

LAMPIRAN

Tabel L.1 Jadwal penelitian

No	Kegiatan	Bulan ke					
		I	II	III	IV	V	VI
1	Penentuan Judul Penelitian						
2	Pengumpulan Referensi Ilmiah						
3	Penyusunan Proposal Penelitian						
4	Pelaksanaan Ujian Seminar Proposal						
5	Penelitian dan Pengolahan Data						
6	Evaluasi dan Analisis Hasil Penelitian						
7	Ujian Seminar Hasil Penelitian						
8	Revisi Dan Penyempurnaan Laporan						
9	Pelaksanaan Ujian Akhir						

Tabel L.2 Sifat fisik zat

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FLUID MECHANICS

TABLE A-9

Properties of air at 1 atm pressure

Temp. $T, ^\circ\text{C}$	Density $\rho, \text{kg/m}^3$	Specific Heat c_p $\text{J/kg} \cdot \text{K}$	Thermal Conductivity $k, \text{W/m} \cdot \text{K}$	Thermal Diffusivity $\alpha, \text{m}^2/\text{s}$	Dynamic Viscosity $\mu, \text{kg/m} \cdot \text{s}$	Kinematic Viscosity $\nu, \text{m}^2/\text{s}$	Prandtl Number Pr
-150	2.866	983	0.01171	4.158×10^{-6}	8.636×10^{-6}	3.013×10^{-6}	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.

Tabel L.3 Pengukuran temperatur dan kecepatan angin dengan menggunakan *anemometer* data logger

No.	Kecepatan angin (m/s)	Temperatur (°C)	Waktu	tanggal
1	10,48	24	1:32:04 PM	14-Aug-25
2	10,47	24	1:32:05 PM	14-Aug-25
3	9,50	24	1:32:06 PM	14-Aug-25
4	9,60	24	1:32:07 PM	14-Aug-25
5	10,35	24	1:32:08 PM	14-Aug-25
6	10,28	24	1:32:09 PM	14-Aug-25
7	10,19	24	1:32:10 PM	14-Aug-25
8	9,83	24	1:32:11 PM	14-Aug-25
9	10,13	24	1:32:12 PM	14-Aug-25
10	10,13	24	1:32:13 PM	14-Aug-25
11	10,10	24	1:32:14 PM	14-Aug-25
12	9,68	24	1:32:15 PM	14-Aug-25
13	9,95	24	1:32:16 PM	14-Aug-25
14	9,91	24	1:32:17 PM	14-Aug-25
15	10,74	24	1:32:18 PM	14-Aug-25
16	10,51	24	1:32:19 PM	14-Aug-25
17	10,47	24	1:32:20 PM	14-Aug-25
18	10,06	24	1:32:21 PM	14-Aug-25
19	9,96	24	1:32:22 PM	14-Aug-25
20	9,79	24	1:32:23 PM	14-Aug-25
21	9,56	24	1:32:24 PM	14-Aug-25
22	9,55	24	1:32:25 PM	14-Aug-25
23	9,98	24	1:32:26 PM	14-Aug-25
24	9,84	24	1:32:27 PM	14-Aug-25
25	9,90	24	1:32:28 PM	14-Aug-25
26	10,41	24	1:32:29 PM	14-Aug-25
27	10,05	24	1:32:30 PM	14-Aug-25
28	10,08	24	1:32:31 PM	14-Aug-25
29	9,76	24	1:32:32 PM	14-Aug-25
30	9,87	24	1:32:33 PM	14-Aug-25
	10,04	24		

Tabel L.4 Data pengukuran beban dan putaran turbin angin Savonius empat sudu tanpa dimple

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg	
No.	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
1	331,60	2025-08-14 13:57:31.713	262,30	2025-08-14 14:05:10.864	222,90	2025-08-14 14:09:23.674	187,90	2025-08-14 14:12:14.164	160,40	2025-08-14 14:14:08.432	129,30	2025-08-14 14:16:09.568
2	331,60	2025-08-14 13:57:32.216	263,60	2025-08-14 14:05:11.368	222,90	2025-08-14 14:09:24.178	187,90	2025-08-14 14:12:14.668	160,40	2025-08-14 14:14:08.936	128,60	2025-08-14 14:16:10.071
3	331,00	2025-08-14 13:57:32.704	263,60	2025-08-14 14:05:11.873	220,90	2025-08-14 14:09:24.666	189,90	2025-08-14 14:12:15.156	160,40	2025-08-14 14:14:09.440	128,60	2025-08-14 14:16:10.560
4	331,00	2025-08-14 13:57:33.205	265,10	2025-08-14 14:05:12.358	220,90	2025-08-14 14:09:25.170	189,90	2025-08-14 14:12:15.659	159,90	2025-08-14 14:14:09.926	127,80	2025-08-14 14:16:11.064
5	330,40	2025-08-14 13:57:33.712	265,10	2025-08-14 14:05:12.879	221,80	2025-08-14 14:09:25.673	192,00	2025-08-14 14:12:16.163	159,90	2025-08-14 14:14:10.432	127,80	2025-08-14 14:16:11.567
6	330,40	2025-08-14 13:57:34.214	266,80	2025-08-14 14:05:13.367	221,80	2025-08-14 14:09:26.178	192,00	2025-08-14 14:12:16.666	159,90	2025-08-14 14:14:10.936	127,80	2025-08-14 14:16:12.070
7	329,10	2025-08-14 13:57:34.704	266,80	2025-08-14 14:05:13.871	221,80	2025-08-14 14:09:26.664	193,70	2025-08-14 14:12:17.153	160,30	2025-08-14 14:14:11.440	127,80	2025-08-14 14:16:12.574
8	329,10	2025-08-14 13:57:35.208	268,00	2025-08-14 14:05:14.359	226,60	2025-08-14 14:09:27.169	193,70	2025-08-14 14:12:17.655	160,30	2025-08-14 14:14:11.926	127,80	2025-08-14 14:16:13.063
9	327,20	2025-08-14 13:57:35.711	268,00	2025-08-14 14:05:14.862	226,60	2025-08-14 14:09:27.673	194,80	2025-08-14 14:12:18.161	162,10	2025-08-14 14:14:12.430	127,80	2025-08-14 14:16:13.567
10	327,20	2025-08-14 13:57:36.216	268,30	2025-08-14 14:05:15.366	231,50	2025-08-14 14:09:28.177	194,80	2025-08-14 14:12:18.666	162,10	2025-08-14 14:14:12.934	127,80	2025-08-14 14:16:14.070
11	327,20	2025-08-14 13:57:36.702	268,30	2025-08-14 14:05:15.869	231,50	2025-08-14 14:09:28.664	194,80	2025-08-14 14:12:19.153	162,10	2025-08-14 14:14:13.438	127,80	2025-08-14 14:16:14.574
12	327,40	2025-08-14 13:57:37.207	267,10	2025-08-14 14:05:16.358	233,80	2025-08-14 14:09:29.168	194,60	2025-08-14 14:12:19.657	163,60	2025-08-14 14:14:13.942	127,80	2025-08-14 14:16:15.061
13	327,40	2025-08-14 13:57:37.711	267,10	2025-08-14 14:05:16.861	233,80	2025-08-14 14:09:29.671	194,60	2025-08-14 14:12:20.162	163,60	2025-08-14 14:14:14.429	127,80	2025-08-14 14:16:15.565
14	329,00	2025-08-14 13:57:38.215	267,10	2025-08-14 14:05:17.366	233,80	2025-08-14 14:09:30.174	193,70	2025-08-14 14:12:20.666	164,70	2025-08-14 14:14:14.934	127,80	2025-08-14 14:16:16.069
15	329,00	2025-08-14 13:57:38.718	264,60	2025-08-14 14:05:17.870	232,20	2025-08-14 14:09:30.663	193,70	2025-08-14 14:12:21.169	164,70	2025-08-14 14:14:15.437	128,90	2025-08-14 14:16:16.573
16	328,70	2025-08-14 13:57:39.221	264,60	2025-08-14 14:05:18.356	232,20	2025-08-14 14:09:31.164	191,60	2025-08-14 14:12:21.658	164,70	2025-08-14 14:14:15.941	128,90	2025-08-14 14:16:17.060
17	328,70	2025-08-14 13:57:39.705	264,70	2025-08-14 14:05:18.861	228,50	2025-08-14 14:09:31.669	191,60	2025-08-14 14:12:22.159	165,70	2025-08-14 14:14:16.429	130,60	2025-08-14 14:16:17.564
18	327,90	2025-08-14 13:57:40.213	264,70	2025-08-14 14:05:19.365	228,50	2025-08-14 14:09:32.174	189,00	2025-08-14 14:12:22.664	165,70	2025-08-14 14:14:16.932	130,60	2025-08-14 14:16:18.068
19	327,90	2025-08-14 13:57:40.717	266,30	2025-08-14 14:05:19.869	228,50	2025-08-14 14:09:32.678	189,00	2025-08-14 14:12:23.167	167,60	2025-08-14 14:14:17.436	132,30	2025-08-14 14:16:18.573
20	328,60	2025-08-14 13:57:41.205	266,30	2025-08-14 14:05:20.372	225,00	2025-08-14 14:09:33.165	189,00	2025-08-14 14:12:23.652	167,60	2025-08-14 14:14:17.938	132,30	2025-08-14 14:16:19.059
21	328,60	2025-08-14 13:57:41.708	265,70	2025-08-14 14:05:20.858	225,00	2025-08-14 14:09:33.669	188,10	2025-08-14 14:12:24.157	167,60	2025-08-14 14:14:18.423	132,30	2025-08-14 14:16:19.563
22	328,60	2025-08-14 13:57:42.211	265,70	2025-08-14 14:05:21.362	221,70	2025-08-14 14:09:34.174	188,10	2025-08-14 14:12:24.658	169,30	2025-08-14 14:14:18.929	134,10	2025-08-14 14:16:20.067
23	330,80	2025-08-14 13:57:42.730	265,60	2025-08-14 14:05:21.867	221,70	2025-08-14 14:09:34.676	190,00	2025-08-14 14:12:25.163	169,30	2025-08-14 14:14:19.432	134,10	2025-08-14 14:16:20.571
24	330,80	2025-08-14 13:57:43.203	265,60	2025-08-14 14:05:22.371	219,70	2025-08-14 14:09:35.164	190,00	2025-08-14 14:12:25.649	168,30	2025-08-14 14:14:19.939	134,70	2025-08-14 14:16:21.075
25	332,40	2025-08-14 13:57:43.706	266,20	2025-08-14 14:05:22.875	219,70	2025-08-14 14:09:35.667	191,70	2025-08-14 14:12:26.153	168,30	2025-08-14 14:14:20.443	134,70	2025-08-14 14:16:21.562
26	332,40	2025-08-14 13:57:44.210	266,20	2025-08-14 14:05:23.362	219,70	2025-08-14 14:09:36.172	191,70	2025-08-14 14:12:26.656	168,30	2025-08-14 14:14:20.930	134,70	2025-08-14 14:16:22.065
27	332,60	2025-08-14 13:57:44.730	264,40	2025-08-14 14:05:23.866	220,20	2025-08-14 14:09:36.677	192,60	2025-08-14 14:12:27.161	164,70	2025-08-14 14:14:21.433	132,40	2025-08-14 14:16:22.570
28	332,60	2025-08-14 13:57:45.218	264,40	2025-08-14 14:05:24.370	220,20	2025-08-14 14:09:37.164	192,60	2025-08-14 14:12:27.653	164,70	2025-08-14 14:14:21.938	132,40	2025-08-14 14:16:23.074
29	332,50	2025-08-14 13:57:45.705	263,10	2025-08-14 14:05:24.858	222,40	2025-08-14 14:09:37.681	193,00	2025-08-14 14:12:28.156	160,00	2025-08-14 14:14:22.441	129,70	2025-08-14 14:16:23.562
30	332,50	2025-08-14 13:57:46.210	263,10	2025-08-14 14:05:25.362	222,40	2025-08-14 14:09:38.170	193,00	2025-08-14 14:12:28.680	160,00	2025-08-14 14:14:22.929	129,70	2025-08-14 14:16:24.066

3 kg		3.5 kg		4 kg		4,5 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
95,30	2025-08-14 14:18:16.275	69,56	2025-08-14 14:19:56.251	35,78	2025-08-14 14:21:25.515	0	2025-08-14 14:22:52.936
94,90	2025-08-14 14:18:16.779	69,56	2025-08-14 14:19:56.755	37,74	2025-08-14 14:21:26.003	0	2025-08-14 14:22:53.440
94,90	2025-08-14 14:18:17.283	73,39	2025-08-14 14:19:57.260	37,74	2025-08-14 14:21:26.507	0	2025-08-14 14:22:53.945
94,50	2025-08-14 14:18:17.786	73,39	2025-08-14 14:19:57.747	37,74	2025-08-14 14:21:27.008	0	2025-08-14 14:22:54.434
94,50	2025-08-14 14:18:18.275	73,39	2025-08-14 14:19:58.250	39,59	2025-08-14 14:21:27.514	0	2025-08-14 14:22:54.940
95,90	2025-08-14 14:18:18.778	73,64	2025-08-14 14:19:58.754	39,59	2025-08-14 14:21:28.018	0	2025-08-14 14:22:55.443
95,90	2025-08-14 14:18:19.281	73,64	2025-08-14 14:19:59.257	39,59	2025-08-14 14:21:28.505	0	2025-08-14 14:22:55.948
99,10	2025-08-14 14:18:19.785	73,64	2025-08-14 14:19:59.762	39,58	2025-08-14 14:21:29.024	0	2025-08-14 14:22:56.449
99,10	2025-08-14 14:18:20.274	67,85	2025-08-14 14:20:00.249	39,58	2025-08-14 14:21:29.512	0	2025-08-14 14:22:56.936
100,90	2025-08-14 14:18:20.777	67,85	2025-08-14 14:20:00.753	39,58	2025-08-14 14:21:30.017	0	2025-08-14 14:22:57.438
100,90	2025-08-14 14:18:21.280	67,85	2025-08-14 14:20:01.256	37,68	2025-08-14 14:21:30.504	0	2025-08-14 14:22:57.942
100,30	2025-08-14 14:18:21.783	63,62	2025-08-14 14:20:01.761	37,68	2025-08-14 14:21:31.005	0	2025-08-14 14:22:58.446
100,30	2025-08-14 14:18:22.286	63,62	2025-08-14 14:20:02.248	37,68	2025-08-14 14:21:31.512	0	2025-08-14 14:22:58.935
100,30	2025-08-14 14:18:22.776	63,62	2025-08-14 14:20:02.752	36,73	2025-08-14 14:21:32.015	0	2025-08-14 14:22:59.439
98,80	2025-08-14 14:18:23.280	63,62	2025-08-14 14:20:03.255	36,73	2025-08-14 14:21:32.503	0	2025-08-14 14:22:59.943
98,80	2025-08-14 14:18:23.783	62,72	2025-08-14 14:20:03.760	36,73	2025-08-14 14:21:33.007	0	2025-08-14 14:23:00.445
97,30	2025-08-14 14:18:24.287	62,72	2025-08-14 14:20:04.247	36,29	2025-08-14 14:21:33.511	0	2025-08-14 14:23:00.937
97,30	2025-08-14 14:18:24.774	62,72	2025-08-14 14:20:04.751	36,29	2025-08-14 14:21:34.013	0	2025-08-14 14:23:01.438
94,90	2025-08-14 14:18:25.279	60,26	2025-08-14 14:20:05.254	36,29	2025-08-14 14:21:34.501	0	2025-08-14 14:23:01.942
94,90	2025-08-14 14:18:25.781	60,26	2025-08-14 14:20:05.758	36,38	2025-08-14 14:21:35.006	0	2025-08-14 14:23:02.447
90,60	2025-08-14 14:18:26.285	60,26	2025-08-14 14:20:06.246	36,38	2025-08-14 14:21:35.509	0	2025-08-14 14:23:02.952
90,60	2025-08-14 14:18:26.774	60,26	2025-08-14 14:20:06.749	38,42	2025-08-14 14:21:36.028	0	2025-08-14 14:23:03.435
90,60	2025-08-14 14:18:27.278	60,80	2025-08-14 14:20:07.254	38,42	2025-08-14 14:21:36.517	0	2025-08-14 14:23:03.940
85,70	2025-08-14 14:18:27.780	60,80	2025-08-14 14:20:07.774	38,42	2025-08-14 14:21:37.005	0	2025-08-14 14:23:04.447
85,70	2025-08-14 14:18:28.285	60,80	2025-08-14 14:20:08.261	39,25	2025-08-14 14:21:37.507	0	2025-08-14 14:23:04.950
81,76	2025-08-14 14:18:28.773	65,22	2025-08-14 14:20:08.749	39,25	2025-08-14 14:21:38.012	0	2025-08-14 14:23:05.438
81,76	2025-08-14 14:18:29.275	65,22	2025-08-14 14:20:09.253	39,25	2025-08-14 14:21:38.516	0	2025-08-14 14:23:05.942
81,76	2025-08-14 14:18:29.780	65,22	2025-08-14 14:20:09.755	37,22	2025-08-14 14:21:39.004	0	2025-08-14 14:23:06.446
80,59	2025-08-14 14:18:30.283	72,96	2025-08-14 14:20:10.260	37,22	2025-08-14 14:21:39.507	0	2025-08-14 14:23:06.948
80,59	2025-08-14 14:18:30.788	72,96	2025-08-14 14:20:10.747	37,22	2025-08-14 14:21:40.011	0	2025-08-14 14:23:07.437

