

LAMPIRAN

Tabel L. 1 Jadwal penelitian

No	Urutan Penelitian	Bulan Ke-					
		I	II	III	IV	V	VI
1	Tinjauan Pustaka						
2	Seminar Proposal						
3	Pembuatan Turbin Angin Savonius Model <i>Dimple</i> Empat Sudu Dengan Variasi Jumlah <i>Dimple</i>						
4	Pengambilan Data						
5	Pengolahan Data						
6	Seminar Hasil						
7	Ujian						

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^{-5}	0.7246
-100	2.038	966	0.01582	8.036×10^{-6}	1.189×10^{-6}	5.837×10^{-5}	0.7263
-50	1.582	999	0.01979	1.252×10^{-5}	1.474×10^{-5}	9.319×10^{-5}	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}	0.6955
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. Hestermanns, IFI/Plenum, NY, 1970, ISBN 0-306057020-8.

TABEL L.3 MATRIKS JURNAL RUJUKAN

No	Autrhor/ tahun	Publisher	judul	Tujuan	Metode	Hasil
1	Petrus Sampelawang,dkk,(2024)	Eastern-European Journal of Enterprise Technologies ISSN 1729-3774 (2024)	Enhancing Savonius Rotor Model With Additional Grooves On Hydrokinetic Turbine Performance	untuk meningkatkan kinerja rotor Savonius dengan meningkatkan perbedaan gaya hambat yang bekerja antara bilah maju dan bilah kembali.	(1). Objek penelitian adalah model rotor Savonius dengan alur tambahan. (2). Studi ini membahas kebutuhan untuk meningkatkan efisiensi dan kinerja keseluruhan model rotor Savonius dalam turbin hidrokinetik, yang banyak digunakan untuk memanfaatkan energi dari arus air yang mengalir.	Hasil pengujian mengungkapkan bahwa penggabungan alur menyebabkan peningkatan yang nyata dalam efisiensi dan koefisien hambatan (CD). Bilah beralur menunjukkan efisiensi maksimum 30,97% dan koefisien hambatan maksimum 2,71. Khususnya, bilah dengan lebar alur 12,5 mm muncul sebagai model optimal, menunjukkan puncak efisiensi 35,66% dan koefisien hambatan 3,08. Ini menunjukkan peningkatan substansial dalam efisiensi sebesar 4,69% dan kenaikan yang sesuai dalam koefisien hambatan sebesar 0,37 untuk bilah beralur.
2	Petrus Sampelawang,dkk(2025)	Trans Tech Ltd (2025)	Performance Analysis Of The Savonius-Type Rotor With Grooved Blades As A Hydrokinetic Turbine	untuk menganalisis kinerja rotor Savonius dengan melakukan modifikasi model bilah dengan memberikan alur pada sisi cekung.	Pengujian dilakukan pada rotor Savonius dua bilah tanpa alur dan dengan bilah menggunakan 5, 6, 7 dan 8 alur dengan lebar 15 mm pada arah tegak lurus poros dengan beban masukan dan laju aliran yang bervariasi untuk beberapa tingkat putaran yang konstan.	Hasil penelitian menunjukkan bahwa bilah tanpa alur menghasilkan rasio kecepatan ujung (TSR) maksimum sebesar 1,32 dan efisiensi maksimum (η) sebesar 29,58%. Sebaliknya, bilah beralur menghasilkan TSR maksimum sebesar 1,40 dan efisiensi maksimum sebesar 33,71%, yang menunjukkan peningkatan TSR sebesar 0,08 dan peningkatan efisiensi sebesar 4,17%, dengan peningkatan tertinggi terjadi pada bilah delapan alur.
3	Nurul Maghfirotul Laili,Yushardi, Sudarti, (2024)	Universitas Jember	Pemanfaatan Turbin Angin Savonius Sebagai Sumber Energi Terbarukan	untuk menganalisis efisiensi turbin angin Savonius dalam menghasilkan energi listrik dalam memenuhi	yang digunakan dalam menganalisis efisiensi Penggunaan Turbin Angin Savonius menggunakan kajian literatur penelitian	Tiupan angin tersebut dibagi menjadi 2 aliran yaitu aliran laminar merupakan angin yang bertiup tanpa hambatan dan aliran turbulen ,yaitu tiupan angin yang disebabkan adanya tumbukan antara udara

				kebutuhan listrik di desa tertinggal. Faktor faktor yang dapat mempengaruhi efisiensi turbin angin Savonius meliputi kecepatan angin, desain turbin, dan kondisi lingkungan.	dan pengamatan Dimana data dan hasil nilai efisien bersumber dari jurnal pemelitan .dengan tahap memulai mengidentifikasi masalah kemudian mencari kajian literatur dan menganalisa kebutuhan.	dengan benda .kecepatan angin ideal yang dapat digunakan dalam turbin angin 6 m/s – 20 m/s .pada hasil pene;itian didapatkan ketika kecepatan angin rata rata 5,6 m/s menghasilkan tegangan 12,6 volt dan arus 0,12 A dan hasil daya yang dapat dihasilkan dalam turbin dapat diketahui menggunakan persamaan.
4	Irwansyah1, Muhammad Syahrul Anwar, (2023)	Program Studi Pendidikan Vokasional Teknik Mesin, Fakultas Keguruan dan Ilmu Pendidikan Universitas Malikussaleh.	Pengaruh jumlah sudu terhadap performa pada turbin angin Savonius tipe U	Adalah mengkaji pengaruh jumlah sudu turbin angin terhadap daya dan Coefisient of power (COP).	Dengan cara memvariasikan jumlah sudu 2 dan 4 dan kecepatan angin rendah pada wind tunnel divariasikan mulai dari 0 sampai 7 m/s.	Hasil menunjukkan bahwa turbin yang memiliki putaran paling besar adalah turbin dengan jumlah sudu 4 (n= 64 RPM), daya turbin sebesar 15,42 watt, coefisien of power sebesar 0,56 %, dan tegangan listrik dihasilkan oleh generator 6,1 Volt. Dari hasil pengujian dapat disimpulkan turbin angin Savonius tipe U jumlah sudu 2 dan 4 bekerja secara baikpada kecepatan udara rendah, akan tetapi kinerja yang maksimal diperoleh dari turbin angin dengan jumlah sudu 4.
5	Immanuel O. Silla, Arifin Sanusi, Yeremias M. Pell (2022)	Program Studi Teknik Mesin, Fakultas Sains dan Teknik, Universitas Nusa Cendana Jalan Adisucipto, Penfui-Kupang NTT	Analisis Kinerja Turbin Savonius Sebagai Sumber Energi alternatif	(1). Mengetahui kecepatan angin rata-rata yang terukur di desa oenali (2). Analisa karakteristik model uji berupa η , τ , P_{out} dan TSR Model uji	(1).Pengujian eksperimen menggunakan turbin Savonius 2 sudu. (2). Mengukur kecepatan dilakukan tiap 1 jam mulai dari pukul 08.00-16.00 WITA (3). Dimensi alat uji turbin terbuat dari plat aluminium dengan ukuran rotor 1m x 1m dengan menggunakan <i>pulley</i> tubin berdiameter sebesar 16 inci yang terkopel	Hasil perhitungan dan analisa diperoleh (1). Kecepatan rata-rata angin yang terukur di desa Oenali adalah 8.26 m/s mampu memutar turbin Savonius dengan putaran rata-rata sebesar 654 rpm sehingga menghasilkan Torsi Turbin (Tt) sebesar 0.33 N.m. (2). Koefisien Daya (CP) sebesar 2.8 (%) dengan tip speed ratio sebesar 0.6 (λ). (3). Koefisien Torsi (CT) diperoleh sebesar 8.7 (%), dan Tip Speed Ratio yang diperoleh sebesar 0.1 (λ).

					langsung dengan <i>pulley</i> generator berdiameter sebesar 4 inci.	
6	Lutfi Laili Salim,dkk, (2020)	Jurusan Teknik Mesin, Universitas Gunadarma Jalan Margonda Raya No. 100, Depok 16424, Indonesia	Analisis Performa Turbin Angin Savonius Tipe U dengan Memvariasikan Jumlah Sudu Turbin	untuk mengetahui kinerja turbin Savonius yang telah dibuat, daya generator yang dihasilkan dan efisiensi pada generator yang digunakan.	(1). menggunakan metode eksperimental dengan memvariasikan jumlah sudu 2, 3, dan 4. (2). Pengujian dilakukan secara langsung di daerah pesisir pantai.	. Hasil yang diperoleh dari pengolahan data adalah daya keluaran turbin terbesar pada turbin 2 sudu = 38,88 watt. Koefisien daya terbesar, turbin 2 sudu = 0,235. Sedangkan daya keluaran terbesar yang dihasilkan oleh generator = 34,3 watt pada turbin 4 sudu. Efisiensi generator terbesar adalah 12,02% pada turbin 4 sudu.
7	J. Victor Tuapete, Ikbal Arif Triprayoga, Putu M. Santika(2019)	Program Studi Teknik Mesin ITI Jl. Raya Puspipetek Serpong, Tangerang Selatan-Banten, Indonesia, 15320	Analisis Dan Pengujian Kinerja Turbin Angin Savonius 4 Sudu	untuk mengetahui kinerja/performance turbin angin tipe savonius 4 sudu terhadap daya yang dihasilkan.	Metode Penelitian yang dilakukan adalah menganalisis kinerja turbin angin tipe savonius 4 sudu dengan posisi 2 tingkat yang dilakukan di Pantai Tanjung Pasir, Kecamatan Teluknaga, Kabupaten Tangerang	Hasil yang diperoleh yaitu kecepatan angin tertinggi terjadi pada 14.45-14.50 WIB sebesar 5,2 m/det. Daya generator dari kecepatan angin tersebut sebesar 10,5 watt. Kecepatan angin terendah terjadi pada pukul 13.45-13.50 sebesar 3,9 m/det dan daya generator yang dihasilkan sebesar 4,18 watt. Koefisien power tertinggi yaitu sebesar 0,027 dan terendah sebesar 0,019.

