29.5	2.1	5.9	4.1	3152.1543	202.253
	65.5	59.6		25.5	29.6	2.1	5.9	4.1	3152.3104	202.26494
	65.5	59.5		25.4	29.6	2.1	6	4.2	3205.8188	202.27092
	65.6	59.5		25.6	29.5	2.1	6.1	3.9	3259.1684	202.26494
	65.5	59.6		25.5	29.5	2.1	5.9	4	3152.3104	202.26494

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.06	981.763	0.00044898	2.8628	0.65665	4179.02	996.51	0.000845	5.7872
4186.02	981.821	0.00044966	2.8676	0.65655	4178.98	996.49	0.000844	5.7728
4186	981.85	0.00045	2.87	0.6565	4179	996.5	0.000845	5.78
4186.02	981.821	0.00044966	2.8676	0.65655	4178.98	996.49	0.000844	5.7728
4186.02	981.821	0.00044966	2.8676	0.65655	4179	996.5	0.000845	5.78

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
600	65.5	59.8	900	25.4	29.8	2.7	5.7	4.4	3748.0636	260.03957
	65.6	59.9		25.6	29.8	2.7	5.7	4.2	3747.878	260.0242
	65.6	59.7		25.5	29.7	2.7	5.9	4.2	3879.5746	260.03957
	65.5	59.7		25.5	29.9	2.7	5.8	4.4	3813.9135	260.04725
	65.6	59.8		25.4	29.8	2.7	5.8	4.4	3813.7246	260.03188

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.06	981.763	0.00044898	2.8628	0.65665	4178.96	996.48	0.000843	5.7656
4186.1	981.705	0.0004483	2.858	0.65675	4178.92	996.46	0.000841	5.7512
4186.06	981.763	0.00044898	2.8628	0.65665	4178.96	996.48	0.000843	5.7656
4186.04	981.792	0.00044932	2.8652	0.6566	4178.92	996.46	0.000841	5.7512
4186.08	981.734	0.00044864	2.8604	0.6567	4178.96	996.48	0.000843	5.7656

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
700	65.5	60.2	900	25.4	30.2	3.5	5.3	4.8	4138.077	337.0485
	65.6	59.9		25.5	30.2	3.5	5.7	4.7	4450.6051	337.06841
	65.6	60.3		25.5	30.1	3.5	5.3	4.6	4137.872	337.02858
	65.6	60.2		25.4	30.3	3.5	5.4	4.9	4216.0495	337.03854
	65.5	60.2		25.5	30.1	3.5	5.3	4.6	4138.077	337.0485

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.14	981.647	0.00044762	2.8532	0.65685	4178.88	996.44	0.000839	5.7368
4186.1	981.705	0.0004483	2.858	0.65675	4178.86	996.43	0.000838	5.7296
4186.18	981.589	0.00044694	2.8484	0.65695	4178.86	996.44	0.000839	5.7368
4186.16	981.618	0.00044728	2.8508	0.6569	4178.88	996.43	0.000838	5.7296
4186.14	981.647	0.00044762	2.8532	0.65685	4178.88	996.44	0.000839	5.7368

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
800	65.6	60.6	900	25.4	30.5	5	5	5.1	4519.6832	481.42673
	65.5	60.6		25.5	30.4	5	4.9	4.9	4429.3993	481.44096
	65.6	60.4		25.5	30.6	5	5.2	5.1	4700.7034	481.45518
	65.6	60.5		25.5	30.5	5	5.1	5	4610.1911	481.44096
	65.6	60.5		25.5	30.5	5	5.1	5	4610.1911	481.44096

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.24	981.502	0.00044592	2.8412	0.6571	4178.82	996.41	0.000836	5.7152
4186.22	981.531	0.00044626	2.8436	0.65705	4178.82	996.41	0.000836	5.7152
4186.2	981.56	0.0004466	2.846	0.657	4178.78	996.39	0.000834	5.7008
4186.22	981.531	0.00044626	2.8436	0.65705	4178.8	996.4	0.000835	5.708
4186.22	981.531	0.00044626	2.8436	0.65705	4178.8	996.4	0.000835	5.708