Tabel L.5 Data pengukuran beban dan putaran turbin angin Savonius empat sudu, diameter 5 mm

Tanpa beban			0.5 kg			1 kg			1.5 kg			2 kg			2.5 kg			3 kg		
No	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
1	344,20	2025-07-31 11:58:26.928	319,20	2025-07-31 13:08:28.899	295,80	2025-07-31 13:12:30.427	260,10	2025-07-31 13:13:53.298	236,60	2025-07-31 13:16:52.864	202,70	2025-07-31 13:18:21.292	187,00	2025-07-31 13:19:57.118						
2	345,40	2025-07-31 11:58:27.416	319,20	2025-07-31 13:08:29.372	290,20	2025-07-31 13:12:30.932	260,10	2025-07-31 13:13:53.786	243,50	2025-07-31 13:16:53.430	202,70	2025-07-31 13:18:21.794	187,00	2025-07-31 13:19:57.621						
3	345,40	2025-07-31 11:58:27.919	319,20	2025-07-31 13:08:29.877	290,20	2025-07-31 13:12:31.418	261,70	2025-07-31 13:13:54.274	243,50	2025-07-31 13:16:53.871	203,30	2025-07-31 13:18:22.282	186,40	2025-07-31 13:19:58.141						
4	346,30	2025-07-31 11:58:28.425	317,20	2025-07-31 13:08:30.381	287,90	2025-07-31 13:12:31.924	261,70	2025-07-31 13:13:54.781	243,80	2025-07-31 13:16:54.374	203,30	2025-07-31 13:18:22.783	186,40	2025-07-31 13:19:58.646						
5	346,30	2025-07-31 11:58:28.927	317,20	2025-07-31 13:08:30.885	287,90	2025-07-31 13:12:32.441	264,20	2025-07-31 13:13:55.284	243,80	2025-07-31 13:16:54.876	202,30	2025-07-31 13:18:23.288	183,10	2025-07-31 13:19:59.133						
6	347,80	2025-07-31 11:58:29.414	316,90	2025-07-31 13:08:31.374	288,00	2025-07-31 13:12:32.931	264,20	2025-07-31 13:13:55.802	238,00	2025-07-31 13:16:55.364	202,30	2025-07-31 13:18:23.791	183,10	2025-07-31 13:19:59.639						
7	347,80	2025-07-31 11:58:29.918	316,90	2025-07-31 13:08:31.923	288,00	2025-07-31 13:12:33.432	264,20	2025-07-31 13:13:56.276	238,00	2025-07-31 13:16:55.870	202,30	2025-07-31 13:18:24.282	183,10	2025-07-31 13:20:00.123						
8	349,60	2025-07-31 11:58:30.438	317,20	2025-07-31 13:08:32.379	288,20	2025-07-31 13:12:33.920	265,40	2025-07-31 13:13:56.777	238,20	2025-07-31 13:16:56.374	203,20	2025-07-31 13:18:24.801	183,00	2025-07-31 13:20:00.610						
9	349,60	2025-07-31 11:58:30.927	317,20	2025-07-31 13:08:32.886	288,20	2025-07-31 13:12:34.425	265,40	2025-07-31 13:13:57.278	238,20	2025-07-31 13:16:56.878	203,20	2025-07-31 13:18:25.286	183,00	2025-07-31 13:20:01.117						
10	349,60	2025-07-31 11:58:31.413	316,60	2025-07-31 13:08:33.389	287,90	2025-07-31 13:12:34.931	264,30	2025-07-31 13:13:57.802	240,80	2025-07-31 13:16:57.364	207,80	2025-07-31 13:18:25.788	185,10	2025-07-31 13:20:01.622						
11	349,60	2025-07-31 11:58:31.917	316,60	2025-07-31 13:08:33.875	287,90	2025-07-31 13:12:35.434	264,30	2025-07-31 13:13:58.292	240,80	2025-07-31 13:16:57.868	207,80	2025-07-31 13:18:26.278	185,10	2025-07-31 13:20:02.126						
12	347,50	2025-07-31 11:58:32.437	316,60	2025-07-31 13:08:34.379	287,60	2025-07-31 13:12:35.920	261,80	2025-07-31 13:13:58.778	238,80	2025-07-31 13:16:58.370	212,30	2025-07-31 13:18:26.781	185,70	2025-07-31 13:20:02.628						
13	347,50	2025-07-31 11:58:32.924	315,40	2025-07-31 13:08:34.882	287,60	2025-07-31 13:12:36.422	261,80	2025-07-31 13:13:59.282	238,80	2025-07-31 13:16:58.873	212,30	2025-07-31 13:18:27.288	185,70	2025-07-31 13:20:03.117						
14	343,80	2025-07-31 11:58:33.430	315,40	2025-07-31 13:08:35.385	287,30	2025-07-31 13:12:36.925	261,40	2025-07-31 13:13:59.785	235,50	2025-07-31 13:16:59.363	212,30	2025-07-31 13:18:27.792	185,70	2025-07-31 13:20:03.618						
15	343,80	2025-07-31 11:58:33.918	315,20	2025-07-31 13:08:35.873	287,30	2025-07-31 13:12:37.430	261,40	2025-07-31 13:14:00.286	235,50	2025-07-31 13:16:59.867	214,20	2025-07-31 13:18:28.277	186,40	2025-07-31 13:20:04.121						
16	342,00	2025-07-31 11:58:34.434	315,20	2025-07-31 13:08:36.379	287,50	2025-07-31 13:12:37.919	263,80	2025-07-31 13:14:00.774	234,90	2025-07-31 13:17:00.370	214,20	2025-07-31 13:18:28.784	186,40	2025-07-31 13:20:04.645						
17	342,00	2025-07-31 11:58:34.923	317,40	2025-07-31 13:08:36.879	287,50	2025-07-31 13:12:38.422	263,80	2025-07-31 13:14:01.294	234,90	2025-07-31 13:17:00.874	213,00	2025-07-31 13:18:29.284	187,70	2025-07-31 13:20:05.116						
18	342,90	2025-07-31 11:58:35.446	317,40	2025-07-31 13:08:37.386	290,00	2025-07-31 13:12:38.927	263,80	2025-07-31 13:14:01.784	236,10	2025-07-31 13:17:01.378	213,00	2025-07-31 13:18:29.787	187,70	2025-07-31 13:20:05.619						
19	342,90	2025-07-31 11:58:35.912	318,30	2025-07-31 13:08:37.873	290,00	2025-07-31 13:12:39.429	266,70	2025-07-31 13:14:02.286	236,10	2025-07-31 13:17:01.863	214,00	2025-07-31 13:18:30.291	186,70	2025-07-31 13:20:06.124						
20	345,10	2025-07-31 11:58:36.418	318,30	2025-07-31 13:08:38.374	290,00	2025-07-31 13:12:39.933	266,70	2025-07-31 13:14:02.773	236,80	2025-07-31 13:17:02.369	214,00	2025-07-31 13:18:30.797	186,70	2025-07-31 13:20:06.625						
21	345,10	2025-07-31 11:58:36.922	316,70	2025-07-31 13:08:38.879	289,90	2025-07-31 13:12:40.420	271,70	2025-07-31 13:14:03.278	236,80	2025-07-31 13:17:02.874	214,00	2025-07-31 13:18:31.284	185,10	2025-07-31 13:20:07.114						
22	346,80	2025-07-31 11:58:37.425	316,70	2025-07-31 13:08:39.385	289,90	2025-07-31 13:12:40.923	271,70	2025-07-31 13:14:03.781	236,80	2025-07-31 13:17:03.377	215,70	2025-07-31 13:18:31.788	185,10	2025-07-31 13:20:07.614						
23	346,80	2025-07-31 11:58:37.912	316,70	2025-07-31 13:08:39.905	292,90	2025-07-31 13:12:41.429	275,70	2025-07-31 13:14:04.333	235,20	2025-07-31 13:17:03.865	215,70	2025-07-31 13:18:32.292	185,10	2025-07-31 13:20:08.123						
24	344,00	2025-07-31 11:58:38.420	315,40	2025-07-31 13:08:40.375	292,90	2025-07-31 13:12:41.933	275,70	2025-07-31 13:14:04.839	235,20	2025-07-31 13:17:04.369	218,20	2025-07-31 13:18:32.779	183,40	2025-07-31 13:20:08.624						
25	344,00	2025-07-31 11:58:38.919	315,40	2025-07-31 13:08:40.881	297,60	2025-07-31 13:12:42.421	273,80	2025-07-31 13:14:05.279	234,50	2025-07-31 13:17:04.872	218,20	2025-07-31 13:18:33.281	183,40	2025-07-31 13:20:09.129						
26	344,00	2025-07-31 11:58:39.423	315,80	2025-07-31 13:08:41.383	297,60	2025-07-31 13:12:42.923	273,80	2025-07-31 13:14:05.783	234,50	2025-07-31 13:17:05.389	226,10	2025-07-31 13:18:33.787	181,90	2025-07-31 13:20:09.615						
27	341,90	2025-07-31 11:58:39.929	315,80	2025-07-31 13:08:41.884	299,30	2025-07-31 13:12:43.428	270,80	2025-07-31 13:14:06.286	233,30	2025-07-31 13:17:05.862	226,10	2025-07-31 13:18:34.292	181,90	2025-07-31 13:20:10.120						
28	341,90	2025-07-31 11:58:40.417	318,10	2025-07-31 13:08:42.373	299,30	2025-07-31 13:12:43.928	270,80	2025-07-31 13:14:06.804	233,30	2025-07-31 13:17:06.367	232,60	2025-07-31 13:18:34.779	182,70	2025-07-31 13:20:10.638						
29	344,30	2025-07-31 11:58:40.919	318,10	2025-07-31 13:08:42.878	300,80	2025-07-31 13:12:44.418	269,90	2025-07-31 13:14:07.291	231,10	2025-07-31 13:17:06.869	232,60	2025-07-31 13:18:35.280	182,70	2025-07-31 13:20:11.128						
30	344,30	2025-07-31 11:58:41.425	319,80	2025-07-31 13:08:43.383	300,80	2025-07-31 13:12:44.923	269,90	2025-07-31 13:14:07.777	231,10	2025-07-31 13:17:07.378	235,30	2025-07-31 13:18:35.787	182,70	2025-07-31 13:20:11.614						