Tabel L. 4 Data kecepatan angin rata-rata dan temperatur pada data *logger*

NO	Kecepatan angin (m/s)	Temperatur (°C)	Waktu	Tanggal
1	8.922	24	12.44.46 PM	03-Jul-25
2	8.99	24	12:44:47 PM	03-Jul-25
3	9.018	24	12:44:48 PM	03-Jul-25
4	9,00	24	12:44:49 PM	03-Jul-25
5	9.018	24	12:44:50 PM	03-Jul-25
6	9.016	24	12:44:51 PM	03-Jul-25
7	9.031	24	12:44:52 PM	03-Jul-25
8	9.02	24	12:44:53 PM	03-Jul-25
9	8.93	24	12:44:54 PM	03-Jul-25
10	8.831	24	12:44:55 PM	03-Jul-25
11	8.966	24	12:44:56 PM	03-Jul-25
12	9.046	24	12:44:57 PM	03-Jul-25
13	9.057	24	12:44:58 PM	03-Jul-25
14	9.028	24	12:44:59 PM	03-Jul-25
15	8.935	24	12:45:00 PM	03-Jul-25
16	8.939	24	12:45:01 PM	03-Jul-25
17	8.984	24	12:45:02 PM	03-Jul-25
18	8.984	24	12:45:03 PM	03-Jul-25
19	8.945	24	12:45:04 PM	03-Jul-25
20	8.859	24	12:45:05 PM	03-Jul-25
21	8.83	24	12:45:06 PM	03-Jul-25
22	8.873	24	12:45:07 PM	03-Jul-25
23	8.964	24	12:45:08 PM	03-Jul-25
24	9.07	24	12:45:09 PM	03-Jul-25
25	9.173	24	12:45:10 PM	03-Jul-25
26	9.225	24	12:45:11 PM	03-Jul-25
27	9.18	24	12:45:12 PM	03-Jul-25
28	9.179	24	12:45:13 PM	03-Jul-25
29	9.26	24	12:45:14 PM	03-Jul-25
30	9.269	24	12:45:15 PM	03-Jul-25
	9,00	24		

Kecepatan angin rata-rata (V) = 9,00 m/s

Temperatur angin rata-rata (T) = 24 °C

Tabel L.5 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi 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	437,01	2025-07-11 11:04:02.792	396,55	2025-07-11 11:05:48.109	363,85	2025-07-11 11:07:14.494	330,89	2025-07-11 11:09:02.538	294,22	2025-07-11 11:10:30.366	261	2025-07-11 11:13:56.809
2	437,01	2025-07-11 11:04:03.293	394,87	2025-07-11 11:05:48.604	363,85	2025-07-11 11:07:14.993	330,89	2025-07-11 11:09:03.047	294,22	2025-07-11 11:10:30.859	261	2025-07-11 11:13:57.309
3	437,01	2025-07-11 11:04:03.850	394,87	2025-07-11 11:05:49.177	363,85	2025-07-11 11:07:15.486	330,98	2025-07-11 11:09:03.545	294,22	2025-07-11 11:10:31.353	261	2025-07-11 11:13:57.861
4	441	2025-07-11 11:04:04.352	396,27	2025-07-11 11:05:49.661	363,85	2025-07-11 11:07:16.042	330,98	2025-07-11 11:09:04.086	294,22	2025-07-11 11:10:31.914	261,1	2025-07-11 11:13:58.357
5	441	2025-07-11 11:04:04.840	396,27	2025-07-11 11:05:50.155	357,7	2025-07-11 11:07:16.538	330,8	2025-07-11 11:09:04.602	294,22	2025-07-11 11:10:32.408	261,1	2025-07-11 11:13:58.850
6	441	2025-07-11 11:04:05.347	399,77	2025-07-11 11:05:50.666	357,7	2025-07-11 11:07:17.034	330,8	2025-07-11 11:09:05.091	294,22	2025-07-11 11:10:32.904	261,1	2025-07-11 11:13:59.358
7	441	2025-07-11 11:04:05.842	399,77	2025-07-11 11:05:51.155	357,7	2025-07-11 11:07:17.544	330,8	2025-07-11 11:09:05.592	294,22	2025-07-11 11:10:33.413	284,97	2025-07-11 11:13:59.856
8	439,46	2025-07-11 11:04:06.338	398,94	2025-07-11 11:05:51.659	362,18	2025-07-11 11:07:18.043	324,38	2025-07-11 11:09:06.102	332,5	2025-07-11 11:10:33.907	284,97	2025-07-11 11:14:00.348
9	439,46	2025-07-11 11:04:06.848	398,94	2025-07-11 11:05:52.167	363,18	2025-07-11 11:07:18.539	324,38	2025-07-11 11:09:06.611	332,5	2025-07-11 11:10:34.404	284,97	2025-07-11 11:14:00.859
10	439,46	2025-07-11 11:04:07.343	398,7	2025-07-11 11:05:52.657	363,18	2025-07-11 11:07:19.040	317,31	2025-07-11 11:09:07.087	332,5	2025-07-11 11:10:34.914	287,98	2025-07-11 11:14:01.354
11	439,46	2025-07-11 11:04:07.839	398,94	2025-07-11 11:05:53.152	363,18	2025-07-11 11:07:19.533	317,31	2025-07-11 11:09:07.600	294,12	2025-07-11 11:10:35.407	287,98	2025-07-11 11:14:01.848
12	431,27	2025-07-11 11:04:08.350	398,79	2025-07-11 11:05:53.666	363,85	2025-07-11 11:07:20.033	317,31	2025-07-11 11:09:08.094	294,12	2025-07-11 11:10:35.905	287,98	2025-07-11 11:14:02.360
13	431,27	2025-07-11 11:04:08.839	398,79	2025-07-11 11:05:54.116	363,18	2025-07-11 11:07:20.545	313,88	2025-07-11 11:09:08.590	294,12	2025-07-11 11:10:36.412	286,44	2025-07-11 11:14:02.857
14	431,27	2025-07-11 11:04:09.342	398,94	2025-07-11 11:05:54.604	371,21	2025-07-11 11:07:21.038	313,88	2025-07-11 11:09:09.102	294,75	2025-07-11 11:10:36.911	286,44	2025-07-11 11:14:03.367
15	431,27	2025-07-11 11:04:09.850	398,57	2025-07-11 11:05:55.114	371,21	2025-07-11 11:07:21.532	313,88	2025-07-11 11:09:09.592	294,75	2025-07-11 11:10:37.400	286,44	2025-07-11 11:14:03.862
16	427,77	2025-07-11 11:04:10.357	398,94	2025-07-11 11:05:55.661	371,21	2025-07-11 11:07:22.061	315,07	2025-07-11 11:09:10.086	3294,75	2025-07-11 11:10:37.912	275,94	2025-07-11 11:14:04.358
17	427,77	2025-07-11 11:04:10.840	398,9	2025-07-11 11:05:56.153	372,19	2025-07-11 11:07:22.538	315,07	2025-07-11 11:09:10.600	294,99	2025-07-11 11:10:38.411	275,94	2025-07-11 11:14:04.850
18	427,77	2025-07-11 11:04:11.350	398,94	2025-07-11 11:05:56.662	372,19	2025-07-11 11:07:23.035	330,57	2025-07-11 11:09:11.091	294,99	2025-07-11 11:10:38.901	275,94	2025-07-11 11:14:05.363
19	429,66	2025-07-11 11:04:11.842	398,5	2025-07-11 11:05:57.158	371,28	2025-07-11 11:07:23.545	330,57	2025-07-11 11:09:11.585	294,99	2025-07-11 11:10:39.417	261,2	2025-07-11 11:14:05.858
20	429,66	2025-07-11 11:04:12.341	398,94	2025-07-11 11:05:57.652	371,28	2025-07-11 11:07:24.041	330,57	2025-07-11 11:09:12.100	286,65	2025-07-11 11:10:39.908	261,2	2025-07-11 11:14:06.360
21	429,66	2025-07-11 11:04:12.851	398,27	2025-07-11 11:05:58.162	363,8	2025-07-11 11:07:24.534	330,38	2025-07-11 11:09:12.594	286,65	2025-07-11 11:10:40.408	261,2	2025-07-11 11:14:06.863
22	429,66	2025-07-11 11:04:13.346	398,94	2025-07-11 11:05:58.658	363,5	2025-07-11 11:07:25.043	330,38	2025-07-11 11:09:13.086	286,65	2025-07-11 11:10:40.913	261,2	2025-07-11 11:14:07.357
23	433,44	2025-07-11 11:04:13.837	398,94	2025-07-11 11:05:59.154	363,9	2025-07-11 11:07:25.538	330,38	2025-07-11 11:09:13.597	275,52	2025-07-11 11:10:41.409	253,47	2025-07-11 11:14:07.853
24	433,44	2025-07-11 11:04:14.356	398,1	2025-07-11 11:05:59.661	363,85	2025-07-11 11:07:26.037	330,32	2025-07-11 11:09:14.090	275,52	2025-07-11 11:10:41.904	253,47	2025-07-11 11:14:08.360
25	433,44	2025-07-11 11:04:14.846	398,94	2025-07-11 11:06:00.162	363,85	2025-07-11 11:07:26.547	330,32	2025-07-11 11:09:14.590	275,52	2025-07-11 11:10:42.409	253,47	2025-07-11 11:14:08.860
26	433,44	2025-07-11 11:04:15.341	407,89	2025-07-11 11:06:00.653	363,85	2025-07-11 11:07:27.042	330,79	2025-07-11 11:09:15.103	273,28	2025-07-11 11:10:42.906	261,38	2025-07-11 11:14:09.350
27	431,76	2025-07-11 11:04:15.849	406,35	2025-07-11 11:06:01.158	363,85	2025-07-11 11:07:27.535	330,79	2025-07-11 11:09:15.594	294,28	2025-07-11 11:10:43.402	261,38	2025-07-11 11:14:09.868
28	431,76	2025-07-11 11:04:16.339	406,35	2025-07-11 11:06:01.667	363,85	2025-07-11 11:07:28.047	352,03	2025-07-11 11:09:16.097	294,28	2025-07-11 11:10:43.915	261,38	2025-07-11 11:14:10.361
29	431,76	2025-07-11 11:04:16.841	400,4	2025-07-11 11:06:02.154	373,87	2025-07-11 11:07:28.541	352,03	2025-07-11 11:09:16.598	294,9	2025-07-11 11:10:44.411	261,8	2025-07-11 11:14:10.852
30	431,76	2025-07-11 11:04:17.349	400,4	2025-07-11 11:06:02.672	371,35	2025-07-11 11:07:29.033	352,03	2025-07-11 11:09:17.095	294,9	2025-07-11 11:10:44.907	261,8	2025-07-11 11:14:11.360
	434,0233333		398,03		363,85		330,06		294,35		261,21	

