

DAFTAR PUSTAKA

- Astawa, K., Suarnadwipa, N., & Putra, W. (2015). *Analisa Performansi Kolektor Surya Pelat Bergelombang untuk Penger ing Bunga Kamboja*.
- Deceased, J. A. D., & Beckman, W. A. (1982). Solar engineering of thermal processes. In *Design Studies* (Vol. 3, Issue 3). [https://doi.org/10.1016/0142-694x\(82\)90016-3](https://doi.org/10.1016/0142-694x(82)90016-3)
- Muhammad Hasan,Basri.Penembangan Material Absorber Untuk peningkatan performa sistem pemanas air tenaga matahari. Universitas Hasanuddin, 2023.
- Saputra,Anugrah. Pengaruh Material Komposit Sebagai *Thermal Storage* Terintegrasi Pada Pelat Absorber Berbentuk-V Terhadap Efisiensi Pemanas Air Tenaga Matahari. Universitas Hasanuddin, 2022.
- Firman W. Siahaan, Himsar Ambarita, Andianto Pintoro, & Zulkifli Lubis. (2019). Study Experimental Optimasi Kolektor Pelat Datar Dengan Menggunakan Pipa Bersirip Untuk Memanaskan Air 120 Liter. *Dinamis*, 7(4), 10. <https://doi.org/10.32734/dinamis.v7i4.7226>
- Hadiya, J. P., & Shukla, A. K. N. (2018). Thermal energy storage using phase change materials: A way forward. *International Journal of Global Energy Issues*, 41(1–4), 108–127. <https://doi.org/10.1504/IJGEI.2018.092311>
- Jalaluddin, Arif, E., & Tarakka, R. (2016). Experimental study of an SWH system with V-shaped pelate. *Journal of Engineering and Technological Sciences*, 48(2), 207–217. <https://doi.org/10.5614/j.eng.technol.sci.2016.48.2.7>
- Sarbu, I., & Sebarchievici, C. (2018). A comprehensive review of thermal energy storage. *Sustainability (Switzerland)*, 10(1). <https://doi.org/10.3390/su10010191>
- Setyaji, E. F. (2012). *Teori Logam*. 7–37.
- Arifianto. (2017). Studi eksperimental performansi *solar water heater* Jenis

kolektor plat datar dengan penambahan *Thermal energy storage*. Thesis, USU

Setyono, A. E., & Kiono, B. F. T. (2021). Dari Energi Fosil Menuju Energi Terbarukan: Potret Kondisi Minyak dan Gas Bumi Indonesia Tahun 2020 – 2050. *Jurnal Energi Baru Dan Terbarukan*, 2(3), 154–162. <https://doi.org/10.14710/jebt.2021.11157>

Sunarto, S. S. E. D. (2020). Perencanaan Pemanas Air Tenaga Surya Kapasitas 80 Galon Per Hari. *Jurnal Mesin*, 2(1), 30–41.

Patel, K., Patel, P., & Patel, J. (2012). Review of Solar Water Heating Systems. *International Journal of Advanced Engineering Technology E*, 3(4), 146–149. <http://www.technicaljournalsonline.com/ijeat/VOL III/IJAET VOL III ISSUE IV OCTBER DECEMBER 2012/Article 34 Vol III issue IV 2012.pdf>

Kalogirou, S. A. (2009). Solar Water Heating Systems. *Solar Energy Engineering*, May, 251–314. <https://doi.org/10.1016/b978-0-12-374501-9.00005-4>

Prado, R. T. A., & Sowmy, D. S. (2016). Innovations in passive solar water heating systems. *Advances in Solar Heating and Cooling*, 117–150. <https://doi.org/10.1016/B978-0-08-100301-5.00007-2>

Lampiran 1 Tabel Konduktivitas Termal Beberapa bahan kolektor surya tertentu:

Bahan	Konduktivitas Termal (k), (W/mK)
Tembaga	385.0
Aluminium	211.0
Timah Putih	66.0
Baja, 1% Karbon	45.0
Baja tahan karat	16.0
Kaca	1.05
ABS (Akrilonitril-Butadien-Stiren)	0.27
Polikarbonat	0.2
Karet alam 30 durometer	0.14
Karet alam 70 durometer	0.17
Isolasi papan kaca serat	0.043

Jansen, T.J. *Teknologi rekayasa surya*. Terjemahan oleh Arismunandar W. Jakarta; PT. Pradnya Paramita; 1995. hal. 41, 45

Lampiran 2 Tabel absorptivitas untuk setiap sudut atau *angle of incident*:

Incident Angle	Absorbance for Flat Black Paint
0	0.96
10	0.96
20	0.96
30	0.95
40	0.94
50	0.92
60	0.88
70	0.82
80	0.67
90	0.00

ASHRAE, 2011, *ASHRAE Handbook: HVAC Applications*, SI Edition, Solar Energy Use (Chapter 35), American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1791 Tullie Circle, N.E., Atlanta, GA 30329.

Lampiran 3 Tabel *Properties of miscellaneous material*853
APPENDIX 1

TABLE A-8

Properties of miscellaneous materials
(Values are at 300 K unless indicated otherwise)

Material	Density, ρ kg/m ³	Thermal Conductivity, k W/m · K	Specific Heat, c_p J/kg · K	Material	Density, ρ kg/m ³	Thermal Conductivity, k W/m · K	Specific Heat, c_p J/kg · K
Asphalt	2115	0.062	920	Ice			
Bakelite	1300	1.4	1465	273 K	920	1.88	2040
Brick, refractory				253 K	922	2.03	1945
Chrome brick				173 K	928	3.49	1460
473 K	3010	2.3	835	Leather, sole	998	0.159	—
823 K	—	2.5	—	Linoleum	535	0.081	—
1173 K	—	2.0	—	1180	1180	0.186	—
Fire clay, burnt				2900	2900	0.523	—
1600 K				Paper	930	0.180	1340
773 K	2050	1.0	960	Plastics			
1073 K	—	1.1	—	Plexiglass	1190	0.19	1465
1373 K	—	1.1	—	Teflon			
Fire clay, burnt				300 K	2200	0.35	1050
1725 K				400 K	—	0.45	—
773 K	2325	1.3	960	Lexan	1200	0.19	1260
1073 K	—	1.4	—	Nylon	1145	0.29	—
1373 K	—	1.4	—	Polypropylene	910	0.12	1925
Fire clay brick				Polyester	1395	0.15	1170
478 K	2645	1.0	960	PVC, vinyl	1470	0.1	840
922 K	—	1.5	—	Porcelain	2300	1.5	—
1478 K	—	1.8	—	Rubber, natural	1150	0.28	—
Magnesite				Rubber, vulcanized			
478 K	—	3.8	1130	Soft	1100	0.13	2010
922 K	—	2.8	—	Hard	1190	0.16	—
1478 K	—	1.9	—	Sand	1515	0.2–1.0	800
Chicken meat, white (74.4% water content)				Snow, fresh	100	0.60	—
198 K	—	1.60	—	Snow, 273 K	500	2.2	—
233 K	—	1.49	—	Soil, dry	1500	1.0	1900
253 K	—	1.35	—	Soil, wet	1900	2.0	2200
273 K	—	0.48	—	Sugar	1600	0.58	—
293 K	—	0.49	—	Tissue, human			
Clay, dry	1550	0.930	—	Skin	—	0.37	—
Clay, wet	1495	1.675	—	Fat layer	—	0.2	—
Coal, anthracite	1350	0.26	1260	Muscle	—	0.41	—
Concrete (stone mix)	2300	1.4	880	Vaseline	—	0.17	—
Cork	86	0.048	2030	Wood, cross-grain			
Cotton	80	0.06	1300	Balsa	140	0.055	—
Fat	—	0.17	—	Fir	415	0.11	2720
Glass				Oak	545	0.17	2385
Window	2800	0.7	750	White pine	435	0.11	—
Pyrex	2225	1–1.4	835	Yellow pine	640	0.15	2805
Crown	2500	1.05	—	Wood, radial			
Lead	3400	0.85	—	Oak	545	0.19	2385
				Fir	420	0.14	2720
				Wool, ship	145	0.05	—

Source: Compiled from various sources.

Lampiran 4 Tabel *Properties of insulating material*

850 APPENDIX 1					
TABLE A-6					
Properties of insulating materials (at a mean temperature of 24°C)					
Material	Thickness, <i>L</i> mm	Density, ρ kg/m ³	Thermal Conductivity, k W/m · K	Specific Heat, c_p kJ/kg · K	<i>R</i> -value (for listed thickness, L/k), K · m ² /W
Blanket and Batt					
Mineral fiber (fibrous form processed from rock, slag, or glass)	50 to 70 mm	4.8–32	—	0.71–0.96	1.23
	75 to 90 mm	4.8–32	—	0.71–0.96	1.94
	135 to 165 mm	4.8–32	—	0.71–0.96	3.32
Board and Slab					
Cellular glass		136	0.055	1.0	—
Glass fiber (organic bonded)		64–144	0.036	0.96	—
Expanded polystyrene (molded beads)		16	0.040	1.2	—
Expanded polyurethane (<i>R</i> -11 expanded)		24	0.023	1.6	—
Expanded perlite (organic bonded)		16	0.052	1.26	—
Expanded rubber (rigid)		72	0.032	1.68	—
Mineral fiber with resin binder		240	0.042	0.71	—
Cork		120	0.039	1.80	—
Sprayed or Formed in Place					
Polyurethane foam		24–40	0.023–0.026	—	—
Glass fiber		56–72	0.038–0.039	—	—
Urethane, two-part mixture (rigid foam)		70	0.026	1.045	—
Mineral wool granules with asbestos/ inorganic binders (sprayed)		190	0.046	—	—
Loose Fill					
Mineral fiber (rock, slag, or glass)	~75 to 125 mm	9.6–32	—	0.71	1.94
	~165 to 222 mm	9.6–32	—	0.71	3.35
	~191 to 254 mm	—	—	0.71	3.87
	~185 mm	—	—	0.71	5.28
Silica aerogel		122	0.025	—	—
Vermiculite (expanded)		122	0.068	—	—
Perlite, expanded		32–66	0.039–0.045	1.09	—
Sawdust or shavings		128–240	0.065	1.38	—
Cellulosic insulation (milled paper or wood pulp)		37–51	0.039–0.046	—	—
Roof Insulation					
Cellular glass	—	144	0.058	1.0	—
Preformed, for use above deck	13 mm	—	—	1.0	0.24
	25 mm	—	—	2.1	0.49
	50 mm	—	—	3.9	0.93
Reflective Insulation					
Silica powder (evacuated)		160	0.0017	—	—
Aluminum foil separating fluffy glass mats; 10–12 layers (evacuated); for cryogenic applications (150 K)		40	0.00016	—	—
Aluminum foil and glass paper laminate; 75–150 layers (evacuated); for cryogenic applications (150 K)		120	0.000017	—	—

Lampiran 5 Tabel *Properties of air at 1 atm pressure*

860 APPENDIX 1							
TABLE A-15							
Properties of air at 1 atm pressure							
Temp. <i>T</i> , °C	Density ρ , kg/m ³	Specific Heat c_p , J/kg · K	Thermal Conductivity k , W/m · K	Thermal Diffusivity α , m ² /s ²	Dynamic Viscosity μ , kg/m · s	Kinematic Viscosity ν , m ² /s	Prandtl Number Pr
-150	2.866	983	0.01171	4.158×10^{-6}	8.636×10^{-6}	3.013×10^{-5}	0.7246
-100	2.038	966	0.01582	8.036×10^{-6}	1.189×10^{-5}	5.837×10^{-6}	0.7263
-50	1.582	999	0.01979	1.252×10^{-5}	1.474×10^{-5}	9.319×10^{-6}	0.7440
-40	1.514	1002	0.02057	1.356×10^{-5}	1.527×10^{-5}	1.008×10^{-5}	0.7436
-30	1.451	1004	0.02134	1.465×10^{-5}	1.579×10^{-5}	1.087×10^{-5}	0.7425
-20	1.394	1005	0.02211	1.578×10^{-5}	1.630×10^{-5}	1.169×10^{-5}	0.7408
-10	1.341	1006	0.02288	1.696×10^{-5}	1.680×10^{-5}	1.252×10^{-5}	0.7387
0	1.292	1006	0.02364	1.818×10^{-5}	1.729×10^{-5}	1.338×10^{-5}	0.7362
5	1.269	1006	0.02401	1.880×10^{-5}	1.754×10^{-5}	1.382×10^{-5}	0.7350
10	1.246	1006	0.02439	1.944×10^{-5}	1.778×10^{-5}	1.426×10^{-5}	0.7336
15	1.225	1007	0.02476	2.009×10^{-5}	1.802×10^{-5}	1.470×10^{-5}	0.7323
20	1.204	1007	0.02514	2.074×10^{-5}	1.825×10^{-5}	1.516×10^{-5}	0.7309
25	1.184	1007	0.02551	2.141×10^{-5}	1.849×10^{-5}	1.562×10^{-5}	0.7296
30	1.164	1007	0.02588	2.208×10^{-5}	1.872×10^{-5}	1.608×10^{-5}	0.7282
35	1.145	1007	0.02625	2.277×10^{-5}	1.895×10^{-5}	1.655×10^{-5}	0.7268
40	1.127	1007	0.02662	2.346×10^{-5}	1.918×10^{-5}	1.702×10^{-5}	0.7255
45	1.109	1007	0.02699	2.416×10^{-5}	1.941×10^{-5}	1.750×10^{-5}	0.7241
50	1.092	1007	0.02735	2.487×10^{-5}	1.963×10^{-5}	1.798×10^{-5}	0.7228
60	1.059	1007	0.02808	2.632×10^{-5}	2.008×10^{-5}	1.896×10^{-5}	0.7202
70	1.028	1007	0.02881	2.780×10^{-5}	2.052×10^{-5}	1.995×10^{-5}	0.7177
80	0.9994	1008	0.02953	2.931×10^{-5}	2.096×10^{-5}	2.097×10^{-5}	0.7154
90	0.9718	1008	0.03024	3.086×10^{-5}	2.139×10^{-5}	2.201×10^{-5}	0.7132
100	0.9458	1009	0.03095	3.243×10^{-5}	2.181×10^{-5}	2.306×10^{-5}	0.7111
120	0.8977	1011	0.03235	3.565×10^{-5}	2.264×10^{-5}	2.522×10^{-5}	0.7073
140	0.8542	1013	0.03374	3.898×10^{-5}	2.345×10^{-5}	2.745×10^{-5}	0.7041
160	0.8148	1016	0.03511	4.241×10^{-5}	2.420×10^{-5}	2.975×10^{-5}	0.7014
180	0.7788	1019	0.03646	4.593×10^{-5}	2.504×10^{-5}	3.212×10^{-5}	0.6992
200	0.7459	1023	0.03779	4.954×10^{-5}	2.577×10^{-5}	3.455×10^{-5}	0.6974
250	0.6746	1033	0.04104	5.890×10^{-5}	2.760×10^{-5}	4.091×10^{-5}	0.6946
300	0.6158	1044	0.04418	6.871×10^{-5}	2.934×10^{-5}	4.765×10^{-5}	0.6935
350	0.5664	1056	0.04721	7.892×10^{-5}	3.101×10^{-5}	5.475×10^{-5}	0.6937
400	0.5243	1069	0.05015	8.951×10^{-5}	3.261×10^{-5}	6.219×10^{-5}	0.6948
450	0.4880	1081	0.05298	1.004×10^{-4}	3.415×10^{-5}	6.997×10^{-5}	0.6965
500	0.4565	1093	0.05572	1.117×10^{-4}	3.563×10^{-5}	7.806×10^{-5}	0.6986
600	0.4042	1115	0.06093	1.352×10^{-4}	3.846×10^{-5}	9.515×10^{-5}	0.7037
700	0.3627	1135	0.06581	1.598×10^{-4}	4.111×10^{-5}	1.133×10^{-4}	0.7092
800	0.3289	1153	0.07037	1.855×10^{-4}	4.362×10^{-5}	1.326×10^{-4}	0.7149
900	0.3008	1169	0.07465	2.122×10^{-4}	4.600×10^{-5}	1.529×10^{-4}	0.7206
1000	0.2772	1184	0.07868	2.398×10^{-4}	4.826×10^{-5}	1.741×10^{-4}	0.7260
1500	0.1990	1234	0.09599	3.908×10^{-4}	5.817×10^{-5}	2.922×10^{-4}	0.7478
2000	0.1553	1264	0.11113	5.664×10^{-4}	6.630×10^{-5}	4.270×10^{-4}	0.7539

Note: For ideal gases, the properties c_p , k , μ , and Pr are independent of pressure. The properties ρ , ν , and α at a pressure P (in atm) other than 1 atm are determined by multiplying the values of ρ at the given temperature by P and by dividing ν and α by P .

Source: Data generated from the EES software developed by S. A. Klein and F. L. Alvarado. Original sources: Keenan, Chao, Keyes, Gas Tables, Wiley, 198; and Thermophysical Properties of Matter, Vol. 3: Thermal Conductivity, Y. S. Touloukian, P. E. Liley, S. C. Saxena, Vol. 11: Viscosity, Y. S. Touloukian, S. C. Saxena, and P. Hestermans, IFI/Plenum, NY, 1970, ISBN 0-306067020-8.

Lampiran 6 Tabel *Properties of saturated water*834
APPENDIX 1

TABLE A-9

Properties of saturated water

Temp. <i>T</i> , °C	Saturation Pressure <i>P</i> _{sat} , kPa	Density ρ , kg/m ³		Enthalpy of Vaporization <i>h</i> _{fg} , kJ/kg	Specific Heat <i>c</i> _p , J/kg · K		Thermal Conductivity <i>k</i> , W/m · K		Dynamic Viscosity μ , kg/m · s		Prandtl Number Pr		Volume Expansion Coefficient β , 1/K
		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 ⁻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	4185	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	1,002.1	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	1,254.4	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	1,553.8	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	2,318	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	3,344	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	4,688	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	6,412	750.8	33.15	1544	5280	4835	0.581	0.0605	0.094 × 10 ⁻³	1.870 × 10 ⁻⁵	0.854	1.49	2.380 × 10 ⁻³
300	8,581	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 $\alpha = k/\rho c_p = \nu/Pr$. 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.