3,5 kg		4 kg		4,5 kg		5 kg		5,5 kg		6 kg		6,5 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
161,20	2025-07-31 13:21:27.261	119,10	2025-07-31 13:23:33.941	98,20	2025-07-31 13:24:49.602	76,80	2025-07-31 13:30:11.463	53,44	2025-07-31 13:34:33.375	22,90	2025-07-31 13:37:08.928	0	2025-07-31 13:34:33.375
161,30	2025-07-31 13:21:27.747	121,80	2025-07-31 13:23:34.446	100,20	2025-07-31 13:24:50.107	83,10	2025-07-31 13:30:11.968	45,53	2025-07-31 13:34:33.879	25,34	2025-07-31 13:37:09.418	0	2025-07-31 13:34:33.879
161,30	2025-07-31 13:21:28.251	121,80	2025-07-31 13:23:34.953	100,20	2025-07-31 13:24:50.595	83,10	2025-07-31 13:30:12.487	45,53	2025-07-31 13:34:34.365	25,34	2025-07-31 13:37:09.920	0	2025-07-31 13:34:34.365
161,30	2025-07-31 13:21:28.755	125,00	2025-07-31 13:23:35.451	103,80	2025-07-31 13:24:51.099	83,10	2025-07-31 13:30:12.959	44,57	2025-07-31 13:34:34.866	23,80	2025-07-31 13:37:10.420	0	2025-07-31 13:34:34.866
162,70	2025-07-31 13:21:29.261	125,00	2025-07-31 13:23:35.940	103,80	2025-07-31 13:24:51.604	90,30	2025-07-31 13:30:13.480	44,57	2025-07-31 13:34:35.385	23,80	2025-07-31 13:37:10.925	0	2025-07-31 13:34:35.385
162,70	2025-07-31 13:21:29.747	131,30	2025-07-31 13:23:36.447	103,80	2025-07-31 13:24:52.108	90,30	2025-07-31 13:30:13.970	44,57	2025-07-31 13:34:35.876	23,80	2025-07-31 13:37:11.416	0	2025-07-31 13:34:35.876
166,50	2025-07-31 13:21:30.251	131,30	2025-07-31 13:23:36.948	108,50	2025-07-31 13:24:52.611	90,30	2025-07-31 13:30:14.486	45,59	2025-07-31 13:34:36.364	21,18	2025-07-31 13:37:11.919	0	2025-07-31 13:34:36.364
166,50	2025-07-31 13:21:30.754	131,30	2025-07-31 13:23:37.451	108,50	2025-07-31 13:24:53.099	95,40	2025-07-31 13:30:14.958	45,59	2025-07-31 13:34:36.867	21,18	2025-07-31 13:37:12.423	0	2025-07-31 13:34:36.867
164,40	2025-07-31 13:21:31.258	134,50	2025-07-31 13:23:37.942	109,80	2025-07-31 13:24:53.601	95,40	2025-07-31 13:30:15.461	45,59	2025-07-31 13:34:37.371	19,58	2025-07-31 13:37:12.975	0	2025-07-31 13:34:37.371
164,40	2025-07-31 13:21:31.761	134,50	2025-07-31 13:23:38.446	109,80	2025-07-31 13:24:54.105	96,50	2025-07-31 13:30:15.967	44,94	2025-07-31 13:34:37.876	19,58	2025-07-31 13:37:13.410	0	2025-07-31 13:34:37.876
164,40	2025-07-31 13:21:32.252	129,70	2025-07-31 13:23:38.947	108,90	2025-07-31 13:24:54.611	96,50	2025-07-31 13:30:16.469	44,94	2025-07-31 13:34:38.361	19,58	2025-07-31 13:37:13.915	0	2025-07-31 13:34:38.361
156,90	2025-07-31 13:21:32.751	129,70	2025-07-31 13:23:39.449	108,90	2025-07-31 13:24:55.096	96,50	2025-07-31 13:30:16.954	46,29	2025-07-31 13:34:38.879	17,44	2025-07-31 13:37:14.421	0	2025-07-31 13:34:38.879
156,90	2025-07-31 13:21:33.258	127,50	2025-07-31 13:23:39.953	106,60	2025-07-31 13:24:55.601	89,40	2025-07-31 13:30:17.459	46,29	2025-07-31 13:34:39.370	17,44	2025-07-31 13:37:14.921	0	2025-07-31 13:34:39.370
152,90	2025-07-31 13:21:33.761	127,50	2025-07-31 13:23:40.442	106,60	2025-07-31 13:24:56.105	89,40	2025-07-31 13:30:17.964	46,29	2025-07-31 13:34:39.872	20,01	2025-07-31 13:37:15.431	0	2025-07-31 13:34:39.872
152,90	2025-07-31 13:21:34.248	127,50	2025-07-31 13:23:40.950	103,00	2025-07-31 13:24:56.609	79,70	2025-07-31 13:30:18.468	52,50	2025-07-31 13:34:40.378	20,01	2025-07-31 13:37:15.916	0	2025-07-31 13:34:40.378
153,50	2025-07-31 13:21:34.751	131,00	2025-07-31 13:23:41.450	103,00	2025-07-31 13:24:57.110	79,70	2025-07-31 13:30:18.955	52,50	2025-07-31 13:34:40.866	20,01	2025-07-31 13:37:16.422	0	2025-07-31 13:34:40.866
153,50	2025-07-31 13:21:35.259	131,00	2025-07-31 13:23:41.970	103,00	2025-07-31 13:24:57.600	69,40	2025-07-31 13:30:19.460	57,24	2025-07-31 13:34:41.368	20,01	2025-07-31 13:37:16.922	0	2025-07-31 13:34:41.368
155,50	2025-07-31 13:21:35.759	136,30	2025-07-31 13:23:42.455	103,00	2025-07-31 13:24:58.104	69,40	2025-07-31 13:30:19.963	57,24	2025-07-31 13:34:41.887	29,27	2025-07-31 13:37:17.424	0	2025-07-31 13:34:41.887
155,50	2025-07-31 13:21:36.249	136,30	2025-07-31 13:23:42.945	105,70	2025-07-31 13:24:58.622	69,40	2025-07-31 13:30:20.468	58,24	2025-07-31 13:34:42.372	29,27	2025-07-31 13:37:17.913	0	2025-07-31 13:34:42.372
157,30	2025-07-31 13:21:36.768	141,30	2025-07-31 13:23:43.463	105,70	2025-07-31 13:24:59.096	62,10	2025-07-31 13:30:20.971	58,24	2025-07-31 13:34:42.892	29,27	2025-07-31 13:37:18.417	0	2025-07-31 13:34:42.892
157,30	2025-07-31 13:21:37.254	141,30	2025-07-31 13:23:43.952	106,80	2025-07-31 13:24:59.598	62,10	2025-07-31 13:30:21.458	58,24	2025-07-31 13:34:43.363	35,76	2025-07-31 13:37:18.921	0	2025-07-31 13:34:43.363
158,90	2025-07-31 13:21:37.757	141,30	2025-07-31 13:23:44.442	106,80	2025-07-31 13:25:00.101	62,60	2025-07-31 13:30:21.962	56,14	2025-07-31 13:34:43.867	35,76	2025-07-31 13:37:19.425	0	2025-07-31 13:34:43.867
158,90	2025-07-31 13:21:38.261	143,60	2025-07-31 13:23:44.943	106,80	2025-07-31 13:25:00.605	62,60	2025-07-31 13:30:22.463	56,14	2025-07-31 13:34:44.371	35,76	2025-07-31 13:37:19.912	0	2025-07-31 13:34:44.371
160,50	2025-07-31 13:21:38.752	143,60	2025-07-31 13:23:45.447	110,30	2025-07-31 13:25:01.110	69,70	2025-07-31 13:30:22.969	51,21	2025-07-31 13:34:44.858	35,76	2025-07-31 13:37:20.415	0	2025-07-31 13:34:44.858
160,50	2025-07-31 13:21:39.255	144,60	2025-07-31 13:23:45.950	110,30	2025-07-31 13:25:01.596	69,70	2025-07-31 13:30:23.460	51,21	2025-07-31 13:34:45.363	39,59	2025-07-31 13:37:20.920	0	2025-07-31 13:34:45.363
160,50	2025-07-31 13:21:39.759	144,60	2025-07-31 13:23:46.454	116,70	2025-07-31 13:25:02.117	69,70	2025-07-31 13:30:23.960	51,21	2025-07-31 13:34:45.866	39,59	2025-07-31 13:37:21.423	0	2025-07-31 13:34:45.866
161,30	2025-07-31 13:21:40.261	144,90	2025-07-31 13:23:46.941	116,70	2025-07-31 13:25:02.605	79,10	2025-07-31 13:30:24.467	48,31	2025-07-31 13:34:46.370	39,59	2025-07-31 13:37:21.926	0	2025-07-31 13:34:46.370
161,30	2025-07-31 13:21:40.750	144,90	2025-07-31 13:23:47.461	116,70	2025-07-31 13:25:03.107	79,10	2025-07-31 13:30:24.972	48,31	2025-07-31 13:34:46.877	40,53	2025-07-31 13:37:22.415	0	2025-07-31 13:34:46.877
163,00	2025-07-31 13:21:41.253	145,40	2025-07-31 13:23:47.950	118,50	2025-07-31 13:25:03.596	79,10	2025-07-31 13:30:25.455	49,72	2025-07-31 13:34:47.364	40,53	2025-07-31 13:37:22.919	0	2025-07-31 13:34:47.364
163,00	2025-07-31 13:21:41.772	145,40	2025-07-31 13:23:48.454	118,50	2025-07-31 13:25:04.131	87,90	2025-07-31 13:30:25.958	49,72	2025-07-31 13:34:47.868	33,11	2025-07-31 13:37:23.455	0	2025-07-31 13:34:47.868

Tabel L.6 Data pengukuran beban dan putaran turbin angin Savonius empat sudu, diameter 7 mm

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg		3 kg	
No.	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
1	328,40	2025-08-14 15:37:05.536	304,60	2025-08-14 15:42:13.630	288,50	2025-08-14 15:44:20.914	253,10	2025-08-14 15:46:06.165	228,50	2025-08-14 15:47:43.651	208,20	2025-08-14 15:49:42.430	180,00	2025-08-14 15:51:21.791
2	329,10	2025-08-14 15:37:06.037	304,60	2025-08-14 15:42:14.131	290,00	2025-08-14 15:44:21.416	253,10	2025-08-14 15:46:06.668	229,90	2025-08-14 15:47:44.154	206,20	2025-08-14 15:49:42.933	179,90	2025-08-14 15:51:22.278
3	329,10	2025-08-14 15:37:06.541	303,50	2025-08-14 15:42:14.636	290,00	2025-08-14 15:44:21.903	253,10	2025-08-14 15:46:07.159	229,90	2025-08-14 15:47:44.656	206,20	2025-08-14 15:49:43.432	179,90	2025-08-14 15:51:22.782
4	329,40	2025-08-14 15:37:07.029	303,50	2025-08-14 15:42:15.140	289,80	2025-08-14 15:44:22.408	254,50	2025-08-14 15:46:07.677	231,40	2025-08-14 15:47:45.161	206,20	2025-08-14 15:49:43.920	179,90	2025-08-14 15:51:23.285
5	329,40	2025-08-14 15:37:07.533	302,90	2025-08-14 15:42:15.628	289,80	2025-08-14 15:44:22.911	254,50	2025-08-14 15:46:08.165	231,40	2025-08-14 15:47:45.650	204,20	2025-08-14 15:49:44.428	180,30	2025-08-14 15:51:23.791
6	330,50	2025-08-14 15:37:08.036	302,90	2025-08-14 15:42:16.132	288,00	2025-08-14 15:44:23.416	255,30	2025-08-14 15:46:08.668	231,50	2025-08-14 15:47:46.153	204,20	2025-08-14 15:49:44.933	180,30	2025-08-14 15:51:24.279
7	330,50	2025-08-14 15:37:08.538	302,90	2025-08-14 15:42:16.635	288,00	2025-08-14 15:44:23.903	255,30	2025-08-14 15:46:09.158	231,50	2025-08-14 15:47:46.657	202,70	2025-08-14 15:49:45.435	180,80	2025-08-14 15:51:24.796
8	332,80	2025-08-14 15:37:09.044	303,10	2025-08-14 15:42:17.140	285,80	2025-08-14 15:44:24.408	256,80	2025-08-14 15:46:09.661	232,00	2025-08-14 15:47:47.179	202,70	2025-08-14 15:49:45.925	180,80	2025-08-14 15:51:25.286
9	332,80	2025-08-14 15:37:09.531	303,10	2025-08-14 15:42:17.644	285,80	2025-08-14 15:44:24.910	256,80	2025-08-14 15:46:10.162	232,00	2025-08-14 15:47:47.665	203,00	2025-08-14 15:49:46.427	180,80	2025-08-14 15:51:25.806
10	332,80	2025-08-14 15:37:10.036	303,80	2025-08-14 15:42:18.132	283,40	2025-08-14 15:44:25.414	256,80	2025-08-14 15:46:10.675	232,30	2025-08-14 15:47:48.153	203,00	2025-08-14 15:49:46.932	180,60	2025-08-14 15:51:26.293
11	335,10	2025-08-14 15:37:10.556	303,80	2025-08-14 15:42:18.635	283,40	2025-08-14 15:44:25.903	258,00	2025-08-14 15:46:11.151	232,30	2025-08-14 15:47:48.657	203,00	2025-08-14 15:49:47.435	180,60	2025-08-14 15:51:26.781
12	335,10	2025-08-14 15:37:11.026	304,80	2025-08-14 15:42:19.155	283,40	2025-08-14 15:44:26.406	258,00	2025-08-14 15:46:11.654	231,90	2025-08-14 15:47:49.161	204,70	2025-08-14 15:49:47.938	180,80	2025-08-14 15:51:27.301
13	335,50	2025-08-14 15:37:11.547	304,80	2025-08-14 15:42:19.642	281,70	2025-08-14 15:44:26.908	257,90	2025-08-14 15:46:12.160	231,90	2025-08-14 15:47:49.665	204,70	2025-08-14 15:49:48.426	180,80	2025-08-14 15:51:27.786
14	335,50	2025-08-14 15:37:12.034	304,80	2025-08-14 15:42:20.129	281,70	2025-08-14 15:44:27.412	257,90	2025-08-14 15:46:12.662	231,60	2025-08-14 15:47:50.153	206,00	2025-08-14 15:49:48.930	180,80	2025-08-14 15:51:28.292
15	336,90	2025-08-14 15:37:12.538	304,20	2025-08-14 15:42:20.634	280,70	2025-08-14 15:44:27.902	258,40	2025-08-14 15:46:13.165	231,60	2025-08-14 15:47:50.655	206,00	2025-08-14 15:49:49.434	180,50	2025-08-14 15:51:28.780
16	336,90	2025-08-14 15:37:13.042	304,20	2025-08-14 15:42:21.137	280,70	2025-08-14 15:44:28.405	258,40	2025-08-14 15:46:13.653	231,60	2025-08-14 15:47:51.160	208,10	2025-08-14 15:49:49.938	180,50	2025-08-14 15:51:29.284
17	339,40	2025-08-14 15:37:13.530	303,00	2025-08-14 15:42:21.640	280,20	2025-08-14 15:44:28.908	258,40	2025-08-14 15:46:14.158	232,30	2025-08-14 15:47:51.665	208,10	2025-08-14 15:49:50.425	180,50	2025-08-14 15:51:29.788
18	339,40	2025-08-14 15:37:14.033	303,00	2025-08-14 15:42:22.129	280,20	2025-08-14 15:44:29.413	259,20	2025-08-14 15:46:14.666	232,30	2025-08-14 15:47:52.151	208,10	2025-08-14 15:49:50.929	179,30	2025-08-14 15:51:30.292
19	339,80	2025-08-14 15:37:14.538	303,00	2025-08-14 15:42:22.632	279,50	2025-08-14 15:44:29.917	259,20	2025-08-14 15:46:15.169	233,40	2025-08-14 15:47:52.655	211,00	2025-08-14 15:49:51.447	179,30	2025-08-14 15:51:30.780
20	339,80	2025-08-14 15:37:15.040	303,30	2025-08-14 15:42:23.136	279,50	2025-08-14 15:44:30.403	259,70	2025-08-14 15:46:15.657	233,40	2025-08-14 15:47:53.160	211,00	2025-08-14 15:49:51.936	178,50	2025-08-14 15:51:31.283
21	338,80	2025-08-14 15:37:15.527	303,30	2025-08-14 15:42:23.640	278,10	2025-08-14 15:44:30.923	259,70	2025-08-14 15:46:16.160	234,60	2025-08-14 15:47:53.664	213,40	2025-08-14 15:49:52.424	178,50	2025-08-14 15:51:31.785
22	338,80	2025-08-14 15:37:16.031	302,30	2025-08-14 15:42:24.144	278,10	2025-08-14 15:44:31.412	260,00	2025-08-14 15:46:16.664	234,60	2025-08-14 15:47:54.149	213,40	2025-08-14 15:49:52.927	178,50	2025-08-14 15:51:32.290
23	338,20	2025-08-14 15:37:16.535	302,30	2025-08-14 15:42:24.631	277,00	2025-08-14 15:44:31.914	260,00	2025-08-14 15:46:17.170	235,10	2025-08-14 15:47:54.668	214,10	2025-08-14 15:49:53.431	177,60	2025-08-14 15:51:32.777
24	338,20	2025-08-14 15:37:17.039	299,50	2025-08-14 15:42:25.135	277,00	2025-08-14 15:44:32.402	260,00	2025-08-14 15:46:17.653	235,10	2025-08-14 15:47:55.158	214,10	2025-08-14 15:49:53.936	177,60	2025-08-14 15:51:33.282
25	338,10	2025-08-14 15:37:17.527	299,50	2025-08-14 15:42:25.640	276,80	2025-08-14 15:44:32.907	260,60	2025-08-14 15:46:18.155	235,20	2025-08-14 15:47:55.678	213,80	2025-08-14 15:49:54.422	175,40	2025-08-14 15:51:33.784
26	338,10	2025-08-14 15:37:18.031	298,50	2025-08-14 15:42:26.143	276,80	2025-08-14 15:44:33.410	260,60	2025-08-14 15:46:18.693	235,20	2025-08-14 15:47:56.149	213,80	2025-08-14 15:49:54.927	175,40	2025-08-14 15:51:34.288
27	338,10	2025-08-14 15:37:18.534	298,50	2025-08-14 15:42:26.631	276,80	2025-08-14 15:44:33.915	261,80	2025-08-14 15:46:19.168	235,50	2025-08-14 15:47:56.653	213,80	2025-08-14 15:49:55.429	172,80	2025-08-14 15:51:34.793
28	336,50	2025-08-14 15:37:19.038	299,40	2025-08-14 15:42:27.133	277,60	2025-08-14 15:44:34.401	261,80	2025-08-14 15:46:19.654	235,50	2025-08-14 15:47:57.157	212,10	2025-08-14 15:49:55.934	172,80	2025-08-14 15:51:35.280
29	336,50	2025-08-14 15:37:19.525	299,40	2025-08-14 15:42:27.638	277,60	2025-08-14 15:44:34.917	263,30	2025-08-14 15:46:20.158	235,50	2025-08-14 15:47:57.660	212,10	2025-08-14 15:49:56.453	172,10	2025-08-14 15:51:35.784
30	334,50	2025-08-14 15:37:20.030	301,10	2025-08-14 15:42:28.141	279,00	2025-08-14 15:44:35.409	263,30	2025-08-14 15:46:20.658	235,50	2025-08-14 15:47:58.180	208,80	2025-08-14 15:49:56.925	172,10	2025-08-14 15:51:36.286