3 kg		3.5 kg		4 kg		4,5 kg		5 kg	
Putaran	Tanggal/Waktu								
227,48	2025-07-11 11:15:31.758	215,25	2025-07-11 11:17:07.859	157,43	2025-07-11 11:19:51.797	96,46	2025-07-11 11:21:21.707	0	2025-07-11 11:21:21.707
227,48	2025-07-11 11:15:32.272	215,25	2025-07-11 11:17:08.357	157,17	2025-07-11 11:19:52.290	96,46	2025-07-11 11:21:22.202	0	2025-07-11 11:21:22.202
227,48	2025-07-11 11:15:32.817	215,25	2025-07-11 11:17:08.850	157,17	2025-07-11 11:19:52.793	96,46	2025-07-11 11:21:22.716	0	2025-07-11 11:21:22.716
235,2	2025-07-11 11:15:33.310	193,96	2025-07-11 11:17:09.410	157,17	2025-07-11 11:19:53.356	85,89	2025-07-11 11:21:23.255	0	2025-07-11 11:21:23.255
235,2	2025-07-11 11:15:33.818	193,96	2025-07-11 11:17:09.906	157,17	2025-07-11 11:19:53.837	85,89	2025-07-11 11:21:23.758	0	2025-07-11 11:21:23.758
235,2	2025-07-11 11:15:34.310	193,96	2025-07-11 11:17:10.402	157,17	2025-07-11 11:19:54.340	85,89	2025-07-11 11:21:24.261	0	2025-07-11 11:21:24.261
235,2	2025-07-11 11:15:34.809	193,96	2025-07-11 11:17:10.909	157,17	2025-07-11 11:19:54.846	85,89	2025-07-11 11:21:24.754	0	2025-07-11 11:21:24.754
227,72	2025-07-11 11:15:35.322	193,96	2025-07-11 11:17:11.408	143,5	2025-07-11 11:19:55.343	85,89	2025-07-11 11:21:25.254	0	2025-07-11 11:21:25.254
227,72	2025-07-11 11:15:35.810	193,96	2025-07-11 11:17:11.904	143,5	2025-07-11 11:19:55.840	85,89	2025-07-11 11:21:25.762	0	2025-07-11 11:21:25.762
227,72	2025-07-11 11:15:36.306	193,13	2025-07-11 11:17:12.409	143,5	2025-07-11 11:19:56.351	85,89	2025-07-11 11:21:26.259	0	2025-07-11 11:21:26.259
242,76	2025-07-11 11:15:36.816	158,13	2025-07-11 11:17:12.909	143,5	2025-07-11 11:19:56.846	85,89	2025-07-11 11:21:26.767	0	2025-07-11 11:21:26.767
242,76	2025-07-11 11:15:37.318	158,13	2025-07-11 11:17:13.352	143,5	2025-07-11 11:19:57.341	85,89	2025-07-11 11:21:27.261	0	2025-07-11 11:21:27.261
242,76	2025-07-11 11:15:37.809	158,13	2025-07-11 11:17:13.910	143,5	2025-07-11 11:19:57.848	85,89	2025-07-11 11:21:27.757	0	2025-07-11 11:21:27.757
254,94	2025-07-11 11:15:38.320	158,13	2025-07-11 11:17:14.406	139,86	2025-07-11 11:19:58.344	85,89	2025-07-11 11:21:28.247	0	2025-07-11 11:21:28.247
254,94	2025-07-11 11:15:38.811	158,13	2025-07-11 11:17:14.907	139,86	2025-07-11 11:19:58.831	89,95	2025-07-11 11:21:28.763	0	2025-07-11 11:21:28.763
254,94	2025-07-11 11:15:39.305	193,4	2025-07-11 11:17:15.414	139,86	2025-07-11 11:19:59.341	89,95	2025-07-11 11:21:29.258	0	2025-07-11 11:21:29.258
227,19	2025-07-11 11:15:39.814	193,4	2025-07-11 11:17:15.909	139,86	2025-07-11 11:19:59.840	89,95	2025-07-11 11:21:29.700	0	2025-07-11 11:21:29.700
227,19	2025-07-11 11:15:40.312	193,4	2025-07-11 11:17:16.402	139,86	2025-07-11 11:20:00.329	89,95	2025-07-11 11:21:30.263	0	2025-07-11 11:21:30.263
227,19	2025-07-11 11:15:40.805	193,4	2025-07-11 11:17:16.911	139,86	2025-07-11 11:20:00.847	89,95	2025-07-11 11:21:30.759	0	2025-07-11 11:21:30.759
227,63	2025-07-11 11:15:41.315	193,4	2025-07-11 11:17:17.409	139,86	2025-07-11 11:20:01.342	89,95	2025-07-11 11:21:31.254	0	2025-07-11 11:21:31.254
227,63	2025-07-11 11:15:41.810	193,4	2025-07-11 11:17:17.907	139,86	2025-07-11 11:20:01.840	89,95	2025-07-11 11:21:31.760	0	2025-07-11 11:21:31.760
227,63	2025-07-11 11:15:42.308	138,67	2025-07-11 11:17:18.410	139,86	2025-07-11 11:20:02.346	89,95	2025-07-11 11:21:32.257	0	2025-07-11 11:21:32.257
273,63	2025-07-11 11:15:42.816	138,67	2025-07-11 11:17:18.901	157,17	2025-07-11 11:20:02.846	89,95	2025-07-11 11:21:32.757	0	2025-07-11 11:21:32.757
266,49	2025-07-11 11:15:43.311	138,67	2025-07-11 11:17:19.402	157,17	2025-07-11 11:20:03.339	89,95	2025-07-11 11:21:33.264	0	2025-07-11 11:21:33.264
266,49	2025-07-11 11:15:43.820	138,67	2025-07-11 11:17:19.866	157,17	2025-07-11 11:20:03.857	89,95	2025-07-11 11:21:33.703	0	2025-07-11 11:21:33.703
266,49	2025-07-11 11:15:44.319	138,67	2025-07-11 11:17:20.410	157,17	2025-07-11 11:20:04.342	89,95	2025-07-11 11:21:34.201	0	2025-07-11 11:21:34.201
251,79	2025-07-11 11:15:44.818	148,12	2025-07-11 11:17:20.902	157,17	2025-07-11 11:20:04.836	89,95	2025-07-11 11:21:34.711	0	2025-07-11 11:21:34.711
251,79	2025-07-11 11:15:45.309	193,12	2025-07-11 11:17:21.408	157,17	2025-07-11 11:20:05.343	89,95	2025-07-11 11:21:35.258	0	2025-07-11 11:21:35.258
251,79	2025-07-11 11:15:45.821	193,12	2025-07-11 11:17:21.908	157,17	2025-07-11 11:20:05.842	89,95	2025-07-11 11:21:35.752	0	2025-07-11 11:21:35.752
251,79	2025-07-11 11:15:46.311	193,12	2025-07-11 11:17:22.403	157,17	2025-07-11 11:20:06.335	65,66	2025-07-11 11:21:36.259	0	2025-07-11 11:21:36.259
227,87		193,08		157		88		0	

Tabel L. 6 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 160

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg	
No.	Putaran	Tanggal/Waktu										
1	423,43	2025-07-11 11:26:55.667	384,49	2025-07-11 11:28:38.311	350,68	2025-07-11 11:29:44.572	315,33	2025-07-11 11:32:04.333	281,52	2025-07-11 11:33:31.094	246,11	2025-07-11 11:35:49.198
2	428,12	2025-07-11 11:26:56.175	384,87	2025-07-11 11:28:38.805	350,2	2025-07-11 11:29:45.064	315,59	2025-07-11 11:32:04.827	281,72	2025-07-11 11:33:31.588	246,11	2025-07-11 11:35:49.707
3	428,12	2025-07-11 11:26:56.718	384,87	2025-07-11 11:28:39.300	350,2	2025-07-11 11:29:45.602	315,59	2025-07-11 11:32:05.344	281,72	2025-07-11 11:33:32.131	245,07	2025-07-11 11:35:50.203
4	428,12	2025-07-11 11:26:57.216	371,84	2025-07-11 11:28:39.857	350,99	2025-07-11 11:29:46.118	315,59	2025-07-11 11:32:05.883	281,72	2025-07-11 11:33:32.642	245,07	2025-07-11 11:35:50.750
5	428,12	2025-07-11 11:26:57.724	371,84	2025-07-11 11:28:40.353	350,99	2025-07-11 11:29:46.611	315,59	2025-07-11 11:32:06.382	281,72	2025-07-11 11:33:33.136	245,07	2025-07-11 11:35:51.254
6	427,21	2025-07-11 11:26:58.219	369,25	2025-07-11 11:28:40.845	350,99	2025-07-11 11:29:47.100	295,89	2025-07-11 11:32:06.888	281,19	2025-07-11 11:33:33.635	246,07	2025-07-11 11:35:51.752
7	427,21	2025-07-11 11:26:58.716	369,25	2025-07-11 11:28:41.358	350,13	2025-07-11 11:29:47.611	295,89	2025-07-11 11:32:07.382	281,19	2025-07-11 11:33:34.161	246,09	2025-07-11 11:35:52.260
8	427,21	2025-07-11 11:26:59.224	368,48	2025-07-11 11:28:41.868	350,13	2025-07-11 11:29:48.108	296,17	2025-07-11 11:32:07.829	281,19	2025-07-11 11:33:34.638	246,09	2025-07-11 11:35:52.770
9	427,21	2025-07-11 11:26:59.718	368,48	2025-07-11 11:28:42.349	350,15	2025-07-11 11:29:48.600	296,17	2025-07-11 11:32:08.389	245	2025-07-11 11:33:35.112	246,09	2025-07-11 11:35:53.252
10	428,61	2025-07-11 11:27:00.233	368,48	2025-07-11 11:28:42.859	350,15	2025-07-11 11:29:49.110	296,17	2025-07-11 11:32:08.834	245	2025-07-11 11:33:35.596	246,09	2025-07-11 11:35:53.748
11	428,61	2025-07-11 11:27:00.724	370,58	2025-07-11 11:28:43.354	350,15	2025-07-11 11:29:49.609	300,79	2025-07-11 11:32:09.384	245	2025-07-11 11:33:36.140	222,74	2025-07-11 11:35:54.261
12	422,94	2025-07-11 11:27:01.217	370,58	2025-07-11 11:28:43.849	350,19	2025-07-11 11:29:50.099	300,79	2025-07-11 11:32:09.888	245	2025-07-11 11:33:36.635	222,74	2025-07-11 11:35:54.757
13	422,94	2025-07-11 11:27:01.720	370,51	2025-07-11 11:28:44.358	350,19	2025-07-11 11:29:50.613	315,34	2025-07-11 11:32:10.384	243,81	2025-07-11 11:33:37.149	222,74	2025-07-11 11:35:55.249
14	417,69	2025-07-11 11:27:02.227	370,51	2025-07-11 11:28:44.850	350,85	2025-07-11 11:29:51.059	315,34	2025-07-11 11:32:10.875	243,81	2025-07-11 11:33:37.638	222,39	2025-07-11 11:35:55.761
15	417,69	2025-07-11 11:27:02.714	372,54	2025-07-11 11:28:45.350	353,85	2025-07-11 11:29:51.601	315,34	2025-07-11 11:32:11.386	243,81	2025-07-11 11:33:38.133	222,39	2025-07-11 11:35:56.251
16	417,76	2025-07-11 11:27:03.207	372,54	2025-07-11 11:28:45.861	355,18	2025-07-11 11:29:52.120	315,11	2025-07-11 11:32:11.881	248,92	2025-07-11 11:33:38.644	222,39	2025-07-11 11:35:56.754
17	417,76	2025-07-11 11:27:03.729	376,95	2025-07-11 11:28:46.357	355,18	2025-07-11 11:29:52.607	315,11	2025-07-11 11:32:12.377	248,92	2025-07-11 11:33:39.138	222,39	2025-07-11 11:35:57.261
18	415,31	2025-07-11 11:27:04.219	376,95	2025-07-11 11:28:46.852	355,18	2025-07-11 11:29:53.104	315,11	2025-07-11 11:32:12.889	248,92	2025-07-11 11:33:39.632	246,5	2025-07-11 11:35:57.747
19	415,31	2025-07-11 11:27:04.711	376,95	2025-07-11 11:28:47.357	347,97	2025-07-11 11:29:53.612	315	2025-07-11 11:32:13.383	256,83	2025-07-11 11:33:40.147	246,5	2025-07-11 11:35:58.245
20	413,77	2025-07-11 11:27:05.233	384,59	2025-07-11 11:28:47.808	347,97	2025-07-11 11:29:54.110	315	2025-07-11 11:32:13.874	256,83	2025-07-11 11:33:40.638	246,5	2025-07-11 11:35:58.757
21	413,77	2025-07-11 11:27:05.715	384,59	2025-07-11 11:28:48.346	337,89	2025-07-11 11:29:54.602	315	2025-07-11 11:32:14.387	256,83	2025-07-11 11:33:41.133	246,5	2025-07-11 11:35:59.251
22	412,51	2025-07-11 11:27:06.221	384,15	2025-07-11 11:28:48.861	337,89	2025-07-11 11:29:55.119	315,42	2025-07-11 11:32:14.883	263,41	2025-07-11 11:33:41.643	246,93	2025-07-11 11:35:59.751
23	412,51	2025-07-11 11:27:06.728	384,15	2025-07-11 11:28:49.358	337,89	2025-07-11 11:29:55.610	315,42	2025-07-11 11:32:15.378	263,41	2025-07-11 11:33:42.137	246,93	2025-07-11 11:36:00.260
24	410,76	2025-07-11 11:27:07.214	384,56	2025-07-11 11:28:49.849	350,47	2025-07-11 11:29:56.106	315,42	2025-07-11 11:32:15.889	281,41	2025-07-11 11:33:42.631	246,93	2025-07-11 11:36:00.748
25	410,76	2025-07-11 11:27:07.713	384,56	2025-07-11 11:28:50.359	350,47	2025-07-11 11:29:56.616	315,78	2025-07-11 11:32:16.385	281,77	2025-07-11 11:33:43.142	246,93	2025-07-11 11:36:01.247
26	410,97	2025-07-11 11:27:08.224	384,56	2025-07-11 11:28:50.852	350,48	2025-07-11 11:29:57.107	315,78	2025-07-11 11:32:16.880	281,77	2025-07-11 11:33:43.641	246,11	2025-07-11 11:36:01.763
27	410,97	2025-07-11 11:27:08.715	384,71	2025-07-11 11:28:51.353	326,48	2025-07-11 11:29:57.605	315,78	2025-07-11 11:32:17.389	281,77	2025-07-11 11:33:44.135	246,11	2025-07-11 11:36:02.255
28	411,32	2025-07-11 11:27:09.211	384,71	2025-07-11 11:28:51.863	326,48	2025-07-11 11:29:58.115	291,97	2025-07-11 11:32:17.887	281,56	2025-07-11 11:33:44.645	246,11	2025-07-11 11:36:02.755
29	411,32	2025-07-11 11:27:09.729	359,52	2025-07-11 11:28:52.351	324,8	2025-07-11 11:29:58.561	291,97	2025-07-11 11:32:18.379	281,56	2025-07-11 11:33:45.133	232,75	2025-07-11 11:36:03.258
30	411,6	2025-07-11 11:27:10.225	359,52	2025-07-11 11:28:52.851	324,8	2025-07-11 11:29:59.053	295,68	2025-07-11 11:32:18.887	281,56	2025-07-11 11:33:45.634	232,75	2025-07-11 11:36:03.754
	419,321		384,35		350,5		315,85		281,53		246,37	

