

## DAFTAR PUSTAKA

- Anas. 2014. *Desain Alat Penjernih Air Laut menjadi Air Bersih Dengan Tenaga Matahari*. Makassar (ID): UIN Alauddin Makassar
- Mukadim, Aldi. 2013. *Analisa Pengaruh Variasi Bentuk Absorber pada Alat Distilasi Air Laut Terhadap kenaikan Suhu Air Dalam Ruang Pemanas dan Jumlah Penguapan Air yang Dihasilkan*. *Dinamika Teknik Mesin*. 3(2): 127-135
- Jalaluddin, Arif, E., & Tarakka, R. (2016). Experimental study of an SWH system with V-shaped plate. *Journal of Engineering and Technological Sciences*, 48(2), 207–217. <https://doi.org/10.5614/j.eng.technol.sci.2016.48.2.7>
- Wijaya, Anthony. 2016. Rancang Bangun Sistem Distilasi Air Dalam Proses Pengolahan Air Bersih Dengan Menggunakan *Fresnel Lens Solar Collector*. <https://www.semanticscholar.org/paper/RANCANG-BANGUN-SISTEM-DISTILASI-AIR-DALAM-PROSES-Endarko/> . (diakses pada 14 September 2019)
- Jefri, Nanda, dkk. 2018. *Analisa Thermal Kolektor Surya Pelat Datar yang Dilengkapi PCM Campuran Parafin dengan Bahan Berbasis Minyak*. *Jurnal STRATOR*. 1(1): 88-94
- Sahar, Andi. 2015. *Distilasi Air Laut Untuk Produksi Air Segar Menggunakan Destilator Prototipe Ultraviolet Sebagai Salah Satu Upaya Pemanfaatan Sumber Daya Air Laut*. [https://www.academia.edu/12703082/DISTILASI\\_AIR\\_LAUT\\_UNTUK\\_PRODUKSI\\_AIR\\_SEGAR\\_MENGGUNAKAN\\_DESTILATOR\\_PROTOTIPE\\_ULTRAVIOLET\\_SEBAGAI\\_SALAH\\_SATU\\_UPAYA\\_PEMANFAATAN\\_SUMBERDAYA\\_AIR\\_LAUT](https://www.academia.edu/12703082/DISTILASI_AIR_LAUT_UNTUK_PRODUKSI_AIR_SEGAR_MENGGUNAKAN_DESTILATOR_PROTOTIPE_ULTRAVIOLET_SEBAGAI_SALAH_SATU_UPAYA_PEMANFAATAN_SUMBERDAYA_AIR_LAUT) . (diakses pada 14 September 2019)

- Said L, Muh, dkk. 2016. *Rancang Bangun Air Laut Menjadi Air Minum Menggunakan Sistem Piramida Air (Green House Effect)*. *Jurnal Sains dan Pendidikan Fisika*. 12(3): 300-310
- Cengel and Cimbala, 2003 *Heat and Mass Transfer a Partical Approach* 3<sup>rd</sup> edition, McGraw Hill.
- Firmansyah Sitopu Tekad, Ambarita Himsyar, Gulton Syahril, 2013, Pengujian Proses Charging Sebuah Pemanas Air Energi Surya Tipe Kotak Sederhana yang Dilengkap PCM (*Phase Change Material*) dengan Luas Permukaan 2 m<sup>2</sup>. Jurusan Mesin. Universitas Sumatera Utara. *Jurnal Dinamis* Volumer II, No. 12, Januari 2013, ISSN 2338-1035
- Holman, JP, (1981). *Heat Transfer*, 5<sup>th</sup> Edition, McGraw-Hill International Book Company, New York.
- Kreith, F. 1986, *Prinsip-prinsip Perpindahan Panas* (Ed.3), Jakarta : Erlangga
- Djuli, Yuvita Satriani . 2013. *Analisis Distilasi Air Laut Memanfaatkan Tenaga Surya*. Program Pascasarjana Universitas Hasanuddin.
- Himran, Syukri, 2005. *Energi Surya*. Fakultas Teknik Universitas Hasanuddin, Makassar : CV. Bintang Lamumpatue.
- Kamil, Muhammad Adnan, 2019. *Analisis Unjuk Kerja Solar Water Heater Termosipon dengan PCM Storage*.
- A.A. El- Sebaai, M. El- Naggar, 2016. *Year round performance and cost analysis of a finned single basin solar still*.
- S.M Shalaby, E.El – Bialy, A.A. El- Sebaai. 2016. *An experimental unvestigation of a v-corrugated absorber single – basin solar still using PCM*.
- Fajar Sri Lestari, Djamiko Ichsani, 2016. *Studi Simulasi Numerik dan Eksperimental Pengaruh Penambahan *Fin* Berbentuk Setengan Silinder Tegak Lurus Aliran yang Dipasang pada Bagian Bawah Pelat Absorber*