3,5 kg		4 kg		4,5 kg		5 kg		5,5 kg		6 kg		6,5 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
154,40	2025-08-14 15:53:53.816	123,30	2025-08-14 15:56:01.470	97,59	2025-08-14 15:58:55.967	70,50	2025-07-31 14:17:57.954	44,51	2025-08-14 16:02:25.273	21,88	2025-08-14 16:03:54.243	0	2025-08-14 16:05:02.952
155,10	2025-08-14 15:53:54.303	124,30	2025-08-14 15:56:01.972	97,59	2025-08-14 15:58:56.455	68,60	2025-07-31 14:17:58.459	44,51	2025-08-14 16:02:25.775	21,88	2025-08-14 16:03:54.748	0	2025-08-14 16:05:03.455
155,10	2025-08-14 15:53:54.790	124,30	2025-08-14 15:56:02.475	95,97	2025-08-14 15:58:56.959	68,60	2025-07-31 14:17:58.981	44,51	2025-08-14 16:02:26.263	21,88	2025-08-14 16:03:55.235	0	2025-08-14 16:05:03.958
155,10	2025-08-14 15:53:55.294	124,30	2025-08-14 15:56:02.963	95,97	2025-08-14 15:58:57.464	62,40	2025-07-31 14:17:59.466	47,37	2025-08-14 16:02:26.767	21,88	2025-08-14 16:03:55.739	0	2025-08-14 16:05:04.463
154,90	2025-08-14 15:53:55.813	125,50	2025-08-14 15:56:03.466	95,97	2025-08-14 15:58:57.967	62,40	2025-07-31 14:17:59.951	47,37	2025-08-14 16:02:27.272	24,49	2025-08-14 16:03:56.243	0	2025-08-14 16:05:04.966
154,90	2025-08-14 15:53:56.319	125,50	2025-08-14 15:56:03.971	97,05	2025-08-14 15:58:58.454	55,10	2025-07-31 14:18:00.459	52,65	2025-08-14 16:02:27.775	24,49	2025-08-14 16:03:56.747	0	2025-08-14 16:05:05.454
153,80	2025-08-14 15:53:56.790	125,50	2025-08-14 15:56:04.475	97,05	2025-08-14 15:58:58.955	55,10	2025-07-31 14:18:00.960	52,65	2025-08-14 16:02:28.263	24,49	2025-08-14 16:03:57.249	0	2025-08-14 16:05:05.957
153,80	2025-08-14 15:53:57.295	126,90	2025-08-14 15:56:04.963	101,40	2025-08-14 15:58:59.456	56,40	2025-07-31 14:18:01.463	52,65	2025-08-14 16:02:28.766	24,49	2025-08-14 16:03:57.739	0	2025-08-14 16:05:06.463
152,30	2025-08-14 15:53:57.798	126,90	2025-08-14 15:56:05.468	101,40	2025-08-14 15:58:59.963	56,40	2025-07-31 14:18:01.968	52,65	2025-08-14 16:02:29.271	26,80	2025-08-14 16:03:58.242	0	2025-08-14 16:05:06.965
152,30	2025-08-14 15:53:58.305	128,40	2025-08-14 15:56:05.971	104,70	2025-08-14 15:59:00.465	56,40	2025-07-31 14:18:02.455	56,08	2025-08-14 16:02:29.775	26,80	2025-08-14 16:03:58.746	0	2025-08-14 16:05:07.451
152,30	2025-08-14 15:53:58.790	128,40	2025-08-14 15:56:06.470	104,70	2025-08-14 15:59:00.952	68,50	2025-07-31 14:18:02.957	56,08	2025-08-14 16:02:30.260	26,80	2025-08-14 16:03:59.247	0	2025-08-14 16:05:07.957
150,40	2025-08-14 15:53:59.293	128,40	2025-08-14 15:56:06.961	104,70	2025-08-14 15:59:01.473	68,50	2025-07-31 14:18:03.475	51,98	2025-08-14 16:02:30.765	26,80	2025-08-14 16:03:59.737	0	2025-08-14 16:05:08.459
150,40	2025-08-14 15:53:59.797	128,10	2025-08-14 15:56:07.467	106,30	2025-08-14 15:59:01.965	77,90	2025-07-31 14:18:03.966	51,98	2025-08-14 16:02:31.268	22,29	2025-08-14 16:04:00.242	0	2025-08-14 16:05:08.960
150,10	2025-08-14 15:54:00.301	128,10	2025-08-14 15:56:07.970	106,30	2025-08-14 15:59:02.451	77,90	2025-07-31 14:18:04.454	46,54	2025-08-14 16:02:31.773	22,29	2025-08-14 16:04:00.745	0	2025-08-14 16:05:09.452
150,10	2025-08-14 15:54:00.789	128,10	2025-08-14 15:56:08.473	108,60	2025-08-14 15:59:02.956	77,90	2025-07-31 14:18:04.958	46,54	2025-08-14 16:02:32.260	22,29	2025-08-14 16:04:01.249	0	2025-08-14 16:05:09.956
151,90	2025-08-14 15:54:01.292	125,40	2025-08-14 15:56:08.977	108,60	2025-08-14 15:59:03.459	78,30	2025-07-31 14:18:05.463	46,54	2025-08-14 16:02:32.764	22,29	2025-08-14 16:04:01.736	0	2025-08-14 16:05:10.461
151,90	2025-08-14 15:54:01.793	125,40	2025-08-14 15:56:09.464	109,30	2025-08-14 15:59:03.963	78,30	2025-07-31 14:18:05.965	46,06	2025-08-14 16:02:33.268	22,82	2025-08-14 16:04:02.241	0	2025-08-14 16:05:10.964
151,90	2025-08-14 15:54:02.299	125,40	2025-08-14 15:56:09.969	109,30	2025-08-14 15:59:04.466	78,30	2025-07-31 14:18:06.452	46,06	2025-08-14 16:02:33.771	22,82	2025-08-14 16:04:02.747	0	2025-08-14 16:05:11.463
152,80	2025-08-14 15:54:02.804	123,20	2025-08-14 15:56:10.472	108,20	2025-08-14 15:59:04.954	78,30	2025-07-31 14:18:06.955	46,57	2025-08-14 16:02:34.275	22,82	2025-08-14 16:04:03.249	0	2025-08-14 16:05:11.956
152,80	2025-08-14 15:54:03.291	123,20	2025-08-14 15:56:10.976	108,20	2025-08-14 15:59:05.459	78,30	2025-07-31 14:18:07.461	46,57	2025-08-14 16:02:34.761	30,35	2025-08-14 16:04:03.751	0	2025-08-14 16:05:12.459
151,70	2025-08-14 15:54:03.812	123,20	2025-08-14 15:56:11.464	108,20	2025-08-14 15:59:05.963	81,10	2025-07-31 14:18:07.964	46,57	2025-08-14 16:02:35.266	30,35	2025-08-14 16:04:04.239	0	2025-08-14 16:05:12.962
151,70	2025-08-14 15:54:04.299	121,80	2025-08-14 15:56:11.983	106,60	2025-08-14 15:59:06.463	81,10	2025-07-31 14:18:08.468	45,79	2025-08-14 16:02:35.770	30,35	2025-08-14 16:04:04.742	0	2025-08-14 16:05:13.466
150,30	2025-08-14 15:54:04.803	121,80	2025-08-14 15:56:12.470	106,60	2025-08-14 15:59:06.970	81,10	2025-07-31 14:18:08.957	45,79	2025-08-14 16:02:36.275	30,35	2025-08-14 16:04:05.246	0	2025-08-14 16:05:13.954
150,30	2025-08-14 15:54:05.291	121,80	2025-08-14 15:56:12.989	105,50	2025-08-14 15:59:07.458	78,70	2025-07-31 14:18:09.459	45,79	2025-08-14 16:02:36.762	31,43	2025-08-14 16:04:05.750	0	2025-08-14 16:05:14.458
150,30	2025-08-14 15:54:05.794	123,00	2025-08-14 15:56:13.461	105,50	2025-08-14 15:59:07.960	78,70	2025-07-31 14:18:09.963	38,53	2025-08-14 16:02:37.266	31,43	2025-08-14 16:04:06.253	0	2025-08-14 16:05:14.963
148,40	2025-08-14 15:54:06.297	123,00	2025-08-14 15:56:13.964	106,30	2025-08-14 15:59:08.464	72,00	2025-07-31 14:18:10.482	38,53	2025-08-14 16:02:37.769	31,43	2025-08-14 16:04:06.741	0	2025-08-14 16:05:15.465
148,40	2025-08-14 15:54:06.803	126,90	2025-08-14 15:56:14.471	106,30	2025-08-14 15:59:08.953	72,00	2025-07-31 14:18:10.953	38,53	2025-08-14 16:02:38.274	31,43	2025-08-14 16:04:07.245	0	2025-08-14 16:05:15.951
147,20	2025-08-14 15:54:07.290	126,90	2025-08-14 15:56:14.969	109,20	2025-08-14 15:59:09.456	76,30	2025-07-31 14:18:11.476	33,37	2025-08-14 16:02:38.758	26,32	2025-08-14 16:04:07.750	0	2025-08-14 16:05:16.457
147,20	2025-08-14 15:54:07.792	126,90	2025-08-14 15:56:15.472	109,20	2025-08-14 15:59:09.959	76,30	2025-07-31 14:18:11.963	33,37	2025-08-14 16:02:39.265	26,32	2025-08-14 16:04:08.237	0	2025-08-14 16:05:16.960
147,00	2025-08-14 15:54:08.297	128,20	2025-08-14 15:56:15.959	110,70	2025-08-14 15:59:10.464	76,30	2025-07-31 14:18:12.468	33,37	2025-08-14 16:02:39.768	26,32	2025-08-14 16:04:08.740	0	2025-08-14 16:05:17.465

Tabel L.7 Data pengukuran beban dan putaran turbin angin Savonius empat sudu, diameter 9 mm