Lampiran 7. (TABEL DATA)

Pelat Kolektor Standar 0°

t	Pelat Kolektor Standar							
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Kaca Dalam (Tc-Dalam)	Kaca Luar (Tc-Luar)	Tangki (T-Tangki)	Ling (Ta)	Illum (I)
0	26.87	26.97	26.40	26.70	26.70	26.84	26.89	0.979
1	27.00	30.49	40.63	40.97	44.57	26.94	27.13	0.989
2	27.07	32.23	43.90	45.83	50.50	26.94	27.20	0.996
3	27.16	33.04	45.00	49.50	55.30	26.95	27.18	1.001
4	27.33	33.58	45.53	52.60	59.47	26.99	27.21	1.002
5	27.46	33.94	46.03	55.27	62.63	27.07	27.28	1.004
6	27.60	34.34	46.53	57.40	65.07	27.16	27.36	1.005
7	27.73	34.60	47.00	59.33	67.47	27.29	27.44	1.009
8	27.80	34.90	47.33	60.90	69.53	27.41	27.47	1.010
9	27.93	35.16	47.67	62.30	71.13	27.57	27.54	1.012
10	27.99	35.40	47.90	63.37	72.17	27.69	27.52	1.011
11	28.04	35.55	48.17	64.40	73.37	27.82	27.49	1.013
12	28.13	35.73	48.47	65.33	74.47	27.98	27.46	1.014
13	28.16	35.89	48.70	66.10	74.97	28.09	27.47	1.014
14	28.27	36.05	48.93	66.80	75.87	28.22	27.49	1.016
15	28.32	36.21	49.20	67.40	76.43	28.39	27.47	1.017
16	28.40	36.34	49.47	68.00	77.03	28.52	27.49	1.020
17	28.48	36.49	49.73	68.50	77.43	28.68	27.47	1.018
18	28.56	36.64	49.87	68.87	77.63	28.81	27.49	1.019
19	28.60	36.74	50.07	69.30	78.33	28.97	27.47	1.019
20	28.68	36.90	50.27	69.60	78.50	29.12	27.52	1.023
21	28.79	36.98	50.47	69.93	78.87	29.26	27.52	1.022
22	28.87	37.09	50.57	70.23	78.70	29.44	27.44	1.023
23	28.91	37.21	50.70	70.47	79.47	29.59	27.43	1.022
24	29.00	37.29	50.80	70.70	79.50	29.72	27.43	1.020
25	29.07	37.37	51.00	70.97	79.77	29.88	27.34	1.022
26	29.15	37.47	51.20	71.17	80.13	30.03	27.29	1.023
27	29.22	37.58	51.33	71.33	80.30	30.19	27.21	1.023
28	29.28	37.66	51.43	71.57	80.53	30.34	27.21	1.023
29	29.36	37.76	51.57	71.73	80.67	30.49	27.20	1.022
30	29.48	37.89	51.67	71.87	80.97	30.68	27.29	1.023
31	29.59	37.97	51.87	72.03	80.90	30.84	27.38	1.024
32	29.72	38.10	51.97	72.17	81.00	31.01	27.39	1.023
33	29.83	38.22	52.03	72.30	80.97	31.15	27.41	1.023
34	29.92	38.36	52.17	72.53	81.20	31.30	27.38	1.023
35	30.00	38.46	52.40	72.67	81.47	31.41	27.39	1.022
36	30.03	38.53	52.60	72.87	82.17	31.54	27.44	1.023

37	30.13	38.62	52.73	73.07	82.23	31.69	27.52	1.022
38	30.22	38.69	52.93	73.23	82.00	31.84	27.62	1.022
39	30.34	38.79	53.00	73.33	82.43	31.98	27.69	1.021
40	30.45	38.92	53.13	73.40	82.53	32.10	27.69	1.021
41	30.53	38.98	53.23	73.57	82.70	32.23	27.67	1.021
42	30.58	39.11	53.33	73.60	82.13	32.39	27.60	1.023
43	30.62	39.14	53.40	73.57	82.03	32.54	27.56	1.022
44	30.70	39.21	53.47	73.57	82.27	32.63	27.49	1.015
45	30.76	39.29	53.53	73.57	82.43	32.80	27.52	1.023
46	30.88	39.37	53.63	73.70	82.43	32.91	27.56	1.018
47	30.96	39.42	53.67	73.73	82.67	33.04	27.54	1.019
48	31.05	39.55	53.87	73.80	82.43	33.15	27.47	1.017
49	31.12	39.62	53.93	73.80	82.27	33.28	27.41	1.017
50	31.18	39.72	54.00	73.77	82.37	33.40	27.39	1.017
51	31.28	39.78	54.07	73.90	82.40	33.54	27.41	1.018
52	31.33	39.83	54.20	74.00	82.67	33.69	27.41	1.018
53	31.38	39.91	54.30	74.03	82.70	33.79	27.47	1.016
54	31.41	39.97	54.37	74.03	82.30	33.90	27.49	1.023
55	31.51	40.04	54.47	74.07	82.47	34.02	27.46	1.023
56	31.59	40.06	54.57	74.20	82.63	34.10	27.46	1.021
57	31.66	40.14	54.67	74.23	83.07	34.23	27.51	1.022
58	31.79	40.26	54.70	74.30	83.30	34.38	27.54	1.023
59	31.85	40.38	54.80	74.30	82.83	34.44	27.51	1.022
60	31.93	40.46	54.90	74.33	82.57	34.54	27.52	1.021

Pelat Kolektor Standar 10°

t	Pelat Kolektor Standar							
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TPI)	Kaca Dalam (Tc-Dalam)	Kaca Luar (Tc-Luar)	Tangki (T-Tangki)	Ling (Ta)	Ilum (I)
0	26.87	26.97	26.43	26.87	26.77	26.84	26.89	0.979
1	27.00	30.49	43.27	41.13	45.50	26.94	27.13	0.989
2	27.07	32.23	46.80	46.17	51.00	26.94	27.20	0.996
3	27.16	33.04	47.83	50.30	54.93	26.95	27.18	1.001
4	27.33	33.58	48.57	53.73	58.30	26.99	27.21	1.002
5	27.46	33.94	49.07	56.57	61.10	27.07	27.28	1.004
6	27.60	34.34	49.57	58.93	63.50	27.16	27.36	1.005
7	27.73	34.60	49.97	60.97	65.27	27.29	27.44	1.009
8	27.80	34.90	50.40	62.73	67.10	27.41	27.47	1.010
9	27.93	35.16	50.77	64.23	68.03	27.57	27.54	1.012
10	27.99	35.40	50.97	65.43	69.00	27.69	27.52	1.011
11	28.04	35.55	51.27	66.57	69.93	27.82	27.49	1.013
12	28.13	35.73	51.53	67.60	70.77	27.98	27.46	1.014
13	28.16	35.89	51.80	68.43	71.50	28.09	27.47	1.014
14	28.27	36.05	52.07	69.23	72.33	28.22	27.49	1.016
15	28.32	36.21	52.30	69.87	72.60	28.39	27.47	1.017
16	28.40	36.34	52.40	70.43	73.37	28.52	27.49	1.020
17	28.48	36.49	52.60	70.97	73.90	28.68	27.47	1.018
18	28.56	36.64	52.80	71.43	74.50	28.81	27.49	1.019
19	28.60	36.74	53.00	71.83	74.80	28.97	27.47	1.019
20	28.68	36.90	53.20	72.17	74.77	29.12	27.52	1.023
21	28.79	36.98	53.30	72.43	75.07	29.26	27.52	1.022
22	28.87	37.09	53.37	72.67	75.30	29.44	27.44	1.023
23	28.91	37.21	53.53	73.03	75.43	29.59	27.43	1.022
24	29.00	37.29	53.63	73.30	75.63	29.72	27.43	1.020
25	29.07	37.37	53.80	73.50	75.93	29.88	27.34	1.022
26	29.15	37.47	54.00	73.63	75.73	30.03	27.29	1.023
27	29.22	37.58	54.07	73.83	75.30	30.19	27.21	1.023
28	29.28	37.66	54.17	73.97	75.70	30.34	27.21	1.023
29	29.36	37.76	54.27	74.17	75.90	30.49	27.20	1.022
30	29.48	37.89	54.40	74.30	76.30	30.68	27.29	1.023
31	29.59	37.97	54.47	74.43	76.20	30.84	27.38	1.024
32	29.72	38.10	54.63	74.50	76.27	31.01	27.39	1.023
33	29.83	38.22	54.73	74.57	76.20	31.15	27.41	1.023
34	29.92	38.36	54.80	74.57	76.27	31.30	27.38	1.023
35	30.00	38.46	54.90	74.77	76.37	31.41	27.39	1.022
36	30.03	38.53	54.97	74.83	76.67	31.54	27.44	1.023

37	30.13	38.62	55.03	74.90	76.87	31.69	27.52	1.022
38	30.22	38.69	55.20	75.10	77.03	31.84	27.62	1.022
39	30.34	38.79	55.30	75.20	76.97	31.98	27.69	1.021
40	30.45	38.92	55.43	75.20	76.93	32.10	27.69	1.021
41	30.53	38.98	55.50	75.27	77.07	32.23	27.67	1.021
42	30.58	39.11	55.53	75.30	76.70	32.39	27.60	1.023
43	30.62	39.14	55.67	75.47	76.67	32.54	27.56	1.022
44	30.70	39.21	55.73	75.53	76.90	32.63	27.49	1.015
45	30.76	39.29	55.83	75.57	76.57	32.80	27.52	1.023
46	30.88	39.37	55.87	75.53	76.67	32.91	27.56	1.018
47	30.96	39.42	55.93	75.60	76.90	33.04	27.54	1.019
48	31.05	39.55	56.00	75.67	77.23	33.15	27.47	1.017
49	31.12	39.62	56.13	75.77	77.40	33.28	27.41	1.017
50	31.18	39.72	56.23	75.87	77.20	33.40	27.39	1.017
51	31.28	39.78	56.33	75.87	77.43	33.54	27.41	1.018
52	31.33	39.83	56.43	75.97	77.20	33.69	27.41	1.018
53	31.38	39.91	56.57	76.03	77.53	33.79	27.47	1.016
54	31.41	39.97	56.63	76.10	77.00	33.90	27.49	1.023
55	31.51	40.04	56.70	76.17	77.63	34.02	27.46	1.023
56	31.59	40.06	56.73	76.33	77.50	34.10	27.46	1.021
57	31.66	40.14	56.83	76.40	77.77	34.23	27.51	1.022
58	31.79	40.26	57.00	76.43	77.80	34.38	27.54	1.023
59	31.85	40.38	57.07	76.53	77.80	34.44	27.51	1.022
60	31.93	40.46	57.13	76.50	77.90	34.54	27.52	1.021

Pelat Kolektor Standar 30°

t	Pelat Kolektor Standar							
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Kaca Dalam (Tc-Dalam)	Kaca Luar (Tc-Luar)	Tangki (T-Tangki)	Ling (Ta)	Ilum (I)
0	26.87	26.97	26.33	26.90	26.80	26.84	26.89	0.979
1	27.00	30.49	41.03	40.37	42.70	26.94	27.13	0.989
2	27.07	32.23	44.13	45.27	47.13	26.94	27.20	0.996
3	27.16	33.04	45.13	48.93	50.33	26.95	27.18	1.001
4	27.33	33.58	45.57	52.03	53.13	26.99	27.21	1.002
5	27.46	33.94	46.03	54.60	55.50	27.07	27.28	1.004
6	27.60	34.34	46.50	56.87	57.30	27.16	27.36	1.005
7	27.73	34.60	46.87	58.73	58.77	27.29	27.44	1.009
8	27.80	34.90	47.13	60.23	60.30	27.41	27.47	1.010
9	27.93	35.16	47.47	61.60	61.20	27.57	27.54	1.012
10	27.99	35.40	47.77	62.73	62.03	27.69	27.52	1.011
11	28.04	35.55	47.97	63.73	62.87	27.82	27.49	1.013
12	28.13	35.73	48.20	64.63	63.47	27.98	27.46	1.014
13	28.16	35.89	48.47	65.40	64.20	28.09	27.47	1.014
14	28.27	36.05	48.70	66.03	64.33	28.22	27.49	1.016
15	28.32	36.21	48.90	66.57	64.93	28.39	27.47	1.017
16	28.40	36.34	49.03	67.00	65.27	28.52	27.49	1.020
17	28.48	36.49	49.27	67.60	65.73	28.68	27.47	1.018
18	28.56	36.64	49.50	68.00	65.93	28.81	27.49	1.019
19	28.60	36.74	49.57	68.30	65.87	28.97	27.47	1.019
20	28.68	36.90	49.80	68.63	66.10	29.12	27.52	1.023
21	28.79	36.98	49.93	68.93	66.47	29.26	27.52	1.022
22	28.87	37.09	50.03	69.20	66.70	29.44	27.44	1.023
23	28.91	37.21	50.17	69.47	66.90	29.59	27.43	1.022
24	29.00	37.29	50.30	69.67	66.80	29.72	27.43	1.020
25	29.07	37.37	50.43	69.87	67.30	29.88	27.34	1.022
26	29.15	37.47	50.57	70.03	67.27	30.03	27.29	1.023
27	29.22	37.58	50.63	70.20	67.50	30.19	27.21	1.023
28	29.28	37.66	50.77	70.37	67.53	30.34	27.21	1.023
29	29.36	37.76	50.97	70.50	67.97	30.49	27.20	1.022
30	29.48	37.89	51.03	70.53	67.90	30.68	27.29	1.023
31	29.59	37.97	51.13	70.70	67.80	30.84	27.38	1.024
32	29.72	38.10	51.20	70.90	68.10	31.01	27.39	1.023
33	29.83	38.22	51.23	71.03	68.03	31.15	27.41	1.023
34	29.92	38.36	51.40	71.10	68.03	31.30	27.38	1.023
35	30.00	38.46	51.53	71.20	68.10	31.41	27.39	1.022

36	30.03	38.53	51.57	71.27	68.10	31.54	27.44	1.023
37	30.13	38.62	51.60	71.30	68.20	31.69	27.52	1.022
38	30.22	38.69	51.67	71.47	68.40	31.84	27.62	1.022
39	30.34	38.79	51.80	71.53	68.60	31.98	27.69	1.021
40	30.45	38.92	51.87	71.63	68.33	32.10	27.69	1.021
41	30.53	38.98	51.93	71.70	68.20	32.23	27.67	1.021
42	30.58	39.11	52.03	71.77	68.60	32.39	27.60	1.023
43	30.62	39.14	52.07	71.90	68.77	32.54	27.56	1.022
44	30.70	39.21	52.17	71.90	68.87	32.63	27.49	1.015
45	30.76	39.29	52.27	71.90	68.67	32.80	27.52	1.023
46	30.88	39.37	52.37	71.93	68.87	32.91	27.56	1.018
47	30.96	39.42	52.43	71.93	68.53	33.04	27.54	1.019
48	31.05	39.55	52.47	72.03	68.87	33.15	27.47	1.017
49	31.12	39.62	52.57	72.03	69.00	33.28	27.41	1.017
50	31.18	39.72	52.67	72.23	68.83	33.40	27.39	1.017
51	31.28	39.78	52.67	72.27	69.13	33.54	27.41	1.018
52	31.33	39.83	52.73	72.27	68.93	33.69	27.41	1.018
53	31.38	39.91	52.80	72.23	68.63	33.79	27.47	1.016
54	31.41	39.97	52.87	72.30	68.73	33.90	27.49	1.023
55	31.51	40.04	52.93	72.40	69.00	34.02	27.46	1.023
56	31.59	40.06	53.03	72.50	68.97	34.10	27.46	1.021
57	31.66	40.14	53.13	72.60	68.90	34.23	27.51	1.022
58	31.79	40.26	53.17	72.60	69.27	34.38	27.54	1.023
59	31.85	40.38	53.20	72.67	69.30	34.44	27.51	1.022
60	31.93	40.46	53.23	72.70	69.27	34.54	27.52	1.021

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(35%Al+65%Al₂O₃) Sudut 0°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Ilum (I)
0	27.08	27.08	26.37	25.90	26.2	26.3	27.05	26.95	1.0208
1	27.21	29.85	39.93	27.20	46.2	47.7	27.05	27.00	1.0072
2	27.36	31.74	42.63	28.70	51.8	54.3	27.05	27.05	1.0154
3	27.43	32.68	44.07	29.70	55.6	59.1	27.05	27.15	1.0208
4	27.59	33.27	45.03	30.60	58.7	63.1	27.05	27.15	1.0235
5	27.75	33.76	45.93	31.30	61.2	66.1	27.15	27.10	1.0262
6	27.83	34.15	46.57	32.10	63.4	68.4	27.25	27.00	1.0235
7	27.98	34.52	47.23	32.80	65.2	71.2	27.34	27.05	1.0316
8	28.08	34.85	47.83	33.40	66.8	73.9	27.49	27.15	1.0316
9	28.19	35.27	48.40	34.00	68.4	74.4	27.59	27.20	1.0344
10	28.29	35.53	48.87	34.50	69.5	76.4	27.69	27.20	1.0398
11	28.40	35.77	49.27	35.00	70.5	76.4	27.88	27.05	1.0425
12	28.47	36.04	49.73	35.50	71.4	77.2	27.98	27.05	1.0425
13	28.55	36.21	50.10	36.00	72.3	79	28.08	27.20	1.0425
14	28.66	36.46	50.47	36.30	72.9	79.7	28.27	27.29	1.0425
15	28.76	36.60	50.83	36.70	73.7	80.2	28.42	27.29	1.0425
16	28.82	36.80	51.10	37.10	74.3	80.6	28.56	27.29	1.0425
17	28.89	36.96	51.43	37.50	74.7	80.6	28.71	27.25	1.0425
18	28.99	37.13	51.63	37.80	75	81.1	28.81	27.20	1.0425
19	29.07	37.30	51.97	38.10	75.4	82	29.00	27.29	1.0425
20	29.17	37.40	52.23	38.40	75.8	82.5	29.20	27.39	1.0425
21	29.28	37.58	52.50	38.70	76.3	82.8	29.35	27.39	1.0425
22	29.35	37.65	52.63	39.00	76.5	82.7	29.54	27.34	1.0425
23	29.44	37.81	52.87	39.30	76.7	82.4	29.64	27.29	1.0425
24	29.57	37.94	53.07	39.40	76.9	82.9	29.83	27.34	1.0425
25	29.67	38.09	53.30	39.60	77.1	83.4	29.98	27.39	1.0452
26	29.79	38.25	53.47	39.90	77.4	84.1	30.18	27.54	1.0425
27	29.87	38.36	53.67	40.10	77.7	83.3	30.37	27.54	1.0425
28	29.96	38.48	53.80	40.30	77.8	83.1	30.47	27.49	1.0425
29	30.03	38.59	54.00	40.60	78	82.6	30.66	27.39	1.0452
30	30.18	38.79	54.17	40.80	78	83.3	30.81	27.39	1.0479
31	30.34	38.90	54.33	40.90	78.1	84.2	31.01	27.54	1.0452
32	30.44	39.06	54.43	41.10	78.5	84.3	31.20	27.64	1.0425
33	30.52	39.18	54.67	41.30	78.6	84.6	31.35	27.69	1.0452
34	30.60	39.27	54.77	41.40	78.7	83.8	31.49	27.59	1.0452

35	30.70	39.39	54.97	41.60	78.8	83.7	31.69	27.49	1.0425
36	30.81	39.50	55.13	41.80	78.9	84.6	31.84	27.39	1.0452
37	30.92	39.57	55.20	41.80	78.9	84.3	31.98	27.44	1.0452
38	31.02	39.71	55.37	42.00	79.1	84.4	32.18	27.59	1.0425
39	31.14	39.88	55.47	42.30	79.3	84.7	32.32	27.73	1.0479
40	31.22	39.99	55.63	42.40	79.4	84.7	32.47	27.73	1.0479
41	31.33	40.07	55.77	42.50	79.5	84.5	32.62	27.69	1.0479
42	31.40	40.19	55.87	42.60	79.5	84.8	32.76	27.59	1.0479
43	31.48	40.33	56.03	42.80	79.5	84.6	32.91	27.54	1.0479
44	31.56	40.40	56.17	42.90	79.6	85.2	33.11	27.69	1.0398
45	31.67	40.49	56.20	43.00	79.4	85.3	33.25	27.73	1.0344
46	31.77	40.58	56.30	43.20	79.6	85	33.35	27.78	1.0344
47	31.90	40.71	56.43	43.30	79.6	84.9	33.54	27.69	1.0371
48	31.95	40.87	56.53	43.40	79.6	84.6	33.69	27.69	1.0316
49	32.05	40.95	56.67	43.50	79.5	84.7	33.84	27.59	1.0316
50	32.11	41.02	56.70	43.60	79.5	84.6	33.94	27.49	1.0344
51	32.18	41.11	56.77	43.70	79.5	84.8	34.13	27.49	1.0344
52	32.34	41.21	56.83	43.80	79.5	84	34.28	27.69	1.0344
53	32.49	41.29	56.90	43.80	79.7	85.5	34.38	27.78	1.0371
54	32.58	41.41	57.00	44.00	79.7	85	34.47	27.78	1.0344
55	32.68	41.50	57.13	44.20	79.8	85	34.62	27.73	1.0316
56	32.73	41.59	57.23	44.30	79.8	84.1	34.77	27.69	1.0344
57	32.81	41.68	57.23	44.30	79.7	84.7	34.91	27.59	1.0344
58	32.93	41.80	57.43	44.50	79.7	84.6	35.06	27.54	1.0316
59	33.02	41.88	57.43	44.50	79.5	84.6	35.16	27.49	1.0316
60	33.14	41.99	57.57	44.60	79.7	84.7	35.30	27.64	1.0344