Berbentuk V Terhadap Efisiensi Kolektor Surya Pemanas Udara. Jurusan Teknik Mesin, Fakultas Teknologi Industri, Institut Teknologi Sepuluh November.

Catrawedarma, I. (2012). Pengaruh massa air baku terhadap performansi sistem distilasi. *Jurnal Energi Dan Manufaktur*, 2(2), 117–123.

Incropera, F. P., & DeWitt, D. P. (1996). *Fundamentals of Heat and Mass Transfer*. <https://doi.org/10.1016/j.applthermaleng.2011.03.022>

Satriani. D. Y., Himran. S., H. D. (2012). DISTILASI WATER SEA EXPLOIT ENERGY OF SURYA Bagian Teknik Mesin Fakultas Teknik Universitas Hasanuddin Alamat Koresponden: Jurusan Teknik Mesin Universitas Hasanuddin Makassar 90425. *Teknik Mesin*, 1–10.

## LAMPIRAN A

Tabel A.1 Hasil Pengujian Alat Distilasi Air Laut Menggunakan Pelat Datar Pada Kapasitas 100%

No	Tanggal & Waktu	RADIASI (W/m <sup>2</sup> )	KEC.ANGIN (m/s)	T RUANG DATAR (degC)	T GLASS IN 1 DATAR (degC)	T GLASS IN 2 DATAR (degC)	T GLASS OUT 1 DATAR (degC)	T GLASS OUT 2 DATAR (degC)	T WATER DATAR (degC)	T ABSORBER DATAR (degC)	T WOOD 1 DATAR (degC)	T LINGKUNGAN (degC)	VOLUME AIR DISTILASI DATAR (ml)
1	8/13/2020 7:00	67	0.7	29.1	28.9	27	29.2	26.9	29.2	29.5	27.3	25.9	0
2	8/13/2020 8:00	296	0.6	38.5	39.4	37.9	40.4	36	30.8	31.4	32.8	28.8	0
3	8/13/2020 9:00	460	1.3	42.5	47.5	46.3	48.6	43.2	34.2	35	34.1	30.3	0
4	8/13/2020 10:00	674	0.8	46.7	54.1	53.2	55.7	50.3	38.8	39.9	36.2	31.6	0
5	8/13/2020 11:00	764	0.3	50	58.8	57.7	60.9	54.9	44.6	45.8	38.3	34	0
6	8/13/2020 12:00	823	1.2	49.8	60.5	59.5	61.8	55.4	49.8	51.1	35.3	31.6	15
7	8/13/2020 13:00	614	1.5	51.2	54.4	52.9	52.3	50.2	53.2	53.7	34.5	34.2	45
8	8/13/2020 14:00	731	1.2	56	63.7	61.7	62.4	58	56.4	57.4	35.5	36.3	80
9	8/13/2020 15:00	595	3.8	56.4	55.7	55.4	52	50.3	57.9	58.8	35.9	35.2	100
10	8/13/2020 16:00	408	2.1	55.7	51.5	51.6	48.8	48.9	56.8	57.2	36.9	35.2	85
11	8/13/2020 17:00	197	2.1	51.7	46.6	47.8	45	45.5	54.6	54.8	36.9	33.5	60
12	8/13/2020 18:00	5	1.1	47.2	43.2	44.6	40.2	41	51.7	51.5	32.6	30.6	35
13	8/13/2020 19:00	0	0	45.1	42.4	42.4	39.1	39.8	48.8	48.7	32.6	30.1	20
14	8/13/2020 20:00	0	0.5	42.9	40.1	40.2	37	38	46.6	46.5	31.3	29.2	10