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg		3 kg		3.5 kg	
No.	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
1	348,50	2025-08-15 10:37:18.642	332,50	2025-08-15 09:50:25.212	300,70	2025-08-15 10:04:53.680	279,10	2025-08-15 10:06:13.867	250,10	2025-08-15 10:08:19.732	215,10	2025-08-15 10:09:46.135	192,70	2025-08-15 10:11:22.637	171,50	2025-08-15 10:13:54.268
2	348,50	2025-08-15 10:37:19.144	332,50	2025-08-15 09:50:25.699	302,30	2025-08-15 10:04:54.183	278,70	2025-08-15 10:06:14.371	250,00	2025-08-15 10:08:20.218	215,10	2025-08-15 10:09:46.639	193,60	2025-08-15 10:11:23.142	171,20	2025-08-15 10:13:54.774
3	349,50	2025-08-15 10:37:19.649	332,50	2025-08-15 09:50:26.202	302,30	2025-08-15 10:04:54.672	278,70	2025-08-15 10:06:14.875	250,00	2025-08-15 10:08:20.723	215,10	2025-08-15 10:09:47.143	193,60	2025-08-15 10:11:23.629	171,20	2025-08-15 10:13:55.261
4	349,50	2025-08-15 10:37:20.153	332,50	2025-08-15 09:50:26.703	302,30	2025-08-15 10:04:55.175	277,90	2025-08-15 10:06:15.376	250,10	2025-08-15 10:08:21.225	213,70	2025-08-15 10:09:47.645	193,30	2025-08-15 10:11:24.133	170,00	2025-08-15 10:13:55.764
5	349,80	2025-08-15 10:37:20.640	332,50	2025-08-15 09:50:27.208	302,80	2025-08-15 10:04:55.677	277,90	2025-08-15 10:06:15.878	250,10	2025-08-15 10:08:21.729	213,70	2025-08-15 10:09:48.134	193,30	2025-08-15 10:11:24.631	170,00	2025-08-15 10:13:56.268
6	349,80	2025-08-15 10:37:21.145	332,70	2025-08-15 09:50:27.699	302,80	2025-08-15 10:04:56.183	277,30	2025-08-15 10:06:16.370	250,20	2025-08-15 10:08:22.218	213,90	2025-08-15 10:09:48.639	193,30	2025-08-15 10:11:25.136	169,50	2025-08-15 10:13:56.771
7	349,20	2025-08-15 10:37:21.649	332,70	2025-08-15 09:50:28.202	302,80	2025-08-15 10:04:56.670	277,30	2025-08-15 10:06:16.874	250,20	2025-08-15 10:08:22.722	213,90	2025-08-15 10:09:49.141	192,90	2025-08-15 10:11:25.624	169,50	2025-08-15 10:13:57.260
8	349,20	2025-08-15 10:37:22.168	333,30	2025-08-15 09:50:28.703	302,80	2025-08-15 10:04:57.174	277,20	2025-08-15 10:06:17.377	250,20	2025-08-15 10:08:23.225	215,40	2025-08-15 10:09:49.647	192,90	2025-08-15 10:11:26.130	169,50	2025-08-15 10:13:57.763
9	349,20	2025-08-15 10:37:22.638	333,30	2025-08-15 09:50:29.209	302,60	2025-08-15 10:04:57.677	277,20	2025-08-15 10:06:17.866	248,90	2025-08-15 10:08:23.730	215,40	2025-08-15 10:09:50.134	194,30	2025-08-15 10:11:26.630	169,50	2025-08-15 10:13:58.266
10	349,20	2025-08-15 10:37:23.143	331,90	2025-08-15 09:50:29.714	302,60	2025-08-15 10:04:58.181	275,70	2025-08-15 10:06:18.370	248,90	2025-08-15 10:08:24.234	218,00	2025-08-15 10:09:50.637	194,30	2025-08-15 10:11:27.135	169,60	2025-08-15 10:13:58.785
11	348,40	2025-08-15 10:37:23.646	331,90	2025-08-15 09:50:30.198	302,60	2025-08-15 10:04:58.668	275,70	2025-08-15 10:06:18.873	247,50	2025-08-15 10:08:24.721	218,00	2025-08-15 10:09:51.140	196,90	2025-08-15 10:11:27.623	169,60	2025-08-15 10:13:59.274
12	348,40	2025-08-15 10:37:24.151	331,90	2025-08-15 09:50:30.705	302,90	2025-08-15 10:04:59.172	274,20	2025-08-15 10:06:19.384	247,50	2025-08-15 10:08:25.224	220,50	2025-08-15 10:09:51.643	196,90	2025-08-15 10:11:28.130	168,90	2025-08-15 10:13:59.762
13	347,30	2025-08-15 10:37:24.651	329,40	2025-08-15 09:50:31.209	302,90	2025-08-15 10:04:59.676	274,20	2025-08-15 10:06:19.863	247,50	2025-08-15 10:08:25.728	220,50	2025-08-15 10:09:52.131	196,90	2025-08-15 10:11:28.629	168,90	2025-08-15 10:14:00.266
14	347,30	2025-08-15 10:37:25.142	329,40	2025-08-15 09:50:31.714	303,50	2025-08-15 10:05:00.180	274,20	2025-08-15 10:06:20.369	248,30	2025-08-15 10:08:26.232	221,30	2025-08-15 10:09:52.636	198,40	2025-08-15 10:11:29.138	168,00	2025-08-15 10:14:00.769
15	347,60	2025-08-15 10:37:25.645	328,00	2025-08-15 09:50:32.201	303,50	2025-08-15 10:05:00.684	273,90	2025-08-15 10:06:20.873	248,30	2025-08-15 10:08:26.720	221,30	2025-08-15 10:09:53.140	198,40	2025-08-15 10:11:29.639	168,00	2025-08-15 10:14:01.273
16	347,60	2025-08-15 10:37:26.149	328,00	2025-08-15 09:50:32.705	302,90	2025-08-15 10:05:01.171	273,90	2025-08-15 10:06:21.375	249,70	2025-08-15 10:08:27.222	221,60	2025-08-15 10:09:53.644	198,80	2025-08-15 10:11:30.126	168,30	2025-08-15 10:14:01.760
17	348,20	2025-08-15 10:37:26.653	327,80	2025-08-15 09:50:33.207	302,90	2025-08-15 10:05:01.674	274,10	2025-08-15 10:06:21.880	249,70	2025-08-15 10:08:27.727	221,60	2025-08-15 10:09:54.148	198,80	2025-08-15 10:11:30.629	168,30	2025-08-15 10:14:02.265
18	348,20	2025-08-15 10:37:27.140	327,80	2025-08-15 09:50:33.712	302,90	2025-08-15 10:05:02.178	274,10	2025-08-15 10:06:22.367	250,00	2025-08-15 10:08:28.246	221,90	2025-08-15 10:09:54.634	199,10	2025-08-15 10:11:31.135	168,80	2025-08-15 10:14:02.768
19	349,00	2025-08-15 10:37:27.644	328,10	2025-08-15 09:50:34.200	300,60	2025-08-15 10:05:02.682	275,10	2025-08-15 10:06:22.871	250,00	2025-08-15 10:08:28.718	221,90	2025-08-15 10:09:55.139	199,10	2025-08-15 10:11:31.641	168,80	2025-08-15 10:14:03.272
20	349,00	2025-08-15 10:37:28.149	328,10	2025-08-15 09:50:34.703	300,60	2025-08-15 10:05:03.171	275,10	2025-08-15 10:06:23.391	250,00	2025-08-15 10:08:29.222	223,10	2025-08-15 10:09:55.642	199,10	2025-08-15 10:11:32.126	168,60	2025-08-15 10:14:03.759
21	349,60	2025-08-15 10:37:28.651	328,10	2025-08-15 09:50:35.207	298,10	2025-08-15 10:05:03.674	276,10	2025-08-15 10:06:23.895	250,80	2025-08-15 10:08:29.726	223,10	2025-08-15 10:09:56.147	198,80	2025-08-15 10:11:32.632	168,60	2025-08-15 10:14:04.262
22	349,60	2025-08-15 10:37:29.139	328,30	2025-08-15 09:50:35.709	298,10	2025-08-15 10:05:04.177	276,10	2025-08-15 10:06:24.366	250,80	2025-08-15 10:08:30.229	225,20	2025-08-15 10:09:56.635	198,80	2025-08-15 10:11:33.136	167,90	2025-08-15 10:14:04.767
23	350,20	2025-08-15 10:37:29.643	328,30	2025-08-15 09:50:36.198	298,10	2025-08-15 10:05:04.680	276,50	2025-08-15 10:06:24.870	251,60	2025-08-15 10:08:30.717	225,20	2025-08-15 10:09:57.138	197,70	2025-08-15 10:11:33.639	167,90	2025-08-15 10:14:05.271
24	350,20	2025-08-15 10:37:30.146	328,90	2025-08-15 09:50:36.702	298,70	2025-08-15 10:05:05.169	276,50	2025-08-15 10:06:25.370	251,60	2025-08-15 10:08:31.221	227,90	2025-08-15 10:09:57.640	197,70	2025-08-15 10:11:34.127	167,10	2025-08-15 10:14:05.758
25	350,70	2025-08-15 10:37:30.651	328,90	2025-08-15 09:50:37.206	298,70	2025-08-15 10:05:05.672	276,70	2025-08-15 10:06:25.878	251,70	2025-08-15 10:08:31.725	227,90	2025-08-15 10:09:58.144	196,90	2025-08-15 10:11:34.630	167,10	2025-08-15 10:14:06.259
26	350,70	2025-08-15 10:37:31.155	330,70	2025-08-15 09:50:37.709	300,20	2025-08-15 10:05:06.175	276,70	2025-08-15 10:06:26.364	251,70	2025-08-15 10:08:32.229	229,70	2025-08-15 10:09:58.632	196,90	2025-08-15 10:11:35.131	166,60	2025-08-15 10:14:06.765
27	349,50	2025-08-15 10:37:31.642	330,70	2025-08-15 09:50:38.213	300,20	2025-08-15 10:05:06.680	276,70	2025-08-15 10:06:26.870	251,70	2025-08-15 10:08:32.733	229,70	2025-08-15 10:09:59.137	196,90	2025-08-15 10:11:35.637	166,60	2025-08-15 10:14:07.270
28	349,50	2025-08-15 10:37:32.145	331,60	2025-08-15 09:50:38.718	300,70	2025-08-15 10:05:07.183	276,70	2025-08-15 10:06:27.372	251,70	2025-08-15 10:08:33.219	229,70	2025-08-15 10:09:59.640	196,60	2025-08-15 10:11:36.142	165,20	2025-08-15 10:14:07.773
29	346,90	2025-08-15 10:37:32.649	331,60	2025-08-15 09:50:39.206	300,70	2025-08-15 10:05:07.672	276,70	2025-08-15 10:06:27.877	251,70	2025-08-15 10:08:33.724	228,70	2025-08-15 10:10:00.139	196,60	2025-08-15 10:11:36.626	165,20	2025-08-15 10:14:08.260
30	346,90	2025-08-15 10:37:33.153	331,60	2025-08-15 09:50:39.707	300,70	2025-08-15 10:05:08.174	275,80	2025-08-15 10:06:28.395	251,10	2025-08-15 10:08:34.227	228,70	2025-08-15 10:10:00.648	197,20	2025-08-15 10:11:37.133	162,30	2025-08-15 10:14:08.764

4 kg		4,5 kg		5 kg		5,5 kg		6 kg		6,5 kg		7 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
151,60	2025-08-15 10:15:49.235	114,90	2025-08-15 10:17:22.069	93,80	2025-08-15 10:19:21.980	77,52	2025-08-15 10:21:08.172	57,47	2025-08-15 10:23:10.316	29,11	2025-08-15 10:25:15.171	0	2025-08-15 10:26:58.978
151,60	2025-08-15 10:15:49.738	114,90	2025-08-15 10:17:22.572	93,80	2025-08-15 10:19:22.485	88,17	2025-08-15 10:21:08.674	57,47	2025-08-15 10:23:10.818	29,11	2025-08-15 10:25:15.675	0	2025-08-15 10:26:59.482
151,50	2025-08-15 10:15:50.241	113,10	2025-08-15 10:17:23.077	96,10	2025-08-15 10:19:22.989	88,17	2025-08-15 10:21:09.178	56,22	2025-08-15 10:23:11.307	29,96	2025-08-15 10:25:16.162	0	2025-08-15 10:26:59.986
151,50	2025-08-15 10:15:50.745	113,10	2025-08-15 10:17:23.579	96,10	2025-08-15 10:19:23.492	88,17	2025-08-15 10:21:09.685	56,22	2025-08-15 10:23:11.810	29,96	2025-08-15 10:25:16.665	0	2025-08-15 10:27:00.474
149,70	2025-08-15 10:15:51.233	110,90	2025-08-15 10:17:24.068	96,30	2025-08-15 10:19:23.979	92,52	2025-08-15 10:21:10.175	55,79	2025-08-15 10:23:12.315	29,96	2025-08-15 10:25:17.170	0	2025-08-15 10:27:00.980
149,70	2025-08-15 10:15:51.736	110,90	2025-08-15 10:17:24.570	96,30	2025-08-15 10:19:24.484	92,52	2025-08-15 10:21:10.678	55,79	2025-08-15 10:23:12.819	29,96	2025-08-15 10:25:17.672	0	2025-08-15 10:27:01.481
149,70	2025-08-15 10:15:52.241	108,60	2025-08-15 10:17:25.075	96,40	2025-08-15 10:19:24.988	92,52	2025-08-15 10:21:11.182	55,79	2025-08-15 10:23:13.322	29,37	2025-08-15 10:25:18.158	0	2025-08-15 10:27:01.982
147,60	2025-08-15 10:15:52.745	108,60	2025-08-15 10:17:25.580	96,40	2025-08-15 10:19:25.492	85,44	2025-08-15 10:21:11.686	57,03	2025-08-15 10:23:13.809	29,37	2025-08-15 10:25:18.665	0	2025-08-15 10:27:02.471
147,60	2025-08-15 10:15:53.232	109,40	2025-08-15 10:17:26.064	96,40	2025-08-15 10:19:25.978	85,44	2025-08-15 10:21:12.187	57,03	2025-08-15 10:23:14.313	29,37	2025-08-15 10:25:19.167	0	2025-08-15 10:27:02.974
146,20	2025-08-15 10:15:53.736	109,40	2025-08-15 10:17:26.570	97,90	2025-08-15 10:19:26.483	85,44	2025-08-15 10:21:12.677	56,23	2025-08-15 10:23:14.817	29,37	2025-08-15 10:25:19.670	0	2025-08-15 10:27:03.481
146,20	2025-08-15 10:15:54.240	109,40	2025-08-15 10:17:27.071	97,90	2025-08-15 10:19:26.988	75,84	2025-08-15 10:21:13.181	56,23	2025-08-15 10:23:15.318	29,37	2025-08-15 10:25:20.176	0	2025-08-15 10:27:03.981
146,00	2025-08-15 10:15:54.744	113,80	2025-08-15 10:17:27.573	99,40	2025-08-15 10:19:27.486	75,84	2025-08-15 10:21:13.684	55,10	2025-08-15 10:23:15.806	29,37	2025-08-15 10:25:20.663	0	2025-08-15 10:27:04.485
146,00	2025-08-15 10:15:55.248	113,80	2025-08-15 10:17:28.079	99,40	2025-08-15 10:19:27.991	75,84	2025-08-15 10:21:14.187	55,10	2025-08-15 10:23:16.314	24,63	2025-08-15 10:25:21.167	0	2025-08-15 10:27:04.975
146,00	2025-08-15 10:15:55.735	118,60	2025-08-15 10:17:28.566	100,10	2025-08-15 10:19:28.483	70,19	2025-08-15 10:21:14.675	55,31	2025-08-15 10:23:16.815	24,63	2025-08-15 10:25:21.671	0	2025-08-15 10:27:05.512
146,00	2025-08-15 10:15:56.239	118,60	2025-08-15 10:17:29.070	100,10	2025-08-15 10:19:28.986	70,19	2025-08-15 10:21:15.179	55,31	2025-08-15 10:23:17.321	24,63	2025-08-15 10:25:22.181	0	2025-08-15 10:27:05.984
146,00	2025-08-15 10:15:56.743	118,60	2025-08-15 10:17:29.574	100,50	2025-08-15 10:19:29.487	70,19	2025-08-15 10:21:15.683	53,44	2025-08-15 10:23:17.807	24,63	2025-08-15 10:25:22.662	0	2025-08-15 10:27:06.488
146,00	2025-08-15 10:15:57.247	123,90	2025-08-15 10:17:30.078	100,50	2025-08-15 10:19:29.991	71,81	2025-08-15 10:21:16.186	53,44	2025-08-15 10:23:18.308	24,59	2025-08-15 10:25:23.167	0	2025-08-15 10:27:06.975
146,00	2025-08-15 10:15:57.733	123,90	2025-08-15 10:17:30.569	100,50	2025-08-15 10:19:30.481	71,81	2025-08-15 10:21:16.674	53,44	2025-08-15 10:23:18.814	24,59	2025-08-15 10:25:23.670	0	2025-08-15 10:27:07.477
146,00	2025-08-15 10:15:58.238	123,90	2025-08-15 10:17:31.072	100,40	2025-08-15 10:19:30.986	71,81	2025-08-15 10:21:17.178	48,77	2025-08-15 10:23:19.318	24,59	2025-08-15 10:25:24.174	0	2025-08-15 10:27:07.987
146,00	2025-08-15 10:15:58.738	127,10	2025-08-15 10:17:31.575	100,40	2025-08-15 10:19:31.487	76,27	2025-08-15 10:21:17.682	48,77	2025-08-15 10:23:19.822	24,59	2025-08-15 10:25:24.661	0	2025-08-15 10:27:08.484
146,00	2025-08-15 10:15:59.246	127,10	2025-08-15 10:17:32.079	99,70	2025-08-15 10:19:31.992	76,27	2025-08-15 10:21:18.186	48,77	2025-08-15 10:23:20.310	24,59	2025-08-15 10:25:25.165	0	2025-08-15 10:27:08.979
144,40	2025-08-15 10:15:59.733	128,40	2025-08-15 10:17:32.566	99,70	2025-08-15 10:19:32.480	76,27	2025-08-15 10:21:18.690	45,33	2025-08-15 10:23:20.814	27,17	2025-08-15 10:25:25.668	0	2025-08-15 10:27:09.478
144,40	2025-08-15 10:16:00.237	128,40	2025-08-15 10:17:33.071	98,90	2025-08-15 10:19:32.984	77,83	2025-08-15 10:21:19.178	45,33	2025-08-15 10:23:21.315	27,17	2025-08-15 10:25:26.172	0	2025-08-15 10:27:09.980
142,10	2025-08-15 10:16:00.740	128,40	2025-08-15 10:17:33.574	98,90	2025-08-15 10:19:33.487	77,83	2025-08-15 10:21:19.681	47,66	2025-08-15 10:23:21.821	27,17	2025-08-15 10:25:26.660	0	2025-08-15 10:27:10.486
142,10	2025-08-15 10:16:01.243	129,60	2025-08-15 10:17:34.078	97,10	2025-08-15 10:19:33.991	77,83	2025-08-15 10:21:20.185	47,66	2025-08-15 10:23:22.309	27,17	2025-08-15 10:25:27.163	0	2025-08-15 10:27:10.990
142,10	2025-08-15 10:16:01.747	129,60	2025-08-15 10:17:34.582	97,10	2025-08-15 10:19:34.495	77,61	2025-08-15 10:21:20.689	52,14	2025-08-15 10:23:22.813	27,17	2025-08-15 10:25:27.667	0	2025-08-15 10:27:11.477
140,60	2025-08-15 10:16:02.235	129,60	2025-08-15 10:17:35.070	97,10	2025-08-15 10:19:34.982	77,61	2025-08-15 10:21:21.176	52,14	2025-08-15 10:23:23.316	25,26	2025-08-15 10:25:28.171	0	2025-08-15 10:27:11.980
140,60	2025-08-15 10:16:02.739	129,30	2025-08-15 10:17:35.573	92,66	2025-08-15 10:19:35.485	77,61	2025-08-15 10:21:21.676	52,14	2025-08-15 10:23:23.821	25,26	2025-08-15 10:25:28.675	0	2025-08-15 10:27:12.483
141,00	2025-08-15 10:16:03.242	129,30	2025-08-15 10:17:36.077	92,66	2025-08-15 10:19:35.989	77,61	2025-08-15 10:21:22.183	52,92	2025-08-15 10:23:24.308	25,26	2025-08-15 10:25:29.162	0	2025-08-15 10:27:12.988
141,00	2025-08-15 10:16:03.747	127,30	2025-08-15 10:17:36.581	92,66	2025-08-15 10:19:36.494	70,03	2025-08-15 10:21:22.687	52,92	2025-08-15 10:23:24.811	32,18	2025-08-15 10:25:29.665	0	2025-08-15 10:27:13.476