3 kg		3.5 kg		4 kg		4,5 kg		5 kg		5,5 kg	
Putaran	Tanggal/Waktu										
212,59	2025-07-11 11:39:44.891	177,97	2025-07-11 11:42:21.570	143,84	2025-07-11 11:44:06.415	108,76	2025-07-11 11:46:24.361	82,18	2025-07-11 11:48:04.045	0	2025-07-11 11:48:04.045
212,59	2025-07-11 11:39:45.391	177,97	2025-07-11 11:42:22.062	143,84	2025-07-11 11:44:06.930	108,76	2025-07-11 11:46:24.852	82,18	2025-07-11 11:48:04.528	0	2025-07-11 11:48:04.528
212,59	2025-07-11 11:39:45.903	177,97	2025-07-11 11:42:22.577	143,35	2025-07-11 11:44:07.422	108,76	2025-07-11 11:46:25.363	82,18	2025-07-11 11:48:05.028	0	2025-07-11 11:48:05.028
212,94	2025-07-11 11:39:46.448	177,97	2025-07-11 11:42:23.117	143,35	2025-07-11 11:44:07.968	108,76	2025-07-11 11:46:25.919	82,18	2025-07-11 11:48:05.585	0	2025-07-11 11:48:05.585
212,94	2025-07-11 11:39:46.940	177,97	2025-07-11 11:42:23.610	143,35	2025-07-11 11:44:08.479	108,76	2025-07-11 11:46:26.401	82,18	2025-07-11 11:48:06.073	0	2025-07-11 11:48:06.073
212,94	2025-07-11 11:39:47.451	177,97	2025-07-11 11:42:24.121	143,35	2025-07-11 11:44:08.979	108,76	2025-07-11 11:46:26.896	82,18	2025-07-11 11:48:06.569	0	2025-07-11 11:48:06.569
212,94	2025-07-11 11:39:47.949	162,26	2025-07-11 11:42:24.619	143,35	2025-07-11 11:44:09.469	108,76	2025-07-11 11:46:27.407	82,18	2025-07-11 11:48:07.096	0	2025-07-11 11:48:07.096
212,94	2025-07-11 11:39:48.440	162,26	2025-07-11 11:42:25.111	143,35	2025-07-11 11:44:09.976	108,37	2025-07-11 11:46:27.901	82,18	2025-07-11 11:48:07.578	0	2025-07-11 11:48:07.578
173,53	2025-07-11 11:39:48.952	162,26	2025-07-11 11:42:25.621	143,35	2025-07-11 11:44:10.474	108,37	2025-07-11 11:46:28.397	82,18	2025-07-11 11:48:08.075	0	2025-07-11 11:48:08.075
173,53	2025-07-11 11:39:49.442	162,26	2025-07-11 11:42:26.118	143,31	2025-07-11 11:44:10.966	108,37	2025-07-11 11:46:28.906	68,18	2025-07-11 11:48:08.585	0	2025-07-11 11:48:08.585
173,53	2025-07-11 11:39:49.937	162,26	2025-07-11 11:42:26.610	135,31	2025-07-11 11:44:11.475	108,37	2025-07-11 11:46:29.401	68,18	2025-07-11 11:48:09.074	0	2025-07-11 11:48:09.074
173,53	2025-07-11 11:39:50.446	163,52	2025-07-11 11:42:27.126	135,31	2025-07-11 11:44:11.974	108,37	2025-07-11 11:46:29.895	68,18	2025-07-11 11:48:09.575	0	2025-07-11 11:48:09.575
173,53	2025-07-11 11:39:50.949	163,52	2025-07-11 11:42:27.619	135,31	2025-07-11 11:44:12.468	108,37	2025-07-11 11:46:30.407	68,18	2025-07-11 11:48:10.081	0	2025-07-11 11:48:10.081
168,63	2025-07-11 11:39:51.441	163,52	2025-07-11 11:42:28.116	135,31	2025-07-11 11:44:12.979	108,37	2025-07-11 11:46:30.902	68,18	2025-07-11 11:48:10.575	0	2025-07-11 11:48:10.575
168,63	2025-07-11 11:39:51.946	163,52	2025-07-11 11:42:28.606	135,31	2025-07-11 11:44:13.471	108,37	2025-07-11 11:46:31.401	68,18	2025-07-11 11:48:11.073	0	2025-07-11 11:48:11.073
168,63	2025-07-11 11:39:52.438	177,47	2025-07-11 11:42:29.117	135,31	2025-07-11 11:44:13.969	108,37	2025-07-11 11:46:31.905	68,18	2025-07-11 11:48:11.583	0	2025-07-11 11:48:11.583
168,63	2025-07-11 11:39:52.937	177,47	2025-07-11 11:42:29.611	135,31	2025-07-11 11:44:14.479	90,51	2025-07-11 11:46:32.400	68,18	2025-07-11 11:48:12.079	0	2025-07-11 11:48:12.079
212,19	2025-07-11 11:39:53.449	177,47	2025-07-11 11:42:30.107	135,31	2025-07-11 11:44:14.973	90,51	2025-07-11 11:46:32.896	68,18	2025-07-11 11:48:12.571	0	2025-07-11 11:48:12.571
212,19	2025-07-11 11:39:53.943	177,47	2025-07-11 11:42:30.616	143,9	2025-07-11 11:44:15.471	90,51	2025-07-11 11:46:33.408	68,18	2025-07-11 11:48:13.088	0	2025-07-11 11:48:13.088
212,19	2025-07-11 11:39:54.435	177,47	2025-07-11 11:42:31.113	143,9	2025-07-11 11:44:15.963	90,51	2025-07-11 11:46:33.902	68,18	2025-07-11 11:48:13.571	0	2025-07-11 11:48:13.571
212,19	2025-07-11 11:39:54.944	177,86	2025-07-11 11:42:31.605	143,9	2025-07-11 11:44:16.477	90,51	2025-07-11 11:46:34.395	68,18	2025-07-11 11:48:14.075	0	2025-07-11 11:48:14.075
212,19	2025-07-11 11:39:55.443	177,86	2025-07-11 11:42:32.120	143,9	2025-07-11 11:44:16.967	90,51	2025-07-11 11:46:34.907	72,73	2025-07-11 11:48:14.583	0	2025-07-11 11:48:14.583
212,76	2025-07-11 11:39:55.938	174,86	2025-07-11 11:42:32.616	143,9	2025-07-11 11:44:17.457	90,51	2025-07-11 11:46:35.395	72,73	2025-07-11 11:48:15.076	0	2025-07-11 11:48:15.076
212,76	2025-07-11 11:39:56.442	174,86	2025-07-11 11:42:33.120	143,9	2025-07-11 11:44:17.973	115,43	2025-07-11 11:46:35.901	72,73	2025-07-11 11:48:15.573	0	2025-07-11 11:48:15.573
212,76	2025-07-11 11:39:56.940	174,86	2025-07-11 11:42:33.621	117,74	2025-07-11 11:44:18.466	115,43	2025-07-11 11:46:36.409	72,73	2025-07-11 11:48:16.083	0	2025-07-11 11:48:16.083
212,76	2025-07-11 11:39:57.439	175,42	2025-07-11 11:42:34.059	117,74	2025-07-11 11:44:18.963	115,43	2025-07-11 11:46:36.901	72,73	2025-07-11 11:48:16.578	0	2025-07-11 11:48:16.578
198,45	2025-07-11 11:39:57.951	177,42	2025-07-11 11:42:34.608	117,74	2025-07-11 11:44:19.470	115,43	2025-07-11 11:46:37.411	72,73	2025-07-11 11:48:17.071	0	2025-07-11 11:48:17.071
198,45	2025-07-11 11:39:58.441	177,42	2025-07-11 11:42:35.122	117,74	2025-07-11 11:44:19.969	115,43	2025-07-11 11:46:37.913	72,73	2025-07-11 11:48:17.578	0	2025-07-11 11:48:17.578
198,45	2025-07-11 11:39:58.936	177,42	2025-07-11 11:42:35.613	143,48	2025-07-11 11:44:20.460	108,29	2025-07-11 11:46:38.404	72,73	2025-07-11 11:48:18.075	0	2025-07-11 11:48:18.075
198,45	2025-07-11 11:39:59.445	177,42	2025-07-11 11:42:36.106	143,48	2025-07-11 11:44:20.973	108,29	2025-07-11 11:46:38.902	72,73	2025-07-11 11:48:18.524	0	2025-07-11 11:48:18.524
212,28		177,67		143,17		108,1		73,745		0	