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(35%Al+65%Al₂O₃) Sudut 10°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Ilum (I)
0	27.10	27.10	26.5	26.9	26.50	26.70	27.00	26.86	0.9448
1	27.29	30.13	39.4	28.2	46.60	46.80	27.00	26.90	0.9963
2	27.39	31.98	41.8	29.5	52.00	52.50	26.95	26.90	1.0045
3	27.39	32.86	43.1	30.5	55.50	57.70	27.00	26.81	1.0099
4	27.54	33.40	43.8	31.3	58.40	61.30	27.05	26.90	1.0126
5	27.73	33.84	44.5	31.9	60.90	64.70	27.10	26.95	1.0126
6	27.93	34.28	44.9	32.6	62.90	67.50	27.20	27.10	1.0181
7	28.03	34.62	45.8	33.2	64.70	69.70	27.29	27.20	1.0208
8	28.17	34.96	46.2	33.7	66.40	71.50	27.49	27.29	1.0181
9	28.27	35.21	46.7	34.2	67.70	73.10	27.59	27.34	1.0208
10	28.32	35.45	47.1	34.7	68.80	74.10	27.69	27.39	1.0208
11	28.47	35.69	47.5	35.2	69.80	75.00	27.83	27.44	1.0208
12	28.56	35.99	47.8	35.6	70.70	76.30	28.03	27.49	1.0208
13	28.66	36.13	48.1	36	71.40	77.60	28.13	27.59	1.0235
14	28.76	36.38	48.3	36.3	72.10	77.50	28.27	27.59	1.0208
15	28.86	36.57	48.6	36.7	72.70	78.60	28.42	27.69	1.0208
16	28.91	36.77	48.9	37	73.30	78.60	28.61	27.73	1.0235
17	28.96	36.87	49.1	37.3	73.80	78.90	28.71	27.78	1.0208
18	29.15	37.06	49.4	37.7	74.30	79.40	28.91	27.83	1.0208
19	29.20	37.16	49.5	37.8	74.60	80.00	29.10	27.88	1.0235
20	29.35	37.35	49.8	38.2	75.00	80.10	29.25	27.93	1.0235
21	29.44	37.55	50.1	38.5	75.40	80.80	29.39	27.93	1.0235
22	29.54	37.70	50.2	38.7	75.60	81.00	29.59	27.98	1.0235
23	29.64	37.84	50.3	39	75.90	80.90	29.74	28.03	1.0235
24	29.74	37.94	50.6	39.2	76.10	81.20	29.93	28.08	1.0235
25	29.83	38.13	50.8	39.4	76.40	81.10	30.08	28.17	1.0208
26	29.93	38.23	50.9	39.6	76.50	81.40	30.22	28.17	1.0208
27	30.08	38.38	51.1	39.9	76.80	81.70	30.42	28.17	1.0235
28	30.18	38.48	51.3	40.1	77.00	81.70	30.62	28.22	1.0208
29	30.32	38.67	51.4	40.2	77.20	82.00	30.81	28.27	1.0235
30	30.37	38.72	51.5	40.4	77.30	81.20	30.96	28.27	1.0208
31	30.52	38.87	51.7	40.6	77.50	81.70	31.15	28.27	1.0208
32	30.57	39.11	51.8	40.8	77.80	82.10	31.25	28.37	1.0208
33	30.71	39.16	51.9	40.9	77.90	81.50	31.40	28.37	1.0208
34	30.81	39.26	52.1	41.1	78.00	81.80	31.59	28.37	1.0208

35	30.91	39.40	52.3	41.3	78.20	82.10	31.79	28.42	1.0208
36	31.05	39.50	52.4	41.4	78.30	82.30	31.93	28.47	1.0208
37	31.10	39.60	52.5	41.6	78.40	82.50	32.08	28.47	1.0262
38	31.25	39.75	52.7	41.7	78.70	82.30	32.28	28.47	1.0398
39	31.35	39.99	53	41.9	79.00	82.60	32.42	28.56	1.0534
40	31.45	40.09	53	42	79.00	83.00	32.57	28.56	1.0262
41	31.54	40.14	53.1	42.2	79.10	83.20	32.76	28.61	1.0262
42	31.64	40.23	53.2	42.3	79.10	83.00	32.91	28.56	1.0262
43	31.74	40.28	53.3	42.5	79.20	82.70	33.06	28.66	1.0262
44	31.88	40.48	53.4	42.6	79.40	82.90	33.20	28.71	1.0289
45	31.98	40.63	53.5	42.8	79.50	82.90	33.35	28.71	1.0289
46	32.08	40.67	53.7	42.9	79.50	83.00	33.54	28.76	1.0262
47	32.13	40.77	53.7	43	79.50	83.20	33.69	28.71	1.0262
48	32.28	40.92	53.8	43.1	79.50	83.40	33.84	28.76	1.0262
49	32.37	40.97	53.9	43.2	79.50	83.20	33.98	28.81	1.0262
50	32.47	41.06	54.1	43.4	79.70	83.50	34.13	28.81	1.0235
51	32.57	41.16	54.2	43.5	79.70	83.60	34.33	28.91	1.0208
52	32.67	41.26	54.3	43.6	79.70	83.60	34.38	28.86	1.0208
53	32.81	41.41	54.4	43.7	79.70	83.30	34.57	28.91	1.0235
54	32.86	41.46	54.5	43.8	79.70	83.20	34.72	28.96	1.0208
55	33.01	41.60	54.6	44	79.80	84.00	34.86	28.96	1.0235
56	33.11	41.70	54.6	44	79.80	83.90	35.01	29.05	1.0208
57	33.25	41.85	54.7	44.2	79.90	83.80	35.11	29.10	1.0208
58	33.30	41.85	54.9	44.3	80.00	83.90	35.30	29.10	1.0208
59	33.45	42.04	55	44.4	80.10	84.70	35.40	29.10	1.0235
60	33.54	42.09	55.1	44.5	80.10	84.10	35.55	29.10	1.0208

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(35%Al+65%Al₂O₃) Sudut 30°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Ilum (I)
0	27.00	27.00	27.20	26.90	28.00	27.80	27.05	27.10	0.9638
1	27.20	29.98	38.50	28.30	45.50	48.10	27.00	27.05	1.0181
2	27.29	31.35	40.50	29.50	49.80	53.10	27.05	27.05	1.0262
3	27.39	32.03	41.40	30.30	52.70	56.50	27.00	27.25	1.0316
4	27.59	32.57	42.20	31.00	54.90	59.20	27.00	27.39	1.0344
5	27.83	33.01	42.80	31.60	56.80	61.20	27.10	27.44	1.0344
6	27.98	33.35	43.30	32.10	58.50	63.20	27.20	27.39	1.0398
7	28.03	33.64	43.80	32.70	60.00	64.60	27.29	27.39	1.0425
8	28.08	33.89	44.20	33.20	61.20	66.40	27.39	27.44	1.0425
9	28.17	34.08	44.60	33.70	62.20	67.20	27.54	27.49	1.0425
10	28.27	34.38	44.90	34.10	63.20	67.80	27.69	27.64	1.0452
11	28.37	34.52	45.20	34.50	64.00	68.60	27.78	27.73	1.0452
12	28.47	34.77	45.50	34.80	64.60	69.70	27.93	27.69	1.0452
13	28.47	34.91	45.80	35.20	65.40	69.70	28.03	27.59	1.0452
14	28.52	35.01	46.10	35.50	66.10	70.10	28.13	27.49	1.0479
15	28.56	35.21	46.30	35.90	66.60	70.40	28.27	27.49	1.0479
16	28.71	35.30	46.60	36.10	67.00	70.90	28.42	27.54	1.0479
17	28.86	35.50	46.80	36.40	67.40	71.60	28.52	27.69	1.0479
18	28.96	35.64	46.90	36.60	67.90	72.10	28.71	27.78	1.0479
19	28.96	35.79	47.20	36.80	68.20	72.20	28.86	27.73	1.0452
20	29.05	35.99	47.30	37.00	68.50	72.70	28.96	27.64	1.0479
21	29.05	36.04	47.50	37.40	68.70	72.30	29.15	27.54	1.0479
22	29.15	36.13	47.50	37.50	68.90	72.50	29.25	27.59	1.0479
23	29.30	36.23	47.80	37.70	69.20	73.20	29.44	27.73	1.0479
24	29.44	36.38	47.90	37.80	69.40	73.10	29.59	27.83	1.0534
25	29.54	36.57	48.00	38.00	69.70	73.30	29.69	27.88	1.0534
26	29.64	36.72	48.10	38.10	69.80	73.30	29.88	27.88	1.0479
27	29.74	36.82	48.50	38.50	70.10	73.30	30.03	27.78	1.0506
28	29.69	36.91	48.50	38.60	70.10	73.20	30.18	27.73	1.0534
29	29.74	36.96	48.60	38.70	70.30	73.40	30.32	27.78	1.0506
30	29.88	37.11	48.60	38.80	70.30	73.60	30.47	27.93	1.0506
31	30.08	37.21	48.80	39.00	70.50	73.50	30.62	28.13	1.0506
32	30.18	37.40	48.90	39.20	70.70	74.30	30.81	27.98	1.0534
33	30.32	37.50	49.10	39.30	70.80	73.80	30.96	27.93	1.0506
34	30.32	37.55	49.30	39.50	70.90	73.50	31.10	27.88	1.0506

35	30.37	37.60	49.40	39.70	70.90	73.30	31.20	27.73	1.0534
36	30.42	37.65	49.40	39.80	70.90	74.00	31.35	27.78	1.0534
37	30.52	37.74	49.40	39.80	71.00	74.40	31.49	27.98	1.0534
38	30.71	37.89	49.50	39.90	71.10	74.50	31.64	28.17	1.0506
39	30.81	37.99	49.60	40.00	71.20	74.00	31.79	28.17	1.0506
40	30.91	38.13	49.80	40.30	71.50	74.50	31.88	28.03	1.0479
41	30.91	38.18	49.90	40.40	71.50	74.10	31.98	27.93	1.0534
42	30.91	38.23	50.00	40.40	71.50	73.70	32.18	27.78	1.0506
43	31.01	38.33	50.10	40.60	71.60	74.30	32.32	27.73	1.0506
44	31.10	38.38	50.10	40.70	71.60	74.10	32.37	27.69	1.0506
45	31.15	38.43	50.20	40.80	71.50	74.00	32.57	27.64	1.0506
46	31.30	38.57	50.30	40.90	71.70	74.00	32.71	27.59	1.0506
47	31.30	38.62	50.40	41.10	71.70	73.70	32.76	27.54	1.0534
48	31.40	38.72	50.40	41.10	71.70	73.50	32.91	27.73	1.0479
49	31.49	38.77	50.50	41.20	71.80	74.90	33.06	27.88	1.0506
50	31.64	38.92	50.50	41.20	71.80	74.60	33.15	28.03	1.0479
51	31.79	39.06	50.60	41.30	71.80	74.90	33.25	27.93	1.0479
52	31.84	39.11	50.70	41.50	71.90	74.20	33.40	27.88	1.0479
53	31.88	39.16	50.80	41.50	72.00	74.10	33.54	27.78	1.0479
54	31.88	39.21	50.90	41.60	72.10	74.00	33.64	27.78	1.0479
55	31.93	39.31	50.90	41.70	72.10	74.30	33.79	27.78	1.0479
56	32.08	39.31	51.00	41.80	72.10	75.00	33.84	27.98	1.0479
57	32.18	39.45	51.00	41.80	72.20	75.00	33.94	28.08	1.0506
58	32.32	39.55	51.10	41.90	72.30	75.40	34.08	28.13	1.0479
59	32.37	39.65	51.30	42.00	72.40	74.30	34.23	28.03	1.0479
60	32.42	39.75	51.40	42.10	72.40	73.90	34.33	27.93	1.0452

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(50%Al+50%Al₂O₃) Sudut 0°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Illum (I)
0	26.90	26.90	26.70	27.50	27.70	27.80	27.05	27.00	0.966
1	27.00	30.52	40.30	27.60	43.40	41.10	27.05	27.00	0.975
2	27.05	32.28	42.60	28.20	48.70	45.20	27.05	27.15	0.977
3	27.15	33.06	43.70	29.00	52.90	48.60	27.05	27.20	0.983
4	27.34	33.64	44.50	29.90	56.30	52.00	27.10	27.29	0.988
5	27.59	34.08	44.90	30.70	59.20	55.00	27.10	27.39	0.985
6	27.78	34.42	45.40	31.60	61.50	57.10	27.25	27.39	0.988
7	27.88	34.77	45.80	32.30	63.50	58.90	27.29	27.34	0.988
8	27.93	35.01	46.30	33.10	65.10	60.10	27.44	27.25	0.994
9	27.98	35.21	46.60	33.60	66.60	61.70	27.59	27.25	0.988
10	28.03	35.35	46.80	34.10	67.70	62.90	27.73	27.10	0.994
11	28.13	35.50	47.10	34.70	68.90	63.90	27.83	27.05	0.996
12	28.17	35.64	47.20	35.10	69.70	64.80	28.03	27.15	0.999
13	28.17	35.79	47.50	35.50	70.50	65.40	28.13	27.20	1.002
14	28.27	35.99	47.70	36.00	71.10	66.10	28.27	27.29	0.999
15	28.37	36.13	47.90	36.40	71.70	66.60	28.42	27.15	1.002
16	28.47	36.23	48.10	36.80	72.20	67.40	28.52	27.05	1.004
17	28.47	36.28	48.10	37.00	72.50	67.80	28.71	27.00	0.999
18	28.56	36.38	48.30	37.30	73.00	68.30	28.86	27.20	0.999
19	28.76	36.52	48.50	37.70	73.40	68.20	28.96	27.29	1.010
20	28.86	36.72	48.80	37.90	73.80	68.70	29.15	27.49	1.010
21	28.96	36.82	48.90	38.10	74.00	68.80	29.30	27.59	1.010
22	29.00	36.96	49.10	38.40	74.30	69.40	29.44	27.49	1.007
23	29.10	37.11	49.20	38.70	74.50	69.50	29.64	27.39	1.007
24	29.15	37.21	49.40	38.90	74.70	69.50	29.74	27.34	1.007
25	29.25	37.26	49.40	39.10	75.00	70.00	29.88	27.25	1.010
26	29.35	37.35	49.50	39.30	75.10	70.20	30.03	27.10	1.010
27	29.35	37.55	49.70	39.60	75.20	70.90	30.22	27.00	1.010
28	29.44	37.55	49.80	39.80	75.50	70.90	30.37	26.95	1.010
29	29.49	37.55	50.00	39.90	75.60	70.80	30.47	27.10	1.010
30	29.59	37.65	50.00	40.10	75.80	70.60	30.62	27.20	1.004
31	29.74	37.79	50.10	40.30	75.80	71.00	30.81	27.29	1.004
32	29.88	37.94	50.20	40.40	76.00	71.20	30.91	27.34	1.013
33	30.03	38.13	50.30	40.60	76.00	71.70	31.10	27.34	1.013
34	30.13	38.23	50.60	40.80	76.10	72.10	31.30	27.20	1.007

35	30.22	38.33	50.60	40.90	76.30	71.80	31.40	27.20	1.007
36	30.32	38.43	50.70	41.10	76.30	71.70	31.59	27.20	1.010
37	30.37	38.48	50.80	41.20	76.40	71.70	31.74	27.25	1.002
38	30.47	38.53	50.90	41.40	76.60	71.50	31.84	27.34	1.007
39	30.52	38.67	51.10	41.50	76.80	71.80	31.98	27.39	1.013
40	30.66	38.72	51.20	41.70	76.90	72.00	32.13	27.39	1.010
41	30.71	38.87	51.20	41.80	76.90	72.30	32.28	27.25	1.002
42	30.76	38.92	51.30	41.90	76.90	71.90	32.37	27.15	1.004
43	30.81	38.96	51.40	42.00	76.70	72.20	32.52	27.05	1.007
44	30.91	39.06	51.50	42.20	76.80	72.40	32.67	27.05	0.999
45	30.91	39.11	51.60	42.40	76.90	72.00	32.76	27.05	0.999
46	31.05	39.21	51.70	42.50	77.00	71.70	32.91	27.15	1.004
47	31.15	39.31	51.80	42.60	77.00	72.30	33.06	27.15	1.007
48	31.30	39.31	51.80	42.70	77.00	72.30	33.15	27.20	0.999
49	31.30	39.40	51.80	42.80	77.10	72.10	33.35	27.29	0.999
50	31.40	39.55	52.00	42.90	77.20	72.30	33.45	27.34	1.002
51	31.45	39.60	52.10	43.00	77.20	72.20	33.54	27.39	0.999
52	31.54	39.65	52.20	43.10	77.20	72.20	33.64	27.44	1.002
53	31.69	39.84	52.30	43.30	77.30	72.20	33.79	27.54	0.999
54	31.84	39.89	52.30	43.30	77.40	72.10	33.89	27.54	1.007
55	31.93	40.04	52.50	43.40	77.40	72.50	34.03	27.49	0.999
56	31.98	40.04	52.60	43.60	77.40	72.40	34.13	27.64	1.002
57	32.03	40.23	52.80	43.70	77.50	72.50	34.28	27.73	1.010
58	32.08	40.28	52.90	43.80	77.60	72.60	34.33	27.69	0.999
59	32.13	40.28	52.90	44.00	77.50	72.70	34.47	27.73	1.002
60	32.18	40.43	53.10	44.10	77.60	72.70	34.57	27.73	1.007

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(50%Al+50%Al₂O₃) Sudut 10°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Illum (I)
0	26.81	26.81	27.70	26.60	27.70	28.50	26.95	26.76	1.023
1	26.90	30.22	46.60	28.20	41.70	43.50	26.90	26.76	1.040
2	26.95	32.13	49.10	30.00	46.00	48.00	26.90	26.71	1.033
3	26.90	32.91	50.40	31.40	49.50	51.40	26.90	26.66	1.035
4	27.05	33.45	50.90	32.40	52.20	54.50	26.95	26.71	1.038
5	27.25	33.84	51.50	33.10	54.60	56.40	27.00	26.86	1.041
6	27.39	34.13	52.00	33.90	56.30	58.70	27.10	26.90	1.043
7	27.59	34.52	52.80	34.50	57.80	60.60	27.20	27.00	1.043
8	27.69	34.81	53.40	35.20	59.30	62.30	27.29	27.00	1.043
9	27.73	35.01	53.80	35.70	60.40	63.10	27.44	27.05	1.043
10	27.73	35.21	54.30	36.20	61.50	64.50	27.54	27.05	1.049
11	27.78	35.30	54.50	36.70	62.30	64.90	27.69	27.00	1.043
12	27.88	35.50	54.80	37.00	62.90	66.30	27.78	27.05	1.049
13	27.98	35.60	55.10	37.40	63.60	66.90	27.93	27.15	1.049
14	28.08	35.79	55.40	37.80	64.20	67.50	28.08	27.20	1.049
15	28.13	35.99	55.70	38.10	64.70	68.50	28.17	27.20	1.049
16	28.17	36.08	55.70	38.50	65.20	69.50	28.32	27.15	1.049
17	28.22	36.28	56.00	38.70	65.60	69.20	28.47	27.05	1.049
18	28.27	36.33	56.10	39.00	66.00	69.40	28.56	27.10	1.022
19	28.42	36.47	56.30	39.30	66.30	70.00	28.76	27.15	1.039
20	28.47	36.57	56.30	39.40	66.40	70.00	28.86	27.25	1.039
21	28.56	36.67	56.50	39.70	66.70	70.60	29.00	27.15	1.039
22	28.66	36.82	56.70	39.90	66.90	71.10	29.15	27.20	1.039
23	28.76	36.87	56.90	40.10	67.20	71.10	29.25	27.10	1.032
24	28.76	37.01	57.00	40.30	67.50	71.20	29.44	27.05	1.039
25	28.81	37.11	57.10	40.50	67.70	71.40	29.59	26.90	1.039
26	28.81	37.16	57.20	40.60	67.90	71.50	29.74	27.00	1.032
27	28.96	37.26	57.40	40.90	68.00	72.10	29.93	27.05	1.032
28	29.00	37.35	57.40	41.00	68.20	71.50	30.03	27.15	1.034
29	29.15	37.40	57.60	41.10	68.30	72.40	30.13	27.15	1.022
30	29.25	37.55	57.70	41.30	68.30	72.40	30.37	27.10	1.034
31	29.30	37.70	57.80	41.50	68.50	72.20	30.47	27.10	1.034
32	29.35	37.74	57.90	41.50	68.40	72.20	30.66	27.20	1.032
33	29.49	37.79	58.00	41.70	68.60	72.60	30.76	27.25	1.032
34	29.69	37.99	58.10	41.80	68.70	72.60	30.91	27.34	1.032