Tabel A.2 Hasil Pengujian Alat Distilasi Air Laut Menggunakan Pelat Datar Pada Kapasitas 65%

No	Tanggal & Waktu	RADIASI (W/m <sup>2</sup> )	KEC.ANGIN (m/s)	T RUANG DATAR (degC)	T GLASS IN 1 DATAR (degC)	T GLASS IN 2 DATAR (degC)	T GLASS OUT 1 DATAR (degC)	T GLASS OUT 2 DATAR (degC)	T WATER DATAR (degC)	T ABSORBER DATAR (degC)	T WOOD 1 DATAR (degC)	T LINGKUNGAN (degC)	VOLUME AIR DISTILASI DATAR (ml)
1	8/14/2020 9:00	472	1.3	42.1	47.2	44.8	48.3	43.4	36.8	37.3	37.2	32.6	0
2	8/14/2020 10:00	642	0.7	47.3	55.8	52.9	52.8	47.2	43.7	44.5	38.9	33.9	0
3	8/14/2020 11:00	954	1.9	50.5	57.4	55.8	53.8	49.8	51	51.5	41.2	32.4	45
4	8/14/2020 12:00	402	0.9	50.6	52.7	52	49.6	49.2	51.8	52.5	39	32.3	70
5	8/14/2020 13:00	818	2.5	57.1	64.8	61.2	60	56.5	56.6	57.8	42.9	35.7	90
6	8/14/2020 14:00	745	2.6	59.1	63.7	60.1	57.6	54.9	59.6	60.6	42.5	35	110
7	8/14/2020 15:00	641	2.8	59.7	60.9	58.5	55.6	53.8	60.5	61.3	44.5	35.2	105
8	8/14/2020 16:00	163	1.1	53.3	49.9	50.8	46.3	46.5	56.8	57.2	39.2	32	90
9	8/14/2020 17:00	41	2	48	44.4	45.1	40.9	41.2	52	52.1	35.8	31.8	70
10	8/14/2020 18:00	6	0.9	46	43.3	43.5	39.8	39.7	49.7	49.7	36.1	31.8	40

Tabel A.3 Hasil Pengujian Alat Distilasi Air Laut Menggunakan Pelat Datar Pada Kapasitas 25%

No	Tanggal & Waktu	RADIASI (W/m <sup>2</sup> )	KEC. ANGIN (m/s)	T RUANG DATAR (degC)	T GLASS IN 1 DATAR (degC)	T GLASS IN 2 DATAR (degC)	T GLASS OUT 1 DATAR (degC)	T GLASS OUT 2 DATAR (degC)	T WATER DATAR (degC)	T ABSORBER DATAR (degC)	T WOOD 1 DATAR (degC)	T LINGKUNGAN (degC)	VOLUME AIR DISTILASI DATAR (ml)
1	8/15/2020 7:00	69	0.7	28	29.2	27.8	28.4	28.2	29.2	29.8	26.2	25	0
2	8/15/2020 8:00	147	0.9	30.7	30.6	30	29.7	29.4	31.9	32.4	27.7	25.3	0
3	8/15/2020 9:00	486	1.1	42.3	48.9	43.7	47.2	42.2	37.5	37.9	35.2	31.6	0
4	8/15/2020 10:00	631	1.5	48.8	57.1	52.2	53.5	48.6	46.2	46.8	38.6	32.5	40
5	8/15/2020 11:00	758	1.5	53.7	65.6	61.6	60	55.2	54.7	55.5	41.7	33.4	70
6	8/15/2020 12:00	808	1.4	59.8	70.2	67.6	64.3	61.1	62.1	63	43.5	36.6	100
7	8/15/2020 13:00	811	2.8	64.6	70.7	68.1	62.1	58.8	65.5	66.3	42	34.7	140
8	8/15/2020 14:00	708	3.7	62	64.3	62.1	55.2	54.2	64.3	65.5	38.3	33.6	130
9	8/15/2020 15:00	547	2.8	60.1	60	57.7	53.2	52.9	62	62.8	39.8	35.1	115
10	8/15/2020 16:00	366	1.9	57	55.2	53.8	51.1	51.5	58.9	59.1	41.7	34.4	100
11	8/15/2020 17:00	165	1.2	52.4	48.1	48.5	45.1	46.1	54.8	54.8	39.7	33.8	70
12	8/15/2020 18:00	5	0.8	45.8	42.9	43.2	39	39.8	49.9	49.8	36.6	31.4	45
13	8/15/2020 19:00	0	1.4	40	36.4	37.7	33.8	35	44.3	44.2	32.4	30.1	30
14	8/15/2020 20:00	0	1.1	37	32.2	35.1	31.8	32.1	41.4	40.9	30.1	29.2	15