Tabel L. 7 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 176

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	412,02	2025-07-11 11:52:27.130	391,65	2025-07-11 11:54:54.468	332,15	2025-07-11 12:01:01.387	321,09	2025-07-11 12:02:14.600	284,46	2025-07-11 12:03:14.842	254,13	2025-07-11 12:04:29.311	259,21	2025-07-11 12:05:47.604
2	406,35	2025-07-11 11:52:27.656	391,65	2025-07-11 11:54:54.954	334,81	2025-07-11 12:01:01.870	313,04	2025-07-11 12:02:15.116	284,96	2025-07-11 12:03:15.358	254,13	2025-07-11 12:04:29.800	259,21	2025-07-11 12:05:48.104
3	406,35	2025-07-11 11:52:28.181	376,46	2025-07-11 11:54:55.448	334,81	2025-07-11 12:01:02.365	313,04	2025-07-11 12:02:15.606	284,96	2025-07-11 12:03:15.847	254,25	2025-07-11 12:04:30.278	259,21	2025-07-11 12:05:48.643
4	406,7	2025-07-11 11:52:28.678	376,46	2025-07-11 11:54:55.999	337,26	2025-07-11 12:01:02.921	312,69	2025-07-11 12:02:16.158	284,96	2025-07-11 12:03:16.395	254,25	2025-07-11 12:04:30.821	259,21	2025-07-11 12:05:49.146
5	406,7	2025-07-11 11:52:29.187	376,46	2025-07-11 11:54:56.508	337,26	2025-07-11 12:01:03.416	312,69	2025-07-11 12:02:16.663	295,89	2025-07-11 12:03:16.889	254,25	2025-07-11 12:04:31.335	267,12	2025-07-11 12:05:49.646
6	403,13	2025-07-11 11:52:29.682	376,86	2025-07-11 11:54:56.993	337,26	2025-07-11 12:01:03.927	312,69	2025-07-11 12:02:17.165	295,89	2025-07-11 12:03:17.391	261,03	2025-07-11 12:04:31.823	225,12	2025-07-11 12:05:50.145
7	403,13	2025-07-11 11:52:30.180	376,86	2025-07-11 11:54:57.494	335,79	2025-07-11 12:01:04.425	316,12	2025-07-11 12:02:17.656	295,89	2025-07-11 12:03:17.893	261,03	2025-07-11 12:04:32.326	235,12	2025-07-11 12:05:50.646
8	400,82	2025-07-11 11:52:30.690	376,7	2025-07-11 11:54:58.005	335,79	2025-07-11 12:01:04.918	316,12	2025-07-11 12:02:18.161	290,15	2025-07-11 12:03:18.337	261,03	2025-07-11 12:04:32.838	225,04	2025-07-11 12:05:51.144
9	400,82	2025-07-11 11:52:31.184	376,7	2025-07-11 11:54:58.497	338,17	2025-07-11 12:01:05.416	316,12	2025-07-11 12:02:18.658	290,15	2025-07-11 12:03:18.901	258,65	2025-07-11 12:04:33.331	225,04	2025-07-11 12:05:51.657
10	397,88	2025-07-11 11:52:31.680	375,27	2025-07-11 11:54:58.994	338,17	2025-07-11 12:01:05.927	315,49	2025-07-11 12:02:19.153	290,15	2025-07-11 12:03:19.374	258,65	2025-07-11 12:04:33.824	225,04	2025-07-11 12:05:52.151
11	397,88	2025-07-11 11:52:32.188	375,27	2025-07-11 11:54:59.505	338,17	2025-07-11 12:01:06.425	315,49	2025-07-11 12:02:19.663	296,1	2025-07-11 12:03:19.891	258,65	2025-07-11 12:04:34.350	256,9	2025-07-11 12:05:52.646
12	396,34	2025-07-11 11:52:32.690	367,85	2025-07-11 11:55:00.007	346,88	2025-07-11 12:01:06.912	316,86	2025-07-11 12:02:20.162	296,1	2025-07-11 12:03:20.402	254,43	2025-07-11 12:04:34.826	256,9	2025-07-11 12:05:53.146
13	396,34	2025-07-11 11:52:33.179	367,85	2025-07-11 11:55:00.496	348,88	2025-07-11 12:01:07.421	316,86	2025-07-11 12:02:20.654	284,42	2025-07-11 12:03:20.896	254,43	2025-07-11 12:04:35.316	256,9	2025-07-11 12:05:53.646
14	396,34	2025-07-11 11:52:33.687	367,85	2025-07-11 11:55:00.954	346,24	2025-07-11 12:01:07.917	316,86	2025-07-11 12:02:21.167	284,42	2025-07-11 12:03:21.390	254,43	2025-07-11 12:04:35.831	256,9	2025-07-11 12:05:54.147
15	403,2	2025-07-11 11:52:34.184	366,24	2025-07-11 11:55:01.504	346,24	2025-07-11 12:01:08.416	314,51	2025-07-11 12:02:21.661	284,42	2025-07-11 12:03:21.901	254,68	2025-07-11 12:04:36.328	246,75	2025-07-11 12:05:54.642
16	403,2	2025-07-11 11:52:34.682	366,24	2025-07-11 11:55:01.999	353,71	2025-07-11 12:01:08.922	314,51	2025-07-11 12:02:22.157	284,93	2025-07-11 12:03:22.392	254,68	2025-07-11 12:04:36.817	246,75	2025-07-11 12:05:55.150
17	409,92	2025-07-11 11:52:35.189	364,35	2025-07-11 11:55:02.506	353,71	2025-07-11 12:01:09.421	314,51	2025-07-11 12:02:22.671	284,93	2025-07-11 12:03:22.890	254,68	2025-07-11 12:04:37.330	246,75	2025-07-11 12:05:55.646
18	409,92	2025-07-11 11:52:35.679	364,35	2025-07-11 11:55:02.999	353,71	2025-07-11 12:01:09.867	316,18	2025-07-11 12:02:23.159	284,93	2025-07-11 12:03:23.400	254,68	2025-07-11 12:04:37.830	230,3	2025-07-11 12:05:56.143
19	412,65	2025-07-11 11:52:36.179	362,95	2025-07-11 11:55:03.499	353,08	2025-07-11 12:01:10.423	316,18	2025-07-11 12:02:23.655	298,06	2025-07-11 12:03:23.893	263,62	2025-07-11 12:04:38.317	230,3	2025-07-11 12:05:56.651
20	412,65	2025-07-11 11:52:36.688	362,95	2025-07-11 11:55:04.003	353,08	2025-07-11 12:01:10.920	316,39	2025-07-11 12:02:24.167	298,06	2025-07-11 12:03:24.388	263,62	2025-07-11 12:04:38.833	230,3	2025-07-11 12:05:57.146
21	415,38	2025-07-11 11:52:37.186	362,95	2025-07-11 11:55:04.497	346,29	2025-07-11 12:01:11.412	316,39	2025-07-11 12:02:24.656	298,06	2025-07-11 12:03:24.897	263,62	2025-07-11 12:04:39.328	230,3	2025-07-11 12:05:57.638
22	415,38	2025-07-11 11:52:37.679	353,01	2025-07-11 11:55:04.996	346,29	2025-07-11 12:01:11.925	316,39	2025-07-11 12:02:25.102	294,28	2025-07-11 12:03:25.395	263,41	2025-07-11 12:04:39.824	225,31	2025-07-11 12:05:58.152
23	417,69	2025-07-11 11:52:38.191	353,01	2025-07-11 11:55:05.500	346,29	2025-07-11 12:01:12.416	309,05	2025-07-11 12:02:25.663	294,28	2025-07-11 12:03:25.887	263,41	2025-07-11 12:04:40.334	225,31	2025-07-11 12:05:58.648
24	417,69	2025-07-11 11:52:38.683	360,01	2025-07-11 11:55:06.001	347,48	2025-07-11 12:01:12.913	309,05	2025-07-11 12:02:26.157	294,28	2025-07-11 12:03:26.396	263,41	2025-07-11 12:04:40.823	225,31	2025-07-11 12:05:59.137
25	414,82	2025-07-11 11:52:39.176	360,01	2025-07-11 11:55:06.497	347,48	2025-07-11 12:01:13.423	309,05	2025-07-11 12:02:26.652	289,45	2025-07-11 12:03:26.893	270,06	2025-07-11 12:04:41.320	225,31	2025-07-11 12:05:59.650
26	414,82	2025-07-11 11:52:39.690	377,58	2025-07-11 11:55:06.998	350,63	2025-07-11 12:01:13.915	300,44	2025-07-11 12:02:27.162	289,45	2025-07-11 12:03:27.387	270,06	2025-07-11 12:04:41.838	225,08	2025-07-11 12:06:00.161
27	413,14	2025-07-11 11:52:40.191	377,58	2025-07-11 11:55:07.496	350,63	2025-07-11 12:01:14.414	300,44	2025-07-11 12:02:27.655	289,45	2025-07-11 12:03:27.895	270,06	2025-07-11 12:04:42.330	224,08	2025-07-11 12:06:00.643
28	413,14	2025-07-11 11:52:40.679	381,78	2025-07-11 11:55:07.999	350,63	2025-07-11 12:01:14.924	300,44	2025-07-11 12:02:28.151	284,76	2025-07-11 12:03:28.421	254,47	2025-07-11 12:04:42.816	234,08	2025-07-11 12:06:01.147
29	410,97	2025-07-11 11:52:41.186	381,78	2025-07-11 11:55:08.504	346,2	2025-07-11 12:01:15.415	299,18	2025-07-11 12:02:28.663	284,76	2025-07-11 12:03:28.886	254,47	2025-07-11 12:04:43.335	225,08	2025-07-11 12:06:01.649
30	410,97	2025-07-11 11:52:41.679	381,78	2025-07-11 11:55:09.009	346,2	2025-07-11 12:01:15.914	299,18	2025-07-11 12:02:29.160	284,76	2025-07-11 12:03:29.400	254,47	2025-07-11 12:04:43.823	225,43	2025-07-11 12:06:02.141
	407,544667		376,42		346,04		316,54		284,75		254,79		225,45	