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
900	65.6	60.8	900	25.5	30.8	6.2	4.8	5.3	4930.3193	596.93387
	65.7	60.7		25.4	30.7	6.2	5	5.3	5135.7492	596.93387
	65.6	60.9		25.5	30.8	6.2	4.7	5.3	4827.4847	596.91623
	65.6	60.8		25.6	30.7	6.2	4.8	5.1	4930.3193	596.93387
	65.6	60.8		25.4	30.7	6.2	4.8	5.3	4930.3193	596.93387

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4186.28	981.444	0.00044524	2.8364	0.6572	4178.74	996.37	0.000832	5.6864
4186.28	981.444	0.000875	2.8364	0.6572	4178.78	996.39	0.000834	5.7008
4186.3	981.415	0.0004449	2.834	0.65725	4178.74	996.37	0.000832	5.6864
4186.28	981.444	0.00044524	2.8364	0.6572	4178.74	996.37	0.000832	5.6864
4186.28	981.444	0.00044524	2.8364	0.6572	4178.78	996.39	0.000834	5.7008

Tabel data hasil pengujian dengan *static radial fin* 3 sudu

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
400	65.5	58.6	900	25.5	30.3	2	6.9	4.8	3120.2034	192.6902
	65.4	58.7		25.5	30.2	2	6.7	4.7	3029.7627	192.6902
	65.5	58.7		25.5	30.3	2	6.8	4.8	3074.9069	192.6845
	65.4	58.6		25.5	30.2	2	6.8	4.7	3075.0591	192.6959
	65.5	58.6		25.4	30.2	2	6.9	4.8	3120.2034	192.6902

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.82	982.111	0.0004531	2.8916	0.65605	4178.84	996.42	0.000837	5.7224
4185.82	982.111	0.0004531	2.8916	0.65605	4178.86	996.43	0.000838	5.7296
4185.84	982.082	0.0004527	2.8892	0.6561	4178.84	996.42	0.000837	5.7224
4185.8	982.14	0.0004534	2.894	0.656	4178.86	996.43	0.000838	5.7296
4185.82	982.111	0.0004531	2.8916	0.65605	4178.88	996.44	0.000839	5.7368

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
500	65.6	58.8	900	25.5	30.5	3.2	6.8	5	3633.801	308.277
	65.5	58.9		25.5	30.4	3.2	6.6	4.9	3526.9245	308.277
	65.4	58.8		25.5	30.4	3.2	6.6	4.9	3527.0991	308.2952
	65.5	58.8		25.7	30.5	3.2	6.7	4.8	3580.4514	308.2861
	65.5	58.9		25.4	30.5	3.2	6.6	5.1	3526.9245	308.277

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.82	982.111	0.0004531	2.8916	0.65605	4178.84	996.42	0.000837	5.7224
4185.82	982.111	0.0004531	2.8916	0.65605	4178.86	996.43	0.000838	5.7296
4185.84	982.082	0.0004527	2.8892	0.6561	4178.84	996.42	0.000837	5.7224
4185.8	982.14	0.0004534	2.894	0.656	4178.86	996.43	0.000838	5.7296
4185.82	982.111	0.0004531	2.8916	0.65605	4178.88	996.44	0.000839	5.7368

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
600	65.6	59.2	900	25.5	30.8	4.4	6.4	5.3	4208.8731	423.8308
	65.5	59.2		25.5	30.7	4.4	6.3	5.2	4143.212	423.8433
	65.5	59.3		25.6	30.6	4.4	6.2	5	4077.3458	423.8308
	65.6	59.3		25.4	30.8	4.4	6.3	5.4	4143.0069	423.8183

	65.5	59.2		25.5	30.7	4.4	6.3	5.2	4143.212	423.8433

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.96	981.908	0.0004507	2.8748	0.6564	4178.74	996.37	0.000832	5.6864
4185.94	981.937	0.000451	2.8772	0.65635	4178.76	996.38	0.000833	5.6936
4185.96	981.908	0.0004507	2.8748	0.6564	4178.76	996.38	0.000833	5.6936
4185.98	981.879	0.0004503	2.8724	0.65645	4178.76	996.38	0.000833	5.6936
4185.94	981.937	0.000451	2.8772	0.65635	4178.76	996.38	0.000833	5.6936

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
700	65.5	59.5	900	25.5	31.2	6	6	5.7	4685.4275	577.9169
	65.6	59.6		25.4	31.3	6	6	5.9	4685.1955	577.8828
	65.6	59.5		25.5	31.3	6	6.1	5.8	4763.4	577.8998
	65.5	59.5		25.6	31.2	6	6	5.6	4685.4275	577.9169
	65.6	59.5		25.5	31.2	6	6.1	5.7	4763.4	577.8998