Tabel A.4 Volume Air yang Dihasilkan Alat Distilasi Air Laut Menggunakan Pelat Absorber Datar

100%			65%			25%		
No	Tanggal & Waktu	VOLUME AIR DISTILASI Datar (ml)	No	Tanggal & Waktu	VOLUME AIR DISTILASI Datar (ml)	No	Tanggal & Waktu	VOLUME AIR DISTILASI Datar (ml)
1	8/13/2020 7:00	0	1	8/14/2020 7:00	0	1	8/15/2020 7:00	0
2	8/13/2020 8:00	0	2	8/14/2020 8:00	0	2	8/15/2020 8:00	0
3	8/13/2020 9:00	0	3	8/14/2020 9:00	0	3	8/15/2020 9:00	0
4	8/13/2020 10:00	0	4	8/14/2020 10:00	0	4	8/15/2020 10:00	40
5	8/13/2020 11:00	0	5	8/14/2020 11:00	45	5	8/15/2020 11:00	70
6	8/13/2020 12:00	15	6	8/14/2020 12:00	70	6	8/15/2020 12:00	100
7	8/13/2020 13:00	45	7	8/14/2020 13:00	90	7	8/15/2020 13:00	140
8	8/13/2020 14:00	80	8	8/14/2020 14:00	110	8	8/15/2020 14:00	130
9	8/13/2020 15:00	100	9	8/14/2020 15:00	105	9	8/15/2020 15:00	115
10	8/13/2020 16:00	85	10	8/14/2020 16:00	90	10	8/15/2020 16:00	100
11	8/13/2020 17:00	60	11	8/14/2020 17:00	70	11	8/15/2020 17:00	70
12	8/13/2020 18:00	35	12	8/15/2020 18:00	40	12	8/15/2020 18:00	45
13	8/13/2020 19:00	20	13	8/15/2020 19:00	20	13	8/15/2020 19:00	30
14	8/13/2020 20:00	10	14	8/15/2020 20:00	15	14	8/15/2020 20:00	15
		450			620			855

Tabel A.5 Efisiensi yang Dihasilkan Alat Distilasi Air Laut Menggunakan Pelat Absorber Datar

100%			65%			25%		
No	Tanggal & Waktu	Efisiensi (%)	No	Tanggal & Waktu	Efisiensi (%)	No	Tanggal & Waktu	Efisiensi (%)
1	8/13/2020 7:00	0	1	8/14/2020 7:00	0	1	8/15/2020 7:00	0
2	8/13/2020 8:00	0	2	8/14/2020 8:00	0	2	8/15/2020 8:00	0
3	8/13/2020 9:00	0	3	8/14/2020 9:00	0	3	8/15/2020 9:00	0
4	8/13/2020 10:00	0	4	8/14/2020 10:00	0	4	8/15/2020 10:00	13.9
5	8/13/2020 11:00	0	5	8/14/2020 11:00	9.16	5	8/15/2020 11:00	16.71
6	8/13/2020 12:00	3.8	6	8/14/2020 12:00	16.64	6	8/15/2020 12:00	24.16
7	8/13/2020 13:00	14.9	7	8/14/2020 13:00	22.31	7	8/15/2020 13:00	31.2
8	8/13/2020 14:00	17.4	8	8/14/2020 14:00	24.93	8	8/15/2020 14:00	29.79
9	8/13/2020 15:00	22.45	9	8/14/2020 15:00	22.84	9	8/15/2020 15:00	27.29
10	8/13/2020 16:00	15.28	10	8/14/2020 16:00	16.43	10	8/15/2020 16:00	20.08
11	8/13/2020 17:00	9	11	8/14/2020 17:00	11.72	11	8/15/2020 17:00	13.2
12	8/13/2020 18:00	5	12	8/14/2020 18:00	7.84	12	8/15/2020 18:00	9.45
13	8/13/2020 19:00	0	13	8/14/2020 18:59	0	13	8/15/2020 19:00	0
14	8/13/2020 20:00	0	14	8/14/2020 19:59	0	14	8/15/2020 20:00	0