3,5 kg		4 kg		4,5 kg		5 kg		5,5 kg		6 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
195,36	2025-07-11 12:07:12.921	164,16	2025-07-11 12:08:19.055	135,12	2025-07-11 12:11:01.342	105,91	2025-07-11 12:18:56.708	67,06	2025-07-11 12:21:16.677	0	2025-07-11 12:21:16.677
195,98	2025-07-11 12:07:13.418	164,16	2025-07-11 12:08:19.508	135,12	2025-07-11 12:11:01.840	105,91	2025-07-11 12:18:57.209	67,06	2025-07-11 12:21:17.181	0	2025-07-11 12:21:17.181
195,98	2025-07-11 12:07:13.960	164,16	2025-07-11 12:08:20.002	135,12	2025-07-11 12:11:02.351	105,91	2025-07-11 12:18:57.699	67,06	2025-07-11 12:21:17.685	0	2025-07-11 12:21:17.685
195,98	2025-07-11 12:07:14.451	164,54	2025-07-11 12:08:20.560	135,12	2025-07-11 12:11:02.889	105,91	2025-07-11 12:18:58.202	67,06	2025-07-11 12:21:18.172	0	2025-07-11 12:21:18.172
195,98	2025-07-11 12:07:14.968	164,54	2025-07-11 12:08:21.058	135,12	2025-07-11 12:11:03.942	105,91	2025-07-11 12:18:58.706	67,06	2025-07-11 12:21:18.675	0	2025-07-11 12:21:18.675
195,98	2025-07-11 12:07:15.462	164,54	2025-07-11 12:08:21.550	135,12	2025-07-11 12:11:04.391	105,91	2025-07-11 12:18:59.210	67,06	2025-07-11 12:21:19.179	0	2025-07-11 12:21:19.179
195,75	2025-07-11 12:07:15.959	164,54	2025-07-11 12:08:22.062	105	2025-07-11 12:11:04.887	105,91	2025-07-11 12:18:59.698	73,78	2025-07-11 12:21:19.683	0	2025-07-11 12:21:19.683
195,75	2025-07-11 12:07:16.465	164,54	2025-07-11 12:08:22.555	105	2025-07-11 12:11:05.400	105,91	2025-07-11 12:19:00.201	73,78	2025-07-11 12:21:20.171	0	2025-07-11 12:21:20.171
195,75	2025-07-11 12:07:16.965	172,06	2025-07-11 12:08:23.058	105	2025-07-11 12:11:05.909	104,3	2025-07-11 12:19:00.705	73,78	2025-07-11 12:21:20.674	0	2025-07-11 12:21:20.674
195,75	2025-07-11 12:07:17.470	172,06	2025-07-11 12:08:23.563	105	2025-07-11 12:11:06.386	104,3	2025-07-11 12:19:01.209	73,78	2025-07-11 12:21:21.178	0	2025-07-11 12:21:21.178
180,81	2025-07-11 12:07:17.982	172,06	2025-07-11 12:08:24.059	105	2025-07-11 12:11:06.894	104,3	2025-07-11 12:19:01.697	73,78	2025-07-11 12:21:21.682	0	2025-07-11 12:21:21.682
180,81	2025-07-11 12:07:18.463	172,06	2025-07-11 12:08:24.551	105	2025-07-11 12:11:07.393	104,3	2025-07-11 12:19:02.200	73,78	2025-07-11 12:21:22.170	0	2025-07-11 12:21:22.170
180,81	2025-07-11 12:07:18.971	172,06	2025-07-11 12:08:25.060	105	2025-07-11 12:11:07.886	104,3	2025-07-11 12:19:02.704	73,78	2025-07-11 12:21:22.673	0	2025-07-11 12:21:22.673
180,81	2025-07-11 12:07:19.466	174,37	2025-07-11 12:08:25.569	110,32	2025-07-11 12:11:08.395	104,3	2025-07-11 12:19:03.208	73,78	2025-07-11 12:21:23.177	0	2025-07-11 12:21:23.177
180,81	2025-07-11 12:07:19.963	174,37	2025-07-11 12:08:26.050	110,32	2025-07-11 12:11:08.904	104,3	2025-07-11 12:19:03.711	73,78	2025-07-11 12:21:23.680	0	2025-07-11 12:21:23.680
171,43	2025-07-11 12:07:20.453	174,37	2025-07-11 12:08:26.566	110,32	2025-07-11 12:11:09.388	91,91	2025-07-11 12:19:04.199	73,78	2025-07-11 12:21:24.184	0	2025-07-11 12:21:24.184
171,43	2025-07-11 12:07:20.965	174,37	2025-07-11 12:08:27.059	110,32	2025-07-11 12:11:09.899	91,91	2025-07-11 12:19:04.703	73,78	2025-07-11 12:21:24.672	0	2025-07-11 12:21:24.672
171,43	2025-07-11 12:07:21.462	164,94	2025-07-11 12:08:27.553	110,32	2025-07-11 12:11:10.393	91,91	2025-07-11 12:19:05.207	73,78	2025-07-11 12:21:25.176	0	2025-07-11 12:21:25.176
171,43	2025-07-11 12:07:21.956	164,94	2025-07-11 12:08:28.063	146,3	2025-07-11 12:11:10.885	91,91	2025-07-11 12:19:05.710	73,78	2025-07-11 12:21:25.679	0	2025-07-11 12:21:25.679
171,43	2025-07-11 12:07:22.465	164,94	2025-07-11 12:08:28.555	146,3	2025-07-11 12:11:11.395	91,91	2025-07-11 12:19:06.197	73,78	2025-07-11 12:21:26.183	0	2025-07-11 12:21:26.183
174,86	2025-07-11 12:07:22.963	164,94	2025-07-11 12:08:29.047	146,3	2025-07-11 12:11:11.892	91,91	2025-07-11 12:19:06.701	75,11	2025-07-11 12:21:26.671	0	2025-07-11 12:21:26.671
174,86	2025-07-11 12:07:23.455	164,94	2025-07-11 12:08:29.565	146,3	2025-07-11 12:11:12.386	129,99	2025-07-11 12:19:07.202	75,11	2025-07-11 12:21:27.174	0	2025-07-11 12:21:27.174
174,86	2025-07-11 12:07:23.967	175,35	2025-07-11 12:08:30.056	135,21	2025-07-11 12:11:12.900	129,99	2025-07-11 12:19:07.709	75,11	2025-07-11 12:21:27.678	0	2025-07-11 12:21:27.678
174,86	2025-07-11 12:07:24.464	175,35	2025-07-11 12:08:30.550	182,21	2025-07-11 12:11:13.401	129,99	2025-07-11 12:19:08.196	75,11	2025-07-11 12:21:28.182	0	2025-07-11 12:21:28.182
191,45	2025-07-11 12:07:24.956	175,35	2025-07-11 12:08:31.055	182,21	2025-07-11 12:11:13.889	129,99	2025-07-11 12:19:08.700	75,11	2025-07-11 12:21:28.669	0	2025-07-11 12:21:28.669
191,45	2025-07-11 12:07:25.468	175,35	2025-07-11 12:08:31.552	182,21	2025-07-11 12:11:14.392	129,99	2025-07-11 12:19:09.203	75,11	2025-07-11 12:21:29.173	0	2025-07-11 12:21:29.173
191,45	2025-07-11 12:07:25.977	175,35	2025-07-11 12:08:32.046	182,21	2025-07-11 12:11:14.886	150,78	2025-07-11 12:19:09.708	75,11	2025-07-11 12:21:29.677	0	2025-07-11 12:21:29.677
191,45	2025-07-11 12:07:26.458	164,98	2025-07-11 12:08:32.559	177,17	2025-07-11 12:11:15.380	150,78	2025-07-11 12:19:10.211	91,21	2025-07-11 12:21:30.181	0	2025-07-11 12:21:30.181
195,56	2025-07-11 12:07:26.963	164,98	2025-07-11 12:08:33.050	177,17	2025-07-11 12:11:16.331	150,78	2025-07-11 12:19:10.699	91,21	2025-07-11 12:21:30.669	0	2025-07-11 12:21:30.669
195,56	2025-07-11 12:07:27.463	164,98	2025-07-11 12:08:33.562	177,17	2025-07-11 12:11:16.889	150,78	2025-07-11 12:19:11.203	91,21	2025-07-11 12:21:31.172	0	2025-07-11 12:21:31.172
195,45		164,25		135,9		104,73		74,4893333		0	