35	29.74	38.09	58.20	42.00	68.70	72.30	31.01	27.39	1.032
36	29.79	38.18	58.30	42.00	68.90	72.80	31.20	27.34	1.032
37	29.83	38.33	58.40	42.20	69.00	73.20	31.25	27.29	1.039
38	29.83	38.28	58.50	42.30	69.10	72.90	31.40	27.25	1.032
39	29.98	38.38	58.60	42.50	69.20	72.90	31.54	27.29	1.032
40	30.13	38.48	58.60	42.50	69.20	73.10	31.64	27.39	1.034
41	30.27	38.57	58.80	42.70	69.40	73.20	31.79	27.44	1.034
42	30.32	38.72	58.90	42.80	69.40	73.20	31.98	27.39	1.034
43	30.32	38.72	59.00	42.80	69.40	73.40	32.08	27.39	1.032
44	30.42	38.87	59.20	43.10	69.50	73.10	32.18	27.20	1.034
45	30.47	38.96	59.20	43.10	69.60	73.20	32.37	27.29	1.032
46	30.52	38.92	59.20	43.20	69.50	73.70	32.47	27.29	1.032
47	30.62	38.92	59.20	43.30	69.50	73.70	32.57	27.39	1.039
48	30.81	39.06	59.30	43.40	69.60	73.90	32.71	27.49	1.032
49	30.91	39.21	59.40	43.40	69.70	73.80	32.81	27.49	1.034
50	30.91	39.31	59.60	43.70	69.80	73.70	32.96	27.44	1.039
51	30.96	39.36	59.50	43.70	69.80	73.70	33.06	27.39	1.049
52	30.96	39.45	59.60	43.80	69.70	73.50	33.15	27.34	1.049
53	31.05	39.50	59.80	43.90	69.80	73.80	33.25	27.34	1.059
54	31.20	39.60	59.80	44.00	70.00	74.40	33.40	27.29	1.044
55	31.30	39.65	59.80	44.00	70.10	74.30	33.54	27.25	1.044
56	31.30	39.75	59.90	44.00	70.00	74.00	33.64	27.29	1.044
57	31.40	39.84	60.10	44.30	70.10	74.30	33.74	27.34	1.044
58	31.45	39.89	60.20	44.30	70.30	74.30	33.84	27.25	1.044
59	31.45	39.89	60.30	44.50	70.30	74.10	33.94	27.25	1.044
60	31.59	39.99	60.30	44.50	70.40	74.40	34.03	27.29	1.047

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(50%Al+50%Al₂O₃) Sudut 30°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Illum (I)
0	27.00	27.00	26.60	26.90	27.00	26.90	26.95	26.95	1.013
1	27.20	29.74	39.90	28.00	39.70	42.70	26.95	27.00	1.032
2	27.25	31.15	42.20	29.20	43.80	47.40	27.00	27.00	0.999
3	27.34	31.79	43.40	30.10	47.10	50.80	27.00	27.00	0.999
4	27.39	32.18	44.20	30.70	49.50	53.60	27.00	27.00	1.002
5	27.49	32.52	44.80	31.30	51.70	55.80	27.10	27.10	1.004
6	27.59	32.86	45.40	31.80	53.30	57.80	27.15	27.10	1.004
7	27.78	33.11	45.70	32.30	54.70	59.20	27.25	27.20	1.002
8	27.88	33.40	46.00	32.50	55.80	61.40	27.34	27.20	1.004
9	27.93	33.54	46.40	32.90	56.90	62.10	27.39	27.20	1.007
10	27.93	33.64	46.80	33.20	57.70	63.10	27.59	27.10	1.013
11	27.98	33.89	47.20	33.60	58.60	63.80	27.69	27.20	1.013
12	28.08	33.98	47.40	33.70	59.20	64.70	27.73	27.29	1.013
13	28.08	34.08	47.50	34.10	59.60	64.80	27.88	27.34	1.015
14	28.12	34.15	47.70	34.30	60.00	65.80	27.98	27.29	1.015
15	28.18	34.42	47.90	34.50	60.30	65.70	28.08	27.39	1.018
16	28.23	34.42	48.00	34.70	60.60	66.10	28.22	27.39	1.021
17	28.30	34.52	48.20	35.00	61.00	67.10	28.32	27.39	1.018
18	28.37	34.67	48.40	35.20	61.30	67.50	28.47	27.39	1.021
19	28.41	34.72	48.50	35.40	61.50	67.20	28.56	27.44	1.021
20	28.45	34.81	48.60	35.50	61.70	67.60	28.71	27.39	1.021
21	28.51	34.96	48.80	35.70	61.90	67.70	28.86	27.49	1.021
22	28.60	34.96	48.90	35.90	62.00	68.30	28.96	27.54	1.021
23	28.66	35.07	49.10	36.00	62.10	68.30	29.05	27.59	1.021
24	28.70	35.30	49.20	36.10	62.40	68.60	29.25	27.54	1.023
25	28.74	35.37	49.30	36.20	62.70	69.00	29.35	27.49	1.023
26	28.85	35.60	49.50	36.40	62.90	68.90	29.44	27.49	1.023
27	28.85	35.64	49.60	36.60	63.10	69.00	29.59	27.39	1.026
28	28.85	35.74	49.80	36.70	63.10	69.20	29.69	27.39	1.029
29	28.85	35.74	49.80	36.80	63.20	69.70	29.83	27.44	1.026
30	28.93	35.81	49.90	37.00	63.20	69.80	29.93	27.54	1.026
31	29.09	35.99	50.00	37.10	63.30	69.60	30.08	27.44	1.029
32	29.15	36.08	50.10	37.20	63.40	69.50	30.22	27.39	1.026
33	29.29	36.18	50.30	37.30	63.50	69.20	30.37	27.49	1.029
34	29.34	36.23	50.30	37.40	63.50	69.40	30.42	27.49	1.029

35	29.47	36.33	50.40	37.50	63.80	70.40	30.57	27.59	1.029
36	29.54	36.33	50.50	37.60	63.80	70.10	30.71	27.54	1.032
37	29.59	36.43	50.60	37.80	63.80	69.90	30.81	27.54	1.029
38	29.67	36.57	50.60	37.80	64.00	70.00	30.96	27.44	1.026
39	29.75	36.57	50.80	38.00	64.00	69.70	31.01	27.59	1.026
40	29.90	36.62	50.70	38.00	64.00	70.10	31.20	27.54	1.023
41	29.98	36.77	50.80	38.10	64.10	70.60	31.25	27.59	1.029
42	30.03	36.77	50.90	38.20	64.10	69.90	31.35	27.49	1.029
43	30.08	36.87	50.90	38.30	64.20	70.20	31.49	27.54	1.029
44	30.13	36.91	51.10	38.50	64.20	69.80	31.59	27.59	1.026
45	30.22	36.96	51.10	38.50	64.30	70.00	31.69	27.69	1.026
46	30.34	37.06	51.10	38.60	64.20	70.10	31.79	27.64	1.026
47	30.40	37.09	51.20	38.70	64.40	70.80	31.88	27.64	1.032
48	30.44	37.16	51.20	38.80	64.40	70.70	31.98	27.54	1.032
49	30.46	37.26	51.40	38.90	64.60	70.50	32.08	27.54	1.029
50	30.53	37.26	51.40	38.90	64.70	71.00	32.23	27.49	1.029
51	30.57	37.26	51.50	39.00	64.70	70.90	32.32	27.59	1.026
52	30.57	37.40	51.50	39.10	64.70	71.10	32.42	27.59	1.029
53	30.61	37.50	51.50	39.10	64.70	70.90	32.52	27.64	1.029
54	30.66	37.55	51.70	39.30	64.90	71.20	32.57	27.59	1.032
55	30.66	37.65	51.80	39.40	65.00	70.90	32.71	27.49	1.032
56	30.66	37.70	51.90	39.50	64.90	71.20	32.81	27.49	1.032
57	30.74	37.70	51.80	39.50	64.90	71.30	32.91	27.49	1.032
58	30.79	37.74	51.90	39.60	64.90	72.00	33.01	27.54	1.032
59	30.83	37.89	51.90	39.60	65.00	71.40	33.11	27.59	1.029
60	30.93	37.94	52.00	39.80	65.10	71.30	33.20	27.54	1.029

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(65%Al+35%Al₂O₃) Sudut 0°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Ilum (I)
0	26.87	26.97	26.67	26.90	27.27	26.90	26.84	26.89	0.979
1	27.00	30.49	44.97	28.07	43.67	43.87	26.94	27.13	0.989
2	27.07	32.23	47.77	29.57	48.50	48.60	26.94	27.20	0.996
3	27.16	33.04	49.17	30.63	52.30	52.80	26.95	27.18	1.001
4	27.33	33.58	49.87	31.47	55.30	56.03	26.99	27.21	1.002
5	27.46	33.94	50.73	32.17	57.83	58.47	27.07	27.28	1.004
6	27.60	34.34	51.33	32.80	59.93	60.23	27.16	27.36	1.005
7	27.73	34.60	51.83	33.30	61.67	62.23	27.29	27.44	1.009
8	27.80	34.90	52.13	33.77	63.07	63.70	27.41	27.47	1.010
9	27.93	35.16	52.57	34.30	64.33	65.27	27.57	27.54	1.012
10	27.99	35.40	52.83	34.67	65.37	66.30	27.69	27.52	1.011
11	28.04	35.55	53.17	35.03	66.40	67.93	27.82	27.49	1.013
12	28.13	35.73	53.47	35.37	67.27	68.50	27.98	27.46	1.014
13	28.16	35.89	53.70	35.70	67.97	69.23	28.09	27.47	1.014
14	28.27	36.05	54.00	36.00	68.60	69.83	28.22	27.49	1.016
15	28.32	36.21	54.27	36.30	69.23	70.50	28.39	27.47	1.017
16	28.40	36.34	54.53	36.53	69.70	71.07	28.52	27.49	1.020
17	28.48	36.49	54.87	36.87	70.23	71.67	28.68	27.47	1.018
18	28.56	36.64	54.87	37.03	70.67	71.90	28.81	27.49	1.019
19	28.60	36.74	55.13	37.27	70.97	72.03	28.97	27.47	1.019
20	28.68	36.90	55.37	37.43	71.33	72.93	29.12	27.52	1.023
21	28.79	36.98	55.47	37.70	71.70	72.80	29.26	27.52	1.022
22	28.87	37.09	55.73	37.80	71.87	72.87	29.44	27.44	1.023
23	28.91	37.21	55.83	38.07	72.13	73.43	29.59	27.43	1.022
24	29.00	37.29	55.87	38.20	72.37	73.93	29.72	27.43	1.020
25	29.07	37.37	56.03	38.37	72.60	74.03	29.88	27.34	1.022
26	29.15	37.47	56.17	38.50	72.73	74.33	30.03	27.29	1.023
27	29.22	37.58	56.27	38.70	72.83	74.57	30.19	27.21	1.023
28	29.28	37.66	56.40	38.83	73.00	74.83	30.34	27.21	1.023
29	29.36	37.76	56.43	38.97	73.17	74.43	30.49	27.20	1.022
30	29.48	37.89	56.50	39.10	73.30	74.40	30.68	27.29	1.023
31	29.59	37.97	56.60	39.23	73.43	74.53	30.84	27.38	1.024
32	29.72	38.10	56.80	39.30	73.53	74.80	31.01	27.39	1.023
33	29.83	38.22	56.90	39.47	73.70	75.33	31.15	27.41	1.023
34	29.92	38.36	57.07	39.57	73.77	75.07	31.30	27.38	1.023

35	30.00	38.46	57.27	39.70	73.93	75.10	31.41	27.39	1.022
36	30.03	38.53	57.37	39.87	74.00	75.00	31.54	27.44	1.023
37	30.13	38.62	57.37	40.03	74.07	74.97	31.69	27.52	1.022
38	30.22	38.69	57.47	40.07	74.13	75.40	31.84	27.62	1.022
39	30.34	38.79	57.60	40.20	74.17	75.27	31.98	27.69	1.021
40	30.45	38.92	57.63	40.27	74.17	75.17	32.10	27.69	1.021
41	30.53	38.98	57.73	40.43	74.30	75.23	32.23	27.67	1.021
42	30.58	39.11	57.87	40.53	74.37	75.33	32.39	27.60	1.023
43	30.62	39.14	57.93	40.63	74.33	75.67	32.54	27.56	1.022
44	30.70	39.21	57.97	40.70	74.50	75.80	32.63	27.49	1.015
45	30.76	39.29	58.00	40.80	74.47	75.63	32.80	27.52	1.023
46	30.88	39.37	58.13	40.93	74.67	75.83	32.91	27.56	1.018
47	30.96	39.42	58.20	41.03	74.70	75.77	33.04	27.54	1.019
48	31.05	39.55	58.30	41.13	74.77	76.17	33.15	27.47	1.017
49	31.12	39.62	58.37	41.23	74.87	76.13	33.28	27.41	1.017
50	31.18	39.72	58.47	41.37	74.97	76.30	33.40	27.39	1.017
51	31.28	39.78	58.50	41.40	75.07	76.53	33.54	27.41	1.018
52	31.33	39.83	58.60	41.50	75.13	76.27	33.69	27.41	1.018
53	31.38	39.91	58.70	41.60	75.17	76.23	33.79	27.47	1.016
54	31.41	39.97	58.73	41.67	75.13	76.20	33.90	27.49	1.023
55	31.51	40.04	58.87	41.77	75.20	76.67	34.02	27.46	1.023
56	31.59	40.06	58.93	41.90	75.23	76.70	34.10	27.46	1.021
57	31.66	40.14	59.00	41.93	75.30	76.73	34.23	27.51	1.022
58	31.79	40.26	59.17	42.03	75.33	76.73	34.38	27.54	1.023
59	31.85	40.38	59.27	42.10	75.40	76.57	34.44	27.51	1.022
60	31.93	40.46	59.30	42.20	75.43	76.50	34.54	27.52	1.021

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(65%Al+35%Al₂O₃) Sudut 10°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Illum (I)
0	26.95	26.95	27.00	26.97	27.63	27.13	27.02	27.05	1.008
1	27.07	30.42	45.20	28.17	45.20	42.07	27.02	27.13	1.021
2	27.08	32.13	47.63	29.77	49.40	47.00	27.02	27.18	1.026
3	27.21	32.93	49.07	30.93	52.60	50.70	27.03	27.29	1.036
4	27.38	33.41	49.90	31.87	55.10	53.80	27.07	27.34	1.034
5	27.54	33.82	50.43	32.60	57.17	56.17	27.08	27.34	1.037
6	27.69	34.18	50.97	33.17	58.83	58.33	27.21	27.34	1.039
7	27.75	34.46	51.47	33.77	60.33	59.77	27.29	27.38	1.041
8	27.80	34.70	51.90	34.23	61.43	61.30	27.43	27.25	1.044
9	27.85	34.90	52.20	34.67	62.40	62.73	27.56	27.25	1.044
10	27.88	35.01	52.47	35.13	63.23	63.87	27.69	27.23	1.044
11	27.99	35.24	52.70	35.40	64.03	64.67	27.85	27.26	1.046
12	28.11	35.43	53.07	35.73	64.63	65.77	27.96	27.23	1.049
13	28.16	35.60	53.30	36.07	65.27	66.50	28.08	27.23	1.048
14	28.24	35.76	53.60	36.30	65.77	66.43	28.21	27.31	1.047
15	28.29	35.94	53.87	36.50	66.17	67.30	28.35	27.36	1.049
16	28.35	35.99	54.10	36.80	66.53	67.67	28.50	27.38	1.049
17	28.50	36.20	54.23	37.03	66.97	68.10	28.65	27.39	1.050
18	28.60	36.34	54.40	37.23	67.20	69.27	28.74	27.44	1.051
19	28.71	36.44	54.67	37.50	67.50	69.23	28.91	27.52	1.053
20	28.84	36.64	54.90	37.77	67.77	69.53	29.09	27.51	1.052
21	28.87	36.75	55.10	37.93	68.03	69.60	29.23	27.49	1.052
22	28.91	36.82	55.23	38.07	68.30	70.07	29.38	27.47	1.052
23	28.94	36.87	55.30	38.30	68.47	69.97	29.52	27.38	1.050
24	29.02	37.03	55.43	38.40	68.60	70.77	29.64	27.33	1.049
25	29.12	37.09	55.60	38.67	68.80	70.90	29.82	27.31	1.052
26	29.17	37.16	55.63	38.73	68.93	72.03	29.96	27.33	1.052
27	29.35	37.32	55.73	38.90	69.07	71.40	30.11	27.39	1.053
28	29.46	37.52	55.83	39.03	69.27	71.53	30.26	27.44	1.052
29	29.59	37.60	56.07	39.17	69.40	71.50	30.42	27.46	1.052
30	29.67	37.74	56.20	39.33	69.57	71.80	30.55	27.46	1.052
31	29.72	37.78	56.23	39.43	69.73	71.70	30.70	27.47	1.052
32	29.74	37.87	56.43	39.63	69.83	72.10	30.88	27.33	1.053
33	29.79	37.99	56.53	39.73	69.93	72.13	31.04	27.31	1.050
34	29.82	37.99	56.60	39.90	70.00	72.00	31.20	27.25	1.048