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.82	982.111	0.0004531	2.8916	0.65605	4178.84	996.42	0.000837	5.7224
4185.82	982.111	0.0004531	2.8916	0.65605	4178.86	996.43	0.000838	5.7296
4185.84	982.082	0.0004527	2.8892	0.6561	4178.84	996.42	0.000837	5.7224
4185.8	982.14	0.0004534	2.894	0.656	4178.86	996.43	0.000838	5.7296
4185.82	982.111	0.0004531	2.8916	0.65605	4178.88	996.44	0.000839	5.7368

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
800	65.6	59.8	900	25.5	31.6	7.4	5.8	6.1	5243.8714	712.68
	65.6	59.7		25.5	31.5	7.4	5.9	6	5334.415	712.701
	65.5	59.7		25.6	31.5	7.4	5.8	5.9	5244.1311	712.7221
	65.6	59.8		25.5	31.5	7.4	5.8	6	5243.8714	712.68
	65.6	59.8		25.4	31.5	7.4	5.8	6.1	5243.8714	712.68

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.82	982.111	0.0004531	2.8916	0.65605	4178.84	996.42	0.000837	5.7224
4185.82	982.111	0.0004531	2.8916	0.65605	4178.86	996.43	0.000838	5.7296
4185.84	982.082	0.0004527	2.8892	0.6561	4178.84	996.42	0.000837	5.7224
4185.8	982.14	0.0004534	2.894	0.656	4178.86	996.43	0.000838	5.7296
4185.82	982.111	0.0004531	2.8916	0.65605	4178.88	996.44	0.000839	5.7368

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
800	65.6	59.8	900	25.5	31.6	7.4	5.8	6.1	5243.8714	712.68
	65.6	59.7		25.5	31.5	7.4	5.9	6	5334.415	712.701
	65.5	59.7		25.6	31.5	7.4	5.8	5.9	5244.1311	712.7221

	65.6	59.8		25.5	31.5	7.4	5.8	6	5243.8714	712.68
	65.6	59.8		25.4	31.5	7.4	5.8	6.1	5243.8714	712.68

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.82	982.111	0.0004531	2.8916	0.65605	4178.84	996.42	0.000837	5.7224
4185.82	982.111	0.0004531	2.8916	0.65605	4178.86	996.43	0.000838	5.7296
4185.84	982.082	0.0004527	2.8892	0.6561	4178.84	996.42	0.000837	5.7224
4185.8	982.14	0.0004534	2.894	0.656	4178.86	996.43	0.000838	5.7296
4185.82	982.111	0.0004531	2.8916	0.65605	4178.88	996.44	0.000839	5.7368

Tabel data hasil pengujian dengan *static radial fin* 4 sudu

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
400	65.7	58.2	900	25.5	30.6	3	7.5	5.1	3391.693269	270.48934
	65.6	57.8		25.6	30.5	3	7.8	4.9	3527.797471	270.52928
	65.6	57.9		25.6	30.5	3	7.7	4.9	3482.483125	270.52129
	65.6	58.2		25.5	30.6	3	7.4	5.1	3346.553512	270.49733
	65.6	57.9		25.5	30.5	3	7.7	5	3482.483125	270.52129

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.78	982.169	0.0004537	2.8964	0.65595	4178.78	996.39	0.0008343	5.7008
4185.68	982.314	0.0004554	2.9084	0.6557	4178.78	996.39	0.0008343	5.7008
4185.7	982.285	0.0004551	2.906	0.65575	4178.78	996.39	0.0008343	5.7008
4185.76	982.198	0.0004541	2.8988	0.6559	4178.78	996.39	0.0008343	5.7008
4185.7	982.285	0.0004551	2.906	0.65575	4178.8	996.4	0.0008352	5.708

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
500	65.6	58.2	900	25.6	30.8	4.3	7.4	5.2	3955.017787	414.32058
	65.7	58.3		25.5	30.9	4.3	7.4	5.4	3954.822031	414.29612
	65.6	58.3		25.6	30.7	4.3	7.3	5.1	3901.475046	414.30835
	65.6	58.2		25.5	30.8	4.3	7.4	5.3	3955.017787	414.32058
	65.7	58.3		25.5	30.8	4.3	7.4	5.3	3954.822031	414.29612