Tabel L. 8 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 192

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	437,92	2025-07-11 12:37:37.365	394,51	2025-07-11 12:39:20.789	364,37	2025-07-11 12:41:02.775	332,75	2025-07-11 12:42:21.176	319,06	2025-07-11 12:43:34.843	273,13	2025-07-11 12:45:07.543	242,43	2025-07-11 12:47:26.539
2	437,92	2025-07-11 12:37:37.860	394,51	2025-07-11 12:39:21.299	364,37	2025-07-11 12:41:03.271	332,04	2025-07-11 12:42:21.690	319,06	2025-07-11 12:43:35.339	273,13	2025-07-11 12:45:08.039	242,43	2025-07-11 12:47:27.012
3	437,92	2025-07-11 12:37:38.404	394,05	2025-07-11 12:39:21.792	364,08	2025-07-11 12:41:03.765	332,04	2025-07-11 12:42:22.231	326,9	2025-07-11 12:43:35.903	273,13	2025-07-11 12:45:08.584	253,61	2025-07-11 12:47:27.507
4	429,1	2025-07-11 12:37:38.914	394,05	2025-07-11 12:39:22.338	364,08	2025-07-11 12:41:04.328	332,04	2025-07-11 12:42:22.730	326,9	2025-07-11 12:43:36.387	273,32	2025-07-11 12:45:09.094	253,61	2025-07-11 12:47:28.066
5	429,1	2025-07-11 12:37:39.411	394,21	2025-07-11 12:39:22.850	364,84	2025-07-11 12:41:04.822	332,43	2025-07-11 12:42:23.262	326,9	2025-07-11 12:43:36.887	273,32	2025-07-11 12:45:09.588	253,61	2025-07-11 12:47:28.566
6	429,1	2025-07-11 12:37:39.908	394,21	2025-07-11 12:39:23.341	364,84	2025-07-11 12:41:05.317	332,43	2025-07-11 12:42:23.731	326,55	2025-07-11 12:43:37.395	273,32	2025-07-11 12:45:10.086	242,76	2025-07-11 12:47:29.057
7	429,1	2025-07-11 12:37:40.418	394,9	2025-07-11 12:39:23.842	364,84	2025-07-11 12:41:05.856	331,87	2025-07-11 12:42:24.229	326,55	2025-07-11 12:43:37.896	297,85	2025-07-11 12:45:10.594	242,76	2025-07-11 12:47:29.578
8	434,56	2025-07-11 12:37:40.907	394,9	2025-07-11 12:39:24.350	385,14	2025-07-11 12:41:06.339	331,87	2025-07-11 12:42:24.737	305,5	2025-07-11 12:43:38.389	297,85	2025-07-11 12:45:11.091	242,76	2025-07-11 12:47:30.065
9	434,56	2025-07-11 12:37:41.407	414,05	2025-07-11 12:39:24.841	385,14	2025-07-11 12:41:06.811	331,87	2025-07-11 12:42:25.231	305,5	2025-07-11 12:43:38.899	273,66	2025-07-11 12:45:11.597	251,09	2025-07-11 12:47:30.553
10	434,56	2025-07-11 12:37:41.921	414,05	2025-07-11 12:39:25.342	385,21	2025-07-11 12:41:07.326	337,82	2025-07-11 12:42:25.729	305,5	2025-07-11 12:43:39.388	273,66	2025-07-11 12:45:12.109	251,09	2025-07-11 12:47:31.063
11	434,56	2025-07-11 12:37:42.412	414,54	2025-07-11 12:39:25.849	385,21	2025-07-11 12:41:07.822	337,82	2025-07-11 12:42:26.238	323,68	2025-07-11 12:43:39.889	273,66	2025-07-11 12:45:12.587	251,09	2025-07-11 12:47:31.561
12	432,39	2025-07-11 12:37:42.915	414,54	2025-07-11 12:39:26.341	382,83	2025-07-11 12:41:08.318	341,88	2025-07-11 12:42:26.733	323,68	2025-07-11 12:43:40.398	283,29	2025-07-11 12:45:13.082	251,09	2025-07-11 12:47:32.060
13	432,39	2025-07-11 12:37:43.418	414,12	2025-07-11 12:39:26.838	382,83	2025-07-11 12:41:08.823	341,88	2025-07-11 12:42:27.224	323,68	2025-07-11 12:43:40.893	283,29	2025-07-11 12:45:13.592	256,41	2025-07-11 12:47:32.566
14	425,11	2025-07-11 12:37:43.911	414,12	2025-07-11 12:39:27.353	380,45	2025-07-11 12:41:09.320	354,97	2025-07-11 12:42:27.737	312,2	2025-07-11 12:43:41.391	283,29	2025-07-11 12:45:14.096	256,41	2025-07-11 12:47:33.064
15	425,11	2025-07-11 12:37:44.407	394,28	2025-07-11 12:39:27.846	380,45	2025-07-11 12:41:09.817	354,97	2025-07-11 12:42:28.231	312,2	2025-07-11 12:43:41.895	283,29	2025-07-11 12:45:14.582	256,41	2025-07-11 12:47:33.556
16	416,57	2025-07-11 12:37:44.915	394,28	2025-07-11 12:39:28.335	379,05	2025-07-11 12:41:10.337	354,97	2025-07-11 12:42:28.728	305,63	2025-07-11 12:43:42.391	263,69	2025-07-11 12:45:15.094	263,55	2025-07-11 12:47:34.070
17	416,57	2025-07-11 12:37:45.407	394,28	2025-07-11 12:39:28.846	379,05	2025-07-11 12:41:10.821	361,48	2025-07-11 12:42:29.233	305,63	2025-07-11 12:43:42.887	263,69	2025-07-11 12:45:15.589	263,55	2025-07-11 12:47:34.560
18	416,57	2025-07-11 12:37:45.914	409,99	2025-07-11 12:39:29.342	379,05	2025-07-11 12:41:11.317	361,48	2025-07-11 12:42:29.732	305,63	2025-07-11 12:43:43.393	263,69	2025-07-11 12:45:16.082	263,55	2025-07-11 12:47:35.063
19	416,57	2025-07-11 12:37:46.414	409,99	2025-07-11 12:39:29.840	374,22	2025-07-11 12:41:11.826	359,87	2025-07-11 12:42:30.226	305,39	2025-07-11 12:43:43.889	273,98	2025-07-11 12:45:16.592	242,16	2025-07-11 12:47:35.568
20	415,8	2025-07-11 12:37:46.909	409,08	2025-07-11 12:39:30.349	374,22	2025-07-11 12:41:12.322	359,87	2025-07-11 12:42:30.735	305,39	2025-07-11 12:43:44.393	273,98	2025-07-11 12:45:17.087	242,16	2025-07-11 12:47:36.057
21	415,8	2025-07-11 12:37:47.400	409,08	2025-07-11 12:39:30.840	364,27	2025-07-11 12:41:12.830	362,04	2025-07-11 12:42:31.229	305,39	2025-07-11 12:43:44.896	273,98	2025-07-11 12:45:17.582	242,16	2025-07-11 12:47:36.559
22	415,8	2025-07-11 12:37:47.914	394,2	2025-07-11 12:39:31.339	364,27	2025-07-11 12:41:13.323	362,04	2025-07-11 12:42:31.728	305,28	2025-07-11 12:43:45.393	273,98	2025-07-11 12:45:18.100	276,85	2025-07-11 12:47:37.069
23	415,8	2025-07-11 12:37:48.406	394,2	2025-07-11 12:39:31.855	364,27	2025-07-11 12:41:13.821	362,04	2025-07-11 12:42:32.235	305,28	2025-07-11 12:43:45.886	250,04	2025-07-11 12:45:18.590	276,85	2025-07-11 12:47:37.564
24	420,28	2025-07-11 12:37:48.906	404,46	2025-07-11 12:39:32.348	364,27	2025-07-11 12:41:14.318	332,5	2025-07-11 12:42:32.729	314,86	2025-07-11 12:43:46.395	250,04	2025-07-11 12:45:19.082	276,85	2025-07-11 12:47:38.059
25	420,28	2025-07-11 12:37:49.415	404,46	2025-07-11 12:39:32.856	386,82	2025-07-11 12:41:14.825	332,5	2025-07-11 12:42:33.232	314,86	2025-07-11 12:43:46.892	250,04	2025-07-11 12:45:19.593	242,43	2025-07-11 12:47:38.561
26	420,28	2025-07-11 12:37:49.908	406,28	2025-07-11 12:39:33.355	386,82	2025-07-11 12:41:15.325	332,63	2025-07-11 12:42:33.691	314,86	2025-07-11 12:43:47.392	260,47	2025-07-11 12:45:20.085	242,43	2025-07-11 12:47:39.061
27	420,28	2025-07-11 12:37:50.403	406,28	2025-07-11 12:39:33.847	390,74	2025-07-11 12:41:15.816	332,63	2025-07-11 12:42:34.185	316,4	2025-07-11 12:43:47.902	260,47	2025-07-11 12:45:20.583	242,43	2025-07-11 12:47:39.560
28	431,48	2025-07-11 12:37:50.917	409,36	2025-07-11 12:39:34.342	390,74	2025-07-11 12:41:16.329	332,32	2025-07-11 12:42:34.728	316,4	2025-07-11 12:43:48.397	260,47	2025-07-11 12:45:21.093	242,43	2025-07-11 12:47:40.051
29	431,48	2025-07-11 12:37:51.411	409,36	2025-07-11 12:39:34.853	364,63	2025-07-11 12:41:16.822	332,32	2025-07-11 12:42:35.235	316,4	2025-07-11 12:43:48.888	273,23	2025-07-11 12:45:21.585	242,59	2025-07-11 12:47:40.576
30	431,48	2025-07-11 12:37:51.904	408,94	2025-07-11 12:39:35.346	364,63	2025-07-11 12:41:17.319	332,32	2025-07-11 12:42:35.732	322,56	2025-07-11 12:43:49.397	273,23	2025-07-11 12:45:22.089	242,59	2025-07-11 12:47:41.061
	426,28133		394,34		364,16		332,82		305,39		273,81		242,1	