LAMPIRAN B

Tabel B.1 Tabel Sifat Uap Jenuh

TABLE A-3													
Properties of saturated water													
Temp. <i>T</i> , °C	Saturation Pressure <i>P</i> <sub>sat</sub> , kPa	Density <i>ρ</i> , kg/m <sup>3</sup>		Enthalpy of Vaporization <i>h</i> <sub>fg</sub> , kJ/kg	Specific Heat <i>c</i> <sub>p</sub> , J/kg · K		Thermal Conductivity <i>k</i> , W/m · K		Dynamic Viscosity <i>μ</i> , kg/m · s		Prandtl Number <i>Pr</i>		Volume Expansion Coefficient <i>β</i> , 1/K Liquid
		Liquid	Vapor		Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	
0.01	0.6113	999.8	0.0048	2501	4217	1854	0.561	0.0171	1.792 × 10 <sup>-3</sup>	0.922 × 10 <sup>-5</sup>	13.5	1.00	-0.068 × 10 <sup>-3</sup>
5	0.8721	999.9	0.0068	2490	4205	1857	0.571	0.0173	1.519 × 10 <sup>-3</sup>	0.934 × 10 <sup>-5</sup>	11.2	1.00	0.015 × 10 <sup>-3</sup>
10	1.2276	999.7	0.0094	2478	4194	1862	0.580	0.0176	1.307 × 10 <sup>-3</sup>	0.946 × 10 <sup>-5</sup>	9.45	1.00	0.733 × 10 <sup>-3</sup>
15	1.7051	999.1	0.0128	2466	4186	1863	0.589	0.0179	1.138 × 10 <sup>-3</sup>	0.959 × 10 <sup>-5</sup>	8.09	1.00	0.138 × 10 <sup>-3</sup>
20	2.339	998.0	0.0173	2454	4182	1867	0.598	0.0182	1.002 × 10 <sup>-3</sup>	0.973 × 10 <sup>-5</sup>	7.01	1.00	0.195 × 10 <sup>-3</sup>
25	3.169	997.0	0.0231	2442	4180	1870	0.607	0.0186	0.891 × 10 <sup>-3</sup>	0.987 × 10 <sup>-5</sup>	6.14	1.00	0.247 × 10 <sup>-3</sup>
30	4.246	996.0	0.0304	2431	4178	1875	0.615	0.0189	0.798 × 10 <sup>-3</sup>	1.001 × 10 <sup>-5</sup>	5.42	1.00	0.294 × 10 <sup>-3</sup>
35	5.628	994.0	0.0397	2419	4178	1880	0.623	0.0192	0.720 × 10 <sup>-3</sup>	1.016 × 10 <sup>-5</sup>	4.83	1.00	0.337 × 10 <sup>-3</sup>
40	7.384	992.1	0.0512	2407	4179	1885	0.631	0.0196	0.653 × 10 <sup>-3</sup>	1.031 × 10 <sup>-5</sup>	4.32	1.00	0.377 × 10 <sup>-3</sup>
45	9.593	990.1	0.0655	2395	4180	1892	0.637	0.0200	0.596 × 10 <sup>-3</sup>	1.046 × 10 <sup>-5</sup>	3.91	1.00	0.415 × 10 <sup>-3</sup>