Tabel L.8 Data pengukuran beban dan putaran turbin angin Savonius empat sudu , diameter 11 mm

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg	
No.	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
1	322,50	2025-08-15 10:37:18.642	293,00	2025-08-15 10:42:43.172	254,60	2025-08-15 10:47:04.470	216,90	2025-08-15 10:59:00.927	215,60	2025-08-15 11:02:59.679	167,40	2025-08-15 11:06:28.710
2	322,50	2025-08-15 10:37:19.144	293,00	2025-08-15 10:42:43.676	254,60	2025-08-15 10:47:04.974	224,50	2025-08-15 10:59:01.431	215,60	2025-08-15 11:03:00.182	167,40	2025-08-15 11:06:29.198
3	322,50	2025-08-15 10:37:19.649	293,50	2025-08-15 10:42:44.163	255,00	2025-08-15 10:47:05.476	224,50	2025-08-15 10:59:01.935	216,20	2025-08-15 11:03:00.687	169,10	2025-08-15 11:06:29.700
4	322,50	2025-08-15 10:37:20.153	293,50	2025-08-15 10:42:44.666	255,00	2025-08-15 10:47:05.980	224,50	2025-08-15 10:59:02.438	216,20	2025-08-15 11:03:01.173	169,10	2025-08-15 11:06:30.219
5	322,50	2025-08-15 10:37:20.640	294,60	2025-08-15 10:42:45.171	255,70	2025-08-15 10:47:06.469	230,40	2025-08-15 10:59:02.926	219,30	2025-08-15 11:03:01.678	171,00	2025-08-15 11:06:30.711
6	322,70	2025-08-15 10:37:21.145	294,60	2025-08-15 10:42:45.673	255,70	2025-08-15 10:47:06.972	230,40	2025-08-15 10:59:03.432	219,30	2025-08-15 11:03:02.181	171,00	2025-08-15 11:06:31.213
7	322,70	2025-08-15 10:37:21.649	294,60	2025-08-15 10:42:46.162	257,70	2025-08-15 10:47:07.476	234,50	2025-08-15 10:59:03.932	219,30	2025-08-15 11:03:02.685	173,60	2025-08-15 11:06:31.702
8	323,30	2025-08-15 10:37:22.168	294,90	2025-08-15 10:42:46.679	257,70	2025-08-15 10:47:07.980	234,50	2025-08-15 10:59:04.437	222,00	2025-08-15 11:03:03.203	173,60	2025-08-15 11:06:32.207
9	323,30	2025-08-15 10:37:22.638	294,90	2025-08-15 10:42:47.169	257,70	2025-08-15 10:47:08.468	235,90	2025-08-15 10:59:04.941	222,00	2025-08-15 11:03:03.676	174,50	2025-08-15 11:06:32.709
10	321,90	2025-08-15 10:37:23.143	294,10	2025-08-15 10:42:47.673	259,90	2025-08-15 10:47:08.971	235,90	2025-08-15 10:59:05.429	222,50	2025-08-15 11:03:04.194	174,50	2025-08-15 11:06:33.215
11	321,90	2025-08-15 10:37:23.646	294,10	2025-08-15 10:42:48.177	259,90	2025-08-15 10:47:09.491	235,90	2025-08-15 10:59:05.932	222,50	2025-08-15 11:03:04.684	174,50	2025-08-15 11:06:33.700
12	321,90	2025-08-15 10:37:24.151	292,80	2025-08-15 10:42:48.664	261,10	2025-08-15 10:47:09.978	235,50	2025-08-15 10:59:06.436	222,50	2025-08-15 11:03:05.188	174,90	2025-08-15 11:06:34.205
13	319,40	2025-08-15 10:37:24.651	292,80	2025-08-15 10:42:49.168	261,10	2025-08-15 10:47:10.482	235,50	2025-08-15 10:59:06.940	216,60	2025-08-15 11:03:05.675	174,90	2025-08-15 11:06:34.709
14	319,40	2025-08-15 10:37:25.142	291,70	2025-08-15 10:42:49.671	261,20	2025-08-15 10:47:10.970	236,70	2025-08-15 10:59:07.429	216,60	2025-08-15 11:03:06.179	175,40	2025-08-15 11:06:35.218
15	318,00	2025-08-15 10:37:25.645	291,70	2025-08-15 10:42:50.176	261,20	2025-08-15 10:47:11.474	236,70	2025-08-15 10:59:07.932	202,00	2025-08-15 11:03:06.682	175,40	2025-08-15 11:06:35.702
16	318,00	2025-08-15 10:37:26.149	291,30	2025-08-15 10:42:50.663	261,20	2025-08-15 10:47:11.977	238,20	2025-08-15 10:59:08.435	202,00	2025-08-15 11:03:07.186	176,10	2025-08-15 11:06:36.203
17	317,80	2025-08-15 10:37:26.653	291,30	2025-08-15 10:42:51.168	261,10	2025-08-15 10:47:12.481	238,20	2025-08-15 10:59:08.938	202,00	2025-08-15 11:03:07.688	176,10	2025-08-15 11:06:36.709
18	317,80	2025-08-15 10:37:27.140	291,40	2025-08-15 10:42:51.670	261,10	2025-08-15 10:47:12.969	240,00	2025-08-15 10:59:09.426	192,10	2025-08-15 11:03:08.177	177,60	2025-08-15 11:06:37.213
19	318,10	2025-08-15 10:37:27.644	291,40	2025-08-15 10:42:52.175	260,60	2025-08-15 10:47:13.473	240,00	2025-08-15 10:59:09.930	192,10	2025-08-15 11:03:08.712	177,60	2025-08-15 11:06:37.716
20	318,10	2025-08-15 10:37:28.149	293,70	2025-08-15 10:42:52.661	260,60	2025-08-15 10:47:13.977	242,10	2025-08-15 10:59:10.434	192,80	2025-08-15 11:03:09.183	179,90	2025-08-15 11:06:38.205
21	318,10	2025-08-15 10:37:28.651	293,70	2025-08-15 10:42:53.165	261,30	2025-08-15 10:47:14.480	242,10	2025-08-15 10:59:10.938	192,80	2025-08-15 11:03:09.671	179,90	2025-08-15 11:06:38.709
22	318,30	2025-08-15 10:37:29.139	296,30	2025-08-15 10:42:53.669	261,30	2025-08-15 10:47:14.968	242,10	2025-08-15 10:59:11.441	199,00	2025-08-15 11:03:10.177	181,10	2025-08-15 11:06:39.207
23	318,30	2025-08-15 10:37:29.643	296,30	2025-08-15 10:42:54.173	262,30	2025-08-15 10:47:15.471	243,70	2025-08-15 10:59:11.930	199,00	2025-08-15 11:03:10.680	181,10	2025-08-15 11:06:39.715
24	318,90	2025-08-15 10:37:30.146	297,50	2025-08-15 10:42:54.677	262,30	2025-08-15 10:47:15.975	243,70	2025-08-15 10:59:12.433	204,40	2025-08-15 11:03:11.184	181,10	2025-08-15 11:06:40.198
25	318,90	2025-08-15 10:37:30.651	297,50	2025-08-15 10:42:55.165	262,30	2025-08-15 10:47:16.480	244,90	2025-08-15 10:59:12.936	204,40	2025-08-15 11:03:11.687	181,30	2025-08-15 11:06:40.706
26	320,70	2025-08-15 10:37:31.155	298,50	2025-08-15 10:42:55.668	263,50	2025-08-15 10:47:16.966	244,90	2025-08-15 10:59:13.437	207,50	2025-08-15 11:03:12.192	181,30	2025-08-15 11:06:41.210
27	320,70	2025-08-15 10:37:31.642	298,50	2025-08-15 10:42:56.172	263,50	2025-08-15 10:47:17.470	244,90	2025-08-15 10:59:13.928	207,50	2025-08-15 11:03:12.693	181,30	2025-08-15 11:06:41.714
28	321,60	2025-08-15 10:37:32.145	298,90	2025-08-15 10:42:56.676	265,40	2025-08-15 10:47:17.972	244,90	2025-08-15 10:59:14.431	207,50	2025-08-15 11:03:13.183	181,30	2025-08-15 11:06:42.201
29	321,60	2025-08-15 10:37:32.649	298,90	2025-08-15 10:42:57.164	265,40	2025-08-15 10:47:18.477	245,70	2025-08-15 10:59:14.936	211,70	2025-08-15 11:03:13.687	180,10	2025-08-15 11:06:42.705
30	321,60	2025-08-15 10:37:33.153	297,90	2025-08-15 10:42:57.667	266,00	2025-08-15 10:47:18.981	245,70	2025-08-15 10:59:15.439	211,70	2025-08-15 11:03:14.186	180,10	2025-08-15 11:06:43.209

3 kg		3,5 kg		4 kg		4,5 kg		5 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
148,70	2025-08-15 11:08:57.536	116,70	2025-08-15 11:10:57.535	85,59	2025-08-15 11:13:56.843	55,48	2025-08-15 11:48:20.212	40,01	2025-08-15 11:50:17.062
148,70	2025-08-15 11:08:58.039	119,70	2025-08-15 11:10:58.037	85,59	2025-08-15 11:13:57.347	56,54	2025-08-15 11:48:20.710	40,01	2025-08-15 11:50:17.557
148,20	2025-08-15 11:08:58.542	119,70	2025-08-15 11:10:58.538	85,59	2025-08-15 11:13:57.838	56,54	2025-08-15 11:48:21.236	40,01	2025-08-15 11:50:18.048
148,20	2025-08-15 11:08:59.047	119,70	2025-08-15 11:10:59.027	85,59	2025-08-15 11:13:58.339	57,48	2025-08-15 11:48:21.723	38,34	2025-08-15 11:50:18.571
148,20	2025-08-15 11:08:59.535	121,50	2025-08-15 11:10:59.531	80,82	2025-08-15 11:13:58.844	57,48	2025-08-15 11:48:22.267	38,34	2025-08-15 11:50:19.067
148,10	2025-08-15 11:09:00.038	121,50	2025-08-15 11:11:00.034	80,82	2025-08-15 11:13:59.351	58,25	2025-08-15 11:48:22.733	38,34	2025-08-15 11:50:19.572
148,10	2025-08-15 11:09:00.540	122,20	2025-08-15 11:11:00.541	80,82	2025-08-15 11:13:59.837	58,25	2025-08-15 11:48:23.228	40,40	2025-08-15 11:50:20.063
148,30	2025-08-15 11:09:01.045	122,20	2025-08-15 11:11:01.028	80,82	2025-08-15 11:14:00.342	59,82	2025-08-15 11:48:23.720	40,40	2025-08-15 11:50:20.566
148,30	2025-08-15 11:09:01.531	121,00	2025-08-15 11:11:01.532	80,09	2025-08-15 11:14:00.845	59,82	2025-08-15 11:48:24.229	40,40	2025-08-15 11:50:21.073
148,30	2025-08-15 11:09:02.039	121,00	2025-08-15 11:11:02.036	80,09	2025-08-15 11:14:01.349	59,93	2025-08-15 11:48:24.729	42,52	2025-08-15 11:50:21.563
148,50	2025-08-15 11:09:02.541	118,10	2025-08-15 11:11:02.539	80,09	2025-08-15 11:14:01.837	59,93	2025-08-15 11:48:25.230	42,52	2025-08-15 11:50:22.056
148,50	2025-08-15 11:09:03.045	118,10	2025-08-15 11:11:03.027	81,93	2025-08-15 11:14:02.341	59,93	2025-08-15 11:48:25.733	42,52	2025-08-15 11:50:22.557
148,50	2025-08-15 11:09:03.549	118,10	2025-08-15 11:11:03.531	81,93	2025-08-15 11:14:02.845	59,27	2025-08-15 11:48:26.222	39,49	2025-08-15 11:50:23.071
149,70	2025-08-15 11:09:04.036	117,00	2025-08-15 11:11:04.033	81,93	2025-08-15 11:14:03.348	59,27	2025-08-15 11:48:26.759	39,49	2025-08-15 11:50:23.557
149,70	2025-08-15 11:09:04.540	117,00	2025-08-15 11:11:04.535	87,86	2025-08-15 11:14:03.852	60,45	2025-08-15 11:48:27.226	39,49	2025-08-15 11:50:24.064
154,10	2025-08-15 11:09:05.043	119,80	2025-08-15 11:11:05.040	87,86	2025-08-15 11:14:04.339	60,45	2025-08-15 11:48:27.728	39,49	2025-08-15 11:50:24.562
154,10	2025-08-15 11:09:05.544	119,80	2025-08-15 11:11:05.529	87,86	2025-08-15 11:14:04.841	62,22	2025-08-15 11:48:28.236	35,46	2025-08-15 11:50:25.056
154,10	2025-08-15 11:09:06.049	124,30	2025-08-15 11:11:06.033	96,04	2025-08-15 11:14:05.343	62,22	2025-08-15 11:48:28.733	35,46	2025-08-15 11:50:25.563
157,20	2025-08-15 11:09:06.539	124,30	2025-08-15 11:11:06.537	96,04	2025-08-15 11:14:05.846	62,68	2025-08-15 11:48:29.226	35,46	2025-08-15 11:50:26.063
157,20	2025-08-15 11:09:07.042	124,40	2025-08-15 11:11:07.041	101,90	2025-08-15 11:14:06.353	62,68	2025-08-15 11:48:29.744	34,72	2025-08-15 11:50:26.556
157,20	2025-08-15 11:09:07.547	124,40	2025-08-15 11:11:07.528	101,90	2025-08-15 11:14:06.842	62,68	2025-08-15 11:48:30.236	34,72	2025-08-15 11:50:27.081
151,40	2025-08-15 11:09:08.033	120,10	2025-08-15 11:11:08.032	101,90	2025-08-15 11:14:07.346	62,68	2025-08-15 11:48:30.741	34,72	2025-08-15 11:50:27.564
151,40	2025-08-15 11:09:08.538	120,10	2025-08-15 11:11:08.535	102,82	2025-08-15 11:14:07.850	63,04	2025-08-15 11:48:31.242	36,15	2025-08-15 11:50:28.056
151,40	2025-08-15 11:09:09.041	120,10	2025-08-15 11:11:09.041	102,82	2025-08-15 11:14:08.337	63,04	2025-08-15 11:48:31.734	36,15	2025-08-15 11:50:28.567
144,20	2025-08-15 11:09:09.545	116,20	2025-08-15 11:11:09.527	102,82	2025-08-15 11:14:08.841	63,04	2025-08-15 11:48:32.230	36,15	2025-08-15 11:50:29.065
144,20	2025-08-15 11:09:10.033	116,20	2025-08-15 11:11:10.031	100,41	2025-08-15 11:14:09.345	63,04	2025-08-15 11:48:32.745	36,15	2025-08-15 11:50:29.555
144,20	2025-08-15 11:09:10.537	113,80	2025-08-15 11:11:10.534	100,41	2025-08-15 11:14:09.848	62,58	2025-08-15 11:48:33.235	34,97	2025-08-15 11:50:30.068
142,90	2025-08-15 11:09:11.041	113,80	2025-08-15 11:11:11.038	100,41	2025-08-15 11:14:10.336	62,58	2025-08-15 11:48:33.728	34,97	2025-08-15 11:50:30.563
142,90	2025-08-15 11:09:11.544	113,80	2025-08-15 11:11:11.526	95,02	2025-08-15 11:14:10.838	55,90	2025-08-15 11:48:34.245	34,97	2025-08-15 11:50:31.043
144,80	2025-08-15 11:09:12.048	113,10	2025-08-15 11:11:12.030	95,02	2025-08-15 11:14:11.342	55,90	2025-08-15 11:48:34.732	34,97	2025-08-15 11:50:31.584