35	29.88	38.07	56.70	39.93	70.07	72.47	31.32	27.15	1.050
36	29.96	38.17	56.70	40.10	70.17	72.17	31.45	27.16	1.051
37	30.06	38.23	56.80	40.23	70.13	72.80	31.58	27.21	1.053
38	30.19	38.30	56.90	40.33	70.30	72.60	31.72	27.16	1.052
39	30.29	38.44	56.90	40.40	70.40	72.70	31.84	27.13	1.048
40	30.34	38.49	57.00	40.53	70.47	72.60	31.98	27.20	1.049
41	30.39	38.62	57.07	40.63	70.50	72.47	32.11	27.16	1.050
42	30.47	38.72	57.23	40.73	70.60	72.70	32.26	27.05	1.050
43	30.55	38.74	57.23	40.80	70.70	72.97	32.37	27.05	1.050
44	30.57	38.85	57.23	40.83	70.77	72.47	32.50	27.03	1.048
45	30.66	38.92	57.37	40.97	70.83	73.23	32.65	27.02	1.045
46	30.73	39.01	57.43	41.07	70.87	73.10	32.76	27.12	1.045
47	30.83	39.11	57.50	41.13	70.83	72.77	32.86	27.21	1.048
48	30.94	39.16	57.53	41.23	70.87	72.97	33.01	27.28	1.048
49	31.12	39.27	57.57	41.27	70.90	73.33	33.12	27.31	1.048
50	31.23	39.40	57.73	41.43	71.03	73.37	33.25	27.34	1.045
51	31.30	39.52	57.83	41.50	71.13	73.50	33.35	27.28	1.046
52	31.32	39.58	57.90	41.57	71.13	73.63	33.51	27.23	1.047
53	31.36	39.66	57.93	41.70	71.23	73.73	33.61	27.18	1.047
54	31.40	39.71	58.13	41.87	71.33	73.37	33.71	27.16	1.047
55	31.43	39.73	58.13	41.87	71.33	73.37	33.85	27.16	1.046
56	31.49	39.79	58.13	41.97	71.30	73.70	33.94	27.23	1.049
57	31.59	39.86	58.20	42.07	71.40	73.17	34.03	27.26	1.050
58	31.67	39.94	58.23	42.07	71.43	73.90	34.15	27.25	1.048
59	31.79	40.04	58.27	42.23	71.50	73.47	34.29	27.21	1.050
60	31.79	40.07	58.40	42.30	71.53	73.70	34.38	27.20	1.050

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(65%Al+35%Al₂O₃) Sudut 30°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina								
	IN (Tfi)	OUT (Tfo)	Pelat Datar (TP1)	Alumina (T-Alu)	Kaca Dalam (Tc- Dalam)	Kaca Luar (Tc- Luar)	Tangki (T- Tangki)	Ling (Ta)	Illum (I)
0	27.00	27.00	27.57	26.83	27.83	27.87	26.92	27.02	0.978
1	27.11	29.52	37.13	27.30	37.43	43.17	26.94	27.07	0.986
2	27.22	30.58	39.30	28.27	41.60	47.70	26.94	27.08	0.995
3	27.28	31.26	40.37	29.07	44.73	51.27	26.94	26.95	0.997
4	27.37	31.61	41.03	29.80	47.27	54.07	26.94	26.90	1.001
5	27.36	31.92	41.60	30.50	49.33	56.47	27.00	26.95	1.002
6	27.46	32.08	42.07	31.00	50.90	58.20	27.08	26.95	1.004
7	27.56	32.48	42.60	31.57	52.33	59.80	27.16	26.95	1.005
8	27.68	32.80	43.03	32.07	53.43	61.03	27.26	26.89	1.006
9	27.85	33.02	43.40	32.53	54.40	62.30	27.38	26.84	1.007
10	27.89	33.13	43.63	32.97	55.20	63.30	27.46	26.87	1.007
11	27.99	33.27	43.90	33.33	55.87	63.67	27.57	26.92	1.007
12	28.06	33.41	44.17	33.67	56.47	64.53	27.67	26.95	1.007
13	28.17	33.58	44.47	34.03	57.07	65.00	27.78	26.89	1.013
14	28.19	33.74	44.67	34.30	57.50	65.80	27.91	26.86	1.005
15	28.26	33.83	44.87	34.63	57.87	66.10	28.01	26.90	1.005
16	28.30	33.99	45.03	34.90	58.20	66.93	28.14	26.97	1.005
17	28.39	34.06	45.20	35.03	58.47	66.67	28.26	27.08	1.005
18	28.43	34.26	45.37	35.37	58.77	66.93	28.35	27.08	1.005
19	28.48	34.38	45.60	35.57	59.03	67.43	28.47	27.02	1.007
20	28.56	34.46	45.73	35.80	59.27	67.87	28.63	27.05	1.007
21	28.61	34.61	45.90	36.03	59.50	68.23	28.73	27.13	1.007
22	28.74	34.72	46.03	36.17	59.63	68.33	28.86	27.15	1.013
23	28.82	34.85	46.13	36.33	59.80	68.13	28.99	27.16	1.013
24	28.91	35.02	46.27	36.53	59.90	68.57	29.13	27.16	1.011
25	28.94	35.04	46.37	36.70	59.97	68.53	29.25	27.07	1.009
26	28.99	35.11	46.53	36.90	60.13	68.67	29.36	27.12	1.009
27	29.07	35.19	46.57	37.00	60.23	68.67	29.49	27.15	1.010
28	29.15	35.29	46.67	37.13	60.37	69.03	29.61	27.21	1.010
29	29.25	35.41	46.87	37.37	60.50	69.50	29.75	27.16	1.010
30	29.35	35.50	46.90	37.50	60.60	69.20	29.88	27.12	1.008
31	29.41	35.60	47.03	37.60	60.80	69.53	30.03	27.08	1.008
32	29.49	35.75	47.13	37.73	60.83	69.40	30.16	27.16	1.010
33	29.59	35.80	47.23	37.87	60.87	69.63	30.29	27.18	1.008
34	29.64	35.89	47.30	37.97	60.97	69.80	30.40	27.12	1.011

35	29.66	35.95	47.40	38.10	60.97	69.70	30.53	27.10	1.009
36	29.72	35.98	47.53	38.27	61.17	69.60	30.65	27.07	1.009
37	29.80	36.08	47.60	38.37	61.17	69.60	30.75	27.10	1.009
38	29.90	36.13	47.70	38.50	61.17	69.47	30.88	27.15	1.011
39	29.95	36.23	47.73	38.57	61.17	69.80	30.99	27.21	1.012
40	30.06	36.34	47.83	38.67	61.23	70.20	31.09	27.21	1.013
41	30.14	36.43	47.93	38.80	61.33	69.70	31.23	27.23	1.010
42	30.19	36.46	48.00	38.90	61.33	69.83	31.33	27.21	1.011
43	30.29	36.59	48.07	38.97	61.33	70.07	31.43	27.23	1.010
44	30.34	36.62	48.20	39.10	61.43	70.17	31.56	27.28	1.010
45	30.40	36.74	48.23	39.23	61.50	70.23	31.67	27.31	1.011
46	30.49	36.80	48.33	39.27	61.53	70.37	31.77	27.28	1.011
47	30.53	36.89	48.40	39.40	61.53	70.00	31.88	27.25	1.010
48	30.62	36.97	48.43	39.43	61.57	70.33	31.98	27.28	1.011
49	30.63	37.07	48.53	39.53	61.67	70.33	32.08	27.28	1.011
50	30.73	37.10	48.57	39.63	61.67	70.27	32.21	27.33	1.009
51	30.76	37.15	48.63	39.70	61.67	70.30	32.29	27.29	1.007
52	30.83	37.22	48.70	39.83	61.73	70.50	32.39	27.21	1.007
53	30.88	37.31	48.77	39.93	61.67	70.27	32.50	27.25	1.010
54	30.96	37.37	48.77	40.00	61.63	70.33	32.58	27.29	1.009
55	31.04	37.45	48.90	40.10	61.77	70.37	32.70	27.31	1.008
56	31.12	37.53	48.97	40.17	61.83	70.77	32.78	27.36	1.008
57	31.17	37.57	49.07	40.33	61.93	70.27	32.89	27.26	1.009
58	31.20	37.64	49.17	40.33	62.00	70.57	32.99	27.28	1.007
59	31.25	37.67	49.17	40.40	62.07	70.53	33.06	27.25	1.007
60	31.28	37.70	49.27	40.57	62.10	70.63	33.17	27.29	1.008

Lampiran 8. (TABEL HASIL PERHITUNGAN)

Pelat Kolektor Standar 0°

t	Pelat Kolektor Standar							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ³ K)	Qn (Watt)	η (%)
0	4.12	1.95	6.07	-0.10	835.46	2.80E-06	0.00	0.00%
1	4.58	1.95	6.53	-0.85	843.95	2.78E-06	40.09	36.12%
2	4.84	1.95	6.79	-0.88	850.13	2.80E-06	64.09	53.16%
3	5.01	1.95	6.96	-0.11	853.99	2.79E-06	72.05	60.49%
4	5.13	1.95	7.08	0.81	854.76	2.81E-06	73.55	63.96%
5	5.22	1.95	7.17	1.28	857.08	2.81E-06	75.75	66.89%
6	5.29	1.95	7.24	1.77	857.85	2.78E-06	77.07	69.17%
7	5.35	1.95	7.30	2.14	860.94	2.83E-06	79.37	70.45%
8	5.40	1.95	7.35	2.39	861.71	2.80E-06	80.63	72.51%
9	5.44	1.95	7.39	2.89	863.26	2.79E-06	81.95	74.20%
10	5.47	1.95	7.42	3.50	862.49	2.79E-06	82.27	75.37%
11	5.50	1.95	7.45	4.12	864.03	2.79E-06	83.97	76.74%
12	5.53	1.95	7.48	4.99	864.80	2.79E-06	84.74	77.52%
13	5.55	1.95	7.50	5.13	865.57	2.79E-06	85.94	79.00%
14	5.57	1.95	7.52	5.88	867.12	2.78E-06	85.91	78.82%
15	5.59	1.95	7.54	6.38	867.89	2.79E-06	86.23	80.21%
16	5.61	1.95	7.56	6.89	870.21	2.79E-06	86.30	80.02%
17	5.62	1.95	7.57	7.64	868.66	2.77E-06	88.13	81.29%
18	5.63	1.95	7.58	8.15	869.44	2.79E-06	88.68	82.03%
19	5.65	1.95	7.60	8.53	869.44	2.81E-06	89.46	83.25%
20	5.66	1.95	7.61	8.79	873.30	2.80E-06	88.98	82.90%
21	5.67	1.95	7.62	9.67	871.75	2.78E-06	89.70	83.04%
22	5.67	1.95	7.62	10.92	873.30	2.79E-06	90.64	83.22%
23	5.68	1.95	7.63	11.30	871.75	2.78E-06	89.83	83.62%
24	5.69	1.95	7.64	12.06	870.21	2.80E-06	90.65	84.01%
25	5.69	1.95	7.64	13.19	871.75	2.78E-06	90.10	83.70%
26	5.70	1.95	7.65	14.19	873.30	2.78E-06	90.94	83.79%
27	5.70	1.95	7.65	15.32	872.52	2.80E-06	92.00	85.34%
28	5.71	1.95	7.66	15.83	873.30	2.79E-06	91.38	84.85%
29	5.71	1.95	7.66	16.59	871.75	2.78E-06	91.57	85.00%
30	5.72	1.95	7.67	16.73	872.52	2.79E-06	92.20	85.50%
31	5.73	1.95	7.68	16.99	874.07	2.78E-06	91.27	84.68%
32	5.73	1.95	7.68	17.88	873.30	2.79E-06	91.03	84.02%
33	5.74	1.95	7.69	18.64	872.52	2.78E-06	91.47	84.50%
34	5.74	1.95	7.69	19.53	872.52	2.78E-06	91.55	85.40%

35	5.75	1.95	7.70	20.04	871.75	2.79E-06	92.58	85.89%
36	5.76	1.95	7.71	19.94	873.30	2.78E-06	93.50	86.23%
37	5.76	1.95	7.71	20.09	871.75	2.80E-06	93.04	86.13%
38	5.77	1.95	7.72	20.10	871.75	2.79E-06	92.95	85.55%
39	5.77	1.95	7.72	20.49	870.98	2.78E-06	93.97	86.04%
40	5.78	1.95	7.73	21.38	870.98	2.79E-06	92.95	85.61%
41	5.78	1.95	7.73	22.15	870.98	2.79E-06	93.42	85.36%
42	5.78	1.95	7.73	23.02	872.52	2.81E-06	94.35	86.53%
43	5.78	1.95	7.73	23.65	871.75	2.79E-06	93.98	86.11%
44	5.78	1.95	7.73	24.78	866.35	2.77E-06	93.97	86.64%
45	5.78	1.95	7.73	25.04	872.52	2.79E-06	93.78	86.19%
46	5.78	1.95	7.73	25.68	868.66	2.77E-06	94.07	85.99%
47	5.79	1.95	7.74	26.44	869.44	2.80E-06	94.34	85.83%
48	5.79	1.95	7.74	27.70	867.89	2.78E-06	93.40	85.98%
49	5.79	1.95	7.74	28.71	867.89	2.78E-06	94.05	86.39%
50	5.79	1.95	7.74	29.33	867.89	2.76E-06	94.51	87.06%
51	5.79	1.95	7.74	29.98	868.66	2.79E-06	94.51	86.42%
52	5.79	1.95	7.74	30.37	868.66	2.77E-06	93.76	86.21%
53	5.80	1.95	7.75	30.26	867.12	2.76E-06	94.04	86.61%
54	5.79	1.95	7.74	30.38	873.30	2.78E-06	93.38	86.24%
55	5.80	1.95	7.75	31.39	872.52	2.77E-06	94.12	86.21%
56	5.80	1.95	7.75	32.04	870.98	2.76E-06	93.67	85.12%
57	5.80	1.95	7.75	32.18	871.75	2.77E-06	93.66	85.37%
58	5.81	1.95	7.76	32.96	873.30	2.78E-06	93.93	85.57%
59	5.81	1.95	7.76	33.70	871.75	2.76E-06	94.19	86.46%
60	5.81	1.95	7.76	34.21	870.98	2.76E-06	94.12	85.95%

Pelat Kolektor Standar 10°

t	Pelat Kolektor Standar							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.15	1.95	6.10	-0.10	835.46	2.80E-06	0.00	0.00%
1	4.72	1.95	6.67	-0.87	843.95	2.78E-06	42.72	36.27%
2	4.73	1.95	6.68	-0.87	850.13	2.80E-06	67.45	53.72%
3	4.99	1.95	6.94	-0.11	853.99	2.79E-06	74.25	60.81%
4	5.14	1.95	7.09	0.81	854.76	2.81E-06	76.28	65.01%
5	5.25	1.95	7.20	1.29	857.08	2.81E-06	77.72	67.23%
6	5.33	1.95	7.28	1.78	857.85	2.78E-06	79.15	69.06%
7	5.39	1.95	7.34	2.15	860.94	2.83E-06	80.76	71.43%
8	5.45	1.95	7.40	2.41	861.71	2.80E-06	82.41	72.99%
9	5.49	1.95	7.44	2.91	863.26	2.79E-06	83.57	73.77%
10	5.52	1.95	7.47	3.53	862.49	2.79E-06	84.67	75.85%
11	5.56	1.95	7.51	4.15	864.03	2.79E-06	85.38	76.75%
12	5.58	1.95	7.53	5.03	864.80	2.79E-06	86.02	77.44%
13	5.61	1.95	7.56	5.17	865.57	2.79E-06	86.58	78.75%
14	5.63	1.95	7.58	5.92	867.12	2.78E-06	87.62	78.81%
15	5.65	1.95	7.60	6.43	867.89	2.79E-06	87.97	80.38%
16	5.67	1.95	7.62	6.94	870.21	2.79E-06	88.45	80.64%
17	5.68	1.95	7.63	7.70	868.66	2.77E-06	88.75	80.82%
18	5.70	1.95	7.65	8.21	869.44	2.79E-06	89.02	81.98%
19	5.71	1.95	7.66	8.60	869.44	2.81E-06	89.73	83.07%
20	5.72	1.95	7.67	8.86	873.30	2.80E-06	89.84	83.30%
21	5.72	1.95	7.67	9.74	871.75	2.78E-06	90.75	82.68%
22	5.73	1.95	7.68	11.00	873.30	2.79E-06	91.04	82.97%
23	5.74	1.95	7.69	11.39	871.75	2.78E-06	90.39	83.65%
24	5.75	1.95	7.70	12.15	870.21	2.80E-06	91.12	84.17%
25	5.75	1.95	7.70	13.29	871.75	2.78E-06	90.28	83.69%
26	5.75	1.95	7.70	14.29	873.30	2.78E-06	91.01	83.83%
27	5.76	1.95	7.71	15.43	872.52	2.80E-06	90.93	84.96%
28	5.76	1.95	7.71	15.94	873.30	2.79E-06	91.01	84.63%
29	5.77	1.95	7.72	16.70	871.75	2.78E-06	90.56	84.78%
30	5.77	1.95	7.72	16.84	872.52	2.79E-06	91.01	84.94%
31	5.78	1.95	7.73	17.11	874.07	2.78E-06	90.72	84.38%
32	5.78	1.95	7.73	17.99	873.30	2.79E-06	90.53	84.54%
33	5.78	1.95	7.73	18.75	872.52	2.78E-06	90.82	84.51%
34	5.78	1.95	7.73	19.63	872.52	2.78E-06	91.55	84.93%
35	5.79	1.95	7.74	20.15	871.75	2.79E-06	91.93	85.50%
36	5.79	1.95	7.74	20.04	873.30	2.78E-06	91.46	85.51%

37	5.80	1.95	7.75	20.17	871.75	2.80E-06	91.25	86.36%
38	5.80	1.95	7.75	20.19	871.75	2.79E-06	91.43	85.51%
39	5.81	1.95	7.76	20.58	870.98	2.78E-06	90.88	85.24%
40	5.81	1.95	7.76	21.47	870.98	2.79E-06	91.80	85.73%
41	5.81	1.95	7.76	22.23	870.98	2.79E-06	91.16	85.51%
42	5.81	1.95	7.76	23.11	872.52	2.81E-06	91.22	86.90%
43	5.81	1.95	7.76	23.75	871.75	2.79E-06	91.60	86.10%
44	5.81	1.95	7.76	24.90	866.35	2.77E-06	91.61	85.87%
45	5.82	1.95	7.77	25.15	872.52	2.79E-06	91.23	86.14%
46	5.82	1.95	7.77	25.78	868.66	2.77E-06	91.32	85.52%
47	5.82	1.95	7.77	26.55	869.44	2.80E-06	91.43	85.99%
48	5.82	1.95	7.77	27.82	867.89	2.78E-06	91.33	86.01%
49	5.82	1.95	7.77	28.84	867.89	2.78E-06	90.96	86.09%
50	5.82	1.95	7.77	29.48	867.89	2.76E-06	91.41	85.79%
51	5.83	1.95	7.78	30.12	868.66	2.79E-06	91.68	86.26%
52	5.83	1.95	7.78	30.51	868.66	2.77E-06	91.40	85.49%
53	5.83	1.95	7.78	30.40	867.12	2.76E-06	91.40	85.84%
54	5.83	1.95	7.78	30.53	873.30	2.78E-06	91.31	86.05%
55	5.84	1.95	7.79	31.56	872.52	2.77E-06	91.50	85.50%
56	5.84	1.95	7.79	32.21	870.98	2.76E-06	91.20	84.64%
57	5.84	1.95	7.79	32.35	871.75	2.77E-06	91.68	85.10%
58	5.85	1.95	7.80	33.12	873.30	2.78E-06	91.76	85.26%
59	5.85	1.95	7.80	33.89	871.75	2.76E-06	91.39	85.35%
60	5.85	1.95	7.80	34.40	870.98	2.76E-06	90.57	85.22%