50	12.35	988.1	0.0831	2383	4181	1900	0.644	0.0204	0.547 × 10 <sup>-3</sup>	1.062 × 10 <sup>-5</sup>	3.55	1.00	0.451 × 10 <sup>-3</sup>
55	15.76	985.2	0.1045	2371	4183	1908	0.649	0.0208	0.504 × 10 <sup>-3</sup>	1.077 × 10 <sup>-5</sup>	3.25	1.00	0.484 × 10 <sup>-3</sup>
60	19.94	983.3	0.1304	2359	4185	1916	0.654	0.0212	0.467 × 10 <sup>-3</sup>	1.093 × 10 <sup>-5</sup>	2.99	1.00	0.517 × 10 <sup>-3</sup>
65	25.03	980.4	0.1614	2346	4187	1926	0.659	0.0216	0.433 × 10 <sup>-3</sup>	1.110 × 10 <sup>-5</sup>	2.75	1.00	0.548 × 10 <sup>-3</sup>
70	31.19	977.5	0.1983	2334	4190	1936	0.663	0.0221	0.404 × 10 <sup>-3</sup>	1.126 × 10 <sup>-5</sup>	2.55	1.00	0.578 × 10 <sup>-3</sup>
75	38.58	974.7	0.2421	2321	4193	1948	0.667	0.0225	0.378 × 10 <sup>-3</sup>	1.142 × 10 <sup>-5</sup>	2.38	1.00	0.607 × 10 <sup>-3</sup>
80	47.39	971.8	0.2935	2309	4197	1962	0.670	0.0230	0.355 × 10 <sup>-3</sup>	1.159 × 10 <sup>-5</sup>	2.22	1.00	0.653 × 10 <sup>-3</sup>
85	57.83	968.1	0.3536	2296	4201	1977	0.673	0.0235	0.333 × 10 <sup>-3</sup>	1.176 × 10 <sup>-5</sup>	2.08	1.00	0.670 × 10 <sup>-3</sup>
90	70.14	965.3	0.4235	2283	4206	1993	0.675	0.0240	0.315 × 10 <sup>-3</sup>	1.193 × 10 <sup>-5</sup>	1.96	1.00	0.702 × 10 <sup>-3</sup>
95	84.55	961.5	0.5045	2270	4212	2010	0.677	0.0246	0.297 × 10 <sup>-3</sup>	1.210 × 10 <sup>-5</sup>	1.85	1.00	0.716 × 10 <sup>-3</sup>
100	101.33	957.9	0.5978	2257	4217	2029	0.679	0.0251	0.282 × 10 <sup>-3</sup>	1.227 × 10 <sup>-5</sup>	1.75	1.00	0.750 × 10 <sup>-3</sup>
110	143.27	950.6	0.8263	2230	4229	2071	0.682	0.0262	0.255 × 10 <sup>-3</sup>	1.261 × 10 <sup>-5</sup>	1.58	1.00	0.798 × 10 <sup>-3</sup>
120	198.53	943.4	1.121	2203	4244	2120	0.683	0.0275	0.232 × 10 <sup>-3</sup>	1.296 × 10 <sup>-5</sup>	1.44	1.00	0.858 × 10 <sup>-3</sup>
130	270.1	934.6	1.496	2174	4263	2177	0.684	0.0288	0.213 × 10 <sup>-3</sup>	1.330 × 10 <sup>-5</sup>	1.33	1.01	0.913 × 10 <sup>-3</sup>
140	361.3	921.7	1.965	2145	4286	2244	0.683	0.0301	0.197 × 10 <sup>-3</sup>	1.365 × 10 <sup>-5</sup>	1.24	1.02	0.970 × 10 <sup>-3</sup>