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.76	982.198	0.0004541	2.8988	0.6559	4178.72	996.36	0.0008315	5.6792
4185.8	982.14	0.0004534	2.894	0.656	4178.72	996.36	0.0008315	5.6792
4185.78	982.169	0.0004537	2.8964	0.65595	4178.74	996.37	0.0008324	5.6864
4185.76	982.198	0.0004541	2.8988	0.6559	4178.74	996.37	0.0008324	5.6864
4185.8	982.14	0.0004534	2.894	0.656	4178.74	996.37	0.0008324	5.6864

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
600	65.5	58.5	900	25.5	31.3	5.7	7	5.8	4604.366605	549.18322

	65.6	58.4		25.4	31.3	5.7	7.2	5.9	4735.919937	549.18322
	65.5	58.4		25.5	31.2	5.7	7.1	5.7	4670.258853	549.19944
	65.6	58.5		25.5	31.2	5.7	7.1	5.7	4670.027688	549.16701
	65.6	58.6		25.4	31.2	5.7	7	5.8	4604.138693	549.15079

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.8	982.14	0.0004534	2.894	0.656	4178.64	996.32	0.0008278	5.6504
4185.8	982.14	0.0004534	2.894	0.656	4178.66	996.33	0.0008287	5.6576
4185.78	982.169	0.0004537	2.8964	0.65595	4178.66	996.33	0.0008287	5.6576
4185.82	982.111	0.0006822	2.8916	0.65605	4178.66	996.33	0.0008287	5.6576
4185.84	982.082	0.0004527	2.8892	0.6561	4178.68	996.34	0.0008296	5.6648

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
	65.6	58.6		25.5	31.4	7.1	7	5.9	5467.414698	684.02993
	65.5	58.7		25.5	31.6	7.1	6.8	6.1	5311.20285	684.02993
700	65.6	58.6	900	25.6	31.5	7.1	7	5.9	5467.414698	684.02993
	65.5	58.7		25.5	31.4	7.1	6.8	5.9	5311.20285	684.02993
	65.6	58.7		25.6	31.5	7.1	6.9	5.9	5389.175382	684.00974

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.84	982.082	0.0004527	2.8892	0.6561	4178.62	996.31	0.0008268	5.6432
4185.84	982.082	0.0004527	2.8892	0.6561	4178.58	996.29	0.000825	5.6288
4185.84	982.082	0.0004527	2.8892	0.6561	4178.58	996.29	0.000825	5.6288
4185.84	982.082	0.0004527	2.8892	0.6561	4178.62	996.31	0.0008268	5.6432
4185.86	982.053	0.0004524	2.8868	0.65615	4178.58	996.29	0.000825	5.6288

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP
	65.6	58.7		25.5	31.6	9.3	6.9	6.1	6240.097811	895.95641
	65.6	58.8		25.5	31.6	9.3	6.8	6.1	6149.509393	895.92996
800	65.5	58.7	900	25.5	31.7	9.3	6.8	6.2	6149.813826	895.98287
	65.6	58.8		25.6	31.8	9.3	6.8	6.2	6149.509393	895.92996
	65.6	58.7		25.6	31.7	9.3	6.9	6.1	6240.097811	895.95641

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.86	982.053	0.0004524	2.8868	0.65615	4178.58	996.29	0.000825	5.6288
4185.88	982.024	0.000452	2.8844	0.6562	4178.58	996.29	0.000825	5.6288
4185.84	982.082	0.0004527	2.8892	0.6561	4178.56	996.28	0.000824	5.6216
4185.88	982.024	0.000452	2.8844	0.6562	4178.52	996.26	0.0008222	5.6072
4185.86	982.053	0.0004524	2.8868	0.65615	4178.54	996.27	0.0008231	5.6144

$\dot{V}_h$	Th.in	Th.out	$\dot{V}_c$	Tc.in	Tc.out	Δh	ΔT_h	ΔT_c	$\dot{Q}_h$	ΔP

900	65.5	59.2	900	25.5	31.9	10.2	6.3	6.4	6473.768751	982.5458
	65.6	59.2		25.5	31.8	10.2	6.4	6.3	6576.364179	982.51678
	65.5	58.9		25.6	31.8	10.2	6.6	6.2	6782.547125	982.63285
	65.6	58.9		25.5	31.8	10.2	6.7	6.3	6885.142558	982.60384
	65.5	59.2		25.5	31.9	10.2	6.3	6.4	6473.768751	982.5458