Pelat Kolektor Standar 30°

t	Pelat Standar Kolektor							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.17	1.95	6.12	-0.10	835.46	2.80E-06	0.00	0.00%
1	4.69	1.95	6.64	-0.86	843.95	2.78E-06	35.51	36.27%
2	4.78	1.95	6.73	-0.88	850.13	2.80E-06	57.03	53.72%
3	4.97	1.95	6.92	-0.11	853.99	2.79E-06	63.95	60.81%
4	5.09	1.95	7.04	0.80	854.76	2.81E-06	64.72	65.01%
5	5.18	1.95	7.13	1.28	857.08	2.81E-06	65.84	67.23%
6	5.25	1.95	7.20	1.76	857.85	2.78E-06	67.93	69.06%
7	5.31	1.95	7.26	2.13	860.94	2.83E-06	68.25	71.43%
8	5.35	1.95	7.30	2.38	861.71	2.80E-06	69.91	72.99%
9	5.39	1.95	7.34	2.87	863.26	2.79E-06	71.25	73.77%
10	5.42	1.95	7.37	3.48	862.49	2.79E-06	71.63	75.85%
11	5.45	1.95	7.40	4.09	864.03	2.79E-06	73.06	76.75%
12	5.47	1.95	7.42	4.95	864.80	2.79E-06	73.48	77.44%
13	5.50	1.95	7.45	5.09	865.57	2.79E-06	74.95	78.75%
14	5.51	1.95	7.46	5.83	867.12	2.78E-06	75.45	78.81%
15	5.53	1.95	7.48	6.33	867.89	2.79E-06	74.98	80.38%
16	5.54	1.95	7.49	6.83	870.21	2.79E-06	75.57	80.64%
17	5.56	1.95	7.51	7.57	868.66	2.77E-06	76.54	80.82%
18	5.57	1.95	7.52	8.07	869.44	2.79E-06	77.45	81.98%
19	5.57	1.95	7.52	8.45	869.44	2.81E-06	77.41	83.07%
20	5.58	1.95	7.53	8.71	873.30	2.80E-06	76.96	83.30%
21	5.59	1.95	7.54	9.58	871.75	2.78E-06	77.22	82.68%
22	5.60	1.95	7.55	10.81	873.30	2.79E-06	77.18	82.97%
23	5.61	1.95	7.56	11.19	871.75	2.78E-06	77.26	83.65%
24	5.61	1.95	7.56	11.94	870.21	2.80E-06	77.67	84.17%
25	5.62	1.95	7.57	13.05	871.75	2.78E-06	78.76	83.69%
26	5.62	1.95	7.57	14.05	873.30	2.78E-06	77.89	83.83%
27	5.62	1.95	7.57	15.16	872.52	2.80E-06	78.29	84.96%
28	5.63	1.95	7.58	15.66	873.30	2.79E-06	78.11	84.63%
29	5.63	1.95	7.58	16.42	871.75	2.78E-06	79.02	84.78%
30	5.64	1.95	7.59	16.55	872.52	2.79E-06	79.01	84.94%
31	5.64	1.95	7.59	16.80	874.07	2.78E-06	79.20	84.38%
32	5.65	1.95	7.60	17.68	873.30	2.79E-06	79.05	84.54%
33	5.65	1.95	7.60	18.43	872.52	2.78E-06	79.20	84.51%
34	5.65	1.95	7.60	19.30	872.52	2.78E-06	78.89	84.93%
35	5.66	1.95	7.61	19.81	871.75	2.79E-06	78.92	85.50%

36	5.66	1.95	7.61	19.69	873.30	2.78E-06	79.03	85.51%
37	5.66	1.95	7.61	19.82	871.75	2.80E-06	79.57	86.36%
38	5.67	1.95	7.62	19.84	871.75	2.79E-06	79.64	85.51%
39	5.67	1.95	7.62	20.22	870.98	2.78E-06	78.69	85.24%
40	5.67	1.95	7.62	21.10	870.98	2.79E-06	79.37	85.73%
41	5.68	1.95	7.63	21.84	870.98	2.79E-06	79.02	85.51%
42	5.68	1.95	7.63	22.72	872.52	2.81E-06	79.02	86.90%
43	5.68	1.95	7.63	23.35	871.75	2.79E-06	78.41	86.10%
44	5.68	1.95	7.63	24.47	866.35	2.77E-06	78.79	85.87%
45	5.68	1.95	7.63	24.72	872.52	2.79E-06	78.60	86.14%
46	5.68	1.95	7.63	25.34	868.66	2.77E-06	79.35	85.52%
47	5.68	1.95	7.63	26.09	869.44	2.80E-06	79.73	85.99%
48	5.68	1.95	7.63	27.34	867.89	2.78E-06	78.97	86.01%
49	5.68	1.95	7.63	28.33	867.89	2.78E-06	79.04	86.09%
50	5.69	1.95	7.64	28.97	867.89	2.76E-06	79.84	85.79%
51	5.69	1.95	7.64	29.60	868.66	2.79E-06	79.04	86.26%
52	5.69	1.95	7.64	29.97	868.66	2.77E-06	78.80	85.49%
53	5.69	1.95	7.64	29.84	867.12	2.76E-06	79.22	85.84%
54	5.69	1.95	7.64	29.98	873.30	2.78E-06	79.06	86.05%
55	5.70	1.95	7.65	30.99	872.52	2.77E-06	78.94	85.50%
56	5.70	1.95	7.65	31.62	870.98	2.76E-06	79.44	84.64%
57	5.70	1.95	7.65	31.76	871.75	2.77E-06	79.08	85.10%
58	5.70	1.95	7.65	32.51	873.30	2.78E-06	79.36	85.26%
59	5.71	1.95	7.66	33.27	871.75	2.76E-06	79.32	85.35%
60	5.71	1.95	7.66	33.77	870.98	2.76E-06	79.84	85.22%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(35%Al+65%Al₂O₃) Sudut 0°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	Ul (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.09	1.9486	6.04	1.08	846.27	2.80E-06	0	0.00%
1	4.80	1.9486	6.74	1.65	857.08	2.78E-06	0.0305	27.04%
2	5.00	1.9486	6.94	2.03	864.03	2.80E-06	0.0510	44.85%
3	5.14	1.9486	7.08	2.08	869.44	2.79E-06	0.0611	53.45%
4	5.24	1.9486	7.19	3.16	870.98	2.81E-06	0.0664	57.98%
5	5.33	1.9486	7.28	4.26	873.30	2.81E-06	0.0703	61.17%
6	5.40	1.9486	7.35	4.78	873.30	2.78E-06	0.0730	63.57%
7	5.46	1.9486	7.41	5.43	877.16	2.83E-06	0.0770	66.79%
8	5.51	1.9486	7.46	5.83	877.16	2.80E-06	0.0789	68.41%
9	5.55	1.9486	7.50	6.35	880.25	2.79E-06	0.0820	70.87%
10	5.59	1.9486	7.54	6.87	881.79	2.79E-06	0.0841	72.55%
11	5.62	1.9486	7.57	8.13	883.33	2.79E-06	0.0857	73.76%
12	5.65	1.9486	7.60	8.41	884.11	2.79E-06	0.0877	75.41%
13	5.67	1.9486	7.62	8.68	885.65	2.79E-06	0.0889	76.31%
14	5.70	1.9486	7.64	9.46	884.88	2.78E-06	0.0900	77.38%
15	5.71	1.9486	7.66	10.10	885.65	2.79E-06	0.0912	78.27%
16	5.73	1.9486	7.68	10.50	884.88	2.79E-06	0.0926	79.61%
17	5.74	1.9486	7.69	10.89	884.88	2.77E-06	0.0931	79.97%
18	5.76	1.9486	7.71	11.79	886.42	2.79E-06	0.0945	81.04%
19	5.77	1.9486	7.72	11.69	886.42	2.81E-06	0.0961	82.44%
20	5.79	1.9486	7.73	12.46	886.42	2.80E-06	0.0958	82.21%
21	5.80	1.9486	7.74	13.49	886.42	2.78E-06	0.0961	82.43%
22	5.80	1.9486	7.75	13.88	886.42	2.79E-06	0.0962	82.54%
23	5.81	1.9486	7.76	14.65	886.42	2.78E-06	0.0966	82.89%
24	5.82	1.9486	7.77	15.04	886.42	2.80E-06	0.0972	83.42%
25	5.83	1.9486	7.77	15.69	886.42	2.78E-06	0.0972	83.41%
26	5.84	1.9486	7.78	16.22	885.65	2.78E-06	0.0979	84.10%
27	5.84	1.9486	7.79	17.36	886.42	2.80E-06	0.0990	84.90%
28	5.84	1.9486	7.79	18.26	886.42	2.79E-06	0.0987	84.65%
29	5.85	1.9486	7.80	18.52	887.19	2.78E-06	0.0990	84.89%
30	5.85	1.9486	7.80	19.18	887.97	2.79E-06	0.0997	85.37%
31	5.86	1.9486	7.81	19.45	887.97	2.78E-06	0.0990	84.81%
32	5.87	1.9486	7.82	20.49	886.42	2.79E-06	0.0999	85.68%
33	5.87	1.9486	7.82	21.51	888.74	2.78E-06	0.1001	85.68%
34	5.87	1.9486	7.82	22.40	887.19	2.78E-06	0.1000	85.75%
35	5.88	1.9486	7.83	22.80	887.19	2.79E-06	0.1006	86.25%
36	5.88	1.9486	7.83	23.59	888.74	2.78E-06	0.1004	85.92%
37	5.89	1.9486	7.84	24.23	886.42	2.80E-06	0.1007	86.37%
38	5.89	1.9486	7.84	25.13	885.65	2.79E-06	0.1006	86.40%
39	5.89	1.9486	7.84	25.79	887.19	2.78E-06	0.1010	86.56%
40	5.90	1.9486	7.85	26.31	887.19	2.79E-06	0.1017	87.20%
41	5.90	1.9486	7.85	27.34	887.97	2.79E-06	0.1013	86.75%

42	5.90	1.9486	7.85	27.61	887.19	2.81E-06	0.1027	88.04%
43	5.91	1.9486	7.85	28.25	887.19	2.79E-06	0.1024	87.80%
44	5.91	1.9486	7.86	28.66	884.88	2.77E-06	0.1015	87.26%
45	5.91	1.9486	7.86	29.80	883.33	2.79E-06	0.1022	87.97%
46	5.91	1.9486	7.86	30.58	881.79	2.77E-06	0.1012	87.28%
47	5.91	1.9486	7.86	31.61	883.33	2.80E-06	0.1022	88.02%
48	5.91	1.9486	7.86	32.25	882.56	2.78E-06	0.1030	88.75%
49	5.91	1.9486	7.86	33.53	884.11	2.78E-06	0.1029	88.52%
50	5.91	1.9486	7.86	34.04	882.56	2.76E-06	0.1021	87.94%
51	5.92	1.9486	7.86	34.18	884.11	2.79E-06	0.1036	89.08%
52	5.92	1.9486	7.87	34.45	884.11	2.77E-06	0.1019	87.67%
53	5.93	1.9486	7.88	35.13	884.88	2.76E-06	0.1010	86.83%
54	5.93	1.9486	7.88	36.15	882.56	2.78E-06	0.1018	87.71%
55	5.93	1.9486	7.88	37.57	882.56	2.77E-06	0.1014	87.35%
56	5.93	1.9486	7.88	38.59	883.33	2.76E-06	0.1013	87.22%
57	5.93	1.9486	7.87	39.22	882.56	2.77E-06	0.1019	87.84%
58	5.93	1.9486	7.88	39.62	880.25	2.78E-06	0.1024	88.47%
59	5.93	1.9486	7.88	39.89	881.02	2.76E-06	0.1016	87.66%
60	5.94	1.9486	7.88	40.55	884.88	2.76E-06	0.1013	87.06%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(35%Al+65%Al₂O₃) Sudut 10°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	U _l (W/m ² K)	Q _{loss} (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Q _n (T-Tangki)	η (%)
0	4.09	1.9486	6.04	0.69	823.88	2.88E-06	0	0.00%
1	4.94	1.9486	6.88	1.90	850.13	2.79E-06	0.0337	30.15%
2	5.11	1.9486	7.06	2.41	856.31	2.80E-06	0.0529	46.96%
3	5.22	1.9486	7.17	2.57	870.98	2.80E-06	0.0624	54.52%
4	5.30	1.9486	7.25	3.07	852.45	2.81E-06	0.0668	59.61%
5	5.37	1.9486	7.32	4.05	864.80	2.81E-06	0.0703	61.81%
6	5.43	1.9486	7.38	5.05	867.12	2.81E-06	0.0728	63.86%
7	5.49	1.9486	7.43	5.20	870.21	2.81E-06	0.0759	66.35%
8	5.53	1.9486	7.48	5.84	869.44	2.79E-06	0.0778	68.02%
9	5.57	1.9486	7.52	6.48	870.21	2.79E-06	0.0797	69.67%
10	5.60	1.9486	7.55	6.63	870.21	2.79E-06	0.0819	71.59%
11	5.63	1.9486	7.57	7.27	872.52	2.82E-06	0.0842	73.39%
12	5.65	1.9486	7.60	7.79	872.52	2.82E-06	0.0863	75.23%
13	5.67	1.9486	7.62	7.94	874.84	2.82E-06	0.0879	76.38%
14	5.69	1.9486	7.64	8.46	873.30	2.79E-06	0.0885	77.10%
15	5.71	1.9486	7.66	8.98	874.07	2.82E-06	0.0901	78.36%
16	5.73	1.9486	7.67	9.24	874.84	2.81E-06	0.0909	79.05%
17	5.74	1.9486	7.69	9.64	874.07	2.81E-06	0.0915	79.59%
18	5.76	1.9486	7.70	10.16	874.07	2.81E-06	0.0929	80.83%
19	5.77	1.9486	7.71	10.67	874.07	2.81E-06	0.0933	81.17%
20	5.78	1.9486	7.73	11.32	879.47	2.80E-06	0.0940	81.27%
21	5.79	1.9486	7.74	12.34	879.47	2.81E-06	0.0950	82.15%
22	5.79	1.9486	7.74	12.73	877.16	2.82E-06	0.0958	83.05%
23	5.80	1.9486	7.75	12.99	879.47	2.82E-06	0.0963	83.30%
24	5.81	1.9486	7.76	13.63	879.47	2.81E-06	0.0961	83.09%
25	5.82	1.9486	7.77	14.02	877.93	2.80E-06	0.0968	83.84%
26	5.82	1.9486	7.77	14.89	877.93	2.82E-06	0.0966	83.69%
27	5.83	1.9486	7.78	15.44	878.70	2.82E-06	0.0972	84.14%
28	5.84	1.9486	7.78	15.70	878.70	2.77E-06	0.0959	83.01%
29	5.84	1.9486	7.79	16.73	880.25	2.79E-06	0.0967	83.51%
30	5.84	1.9486	7.79	17.25	877.93	2.79E-06	0.0970	83.98%
31	5.85	1.9486	7.80	18.01	878.70	2.78E-06	0.0967	83.73%
32	5.86	1.9486	7.81	18.28	878.70	2.78E-06	0.0975	84.34%
33	5.86	1.9486	7.81	19.25	877.93	2.80E-06	0.0977	84.63%
34	5.87	1.9486	7.81	19.37	877.93	2.78E-06	0.0970	84.02%
35	5.87	1.9486	7.82	19.83	877.93	2.80E-06	0.0980	84.85%
36	5.87	1.9486	7.82	20.91	877.93	2.79E-06	0.0977	84.61%
37	5.87	1.9486	7.82	21.87	877.93	2.79E-06	0.0977	84.60%
38	5.88	1.9486	7.83	22.81	883.33	2.80E-06	0.0982	84.57%
39	5.88	1.9486	7.83	23.18	887.19	2.81E-06	0.0996	85.39%
40	5.89	1.9486	7.84	24.49	878.70	2.79E-06	0.0987	85.41%
41	5.89	1.9486	7.84	24.89	879.47	2.80E-06	0.0985	85.19%

42	5.90	1.9486	7.84	25.56	879.47	2.81E-06	0.0992	85.77%
43	5.90	1.9486	7.85	26.56	879.47	2.79E-06	0.0987	85.37%
44	5.90	1.9486	7.85	27.59	877.93	2.79E-06	0.0990	85.72%
45	5.90	1.9486	7.85	28.49	879.47	2.79E-06	0.0992	85.77%
46	5.90	1.9486	7.85	28.63	877.93	2.80E-06	0.0998	86.47%
47	5.91	1.9486	7.86	28.77	880.25	2.79E-06	0.0997	86.15%
48	5.91	1.9486	7.86	29.16	877.93	2.80E-06	0.0998	86.43%
49	5.91	1.9486	7.86	30.06	877.93	2.78E-06	0.0987	85.50%
50	5.91	1.9486	7.86	30.96	877.16	2.80E-06	0.0998	86.54%
51	5.92	1.9486	7.86	31.87	874.84	2.80E-06	0.0995	86.52%
52	5.92	1.9486	7.87	32.78	874.84	2.79E-06	0.0991	86.15%
53	5.92	1.9486	7.87	33.11	878.70	2.79E-06	0.0997	86.27%
54	5.92	1.9486	7.87	33.32	876.38	2.79E-06	0.0998	86.60%
55	5.92	1.9486	7.87	34.10	877.93	2.79E-06	0.0997	86.34%
56	5.93	1.9486	7.87	34.34	877.16	2.81E-06	0.1006	87.20%
57	5.93	1.9486	7.88	35.64	875.61	2.80E-06	0.0999	86.76%
58	5.93	1.9486	7.88	35.78	877.93	2.79E-06	0.0997	86.35%
59	5.94	1.9486	7.89	36.70	878.70	2.81E-06	0.1003	86.77%
60	5.94	1.9486	7.88	37.72	877.16	2.79E-06	0.0993	86.07%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(35%Al+65%Al₂O₃) Sudut 30°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	U _l (W/m ² K)	Q _{loss} (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Q _n (T-Tangki)	η (%)
0	4.15	1.9486	6.10	-0.10	844.73	2.79E-06	0	0.00%
1	4.88	1.9486	6.83	1.33	873.30	2.80E-06	0.0294	25.63%
2	5.02	1.9486	6.97	1.82	880.25	2.81E-06	0.0457	39.50%
3	5.12	1.9486	7.07	1.61	884.11	2.81E-06	0.0530	45.63%
4	5.19	1.9486	7.14	2.44	887.97	2.79E-06	0.0565	48.41%
5	5.25	1.9486	7.20	3.63	889.51	2.80E-06	0.0591	50.52%
6	5.30	1.9486	7.24	4.48	891.83	2.79E-06	0.0618	52.66%
7	5.34	1.9486	7.29	4.98	893.37	2.80E-06	0.0644	54.83%
8	5.38	1.9486	7.33	5.37	894.14	2.78E-06	0.0661	56.20%
9	5.41	1.9486	7.36	5.75	894.92	2.79E-06	0.0677	57.55%
10	5.44	1.9486	7.39	5.89	896.46	2.78E-06	0.0700	59.37%
11	5.46	1.9486	7.41	6.75	896.46	2.79E-06	0.0709	60.11%
12	5.48	1.9486	7.43	7.50	896.46	2.79E-06	0.0725	61.49%
13	5.50	1.9486	7.45	7.76	897.23	2.79E-06	0.0738	62.52%
14	5.52	1.9486	7.47	8.75	898.78	2.77E-06	0.0738	62.44%
15	5.53	1.9486	7.48	9.37	899.55	2.78E-06	0.0754	63.75%
16	5.54	1.9486	7.49	9.88	900.32	2.78E-06	0.0758	64.02%
17	5.56	1.9486	7.51	10.14	900.32	2.80E-06	0.0770	65.07%
18	5.57	1.9486	7.52	10.40	900.32	2.79E-06	0.0773	65.32%
19	5.58	1.9486	7.53	10.66	900.32	2.77E-06	0.0780	65.86%
20	5.59	1.9486	7.54	11.78	901.09	2.79E-06	0.0794	66.98%
21	5.60	1.9486	7.55	12.28	900.32	2.80E-06	0.0802	67.78%
22	5.60	1.9486	7.55	13.27	899.55	2.80E-06	0.0809	68.38%
23	5.61	1.9486	7.56	13.65	901.09	2.79E-06	0.0802	67.68%
24	5.62	1.9486	7.57	13.92	902.64	2.79E-06	0.0802	67.56%
25	5.63	1.9486	7.57	14.55	903.41	2.79E-06	0.0809	68.08%
26	5.63	1.9486	7.58	15.18	901.87	2.79E-06	0.0812	68.43%
27	5.63	1.9486	7.58	15.80	902.64	2.79E-06	0.0817	68.79%
28	5.64	1.9486	7.59	15.81	904.18	2.76E-06	0.0813	68.37%
29	5.65	1.9486	7.60	16.20	901.87	2.78E-06	0.0815	68.73%
30	5.65	1.9486	7.60	17.19	901.87	2.78E-06	0.0823	69.40%
31	5.65	1.9486	7.60	18.07	903.41	2.79E-06	0.0823	69.32%
32	5.66	1.9486	7.61	18.57	903.41	2.78E-06	0.0826	69.55%
33	5.66	1.9486	7.61	19.44	903.41	2.78E-06	0.0824	69.40%
34	5.66	1.9486	7.61	20.07	902.64	2.76E-06	0.0817	68.83%
35	5.67	1.9486	7.61	21.07	902.64	2.77E-06	0.0821	69.19%
36	5.67	1.9486	7.62	21.70	904.18	2.78E-06	0.0828	69.61%
37	5.67	1.9486	7.62	21.58	903.41	2.78E-06	0.0828	69.72%
38	5.68	1.9486	7.63	21.60	902.64	2.78E-06	0.0824	69.43%