Tabel L.9 Data pengukuran beban dan putaran turbin angin Savonius empat sudu, diameter 13 mm

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg	
No.	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
1	311,50	2025-08-15 11:53:48.461	286,20	2025-08-15 12:00:57.266	258,70	2025-08-15 12:03:04.704	231,30	2025-08-15 12:04:55.798	197,20	2025-08-15 12:06:43.890	178,00	2025-08-15 12:10:03.768
2	311,50	2025-08-15 11:53:48.940	286,20	2025-08-15 12:00:57.768	256,10	2025-08-15 12:03:05.208	231,30	2025-08-15 12:04:56.292	197,80	2025-08-15 12:06:44.406	178,00	2025-08-15 12:10:04.272
3	309,20	2025-08-15 11:53:49.463	284,00	2025-08-15 12:00:58.273	256,10	2025-08-15 12:03:05.701	231,30	2025-08-15 12:04:56.791	197,80	2025-08-15 12:06:44.877	177,70	2025-08-15 12:10:04.797
4	309,20	2025-08-15 11:53:49.963	284,00	2025-08-15 12:00:58.790	254,50	2025-08-15 12:03:06.218	231,30	2025-08-15 12:04:57.321	197,80	2025-08-15 12:06:45.394	177,70	2025-08-15 12:10:05.292
5	309,20	2025-08-15 11:53:50.463	283,20	2025-08-15 12:00:59.281	254,50	2025-08-15 12:03:06.716	231,30	2025-08-15 12:04:57.812	198,80	2025-08-15 12:06:45.888	177,70	2025-08-15 12:10:05.800
6	308,60	2025-08-15 11:53:50.981	283,20	2025-08-15 12:00:59.807	253,60	2025-08-15 12:03:07.219	229,80	2025-08-15 12:04:58.302	198,80	2025-08-15 12:06:46.384	177,20	2025-08-15 12:10:06.314
7	308,60	2025-08-15 11:53:51.472	283,40	2025-08-15 12:01:00.288	253,60	2025-08-15 12:03:07.719	229,80	2025-08-15 12:04:58.818	198,90	2025-08-15 12:06:46.899	177,20	2025-08-15 12:10:06.793
8	309,10	2025-08-15 11:53:51.964	283,40	2025-08-15 12:01:00.756	253,60	2025-08-15 12:03:08.224	227,60	2025-08-15 12:04:59.287	198,90	2025-08-15 12:06:47.385	177,20	2025-08-15 12:10:07.280
9	309,10	2025-08-15 11:53:52.481	283,40	2025-08-15 12:01:01.295	253,70	2025-08-15 12:03:08.725	227,60	2025-08-15 12:04:59.814	198,90	2025-08-15 12:06:47.921	174,80	2025-08-15 12:10:07.791
10	309,10	2025-08-15 11:53:52.957	283,40	2025-08-15 12:01:01.787	253,70	2025-08-15 12:03:09.197	227,40	2025-08-15 12:05:00.319	200,00	2025-08-15 12:06:48.392	174,80	2025-08-15 12:10:08.281
11	309,10	2025-08-15 11:53:53.467	283,40	2025-08-15 12:01:02.284	253,80	2025-08-15 12:03:09.726	227,40	2025-08-15 12:05:00.811	200,00	2025-08-15 12:06:48.887	172,30	2025-08-15 12:10:08.780
12	309,10	2025-08-15 11:53:53.970	281,50	2025-08-15 12:01:02.794	253,80	2025-08-15 12:03:10.222	227,90	2025-08-15 12:05:01.309	201,70	2025-08-15 12:06:49.397	172,30	2025-08-15 12:10:09.307
13	309,00	2025-08-15 11:53:54.448	281,50	2025-08-15 12:01:03.288	253,80	2025-08-15 12:03:10.714	227,90	2025-08-15 12:05:01.820	201,70	2025-08-15 12:06:49.904	172,30	2025-08-15 12:10:09.801
14	309,00	2025-08-15 11:53:54.963	280,60	2025-08-15 12:01:03.781	253,80	2025-08-15 12:03:11.224	227,10	2025-08-15 12:05:02.308	201,70	2025-08-15 12:06:50.373	169,70	2025-08-15 12:10:10.277
15	307,80	2025-08-15 11:53:55.476	280,60	2025-08-15 12:01:04.296	254,90	2025-08-15 12:03:11.700	227,10	2025-08-15 12:05:02.811	201,10	2025-08-15 12:06:50.868	169,70	2025-08-15 12:10:10.804
16	307,80	2025-08-15 11:53:55.970	282,80	2025-08-15 12:01:04.789	254,90	2025-08-15 12:03:12.216	227,00	2025-08-15 12:05:03.320	201,10	2025-08-15 12:06:51.377	169,70	2025-08-15 12:10:11.283
17	307,80	2025-08-15 11:53:56.479	282,80	2025-08-15 12:01:05.284	254,90	2025-08-15 12:03:12.711	227,00	2025-08-15 12:05:03.834	199,30	2025-08-15 12:06:51.877	167,50	2025-08-15 12:10:11.781
18	307,80	2025-08-15 11:53:56.988	285,00	2025-08-15 12:01:05.795	255,80	2025-08-15 12:03:13.224	227,00	2025-08-15 12:05:04.312	199,30	2025-08-15 12:06:52.369	167,50	2025-08-15 12:10:12.289
19	307,80	2025-08-15 11:53:57.494	285,00	2025-08-15 12:01:06.288	255,80	2025-08-15 12:03:13.719	228,20	2025-08-15 12:05:04.821	199,30	2025-08-15 12:06:52.880	167,50	2025-08-15 12:10:12.784
20	312,10	2025-08-15 11:53:57.945	287,30	2025-08-15 12:01:06.767	255,30	2025-08-15 12:03:14.225	228,20	2025-08-15 12:05:05.279	198,00	2025-08-15 12:06:53.375	166,30	2025-08-15 12:10:13.275
21	312,10	2025-08-15 11:53:58.476	287,30	2025-08-15 12:01:07.294	255,30	2025-08-15 12:03:14.721	228,70	2025-08-15 12:05:05.808	198,00	2025-08-15 12:06:53.870	166,30	2025-08-15 12:10:13.787
22	318,30	2025-08-15 11:53:58.979	289,10	2025-08-15 12:01:07.789	254,50	2025-08-15 12:03:15.188	228,70	2025-08-15 12:05:06.296	198,00	2025-08-15 12:06:54.381	166,30	2025-08-15 12:10:14.302
23	318,30	2025-08-15 11:53:59.466	289,10	2025-08-15 12:01:08.287	254,50	2025-08-15 12:03:15.726	228,00	2025-08-15 12:05:06.810	197,20	2025-08-15 12:06:54.874	164,20	2025-08-15 12:10:14.788
24	318,30	2025-08-15 11:53:59.975	289,10	2025-08-15 12:01:08.786	254,50	2025-08-15 12:03:16.213	228,00	2025-08-15 12:05:07.310	197,20	2025-08-15 12:06:55.370	164,20	2025-08-15 12:10:15.299
25	321,50	2025-08-15 11:54:00.476	289,40	2025-08-15 12:01:09.273	254,50	2025-08-15 12:03:16.708	227,90	2025-08-15 12:05:07.821	197,20	2025-08-15 12:06:55.879	161,20	2025-08-15 12:10:15.793
26	321,50	2025-08-15 11:54:00.965	289,40	2025-08-15 12:01:09.763	254,50	2025-08-15 12:03:17.225	227,90	2025-08-15 12:05:08.329	197,20	2025-08-15 12:06:56.396	161,20	2025-08-15 12:10:16.287
27	321,80	2025-08-15 11:54:01.457	288,70	2025-08-15 12:01:10.278	255,30	2025-08-15 12:03:17.716	226,40	2025-08-15 12:05:08.808	197,20	2025-08-15 12:06:56.869	158,60	2025-08-15 12:10:16.767
28	321,80	2025-08-15 11:54:01.961	288,70	2025-08-15 12:01:10.792	255,30	2025-08-15 12:03:18.222	226,40	2025-08-15 12:05:09.319	197,40	2025-08-15 12:06:57.381	158,60	2025-08-15 12:10:17.293
29	321,80	2025-08-15 11:54:02.467	288,10	2025-08-15 12:01:11.281	255,80	2025-08-15 12:03:18.710	224,40	2025-08-15 12:05:09.818	197,40	2025-08-15 12:06:57.873	156,00	2025-08-15 12:10:17.789
30	320,90	2025-08-15 11:54:02.969	288,10	2025-08-15 12:01:11.797	255,80	2025-08-15 12:03:19.217	224,40	2025-08-15 12:05:10.302	197,40	2025-08-15 12:06:58.371	156,00	2025-08-15 12:10:18.302