Cp_h	ρ_h	μ_h	Pr_h	k_h	Cp_c	ρ_c	μ_c	Pr_c
4185.94	981.937	0.000451	2.8772	0.65635	4178.52	996.26	0.0008222	5.6072
4185.96	981.908	0.0004507	2.8748	0.6564	4178.54	996.27	0.0008231	5.6144
4185.88	982.024	0.000452	2.8844	0.6562	4178.52	996.26	0.0008222	5.6072
4185.9	981.995	0.0004517	2.882	0.65625	4178.54	996.27	0.0008231	5.6144
4185.94	981.937	0.000451	2.8772	0.65635	4178.52	996.26	0.0008222	5.6072

Tabel data hasil pengujian $\dot{Q}_h$ rata-rata

$\dot{V}_h$	$\dot{V}_c$	$\dot{Q}_h$ tanpa *static radial fin*	$\dot{Q}_h$ dengan *static radial fin* 2 sudu	$\dot{Q}_h$ dengan *static radial fin* 3 sudu	$\dot{Q}_h$ dengan *static radial fin* 4 sudu
400	900	1834.546	2830.2891	3084.027	3446.2021
500	900	2007.7426	3184.3525	3559.04	3944.2309
600	900	2300.0519	3800.6308	4143.13	4656.9424
700	900	2481.3951	4216.1361	4716.57	5389.2821
800	900	2674.274	4574.0336	5262.032	6185.8056
900	900	2854.0195	4950.419	5883.765	6638.3183

Tabel data hasil pengujian ΔP rata-rata

$\dot{V}_h$	$\dot{V}_c$	ΔP tanpa *static radial fin*	ΔP dengan *static radial fin* 2 sudu	ΔP dengan *static radial fin* 3 sudu	ΔP dengan *static radial fin* 4 sudu
400	900	96.257	154.028	192.572	270.511
500	900	115.498	202.263	308.096	414.054
600	900	144.285	260.0365	423.582	549.1767
700	900	173.218	337.0456	577.565	684.0259
800	900	221.3202	481.441	712.284	895.9511
900	900	240.424	596.594	866.16	982.569

Keterangan tabel data:

$\dot{V}_h$: Debit air panas $[\frac{L}{jam}]$

$\dot{V}_c$: Debit air dingin $[\frac{L}{jam}]$

Th_{in} : Suhu air panas masuk $[^0C]$

Th_{out} : Suhu air panas keluar $[^0C]$

Tc_{in} : Suhu air dingin masuk $[^0C]$

Tc_{out}	: Suhu air dingin keluar	$[^0C]$
Δh	: Beda ketinggian manometer	$[cmH_2O]$
ΔTh	: Beda temperatur air panas	$[^0C]$
$\dot{Q}_h$	: Laju perpindahan kalor fluida panas	[Watt]
ΔP	: *Pressure drop*	$[\frac{N}{m^2}]$
Cp_h	: Kalor spesifik air panas	$[\frac{J}{kg.^oC}]$
ρ_h	: Massa jenis air panas	$[\frac{kg}{m^3}]$
k_h	: Konduktifitas thermal air panas	$[\frac{W}{m.^oC}]$
μ_h	: Viskositas dinamik air panas	$[\frac{kg}{m.s}]$
Pr_h	: Angka Prandtl air panas	
Cp_c	: Kalor spesifik air dingin	$[\frac{J}{kg.^oC}]$
ρ_c	: Massa jenis air dingin	$[\frac{kg}{m^3}]$
k_c	: Konduktifitas thermal air dingin	$[\frac{W}{m.^oC}]$
μ_c	: Viskositas dinamik air dingin	$[\frac{kg}{m.s}]$
Pr_c	: Angka Prandtl air dingin	