150	475.8	916.6	2.546	2114	4311	2314	0.682	0.0316	0.183 × 10 <sup>-3</sup>	1.399 × 10 <sup>-5</sup>	1.16	1.02	1.025 × 10 <sup>-3</sup>
160	617.8	907.4	3.256	2083	4340	2420	0.680	0.0331	0.170 × 10 <sup>-3</sup>	1.434 × 10 <sup>-5</sup>	1.09	1.05	1.145 × 10 <sup>-3</sup>
170	791.7	897.7	4.119	2050	4370	2490	0.677	0.0347	0.160 × 10 <sup>-3</sup>	1.468 × 10 <sup>-5</sup>	1.03	1.05	1.178 × 10 <sup>-3</sup>
180	1,002.1	887.3	5.153	2015	4410	2590	0.673	0.0364	0.150 × 10 <sup>-3</sup>	1.502 × 10 <sup>-5</sup>	0.983	1.07	1.210 × 10 <sup>-3</sup>
190	1,254.4	876.4	6.388	1979	4460	2710	0.669	0.0382	0.142 × 10 <sup>-3</sup>	1.537 × 10 <sup>-5</sup>	0.947	1.09	1.280 × 10 <sup>-3</sup>
200	1,553.8	864.3	7.852	1941	4500	2840	0.663	0.0401	0.134 × 10 <sup>-3</sup>	1.571 × 10 <sup>-5</sup>	0.910	1.11	1.350 × 10 <sup>-3</sup>
220	2,318	840.3	11.60	1859	4610	3110	0.650	0.0442	0.122 × 10 <sup>-3</sup>	1.641 × 10 <sup>-5</sup>	0.865	1.15	1.520 × 10 <sup>-3</sup>
240	3,344	813.7	16.73	1767	4760	3520	0.632	0.0487	0.111 × 10 <sup>-3</sup>	1.712 × 10 <sup>-5</sup>	0.836	1.24	1.720 × 10 <sup>-3</sup>
260	4,688	783.7	23.69	1663	4970	4070	0.609	0.0540	0.102 × 10 <sup>-3</sup>	1.788 × 10 <sup>-5</sup>	0.832	1.35	2.000 × 10 <sup>-3</sup>
280	6,412	750.8	33.15	1544	5280	4835	0.581	0.0605	0.094 × 10 <sup>-3</sup>	1.870 × 10 <sup>-5</sup>	0.854	1.49	2.380 × 10 <sup>-3</sup>
300	8,581	713.8	46.15	1405	5750	5980	0.548	0.0695	0.086 × 10 <sup>-3</sup>	1.965 × 10 <sup>-5</sup>	0.902	1.69	2.950 × 10 <sup>-3</sup>
320	11,274	667.1	64.57	1239	6540	7900	0.509	0.0836	0.078 × 10 <sup>-3</sup>	2.084 × 10 <sup>-5</sup>	1.00	1.97	
340	14,586	610.5	92.62	1028	8240	11,870	0.469	0.110	0.070 × 10 <sup>-3</sup>	2.255 × 10 <sup>-5</sup>	1.23	2.43	
360	18,651	528.3	144.0	720	14,690	25,800	0.427	0.178	0.060 × 10 <sup>-3</sup>	2.571 × 10 <sup>-5</sup>	2.06	3.73	
374.14	22,090	317.0	317.0	0	—	—	—	—	0.043 × 10 <sup>-3</sup>	4.313 × 10 <sup>-5</sup>			