39	5.68	1.9486	7.63	22.35	901.87	2.78E-06	0.0825	69.58%
40	5.68	1.9486	7.63	24.10	901.09	2.78E-06	0.0831	70.16%
41	5.68	1.9486	7.63	24.96	902.64	2.79E-06	0.0835	70.37%
42	5.68	1.9486	7.63	25.34	904.18	2.78E-06	0.0841	70.75%
43	5.69	1.9486	7.64	25.97	902.64	2.79E-06	0.0841	70.85%
44	5.69	1.9486	7.64	26.60	903.41	2.80E-06	0.0838	70.51%
45	5.69	1.9486	7.64	27.11	903.41	2.77E-06	0.0832	70.05%
46	5.69	1.9486	7.64	27.98	902.64	2.79E-06	0.0839	70.71%
47	5.69	1.9486	7.64	28.49	905.73	2.78E-06	0.0835	70.12%
48	5.70	1.9486	7.65	28.50	902.64	2.79E-06	0.0840	70.76%
49	5.70	1.9486	7.65	29.02	895.69	2.77E-06	0.0830	70.51%
50	5.71	1.9486	7.65	30.02	894.92	2.77E-06	0.0834	70.89%
51	5.70	1.9486	7.65	31.38	894.14	2.79E-06	0.0843	71.72%
52	5.70	1.9486	7.65	31.75	894.92	2.79E-06	0.0842	71.57%
53	5.71	1.9486	7.66	32.15	894.92	2.79E-06	0.0840	71.39%
54	5.71	1.9486	7.66	32.41	894.92	2.78E-06	0.0837	71.15%
55	5.71	1.9486	7.66	33.05	894.92	2.79E-06	0.0843	71.66%
56	5.72	1.9486	7.67	33.31	894.92	2.79E-06	0.0838	71.17%
57	5.72	1.9486	7.67	33.56	896.46	2.79E-06	0.0845	71.71%
58	5.72	1.9486	7.67	33.96	894.92	2.79E-06	0.0844	71.72%
59	5.72	1.9486	7.67	35.08	895.69	2.78E-06	0.0843	71.54%
60	5.72	1.9486	7.67	36.08	893.37	2.78E-06	0.0841	71.59%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(50%Al+50%Al₂O₃) Sudut 0°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	U _l (W/m ² K)	Q _{loss} (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Q _n (T-Tangki)	η (%)
0	4.22	1.9486	6.17	-0.50	829.28	2.79E-06	0	0.00%
1	4.76	1.9486	6.71	-0.44	837.78	2.78E-06	0.0409	37.17%
2	4.97	1.9486	6.92	-0.56	840.09	2.78E-06	0.0619	56.02%
3	5.11	1.9486	7.06	-0.23	843.95	2.79E-06	0.0708	63.84%
4	5.22	1.9486	7.16	0.70	847.04	2.79E-06	0.0742	66.65%
5	5.30	1.9486	7.25	1.77	847.82	2.79E-06	0.0764	68.57%
6	5.36	1.9486	7.31	2.74	848.59	2.79E-06	0.0794	71.12%
7	5.41	1.9486	7.36	3.35	850.13	2.80E-06	0.0814	72.80%
8	5.46	1.9486	7.41	4.70	852.45	2.80E-06	0.0832	74.26%
9	5.49	1.9486	7.44	5.09	850.90	2.79E-06	0.0851	76.04%
10	5.52	1.9486	7.47	6.08	853.99	2.79E-06	0.0868	77.34%
11	5.55	1.9486	7.50	6.59	853.22	2.79E-06	0.0882	78.60%
12	5.58	1.9486	7.52	6.49	855.54	2.79E-06	0.0888	78.90%
13	5.60	1.9486	7.55	6.76	857.85	2.79E-06	0.0902	79.94%
14	5.62	1.9486	7.57	7.63	857.85	2.79E-06	0.0913	80.92%
15	5.63	1.9486	7.58	8.76	857.85	2.80E-06	0.0930	82.41%
16	5.65	1.9486	7.60	9.64	857.85	2.80E-06	0.0930	82.42%
17	5.66	1.9486	7.61	9.90	857.85	2.78E-06	0.0923	81.83%
18	5.67	1.9486	7.62	9.80	859.40	2.77E-06	0.0921	81.51%
19	5.68	1.9486	7.63	10.18	860.94	2.78E-06	0.0926	81.80%
20	5.69	1.9486	7.64	10.45	864.80	2.79E-06	0.0932	81.97%
21	5.70	1.9486	7.65	10.94	865.57	2.79E-06	0.0928	81.52%
22	5.71	1.9486	7.66	11.34	863.26	2.79E-06	0.0942	83.01%
23	5.72	1.9486	7.66	12.35	862.49	2.80E-06	0.0946	83.44%
24	5.72	1.9486	7.67	13.61	862.49	2.80E-06	0.0947	83.49%
25	5.73	1.9486	7.68	14.47	864.03	2.79E-06	0.0947	83.34%
26	5.73	1.9486	7.68	16.02	864.03	2.80E-06	0.0948	83.45%
27	5.74	1.9486	7.68	16.53	865.57	2.79E-06	0.0952	83.65%
28	5.74	1.9486	7.69	17.52	866.35	2.79E-06	0.0949	83.26%
29	5.75	1.9486	7.69	17.41	865.57	2.79E-06	0.0954	83.78%
30	5.75	1.9486	7.70	18.30	863.26	2.78E-06	0.0945	83.25%
31	5.76	1.9486	7.71	18.69	864.80	2.76E-06	0.0936	82.31%
32	5.76	1.9486	7.71	18.95	866.35	2.78E-06	0.0943	82.75%
33	5.77	1.9486	7.71	19.84	868.66	2.80E-06	0.0950	83.17%
34	5.77	1.9486	7.72	20.73	862.49	2.80E-06	0.0947	83.49%
35	5.77	1.9486	7.72	21.61	862.49	2.80E-06	0.0946	83.44%
36	5.77	1.9486	7.72	22.62	863.26	2.79E-06	0.0946	83.34%
37	5.77	1.9486	7.72	23.12	860.94	2.79E-06	0.0950	83.95%
38	5.78	1.9486	7.73	24.14	864.80	2.80E-06	0.0949	83.49%
39	5.78	1.9486	7.73	24.53	864.03	2.78E-06	0.0949	83.50%
40	5.78	1.9486	7.73	25.67	864.03	2.79E-06	0.0945	83.18%
41	5.78	1.9486	7.73	26.67	859.40	2.78E-06	0.0947	83.76%

42	5.78	1.9486	7.73	27.68	860.94	2.78E-06	0.0942	83.20%
43	5.78	1.9486	7.73	27.93	861.71	2.79E-06	0.0948	83.64%
44	5.79	1.9486	7.73	28.33	859.40	2.79E-06	0.0948	83.87%
45	5.79	1.9486	7.74	28.72	859.40	2.77E-06	0.0940	83.19%
46	5.79	1.9486	7.74	29.23	858.63	2.79E-06	0.0942	83.47%
47	5.80	1.9486	7.74	30.00	861.71	2.78E-06	0.0940	82.97%
48	5.80	1.9486	7.75	30.76	857.08	2.78E-06	0.0937	83.13%
49	5.80	1.9486	7.75	30.89	858.63	2.79E-06	0.0943	83.54%
50	5.80	1.9486	7.75	31.53	858.63	2.81E-06	0.0952	84.29%
51	5.80	1.9486	7.75	31.80	858.63	2.78E-06	0.0948	83.97%
52	5.80	1.9486	7.75	32.43	859.40	2.80E-06	0.0952	84.25%
53	5.81	1.9486	7.76	32.82	857.08	2.79E-06	0.0954	84.66%
54	5.81	1.9486	7.76	33.33	860.17	2.81E-06	0.0953	84.25%
55	5.81	1.9486	7.76	33.97	857.85	2.78E-06	0.0938	83.13%
56	5.81	1.9486	7.76	34.48	859.40	2.81E-06	0.0954	84.42%
57	5.81	1.9486	7.76	34.49	860.94	2.80E-06	0.0957	84.52%
58	5.82	1.9486	7.76	35.39	857.85	2.78E-06	0.0956	84.73%
59	5.82	1.9486	7.77	36.02	858.63	2.77E-06	0.0954	84.53%
60	5.82	1.9486	7.77	36.40	860.94	2.80E-06	0.0968	85.54%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(50%Al+50%Al₂O₃) Sudut 10°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.18	1.9486	6.13	0.60	866.55	2.78E-06	0	0.00%
1	4.64	1.9486	6.59	0.43	874.52	2.78E-06	0.0388	33.74%
2	4.81	1.9486	6.76	0.88	873.99	2.78E-06	0.0598	52.02%
3	4.87	1.9486	6.82	1.55	879.40	2.80E-06	0.0690	59.69%
4	4.98	1.9486	6.92	2.59	880.17	2.80E-06	0.0735	63.54%
5	5.12	1.9486	7.07	3.34	884.03	2.79E-06	0.0763	65.66%
6	5.21	1.9486	7.16	4.08	884.80	2.79E-06	0.0785	67.49%
7	5.27	1.9486	7.22	4.82	885.57	2.80E-06	0.0805	69.13%
8	5.32	1.9486	7.27	5.44	887.12	2.78E-06	0.0823	70.59%
9	5.36	1.9486	7.31	6.18	887.12	2.80E-06	0.0842	72.20%
10	5.39	1.9486	7.34	6.57	888.66	2.78E-06	0.0853	72.99%
11	5.42	1.9486	7.37	6.72	889.43	2.79E-06	0.0868	74.19%
12	5.45	1.9486	7.40	6.98	889.43	2.77E-06	0.0871	74.45%
13	5.47	1.9486	7.42	7.25	890.98	2.80E-06	0.0885	75.54%
14	5.49	1.9486	7.44	7.63	889.43	2.79E-06	0.0894	76.43%
15	5.51	1.9486	7.46	8.50	891.75	2.81E-06	0.0906	77.30%
16	5.52	1.9486	7.47	8.88	890.98	2.79E-06	0.0909	77.57%
17	5.53	1.9486	7.48	8.89	889.43	2.80E-06	0.0927	79.27%
18	5.54	1.9486	7.49	9.14	882.45	2.80E-06	0.0926	79.76%
19	5.55	1.9486	7.50	10.01	887.36	2.79E-06	0.0925	79.31%
20	5.56	1.9486	7.51	10.76	887.36	2.79E-06	0.0930	79.68%
21	5.57	1.9486	7.52	11.87	886.59	2.79E-06	0.0931	79.83%
22	5.58	1.9486	7.53	12.13	888.91	2.81E-06	0.0938	80.29%
23	5.58	1.9486	7.53	12.87	886.83	2.80E-06	0.0939	80.52%
24	5.59	1.9486	7.54	13.00	888.13	2.79E-06	0.0942	80.68%
25	5.60	1.9486	7.54	14.00	888.13	2.79E-06	0.0943	80.76%
26	5.60	1.9486	7.55	14.26	885.29	2.79E-06	0.0949	81.50%
27	5.61	1.9486	7.55	14.88	886.83	2.79E-06	0.0950	81.50%
28	5.61	1.9486	7.56	14.72	887.61	2.78E-06	0.0953	81.64%
29	5.62	1.9486	7.57	15.63	881.15	2.79E-06	0.0953	82.25%
30	5.62	1.9486	7.57	16.55	885.53	2.80E-06	0.0955	81.97%
31	5.62	1.9486	7.57	17.44	884.76	2.77E-06	0.0954	82.03%
32	5.62	1.9486	7.57	17.15	883.99	2.78E-06	0.0960	82.60%
33	5.62	1.9486	7.57	17.80	885.29	2.77E-06	0.0960	82.48%
34	5.63	1.9486	7.58	18.25	888.13	2.78E-06	0.0961	82.28%

35	5.63	1.9486	7.58	18.47	886.83	2.82E-06	0.0977	83.77%
36	5.64	1.9486	7.59	19.17	888.91	2.82E-06	0.0981	83.94%
37	5.64	1.9486	7.59	19.49	888.91	2.78E-06	0.0976	83.50%
38	5.65	1.9486	7.60	20.01	886.06	2.79E-06	0.0976	83.74%
39	5.65	1.9486	7.60	21.17	885.29	2.80E-06	0.0968	83.17%
40	5.65	1.9486	7.60	22.01	886.06	2.80E-06	0.0965	82.82%
41	5.65	1.9486	7.60	22.77	887.61	2.80E-06	0.0965	82.68%
42	5.66	1.9486	7.60	23.89	886.06	2.81E-06	0.0972	83.43%
43	5.66	1.9486	7.61	24.02	886.83	2.80E-06	0.0969	83.08%
44	5.66	1.9486	7.61	25.01	884.76	2.79E-06	0.0972	83.57%
45	5.66	1.9486	7.61	25.27	883.99	2.80E-06	0.0972	83.63%
46	5.66	1.9486	7.61	25.52	883.99	2.80E-06	0.0972	83.65%
47	5.67	1.9486	7.61	25.90	886.06	2.80E-06	0.0961	82.47%
48	5.67	1.9486	7.62	26.66	883.99	2.78E-06	0.0965	83.01%
49	5.67	1.9486	7.62	27.91	885.29	2.80E-06	0.0975	83.73%
50	5.67	1.9486	7.62	28.52	885.29	2.80E-06	0.0974	83.65%
51	5.67	1.9486	7.62	28.77	888.91	2.79E-06	0.0981	83.89%
52	5.67	1.9486	7.62	29.14	888.66	2.78E-06	0.0972	83.14%
53	5.67	1.9486	7.62	30.13	892.28	2.82E-06	0.0978	83.39%
54	5.67	1.9486	7.62	31.13	885.29	2.78E-06	0.0969	83.23%
55	5.67	1.9486	7.62	32.12	886.06	2.79E-06	0.0966	82.94%
56	5.67	1.9486	7.62	32.25	886.06	2.79E-06	0.0975	83.64%
57	5.68	1.9486	7.62	32.64	886.83	2.79E-06	0.0973	83.41%
58	5.68	1.9486	7.63	33.16	888.38	2.79E-06	0.0974	83.39%
59	5.68	1.9486	7.63	33.52	888.13	2.79E-06	0.0968	82.88%
60	5.68	1.9486	7.63	34.03	888.91	2.80E-06	0.0972	83.12%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(50%Al+50%Al₂O₃) Sudut 30°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.15	1.9486	6.10	-0.79	857.04	2.80E-06	0	0.00%
1	4.59	1.9486	6.54	0.21	864.76	2.80E-06	0.0298	26.20%
2	4.71	1.9486	6.66	0.54	854.76	2.80E-06	0.0459	40.81%
3	4.87	1.9486	6.82	0.89	857.08	2.81E-06	0.0525	46.59%
4	4.98	1.9486	6.93	1.47	860.17	2.80E-06	0.0561	49.64%
5	5.06	1.9486	7.00	2.74	860.94	2.79E-06	0.0584	51.61%
6	5.11	1.9486	7.06	3.56	861.71	2.80E-06	0.0613	54.06%
7	5.16	1.9486	7.11	4.40	862.49	2.78E-06	0.0620	54.63%
8	5.20	1.9486	7.15	5.12	864.80	2.79E-06	0.0637	56.04%
9	5.23	1.9486	7.18	5.73	866.35	2.81E-06	0.0666	58.43%
10	5.26	1.9486	7.20	5.86	868.66	2.80E-06	0.0674	58.98%
11	5.28	1.9486	7.23	6.12	862.97	2.78E-06	0.0683	60.17%
12	5.30	1.9486	7.25	6.37	865.10	2.79E-06	0.0686	60.28%
13	5.32	1.9486	7.26	6.50	865.11	2.78E-06	0.0695	61.07%
14	5.33	1.9486	7.28	7.34	865.11	2.80E-06	0.0705	62.00%
15	5.34	1.9486	7.29	7.97	866.73	2.80E-06	0.0720	63.17%
16	5.35	1.9486	7.30	8.34	867.58	2.79E-06	0.0718	62.92%
17	5.36	1.9486	7.31	8.75	867.50	2.79E-06	0.0730	63.98%
18	5.37	1.9486	7.32	9.41	868.27	2.79E-06	0.0735	64.36%
19	5.38	1.9486	7.33	9.39	867.58	2.79E-06	0.0734	64.37%
20	5.38	1.9486	7.33	9.74	867.50	2.79E-06	0.0737	64.57%
21	5.39	1.9486	7.34	9.67	867.58	2.80E-06	0.0741	64.92%
22	5.40	1.9486	7.35	10.60	866.73	2.80E-06	0.0735	64.48%
23	5.40	1.9486	7.35	10.63	867.50	2.79E-06	0.0740	64.85%
24	5.41	1.9486	7.35	10.97	869.12	2.78E-06	0.0747	65.35%
25	5.41	1.9486	7.36	12.18	868.35	2.82E-06	0.0765	67.01%
26	5.42	1.9486	7.37	12.93	868.27	2.81E-06	0.0767	67.16%
27	5.42	1.9486	7.37	12.70	868.35	2.79E-06	0.0764	66.88%
28	5.42	1.9486	7.37	12.95	869.04	2.82E-06	0.0770	67.37%
29	5.43	1.9486	7.38	12.72	868.27	2.79E-06	0.0763	66.80%
30	5.43	1.9486	7.38	13.16	868.35	2.81E-06	0.0772	67.60%
31	5.43	1.9486	7.38	14.28	869.12	2.80E-06	0.0774	67.70%
32	5.44	1.9486	7.39	14.54	869.12	2.80E-06	0.0780	68.22%
33	5.44	1.9486	7.39	15.50	869.12	2.80E-06	0.0772	67.56%
34	5.44	1.9486	7.39	16.10	869.82	2.79E-06	0.0775	67.80%