LAMPIRAN 2

Tabel Sifat-sifat Air

TABLE A–9

Properties of saturated water

Temp., T °C	Saturation Pressure, P_{sat} kPa	Density, ρ kg/m³ Liquid	Density, ρ kg/m³ Vapor	Enthalpy of Vaporization, h_{fg} kJ/kg	Specific Heat, C_p J/kg · °C Liquid	Specific Heat, C_p J/kg · °C Vapor	Thermal Conductivity, k W/m · °C Liquid	Thermal Conductivity, k W/m · °C Vapor	Dynamic Viscosity, μ kg/m · s Liquid	Dynamic Viscosity, μ kg/m · s Vapor	Prandtl Number, Pr Liquid	Prandtl Number, Pr Vapor	Volume Expansion Coefficient, β 1/K Liquid
0.01	0.6113	999.8	0.0048	2501	4217	1854	0.561	0.0171	1.792×10^{-3}	0.922×10^{-5}	13.5	1.00	-0.068×10^{-3}
5	0.8721	999.9	0.0068	2490	4205	1857	0.571	0.0173	1.519×10^{-3}	0.934×10^{-5}	11.2	1.00	0.015×10^{-3}
10	1.2276	999.7	0.0094	2478	4194	1862	0.580	0.0176	1.307×10^{-3}	0.946×10^{-5}	9.45	1.00	0.733×10^{-3}
15	1.7051	999.1	0.0128	2466	4186	1863	0.589	0.0179	1.138×10^{-3}	0.959×10^{-5}	8.09	1.00	0.138×10^{-3}
20	2.339	998.0	0.0173	2454	4182	1867	0.598	0.0182	1.002×10^{-3}	0.973×10^{-5}	7.01	1.00	0.195×10^{-3}
25	3.169	997.0	0.0231	2442	4180	1870	0.607	0.0186	0.891×10^{-3}	0.987×10^{-5}	6.14	1.00	0.247×10^{-3}
30	4.246	996.0	0.0304	2431	4178	1875	0.615	0.0189	0.798×10^{-3}	1.001×10^{-5}	5.42	1.00	0.294×10^{-3}
35	5.628	994.0	0.0397	2419	4178	1880	0.623	0.0192	0.720×10^{-3}	1.016×10^{-5}	4.83	1.00	0.337×10^{-3}
40	7.384	992.1	0.0512	2407	4179	1885	0.631	0.0196	0.653×10^{-3}	1.031×10^{-5}	4.32	1.00	0.377×10^{-3}
45	9.593	990.1	0.0655	2395	4180	1892	0.637	0.0200	0.596×10^{-3}	1.046×10^{-5}	3.91	1.00	0.415×10^{-3}
50	12.35	988.1	0.0831	2383	4181	1900	0.644	0.0204	0.547×10^{-3}	1.062×10^{-5}	3.55	1.00	0.451×10^{-3}
55	15.76	985.2	0.1045	2371	4183	1908	0.649	0.0208	0.504×10^{-3}	1.077×10^{-5}	3.25	1.00	0.484×10^{-3}
60	19.94	983.3	0.1304	2359	4185	1916	0.654	0.0212	0.467×10^{-3}	1.093×10^{-5}	2.99	1.00	0.517×10^{-3}
65	25.03	980.4	0.1614	2346	4187	1926	0.659	0.0216	0.433×10^{-3}	1.110×10^{-5}	2.75	1.00	0.548×10^{-3}
70	31.19	977.5	0.1983	2334	4190	1936	0.663	0.0221	0.404×10^{-3}	1.126×10^{-5}	2.55	1.00	0.578×10^{-3}
75	38.58	974.7	0.2421	2321	4193	1948	0.667	0.0225	0.378×10^{-3}	1.142×10^{-5}	2.38	1.00	0.607×10^{-3}
80	47.39	971.8	0.2935	2309	4197	1962	0.670	0.0230	0.355×10^{-3}	1.159×10^{-5}	2.22	1.00	0.653×10^{-3}
85	57.83	968.1	0.3536	2296	4201	1977	0.673	0.0235	0.333×10^{-3}	1.176×10^{-5}	2.08	1.00	0.670×10^{-3}
90	70.14	965.3	0.4235	2283	4206	1993	0.675	0.0240	0.315×10^{-3}	1.193×10^{-5}	1.96	1.00	0.702×10^{-3}
95	84.55	961.5	0.5045	2270	4212	2010	0.677	0.0246	0.297×10^{-3}	1.210×10^{-5}	1.85	1.00	0.716×10^{-3}
100	101.33	957.9	0.5978	2257	4217	2029	0.679	0.0251	0.282×10^{-3}	1.227×10^{-5}	1.75	1.00	0.750×10^{-3}