3 kg		3,5 kg		4 kg		4,5 kg		5 kg		5,5 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
134,80	2025-08-15 12:15:29.756	118,01	2025-08-15 12:13:38.672	84,70	2025-08-05 10:38:26.017	50,73	2025-08-15 12:11:27.909	24,03	2025-08-15 12:18:41.385	0	2025-08-15 12:18:41.385
134,80	2025-08-15 12:15:30.256	118,01	2025-08-15 12:13:39.187	84,70	2025-08-05 10:38:26.505	50,73	2025-08-15 12:11:28.392	24,03	2025-08-15 12:18:41.894	0	2025-08-15 12:18:41.894
140,30	2025-08-15 12:15:30.765	118,01	2025-08-15 12:13:39.718	84,70	2025-08-05 10:38:27.008	50,93	2025-08-15 12:11:28.886	24,03	2025-08-15 12:18:42.387	0	2025-08-15 12:18:42.387
140,30	2025-08-15 12:15:31.260	115,41	2025-08-15 12:13:40.199	82,60	2025-08-05 10:38:27.512	50,93	2025-08-15 12:11:29.418	23,72	2025-08-15 12:18:42.900	0	2025-08-15 12:18:42.900
144,40	2025-08-15 12:15:31.780	115,41	2025-08-15 12:13:40.696	82,60	2025-08-05 10:38:28.014	51,15	2025-08-15 12:11:29.914	23,72	2025-08-15 12:18:43.417	0	2025-08-15 12:18:43.417
144,40	2025-08-15 12:15:32.280	115,41	2025-08-15 12:13:41.175	81,20	2025-08-05 10:38:28.501	51,15	2025-08-15 12:11:30.426	23,72	2025-08-15 12:18:44.006	0	2025-08-15 12:18:44.006
147,00	2025-08-15 12:15:32.772	115,41	2025-08-15 12:13:41.701	81,20	2025-08-05 10:38:29.007	50,99	2025-08-15 12:11:30.895	27,28	2025-08-15 12:18:44.904	0	2025-08-15 12:18:44.904
147,00	2025-08-15 12:15:33.269	113,01	2025-08-15 12:13:42.186	78,30	2025-08-05 10:38:29.509	50,99	2025-08-15 12:11:31.414	27,28	2025-08-15 12:18:45.405	0	2025-08-15 12:18:45.405
147,30	2025-08-15 12:15:33.780	113,01	2025-08-15 12:13:42.707	78,30	2025-08-05 10:38:30.013	50,99	2025-08-15 12:11:31.908	31,56	2025-08-15 12:18:45.903	0	2025-08-15 12:18:45.903
147,30	2025-08-15 12:15:34.283	111,83	2025-08-15 12:13:43.202	77,40	2025-08-05 10:38:30.517	50,41	2025-08-15 12:11:32.454	31,56	2025-08-15 12:18:46.407	0	2025-08-15 12:18:46.407
144,70	2025-08-15 12:15:34.771	111,83	2025-08-15 12:13:43.705	77,40	2025-08-05 10:38:31.004	50,41	2025-08-15 12:11:32.915	31,56	2025-08-15 12:18:46.924	0	2025-08-15 12:18:46.924
144,70	2025-08-15 12:15:35.277	110,97	2025-08-15 12:13:44.208	77,40	2025-08-05 10:38:31.510	50,68	2025-08-15 12:11:33.412	32,33	2025-08-15 12:18:47.402	0	2025-08-15 12:18:47.402
144,70	2025-08-15 12:15:35.777	110,97	2025-08-15 12:13:44.699	80,60	2025-08-05 10:38:32.011	50,68	2025-08-15 12:11:33.917	32,33	2025-08-15 12:18:47.878	0	2025-08-15 12:18:47.878
141,10	2025-08-15 12:15:36.274	110,73	2025-08-15 12:13:45.196	80,60	2025-08-05 10:38:32.517	51,21	2025-08-15 12:11:34.413	32,33	2025-08-15 12:18:48.408	0	2025-08-15 12:18:48.408
141,10	2025-08-15 12:15:36.780	110,73	2025-08-15 12:13:45.706	83,60	2025-08-05 10:38:33.005	51,21	2025-08-15 12:11:34.905	32,04	2025-08-15 12:18:48.902	0	2025-08-15 12:18:48.902
139,10	2025-08-15 12:15:37.273	111,37	2025-08-15 12:13:46.200	83,60	2025-08-05 10:38:33.506	51,21	2025-08-15 12:11:35.419	32,04	2025-08-15 12:18:49.406	0	2025-08-15 12:18:49.406
139,10	2025-08-15 12:15:37.771	111,37	2025-08-15 12:13:46.698	85,30	2025-08-05 10:38:34.013	51,97	2025-08-15 12:11:35.908	33,16	2025-08-15 12:18:49.896	0	2025-08-15 12:18:49.896
140,30	2025-08-15 12:15:38.281	111,37	2025-08-15 12:13:47.207	85,30	2025-08-05 10:38:34.530	51,97	2025-08-15 12:11:36.424	33,16	2025-08-15 12:18:50.380	0	2025-08-15 12:18:50.380
140,30	2025-08-15 12:15:38.771	111,37	2025-08-15 12:13:47.700	84,80	2025-08-05 10:38:35.002	52,78	2025-08-15 12:11:36.935	33,16	2025-08-15 12:18:50.912	0	2025-08-15 12:18:50.912
142,00	2025-08-15 12:15:39.275	112,85	2025-08-15 12:13:48.209	84,80	2025-08-05 10:38:35.507	52,78	2025-08-15 12:11:37.408	33,11	2025-08-15 12:18:51.422	0	2025-08-15 12:18:51.422
142,00	2025-08-15 12:15:39.783	112,85	2025-08-15 12:13:48.704	86,40	2025-08-05 10:38:36.011	52,78	2025-08-15 12:11:37.908	33,11	2025-08-15 12:18:51.899	0	2025-08-15 12:18:51.899
141,90	2025-08-15 12:15:40.272	112,18	2025-08-15 12:13:49.210	86,40	2025-08-05 10:38:36.528	52,78	2025-08-15 12:11:38.424	33,11	2025-08-15 12:18:52.417	0	2025-08-15 12:18:52.417
141,90	2025-08-15 12:15:40.778	112,18	2025-08-15 12:13:49.706	91,10	2025-08-05 10:38:37.017	52,78	2025-08-15 12:11:38.913	32,33	2025-08-15 12:18:52.887	0	2025-08-15 12:18:52.887
141,90	2025-08-15 12:15:41.272	109,75	2025-08-15 12:13:50.198	91,10	2025-08-05 10:38:37.505	52,05	2025-08-15 12:11:39.383	32,33	2025-08-15 12:18:53.400	0	2025-08-15 12:18:53.400
138,50	2025-08-15 12:15:41.777	109,75	2025-08-15 12:13:50.702	91,10	2025-08-05 10:38:38.011	52,05	2025-08-15 12:11:39.930	32,33	2025-08-15 12:18:53.913	0	2025-08-15 12:18:53.913
138,50	2025-08-15 12:15:42.266	109,22	2025-08-15 12:13:51.199	94,60	2025-08-05 10:38:38.513	52,61	2025-08-15 12:11:40.436	30,58	2025-08-15 12:18:54.410	0	2025-08-15 12:18:54.410
132,30	2025-08-15 12:15:42.781	109,22	2025-08-15 12:13:51.706	94,60	2025-08-05 10:38:39.017	52,61	2025-08-15 12:11:40.906	30,58	2025-08-15 12:18:54.901	0	2025-08-15 12:18:54.901
132,30	2025-08-15 12:15:43.278	110,05	2025-08-15 12:13:52.200	94,60	2025-08-05 10:38:39.503	55,14	2025-08-15 12:11:41.518	30,58	2025-08-15 12:18:55.430	0	2025-08-15 12:18:55.430
132,30	2025-08-15 12:15:43.773	110,05	2025-08-15 12:13:52.704	95,90	2025-08-05 10:38:40.009	55,14	2025-08-15 12:11:42.046	29,38	2025-08-15 12:18:55.940	0	2025-08-15 12:18:55.940
124,07	2025-08-15 12:15:44.279	111,20	2025-08-15 12:13:53.207	95,90	2025-08-05 10:38:40.512	55,91	2025-08-15 12:11:43.130	29,38	2025-08-15 12:18:56.403	0	2025-08-15 12:18:56.403



a). Tanpa *dimple*

b). *Diameter 5 mm*



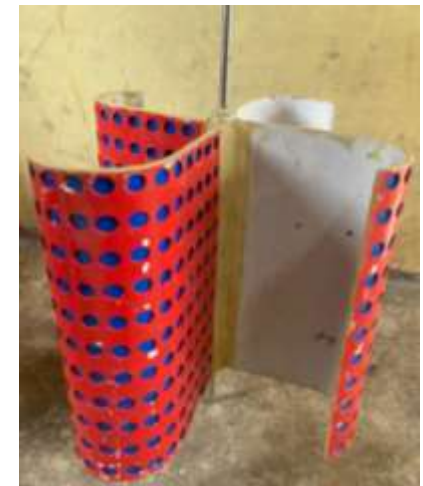
c). *Diameter 7 mm*



d). *Diameter 9 mm*



e). *Diameter 11 mm*



f). *Diameter 13 mm*

Gambar L.10 Model diameter *dimple* yang divariasikan.



Gambar L.11 Proses pemasangan rotor pada *wind tunnel*



Gambar L.12 Proses pengukuran menggunakan *anemometer*



Gambar L.13 Rotor dalam *wind tunnel* tampak depan



Gambar L.14 Rotor dalam *wind tunnel* tampak belakang



Gambar L.15 Turbin angin savonius empat sudu dengan variasi diameter *dimple* tampak samping



Gambar L.16 *wind tunnel* turbin angin Savonius tipe L empat sudu variasi diameter *dimple* tampak samping.



Gambar L.17 Blower tampak samping



Gambar L.18 Blower tampak depan

No.	Arthor / tahun	Publish	Judul	Tujuan	Metode	Hasil
1	Melda Latif, dkk (2022)	Jurnal amplifier Vol 12 No. 1, hal 19-24	Prototype turbin angin savonius empat sudu pada kecepatan angin rendah untuk pengisian baterai.	Untuk menghasilkan daya listrik dari turbin angin savonius dengan empat sudu dan menggunakannya untuk mengisi baterai, terutama pada kondisi kecepatan angin rendah dan juga untuk meningkatkan efisiensi turbin savonius dengan empat sudu agar dapat beroperasi secara efektif.	Dilakukan secara experiment dengan memvariasikan kecepatan angin 2,7 dan (3,9 m/s) dengan melakukan pembebanan pada dua buah baterai.	1. Efisiensi terendah diperoleh sebesar 0,3 %, sedangkan efisiensi tinggi diperoleh sebesar 0,64 %. 2. TSR terendah diperoleh dari pengujian pada kecepatan angin 2,7 m/s yaitu 0,07. Nilai TSR sebesar 0,119 merupakan nilai terbesar dengan kecepatan angin 3,9 m/s.
2	Mohammad Rizqi Saputra (2020).	Artikel Teknik Mesin dan Manufaktur. ARMATUR Vol. 1 No. 2. Hal 61-67	Pengaruh diameter dan jumlah sudu turbin angin savonius tipe L terhadap unjuk kerja yang dihasilkan	untuk mengetahui pengaruh perbedaan diameter dan jumlah sudu terhadap unjuk kerja yang dihasilkan dengan variasi yang digunakan adalah diameter 20 cm dan 40 cm serta jumlah sudu 2 dan 4.	Penelitian kuantitatif, yang memvariasikan diameter turbin angin (20 dan 40 cm) dengan jumlah sudu turbin angin yaitu 2 dan 4.	1. Variasi diameter 40 cm dan 4 sudu memiliki kinerja terbaik dwengan menghasilkan daya 1,676 watt, BHP 3,352 watt, dan efisiensi 2,17%. 2. Torsi tertinggi diraih turbin angin dengan variasi diameter 40 cm dan 2 sudu dengan torsi 0,116 Nm.

3	M. Irfan Nur Kholis,dkk	Jurnal inovasi teknologi terapan VOL.2, No.1, hal 194-200	Prototype turbin angin savonius empat sudu pada kecepatan angin rendah untuk pengisian baterai.	Untuk mengetahui frekuensi natural panel atau pelat setelah berubah bentuk menjadi dimple.	Menggunakan metode eksperiment, yang memvariasikan jumlah lobang dimple 16 dan 20 dengan diamter lobang dimple yaitu 20 dan 25.	1. Variasi diameter lobang dimple 25 dan jumlah lobang dimple 16 memiliki kinerja terbaik dengan rata-rata kekakuan plat senilai 399,01.
4	J. Victor Tuapetel (2019)	JURNAL TEKNIK MESIN – ITI Vol. 3, No. 2 Hal 46-52	ANALISIS DAN PENGUJIAN KINERJA TURBIN ANGIN SAVONIUS 4 SUDU	untuk mengetahui kinerja/performance turbin angin tipe savonius 4 sudu terhadap daya yang dihasilkan.	Simulasi CFD (Cimulating Fluid Dynamics)	1. Putaran pada poros motor berbanding lurus dengan kecepatan angin, begitu pula sebaliknya. Pada poros tertinggi yaitu 466 rpm terjadi pada kecepatan angin 5,2 m/s. 2. daya generator yang dihasilkan semakin besar seiring dengan bertambahnya kecepatan angin yaitu pada kecepatan tertinggi yaitu 5,2 m/s menghasilkan daya sebesar 10 wat sedangkan pada kecepatan angin

						terendah menghasilkan daya sebesar 4,18 m/s.
5	Bayu Mahendra (2013)	Jurusan Teknik Mesin Fakultas Teknik Universitas Brawijaya Malang Hal 1-10	PENGARUH JUMLAH SUDU TERHADAP UNJUK KERJA TURBIN ANGIN SAVONIUS TYPE L	untuk mencari data sebab akibat dalam suatu proses melalui eksperimen sehingga dapat mengetahui pengaruh jumlah sudu terhadap unjuk kerja pada turbin 79ngina savonius type	menggunakan metode penelitian eksperimental (experimental research).	1. pada turbin 3 sudu dengan kecepatan angin 5 m/s dihasilkan BHP 0,267 watt, torsi 0,00398 Nm, dan efisiensi 10,20%. 2. pada turbin 4 sudu dengan kecepatan angin 7 m/s diperoleh BHP 0,191 watt, torsi 0,00320 Nm, dan efisiensi 4,95%.
6	Arnawan Hasibuan (2022)	Feniks MUda Sejahtera,.	Pemanfaatan Energi Angin Untuk Pembangkit Listrik Di Daerah Kepulauan Menggunakan Kincir Angin Skala Kecil.	untuk pembangkit listrik di daerah kepulauan menggunakan kincir angin skala kecil menunjukkan potensi besar untuk pengembangan energi terbarukan di daerah tersebut. Kincir angin skala kecil dapat menjadi solusi untuk memenuhi kebutuhan listrik didaerah yang sulit terangkau oleh	digunakan dalam jurnal tersebut adalah metode eksperimen dan observasi	Pemanfaatan energi angin melalui kincir angin skala kecil memiliki potensi besar untuk memenuhi kebutuhan listrik di daerah kepulauan. Penelitian ini menunjukkan bahwa kincir angin skala kecil dapat menjadi solusi yang efektif, efisien, dan ramah lingkungan untuk pengembangan energi terbarukan di daerah-

				jaringan listrik konvensional, seperti pulau-pulau kecil.		daerah yang sulit terjangkau oleh jaringan listrik konvensional.
7	Sampelawang dkk., (2025)	Engineering Headway, Vol. 20, 2025-03-17: 75-83 halaman	Performance Analysis of the Savonius-Type Rotor with Grooved Blades as a Hydrokinetic Turbin	Meningkatkan efisiensi dan kinerja turbin hidrokinetik Savonius dengan menambahkan alur (Grooves) pada sudu rotor. Penelitian ini bertujuan memahami bagaimana konfigurasi alur memengaruhi perilaku akrodinamis dan efisiensi ekstraksi energi.	Metode yang digunakan melibatkan desain variasi lebar alur pada sudu Savonius, termasuk model dengan lebar alur pada sudu Savonius, termasuk model dengan lebar 12,5 mm. Eksperimen dilakukan untuk mengukur efisiensi (η) dan koefisien <i>drag</i> (CD) pada berbagai debit aliran air, serta membandingkan performa antara rotor konvensional dan rotor beralur.	1) Hasil penelitian menunjukkan bahwa rotor beralur mencapai efisiensi maksimum 35,66% , meningkat 4,69% dibandingkan rotor konvensional. 2) Koefisien <i>drag</i> tertinggi tercapai pada alur 12,5 mm dengan nilai 3,08 , naik 0.37 dari model dasar. (3) Alur meningkatkan gesekan dan distribusi tekanan, sehingga memperbaiki torsi positif dan mengurangi fluktuasi torsi negatif. Temuan ini menunjukkan potensi signifikan dalam optimasi turbin hidrokinetik untuk daerah berkecepatan aliran air rendah.

8	Sampelawang dkk., (2024)	Eastren-European Journal of Enterprise Technologies; Vol. 1, 2024-02-28: 28-37 halaman	Enhancing Savonius Rotor model with Additional Grooves on Hydrokinetik Turbine Performance	Tujuan penelitian ini adalah meningkatkan efisiensi dan kinerja turbin hidrokinetik Savonius melalui modifikasi sudu dengan penambahan alur (<i>Grooves</i>) pada sisi cekung, untuk memahami bagaimana konfigurasi alur memengaruhi perilaku aerodinamis dan efisiensi ekstraksi energi dari aliran air.	Metode yang digunakan melibatkan desain dan pengujian model rotor Savonius dengan tambahan alur pada sudu, termasuk variasi lebar alur, serta pengukuran efisiensi dan koefisien <i>drag</i> pada berbagai debit aliran air. Uji kinerja dilakukan untuk membandingkan model konvensional tanpa alur dan model beralur, dengan fokus pada pengaruh lebar alur terhadap efisiensi dan koefisien <i>drag</i> .	Hasil penelitian menunjukkan bahwa penambahan alur pada sudu Savonius secara signifikan meningkatkan efisiensi dan koefisien <i>drag</i> . Model beralur dengan lebar 12,5 mm memberikan efisiensi maksimum 35,66% dan koefisien <i>drag</i> 3,08 yang berarti terjadi peningkatan koefisiensi sebesar 4,69% dan koefisien <i>drag</i> sebesar 0,37 dibandingkan model tanpa alur. Alur pada sudu meningkatkan gesekan dan distribusi tekanan, sehingga memperbaiki kinerja turbin secara keseluruhan dan efektif untuk ekstraksi energi pada aliran air berkecepatan rendah.
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