35	5.45	1.9486	7.40	16.31	869.12	2.80E-06	0.0782	68.39%
36	5.45	1.9486	7.40	16.72	870.67	2.80E-06	0.0784	68.51%
37	5.45	1.9486	7.40	16.85	869.12	2.78E-06	0.0775	67.84%
38	5.45	1.9486	7.40	17.43	869.89	2.82E-06	0.0786	68.70%
39	5.45	1.9486	7.40	17.75	869.12	2.81E-06	0.0778	68.10%
40	5.46	1.9486	7.41	18.24	868.35	2.80E-06	0.0772	67.59%
41	5.46	1.9486	7.41	18.93	869.89	2.81E-06	0.0780	68.16%
42	5.46	1.9486	7.41	19.77	869.82	2.80E-06	0.0779	68.07%
43	5.46	1.9486	7.41	19.89	869.89	2.79E-06	0.0784	68.52%
44	5.46	1.9486	7.41	20.03	869.12	2.79E-06	0.0782	68.42%
45	5.47	1.9486	7.42	20.52	868.35	2.80E-06	0.0783	68.54%
46	5.47	1.9486	7.42	21.05	868.20	2.78E-06	0.0773	67.68%
47	5.47	1.9486	7.42	21.68	870.59	2.79E-06	0.0773	67.49%
48	5.47	1.9486	7.42	22.02	870.51	2.82E-06	0.0781	68.25%
49	5.47	1.9486	7.42	22.81	870.59	2.82E-06	0.0780	68.14%
50	5.47	1.9486	7.42	23.72	869.04	2.79E-06	0.0776	67.94%
51	5.48	1.9486	7.42	23.82	867.27	2.79E-06	0.0777	68.12%
52	5.48	1.9486	7.43	24.19	868.35	2.79E-06	0.0784	68.62%
53	5.48	1.9486	7.43	24.64	869.92	2.79E-06	0.0781	68.28%
54	5.48	1.9486	7.43	25.14	871.47	2.80E-06	0.0776	67.73%
55	5.48	1.9486	7.43	25.50	869.74	2.79E-06	0.0788	68.92%
56	5.48	1.9486	7.43	25.14	869.89	2.79E-06	0.0795	69.49%
57	5.48	1.9486	7.43	25.70	869.04	2.80E-06	0.0788	68.98%
58	5.48	1.9486	7.43	26.09	868.27	2.79E-06	0.0785	68.71%
59	5.49	1.9486	7.44	26.43	867.50	2.78E-06	0.0780	68.39%
60	5.49	1.9486	7.44	27.29	867.50	2.79E-06	0.0780	68.37%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(65%Al+35%Al₂O₃) Sudut 0°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	U _l (W/m ² K)	Q _{loss} (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Q _n (T-Tangki)	η (%)
0	4.18	1.9486	6.13	-0.10	835.46	2.80E-06	0.00	0.00%
1	4.75	1.9486	6.70	-0.87	843.95	2.78E-06	40.25	36.27%
2	4.85	1.9486	6.80	-0.88	850.13	2.80E-06	60.05	53.72%
3	5.06	1.9486	7.01	-0.11	853.99	2.79E-06	68.29	60.81%
4	5.18	1.9486	7.13	0.81	854.76	2.81E-06	73.07	65.01%
5	5.27	1.9486	7.22	1.29	857.08	2.81E-06	75.78	67.23%
6	5.34	1.9486	7.29	1.78	857.85	2.78E-06	77.90	69.06%
7	5.40	1.9486	7.35	2.15	860.94	2.83E-06	80.86	71.43%
8	5.44	1.9486	7.39	2.41	861.71	2.80E-06	82.70	72.99%
9	5.49	1.9486	7.43	2.90	863.26	2.79E-06	83.74	73.77%
10	5.52	1.9486	7.47	3.52	862.49	2.79E-06	86.02	75.85%
11	5.55	1.9486	7.50	4.15	864.03	2.79E-06	87.20	76.75%
12	5.57	1.9486	7.52	5.02	864.80	2.79E-06	88.06	77.44%
13	5.60	1.9486	7.54	5.16	865.57	2.79E-06	89.64	78.75%
14	5.62	1.9486	7.56	5.91	867.12	2.78E-06	89.86	78.81%
15	5.63	1.9486	7.58	6.42	867.89	2.79E-06	91.73	80.38%
16	5.65	1.9486	7.60	6.92	870.21	2.79E-06	92.28	80.64%
17	5.67	1.9486	7.61	7.68	868.66	2.77E-06	92.33	80.82%
18	5.68	1.9486	7.63	8.19	869.44	2.79E-06	93.73	81.98%
19	5.69	1.9486	7.63	8.57	869.44	2.81E-06	94.97	83.07%
20	5.70	1.9486	7.65	8.84	873.30	2.80E-06	95.66	83.30%
21	5.71	1.9486	7.66	9.72	871.75	2.78E-06	94.78	82.68%
22	5.71	1.9486	7.66	10.97	873.30	2.79E-06	95.28	82.97%
23	5.72	1.9486	7.67	11.36	871.75	2.78E-06	95.89	83.65%
24	5.73	1.9486	7.68	12.12	870.21	2.80E-06	96.31	84.17%
25	5.73	1.9486	7.68	13.25	871.75	2.78E-06	95.94	83.69%
26	5.74	1.9486	7.69	14.26	873.30	2.78E-06	96.28	83.83%
27	5.74	1.9486	7.69	15.39	872.52	2.80E-06	97.48	84.96%
28	5.75	1.9486	7.69	15.91	873.30	2.79E-06	97.19	84.63%
29	5.75	1.9486	7.70	16.66	871.75	2.78E-06	97.19	84.78%
30	5.75	1.9486	7.70	16.80	872.52	2.79E-06	97.45	84.94%
31	5.76	1.9486	7.71	17.06	874.07	2.78E-06	96.98	84.38%
32	5.76	1.9486	7.71	17.95	873.30	2.79E-06	97.08	84.54%
33	5.77	1.9486	7.72	18.72	872.52	2.78E-06	96.97	84.51%
34	5.77	1.9486	7.72	19.60	872.52	2.78E-06	97.44	84.93%
35	5.78	1.9486	7.73	20.12	871.75	2.79E-06	98.01	85.50%
36	5.78	1.9486	7.73	20.00	873.30	2.78E-06	98.19	85.51%
37	5.78	1.9486	7.73	20.13	871.75	2.80E-06	99.00	86.36%
38	5.79	1.9486	7.74	20.15	871.75	2.79E-06	98.02	85.51%

39	5.79	1.9486	7.74	20.53	870.98	2.78E-06	97.63	85.24%
40	5.79	1.9486	7.74	21.41	870.98	2.79E-06	98.18	85.73%
41	5.79	1.9486	7.74	22.18	870.98	2.79E-06	97.94	85.51%
42	5.79	1.9486	7.74	23.06	872.52	2.81E-06	99.70	86.90%
43	5.79	1.9486	7.74	23.69	871.75	2.79E-06	98.70	86.10%
44	5.80	1.9486	7.75	24.84	866.35	2.77E-06	97.83	85.87%
45	5.80	1.9486	7.75	25.09	872.52	2.79E-06	98.83	86.14%
46	5.80	1.9486	7.75	25.74	868.66	2.77E-06	97.68	85.52%
47	5.80	1.9486	7.75	26.50	869.44	2.80E-06	98.32	85.99%
48	5.81	1.9486	7.76	27.77	867.89	2.78E-06	98.15	86.01%
49	5.81	1.9486	7.76	28.79	867.89	2.78E-06	98.25	86.09%
50	5.81	1.9486	7.76	29.43	867.89	2.76E-06	97.90	85.79%
51	5.82	1.9486	7.76	30.08	868.66	2.79E-06	98.53	86.26%
52	5.82	1.9486	7.77	30.46	868.66	2.77E-06	97.64	85.49%
53	5.82	1.9486	7.77	30.34	867.12	2.76E-06	97.87	85.84%
54	5.82	1.9486	7.77	30.47	873.30	2.78E-06	98.82	86.05%
55	5.82	1.9486	7.77	31.49	872.52	2.77E-06	98.11	85.50%
56	5.82	1.9486	7.77	32.13	870.98	2.76E-06	96.94	84.64%
57	5.83	1.9486	7.77	32.27	871.75	2.77E-06	97.55	85.10%
58	5.83	1.9486	7.78	33.04	873.30	2.78E-06	97.91	85.26%
59	5.83	1.9486	7.78	33.80	871.75	2.76E-06	97.83	85.35%
60	5.83	1.9486	7.78	34.31	870.98	2.76E-06	97.59	85.22%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(65%Al+35%Al₂O₃) Sudut 10°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.20	1.9486	6.15	-0.60	860.17	2.88E-06	0.00	0.00%
1	4.61	1.9486	6.56	-0.42	870.98	2.79E-06	38.95	34.01%
2	4.92	1.9486	6.87	-0.67	875.61	2.80E-06	58.74	51.02%
3	5.07	1.9486	7.02	-0.57	884.11	2.80E-06	66.63	57.31%
4	5.17	1.9486	7.12	0.23	882.56	2.81E-06	70.62	60.86%
5	5.24	1.9486	7.19	1.40	884.88	2.81E-06	73.54	63.20%
6	5.30	1.9486	7.25	2.48	886.42	2.81E-06	75.86	65.08%
7	5.35	1.9486	7.30	2.73	887.97	2.81E-06	78.40	67.14%
8	5.39	1.9486	7.34	4.06	891.06	2.79E-06	80.24	68.48%
9	5.42	1.9486	7.37	4.44	891.06	2.79E-06	81.80	69.82%
10	5.45	1.9486	7.39	4.81	891.06	2.79E-06	82.88	70.73%
11	5.47	1.9486	7.42	5.43	892.60	2.82E-06	84.83	72.27%
12	5.49	1.9486	7.44	6.54	894.92	2.82E-06	85.94	73.03%
13	5.51	1.9486	7.46	6.92	894.14	2.82E-06	87.11	74.08%
14	5.53	1.9486	7.47	6.93	893.37	2.79E-06	87.13	74.17%
15	5.54	1.9486	7.49	6.95	894.92	2.82E-06	89.67	76.20%
16	5.55	1.9486	7.50	7.33	894.92	2.81E-06	89.04	75.66%
17	5.57	1.9486	7.52	8.32	895.69	2.81E-06	89.97	76.39%
18	5.58	1.9486	7.53	8.70	896.46	2.81E-06	90.62	76.87%
19	5.59	1.9486	7.54	8.95	898.78	2.81E-06	90.25	76.36%
20	5.60	1.9486	7.54	10.07	898.00	2.80E-06	90.83	76.92%
21	5.60	1.9486	7.55	10.45	897.23	2.81E-06	91.95	77.94%
22	5.61	1.9486	7.56	10.83	897.23	2.82E-06	92.60	78.49%
23	5.61	1.9486	7.56	11.82	895.69	2.82E-06	92.97	78.93%
24	5.62	1.9486	7.57	12.81	894.92	2.81E-06	93.47	79.43%
25	5.63	1.9486	7.57	13.69	897.23	2.80E-06	92.99	78.82%
26	5.63	1.9486	7.58	13.95	897.23	2.82E-06	93.54	79.28%
27	5.64	1.9486	7.59	14.82	898.78	2.82E-06	93.34	78.98%
28	5.64	1.9486	7.59	15.32	898.00	2.77E-06	92.74	78.53%
29	5.65	1.9486	7.60	16.20	897.23	2.79E-06	92.90	78.74%
30	5.65	1.9486	7.60	16.83	897.23	2.79E-06	93.56	79.30%
31	5.66	1.9486	7.61	17.08	897.23	2.78E-06	93.10	78.91%
32	5.66	1.9486	7.61	18.33	898.78	2.78E-06	93.89	79.45%
33	5.66	1.9486	7.61	18.83	895.69	2.80E-06	95.44	81.03%
34	5.66	1.9486	7.61	19.57	894.14	2.78E-06	94.32	80.22%

35	5.67	1.9486	7.61	20.82	895.69	2.80E-06	95.43	81.02%
36	5.67	1.9486	7.62	21.32	896.46	2.79E-06	95.24	80.80%
37	5.67	1.9486	7.62	21.70	898.78	2.79E-06	94.58	80.03%
38	5.67	1.9486	7.62	23.07	897.23	2.80E-06	94.38	79.99%
39	5.67	1.9486	7.62	24.07	894.14	2.81E-06	95.27	81.03%
40	5.68	1.9486	7.63	23.96	894.92	2.79E-06	94.57	80.36%
41	5.68	1.9486	7.63	24.58	895.69	2.80E-06	95.79	81.33%
42	5.68	1.9486	7.63	26.07	895.69	2.81E-06	96.26	81.73%
43	5.68	1.9486	7.63	26.71	895.69	2.79E-06	94.94	80.61%
44	5.68	1.9486	7.63	26.95	894.14	2.79E-06	96.17	81.79%
45	5.69	1.9486	7.64	27.84	891.83	2.79E-06	95.60	81.52%
46	5.69	1.9486	7.64	27.60	891.83	2.80E-06	96.25	82.08%
47	5.69	1.9486	7.64	27.60	894.14	2.79E-06	95.97	81.62%
48	5.69	1.9486	7.64	27.98	894.14	2.80E-06	95.49	81.21%
49	5.70	1.9486	7.64	29.11	894.14	2.78E-06	94.18	80.10%
50	5.70	1.9486	7.65	29.75	891.83	2.80E-06	94.91	80.93%
51	5.70	1.9486	7.65	30.76	892.60	2.80E-06	95.48	81.34%
52	5.70	1.9486	7.65	31.25	893.37	2.79E-06	95.86	81.60%
53	5.70	1.9486	7.65	32.01	893.37	2.79E-06	96.23	81.92%
54	5.71	1.9486	7.65	32.39	893.37	2.79E-06	96.33	82.00%
55	5.71	1.9486	7.65	32.64	892.60	2.79E-06	96.04	81.83%
56	5.71	1.9486	7.66	32.65	894.92	2.81E-06	96.73	82.20%
57	5.71	1.9486	7.66	33.15	895.69	2.80E-06	96.22	81.69%
58	5.71	1.9486	7.66	33.91	894.14	2.79E-06	95.94	81.59%
59	5.71	1.9486	7.66	35.03	895.69	2.81E-06	96.30	81.76%
60	5.71	1.9486	7.66	35.17	895.69	2.79E-06	96.12	81.61%

**Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina
(65%Al+35%Al₂O₃) Sudut 30°**

t	Pelat Kolektor Terintegrasi Material Komposit Aluminium-Alumina							
	Ut (W/m ² K)	Ub (W/m ² K)	UI (W/m ² K)	Qloss (W/m ² K)	S (W/m ² K)	V (W/m ² K)	Qn (T-Tangki)	η (%)
0	4.15	1.9486	6.10	-0.10	834.69	2.79E-06	0.00	0.00%
1	4.46	1.9486	6.41	0.29	841.64	2.80E-06	28.10	25.39%
2	4.72	1.9486	6.67	0.89	848.59	2.81E-06	39.33	35.25%
3	4.86	1.9486	6.81	2.21	850.90	2.81E-06	46.53	41.58%
4	4.95	1.9486	6.90	3.25	853.99	2.79E-06	49.22	43.84%
5	5.03	1.9486	6.97	2.81	854.76	2.80E-06	53.13	47.26%
6	5.08	1.9486	7.03	3.59	857.08	2.79E-06	53.59	47.54%
7	5.12	1.9486	7.07	4.27	857.85	2.80E-06	57.29	50.79%
8	5.16	1.9486	7.11	5.60	858.10	2.78E-06	59.30	52.55%
9	5.19	1.9486	7.14	7.20	858.87	2.79E-06	59.98	53.11%
10	5.21	1.9486	7.16	7.30	859.64	2.78E-06	60.56	53.57%
11	5.23	1.9486	7.18	7.72	858.87	2.79E-06	61.31	54.29%
12	5.25	1.9486	7.20	7.97	859.64	2.79E-06	62.08	54.92%
13	5.27	1.9486	7.22	9.28	864.03	2.79E-06	62.83	55.30%
14	5.28	1.9486	7.23	9.65	857.14	2.77E-06	63.99	56.78%
15	5.30	1.9486	7.24	9.79	857.91	2.78E-06	64.45	57.13%
16	5.31	1.9486	7.26	9.69	857.91	2.78E-06	65.72	58.26%
17	5.32	1.9486	7.27	9.46	857.91	2.80E-06	65.98	58.49%
18	5.33	1.9486	7.27	9.83	857.91	2.79E-06	67.52	59.85%
19	5.33	1.9486	7.28	10.67	859.36	2.77E-06	67.94	60.12%
20	5.34	1.9486	7.29	11.04	859.36	2.79E-06	68.49	60.61%
21	5.35	1.9486	7.30	10.81	859.36	2.80E-06	69.75	61.73%
22	5.36	1.9486	7.30	11.65	864.27	2.80E-06	69.62	61.26%
23	5.36	1.9486	7.31	12.13	864.27	2.79E-06	69.92	61.51%
24	5.36	1.9486	7.31	12.73	862.97	2.79E-06	70.92	62.50%
25	5.36	1.9486	7.31	13.69	860.66	2.79E-06	70.68	62.45%
26	5.37	1.9486	7.32	13.70	860.66	2.79E-06	71.07	62.80%
27	5.37	1.9486	7.32	14.06	861.43	2.79E-06	71.07	62.75%
28	5.38	1.9486	7.33	14.19	861.43	2.76E-06	70.34	62.09%
29	5.38	1.9486	7.33	15.28	862.20	2.78E-06	71.10	62.71%
30	5.38	1.9486	7.33	16.35	859.89	2.78E-06	71.04	62.82%
31	5.39	1.9486	7.34	17.08	859.89	2.79E-06	71.63	63.35%
32	5.39	1.9486	7.34	17.09	861.43	2.78E-06	72.22	63.76%
33	5.39	1.9486	7.34	17.69	859.89	2.78E-06	71.84	63.53%
34	5.40	1.9486	7.35	18.53	862.97	2.76E-06	71.87	63.33%

35	5.40	1.9486	7.35	18.82	860.66	2.77E-06	72.51	64.07%
36	5.40	1.9486	7.35	19.50	860.66	2.78E-06	72.25	63.84%
37	5.40	1.9486	7.35	19.86	860.66	2.78E-06	72.65	64.20%
38	5.40	1.9486	7.35	20.22	862.97	2.78E-06	71.94	63.40%
39	5.40	1.9486	7.35	20.11	863.75	2.78E-06	72.58	63.90%
40	5.41	1.9486	7.36	20.95	864.52	2.78E-06	72.56	63.83%
41	5.41	1.9486	7.36	21.44	861.43	2.79E-06	72.90	64.36%
42	5.41	1.9486	7.36	21.92	862.97	2.78E-06	72.56	63.94%
43	5.41	1.9486	7.36	22.50	862.20	2.79E-06	73.04	64.42%
44	5.42	1.9486	7.36	22.51	862.20	2.80E-06	73.10	64.47%
45	5.42	1.9486	7.37	22.77	862.97	2.77E-06	73.05	64.37%
46	5.42	1.9486	7.37	23.62	862.97	2.79E-06	73.19	64.50%
47	5.42	1.9486	7.37	24.22	862.20	2.78E-06	73.32	64.66%
48	5.42	1.9486	7.37	24.59	862.97	2.79E-06	73.57	64.83%
49	5.42	1.9486	7.37	24.71	862.97	2.77E-06	74.01	65.21%
50	5.42	1.9486	7.37	25.08	860.66	2.77E-06	73.47	64.91%
51	5.42	1.9486	7.37	25.56	859.11	2.79E-06	74.07	65.57%
52	5.42	1.9486	7.37	26.64	859.11	2.79E-06	74.26	65.73%
53	5.42	1.9486	7.37	26.75	861.43	2.79E-06	74.54	65.80%
54	5.42	1.9486	7.37	26.99	860.66	2.78E-06	74.05	65.43%
55	5.43	1.9486	7.38	27.48	859.89	2.79E-06	74.32	65.72%
56	5.43	1.9486	7.38	27.72	859.89	2.79E-06	74.23	65.64%
57	5.43	1.9486	7.38	28.82	860.66	2.79E-06	74.14	65.51%
58	5.43	1.9486	7.38	28.97	859.11	2.79E-06	74.69	66.12%
59	5.43	1.9486	7.38	29.58	859.11	2.78E-06	74.21	65.69%
60	5.44	1.9486	7.39	29.44	859.89	2.78E-06	74.12	65.55%

Lampiran 9. Dokumentasi