Note 1: Kinematic viscosity  $\nu$  and thermal diffusivity  $\alpha$  can be calculated from their definitions,  $\nu = \mu/\rho$  and  $\alpha = k/\rho c_p = \nu/Pr$ . 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.

Tabel B.2 Tabel sifat-sifat udara pada tekanan 1 atmosfer

**APPENDIX A** Tables

**Table A-5** | Properties of air at atmospheric pressure.<sup>†</sup>

The values of  $\mu$ ,  $k$ ,  $c_p$ , and Pr are not strongly pressure-dependent and may be used over a fairly wide range of pressures

$T, K$	$\rho$ kg/m <sup>3</sup>	$c_p$ kJ/kg·°C	$\mu \times 10^5$ kg/m·s	$\nu \times 10^6$ m <sup>2</sup> /s	$k$ W/m·°C	$\alpha \times 10^4$ m <sup>2</sup> /s	Pr
100	3.6010	1.0266	0.6924	1.923	0.009246	0.02501	0.770
150	2.3675	1.0099	1.0283	4.343	0.013735	0.05745	0.753
200	1.7684	1.0061	1.3289	7.490	0.01809	0.10165	0.739
250	1.4128	1.0053	1.5990	11.31	0.02227	0.15675	0.722
300	1.1774	1.0057	1.8462	15.69	0.02624	0.22160	0.708
350	0.9980	1.0090	2.075	20.76	0.03003	0.2983	0.697
400	0.8826	1.0140	2.286	25.90	0.03365	0.3760	0.689
450	0.7833	1.0207	2.484	31.71	0.03707	0.4222	0.683
500	0.7048	1.0295	2.671	37.90	0.04038	0.5564	0.680
550	0.6423	1.0392	2.848	44.34	0.04360	0.6532	0.680
600	0.5879	1.0551	3.018	51.34	0.04659	0.7512	0.680
650	0.5430	1.0635	3.177	58.51	0.04953	0.8578	0.682
700	0.5030	1.0752	3.332	66.25	0.05230	0.9672	0.684
750	0.4709	1.0856	3.481	73.91	0.05509	1.0774	0.686
800	0.4405	1.0978	3.625	82.29	0.05779	1.1951	0.689
850	0.4149	1.1095	3.765	90.75	0.06028	1.3097	0.692
900	0.3925	1.1212	3.899	99.3	0.06279	1.4271	0.696
950	0.3716	1.1321	4.023	108.2	0.06525	1.5510	0.699
1000	0.3524	1.1417	4.152	117.8	0.06752	1.6779	0.702
1100	0.3204	1.160	4.44	138.6	0.0732	1.969	0.704
1200	0.2947	1.179	4.69	159.1	0.0782	2.251	0.707
1300	0.2707	1.197	4.93	182.1	0.0837	2.583	0.705
1400	0.2515	1.214	5.17	205.5	0.0891	2.920	0.705
1500	0.2355	1.230	5.40	229.1	0.0946	3.262	0.705
1600	0.2211	1.248	5.63	254.5	0.100	3.609	0.705
1700	0.2082	1.267	5.85	280.5	0.105	3.977	0.705
1800	0.1970	1.287	6.07	308.1	0.111	4.379	0.704
1900	0.1858	1.309	6.29	338.5	0.117	4.811	0.704
2000	0.1762	1.338	6.50	369.0	0.124	5.260	0.702
2100	0.1682	1.372	6.72	399.6	0.131	5.715	0.700
2200	0.1602	1.419	6.93	432.6	0.139	6.120	0.707
2300	0.1538	1.482	7.14	464.0	0.149	6.540	0.710
2400	0.1458	1.574	7.35	504.0	0.161	7.020	0.718
2500	0.1394	1.688	7.57	543.5	0.175	7.441	0.730

<sup>†</sup>From *Natl. Bur. Stand. (U.S.) Circ. 564, 1955.*



## LAMPIRAN C

### Dokumentasi Penelitian



Gambar C.1 *Weather Station*



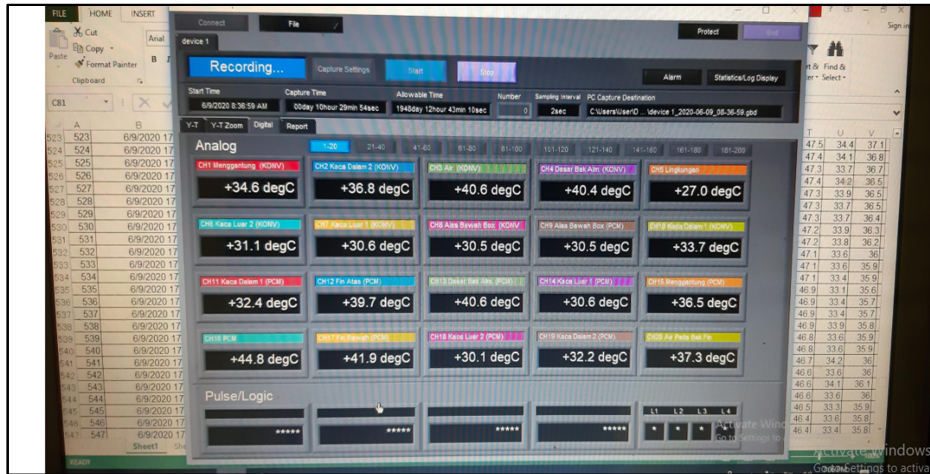
Gambar C.2 Proses pemasangan titik ukur



Gambar C.3 Penyambungan ujung termokopel untuk pemasangan pada kutub positif dan negative Midi Log



Gambar C.4 Tampilan Midi Log pada Saat Membaca Titik Titik Pengukuran Temperatur



Gambar C.5 Tampilan Titik – Titik Pengukuran dari Midi Log ke Layar Laptop



Gambar C.6 Midi Log dan Laptop untuk membaca nilai dari titik-titik ukur pada alat distilasi



Gambar C.7 Proses pengujian alat distilasi pelat datar



Gambar C.8 Evaporasi air laut yang ditangkap kaca penutup alat distilasi