110	143.27	950.6	0.8263	2230	4229	2071	0.682	0.0262	0.255×10^{-3}	1.261×10^{-5}	1.58	1.00	0.798×10^{-3}
120	198.53	943.4	1.121	2203	4244	2120	0.683	0.0275	0.232×10^{-3}	1.296×10^{-5}	1.44	1.00	0.858×10^{-3}
130	270.1	934.6	1.496	2174	4263	2177	0.684	0.0288	0.213×10^{-3}	1.330×10^{-5}	1.33	1.01	0.913×10^{-3}
140	361.3	921.7	1.965	2145	4286	2244	0.683	0.0301	0.197×10^{-3}	1.365×10^{-5}	1.24	1.02	0.970×10^{-3}
150	475.8	916.6	2.546	2114	4311	2314	0.682	0.0316	0.183×10^{-3}	1.399×10^{-5}	1.16	1.02	1.025×10^{-3}
160	617.8	907.4	3.256	2083	4340	2420	0.680	0.0331	0.170×10^{-3}	1.434×10^{-5}	1.09	1.05	1.145×10^{-3}
170	791.7	897.7	4.119	2050	4370	2490	0.677	0.0347	0.160×10^{-3}	1.468×10^{-5}	1.03	1.05	1.178×10^{-3}
180	1002.1	887.3	5.153	2015	4410	2590	0.673	0.0364	0.150×10^{-3}	1.502×10^{-5}	0.983	1.07	1.210×10^{-3}
190	1254.4	876.4	6.388	1979	4460	2710	0.669	0.0382	0.142×10^{-3}	1.537×10^{-5}	0.947	1.09	1.280×10^{-3}
200	1553.8	864.3	7.852	1941	4500	2840	0.663	0.0401	0.134×10^{-3}	1.571×10^{-5}	0.910	1.11	1.350×10^{-3}
220	2318	840.3	11.60	1859	4610	3110	0.650	0.0442	0.122×10^{-3}	1.641×10^{-5}	0.865	1.15	1.520×10^{-3}
240	3344	813.7	16.73	1767	4760	3520	0.632	0.0487	0.111×10^{-3}	1.712×10^{-5}	0.836	1.24	1.720×10^{-3}
260	4688	783.7	23.69	1663	4970	4070	0.609	0.0540	0.102×10^{-3}	1.788×10^{-5}	0.832	1.35	2.000×10^{-3}
280	6412	750.8	33.15	1544	5230	4835	0.581	0.0605	0.094×10^{-3}	1.870×10^{-5}	0.854	1.49	2.380×10^{-3}
300	8581	713.8	46.15	1405	5750	5980	0.548	0.0695	0.086×10^{-3}	1.965×10^{-5}	0.902	1.69	2.950×10^{-3}
320	11,274	667.1	64.57	1239	6540	7900	0.509	0.0836	0.078×10^{-3}	2.084×10^{-5}	1.00	1.97	—
340	14,586	610.5	92.62	1028	8240	11,870	0.469	0.110	0.070×10^{-3}	2.255×10^{-5}	1.23	2.43	—
360	18,651	528.3	144.0	720	14,690	25,800	0.427	0.178	0.060×10^{-3}	2.571×10^{-5}	2.06	3.73	—
374.14	22,090	317.0	317.0	0	∞	∞	∞	∞	0.043×10^{-3}	4.313×10^{-5}	—	—	—

Note 1: Kinematic viscosity ν and thermal diffusivity α can be calculated from their definitions, $\nu = \mu/\rho$ and $\alpha = k/\rho C_p = \nu/\text{Pr}$. The temperatures 0.01°C, 100°C, and 374.14°C are the triple-, boiling-, and critical-point temperatures of water, respectively. The properties listed above (except the vapor density) can be used at any pressure with negligible error except at temperatures near the critical-point value.

Note 2: The unit kJ/kg · °C for specific heat is equivalent to kJ/kg · K, and the unit W/m · °C for thermal conductivity is equivalent to W/m · K.

Source: Viscosity and thermal conductivity data are from J. V. Sengers and J. T. R. Watson, *Journal of Physical and Chemical Reference Data* 15 (1986) pp. 1291–1322. Other data are obtained from various sources or calculated.