3,5 kg		4 kg		4,5 kg		5 kg		5,5 kg		6 kg		6,5 kg	
Putaran	Tanggal/Waktu												
211,38	2025-07-11 12:49:36.296	191,38	2025-07-11 12:53:20.337	163,52	2025-07-11 12:56:07.811	119,94	2025-07-11 12:58:07.616	87,52	2025-07-11 12:59:35.817	52,85	2025-07-11 13:00:46.854	0	2025-07-04 11:35:43.824
211,38	2025-07-11 12:49:36.809	191,38	2025-07-11 12:53:20.833	163,52	2025-07-11 12:56:08.305	119,44	2025-07-11 12:58:08.129	87,52	2025-07-11 12:59:36.324	52,85	2025-07-11 13:00:47.348	0	2025-07-04 11:35:44.333
211,38	2025-07-11 12:49:37.353	191,38	2025-07-11 12:53:21.329	163,52	2025-07-11 12:56:08.850	119,44	2025-07-11 12:58:08.693	87,52	2025-07-11 12:59:36.866	52,85	2025-07-11 13:00:47.897	0	2025-07-04 11:35:44.828
211,38	2025-07-11 12:49:37.849	181,01	2025-07-11 12:53:21.885	150,64	2025-07-11 12:56:09.361	119,44	2025-07-11 12:58:09.167	87,52	2025-07-11 12:59:37.363	52,85	2025-07-11 13:00:48.401	0	2025-07-04 11:35:45.353
243,25	2025-07-11 12:49:38.359	181,01	2025-07-11 12:53:22.380	150,64	2025-07-11 12:56:09.855	119,44	2025-07-11 12:58:09.673	87,52	2025-07-11 12:59:37.858	52,85	2025-07-11 13:00:48.900	0	2025-07-04 11:35:45.834
243,25	2025-07-11 12:49:38.848	181,01	2025-07-11 12:53:22.875	150,64	2025-07-11 12:56:10.352	119,44	2025-07-11 12:58:10.172	87,52	2025-07-11 12:59:38.371	52,85	2025-07-11 13:00:49.392	0	2025-07-04 11:35:46.328
243,25	2025-07-11 12:49:39.351	181,01	2025-07-11 12:53:23.387	150,64	2025-07-11 12:56:10.860	154,35	2025-07-11 12:58:10.670	87,52	2025-07-11 12:59:38.867	52,85	2025-07-11 13:00:49.904	0	2025-07-04 11:35:46.823
243,25	2025-07-11 12:49:39.856	181,61	2025-07-11 12:53:23.880	150,64	2025-07-11 12:56:11.357	154,35	2025-07-11 12:58:11.178	87,52	2025-07-11 12:59:39.361	52,85	2025-07-11 13:00:50.402	0	2025-07-04 11:35:47.332
230,16	2025-07-11 12:49:40.352	181,61	2025-07-11 12:53:24.375	150,64	2025-07-11 12:56:11.855	154,35	2025-07-11 12:58:11.671	87,52	2025-07-11 12:59:39.868	52,85	2025-07-11 13:00:50.896	0	2025-07-04 11:35:47.858
230,16	2025-07-11 12:49:40.845	181,61	2025-07-11 12:53:24.885	150,64	2025-07-11 12:56:12.361	154,35	2025-07-11 12:58:12.169	82,04	2025-07-11 12:59:40.366	52,85	2025-07-11 13:00:51.404	0	2025-07-04 11:35:48.323
230,16	2025-07-11 12:49:41.361	181,61	2025-07-11 12:53:25.381	120,05	2025-07-11 12:56:12.855	154,35	2025-07-11 12:58:12.672	82,04	2025-07-11 12:59:40.862	51,24	2025-07-11 13:00:51.896	0	2025-07-04 11:35:48.833
230,16	2025-07-11 12:49:41.851	181,61	2025-07-11 12:53:25.878	120,05	2025-07-11 12:56:13.350	154,35	2025-07-11 12:58:13.178	82,04	2025-07-11 12:59:41.374	51,24	2025-07-11 13:00:52.404	0	2025-07-04 11:35:49.328
211,57	2025-07-11 12:49:42.349	187,6	2025-07-11 12:53:26.386	120,05	2025-07-11 12:56:13.865	154,35	2025-07-11 12:58:13.668	82,04	2025-07-11 12:59:41.869	51,24	2025-07-11 13:00:52.904	0	2025-07-04 11:35:49.823
211,57	2025-07-11 12:49:42.856	187,6	2025-07-11 12:53:26.881	120,05	2025-07-11 12:56:14.356	119,01	2025-07-11 12:58:14.179	82,04	2025-07-11 12:59:42.358	51,24	2025-07-11 13:00:53.399	0	2025-07-04 11:35:50.363
211,57	2025-07-11 12:49:43.354	187,6	2025-07-11 12:53:27.378	120,05	2025-07-11 12:56:14.849	119,01	2025-07-11 12:58:14.672	82,04	2025-07-11 12:59:42.870	51,24	2025-07-11 13:00:53.895	0	2025-07-04 11:35:50.828
211,13	2025-07-11 12:49:43.847	187,6	2025-07-11 12:53:27.884	120,05	2025-07-11 12:56:15.358	119,01	2025-07-11 12:58:15.172	82,04	2025-07-11 12:59:43.366	51,24	2025-07-11 13:00:54.405	0	2025-07-04 11:35:51.323
211,13	2025-07-11 12:49:44.361	181,54	2025-07-11 12:53:28.378	131,53	2025-07-11 12:56:15.858	119,01	2025-07-11 12:58:15.677	82,04	2025-07-11 12:59:43.856	51,24	2025-07-11 13:00:54.896	0	2025-07-04 11:35:51.833
211,13	2025-07-11 12:49:44.857	181,54	2025-07-11 12:53:28.872	131,53	2025-07-11 12:56:16.351	119,01	2025-07-11 12:58:16.171	82,04	2025-07-11 12:59:44.368	51,24	2025-07-11 13:00:55.395	0	2025-07-04 11:35:52.343
211,13	2025-07-11 12:49:45.350	181,54	2025-07-11 12:53:29.382	131,53	2025-07-11 12:56:16.859	119,01	2025-07-11 12:58:16.665	82,04	2025-07-11 12:59:44.864	51,24	2025-07-11 13:00:55.907	0	2025-07-04 11:35:52.823
227,64	2025-07-11 12:49:45.856	181,54	2025-07-11 12:53:29.879	131,53	2025-07-11 12:56:17.357	119,01	2025-07-11 12:58:17.175	82,04	2025-07-11 12:59:45.358	51,24	2025-07-11 13:00:56.399	0	2025-07-04 11:35:53.332
227,64	2025-07-11 12:49:46.353	181,54	2025-07-11 12:53:30.376	131,53	2025-07-11 12:56:17.849	119,01	2025-07-11 12:58:17.669	87,26	2025-07-11 12:59:45.868	51,24	2025-07-11 13:00:56.897	0	2025-07-04 11:35:53.828
227,64	2025-07-11 12:49:46.847	181,54	2025-07-11 12:53:30.891	150,76	2025-07-11 12:56:18.356	119,01	2025-07-11 12:58:18.168	87,26	2025-07-11 12:59:46.366	68,67	2025-07-11 13:00:57.399	0	2025-07-04 11:35:54.324
237,16	2025-07-11 12:49:47.356	168	2025-07-11 12:53:31.389	150,76	2025-07-11 12:56:18.855	119,01	2025-07-11 12:58:18.674	87,26	2025-07-11 12:59:46.860	68,67	2025-07-11 13:00:57.903	0	2025-07-04 11:35:54.832
237,16	2025-07-11 12:49:47.851	168	2025-07-11 12:53:31.874	150,76	2025-07-11 12:56:19.369	98,21	2025-07-11 12:58:19.174	87,26	2025-07-11 12:59:47.374	68,67	2025-07-11 13:00:58.399	0	2025-07-04 11:35:55.327
237,16	2025-07-11 12:49:48.351	168	2025-07-11 12:53:32.384	150,76	2025-07-11 12:56:19.863	98,21	2025-07-11 12:58:19.663	87,26	2025-07-11 12:59:47.863	68,67	2025-07-11 13:00:58.902	0	2025-07-04 11:35:55.821
237,16	2025-07-11 12:49:48.855	168	2025-07-11 12:53:32.880	150,76	2025-07-11 12:56:20.363	98,21	2025-07-11 12:58:20.173	87,26	2025-07-11 12:59:48.361	68,67	2025-07-11 13:00:59.399	0	2025-07-04 11:35:56.362
211,65	2025-07-11 12:49:49.352	168	2025-07-11 12:53:33.380	150,72	2025-07-11 12:56:20.849	98,21	2025-07-11 12:58:20.668	87,26	2025-07-11 12:59:48.872	68,67	2025-07-11 13:00:59.894	0	2025-07-04 11:35:56.872
211,65	2025-07-11 12:49:49.847	154,28	2025-07-11 12:53:33.895	150,72	2025-07-11 12:56:21.357	98,21	2025-07-11 12:58:21.165	87,79	2025-07-11 12:59:49.381	68,67	2025-07-11 13:01:00.406	0	2025-07-04 11:35:57.322
211,65	2025-07-11 12:49:50.360	154,28	2025-07-11 12:53:34.405	150,72	2025-07-11 12:56:21.859	98,21	2025-07-11 12:58:21.677	87,79	2025-07-11 12:59:49.861	93,45	2025-07-11 13:01:00.897	0	2025-07-04 11:35:57.832
211,63	2025-07-11 12:49:50.852	154,28	2025-07-11 12:53:34.870	150,72	2025-07-11 12:56:22.346	119,64	2025-07-11 12:58:22.172	87,79	2025-07-11 12:59:50.366	93,45	2025-07-11 13:01:01.393	0	2025-07-04 11:35:58.327
211,32		181,56		150,82		119,29		87,34		58,66		0	

Tabel L. 9 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 208

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	407,89	2025-07-11 14:14:09.885	384,15	2025-07-11 14:16:42.916	358,92	2025-07-11 14:19:06.374	332,73	2025-07-11 14:20:47.263	304,42	2025-07-11 14:22:53.295	285,74	2025-07-11 14:24:49.558	248,76	2025-07-11 14:30:02.097	221,66	2025-07-11 14:33:10.423
2	407,89	2025-07-11 14:14:10.384	384,15	2025-07-11 14:16:43.414	358,92	2025-07-11 14:19:06.869	332,28	2025-07-11 14:20:47.761	304,42	2025-07-11 14:22:53.804	281,96	2025-07-11 14:24:50.058	248,76	2025-07-11 14:30:02.592	221,66	2025-07-11 14:33:10.936
3	411,04	2025-07-11 14:14:10.898	384,98	2025-07-11 14:16:43.971	358,92	2025-07-11 14:19:07.367	332,28	2025-07-11 14:20:48.277	304,42	2025-07-11 14:22:54.314	281,96	2025-07-11 14:24:50.549	248,76	2025-07-11 14:30:03.151	221,66	2025-07-11 14:33:11.427
4	411,04	2025-07-11 14:14:11.434	384,98	2025-07-11 14:16:44.468	344,12	2025-07-11 14:19:07.923	332,28	2025-07-11 14:20:48.816	304,42	2025-07-11 14:22:54.841	281,96	2025-07-11 14:24:51.103	248,76	2025-07-11 14:30:03.647	221,66	2025-07-11 14:33:11.979
5	412,86	2025-07-11 14:14:11.932	384,29	2025-07-11 14:16:44.965	344,12	2025-07-11 14:19:08.419	308,49	2025-07-11 14:20:49.313	304,42	2025-07-11 14:22:55.355	276,55	2025-07-11 14:24:51.596	239,54	2025-07-11 14:30:04.145	221,66	2025-07-11 14:33:12.484
6	412,86	2025-07-11 14:14:12.440	384,29	2025-07-11 14:16:45.474	345,52	2025-07-11 14:19:08.915	308,49	2025-07-11 14:20:49.820	301,14	2025-07-11 14:22:55.847	276,55	2025-07-11 14:24:52.101	239,54	2025-07-11 14:30:04.665	221,66	2025-07-11 14:33:12.977
7	412,86	2025-07-11 14:14:12.950	384,03	2025-07-11 14:16:45.964	345,52	2025-07-11 14:19:09.427	308,49	2025-07-11 14:20:50.313	301,14	2025-07-11 14:22:56.348	276,55	2025-07-11 14:24:52.608	239,54	2025-07-11 14:30:05.148	221,66	2025-07-11 14:33:13.474
8	412,86	2025-07-11 14:14:13.429	408,03	2025-07-11 14:16:46.459	358,48	2025-07-11 14:19:09.924	296,03	2025-07-11 14:20:50.806	301,14	2025-07-11 14:22:56.855	276,58	2025-07-11 14:24:53.104	248,12	2025-07-11 14:30:05.643	228,06	2025-07-11 14:33:13.984
9	420	2025-07-11 14:14:13.938	401,03	2025-07-11 14:16:46.970	358,48	2025-07-11 14:19:10.419	296,03	2025-07-11 14:20:51.318	304,95	2025-07-11 14:22:57.351	276,58	2025-07-11 14:24:53.602	248,12	2025-07-11 14:30:06.153	234,5	2025-07-11 14:33:14.473
10	420	2025-07-11 14:14:14.446	401,03	2025-07-11 14:16:47.469	358,48	2025-07-11 14:19:10.937	303,17	2025-07-11 14:20:51.814	304,95	2025-07-11 14:22:57.860	276,58	2025-07-11 14:24:54.123	248,12	2025-07-11 14:30:06.646	234,5	2025-07-11 14:33:14.976
11	420	2025-07-11 14:14:14.929	401,03	2025-07-11 14:16:47.961	358,12	2025-07-11 14:19:11.413	303,17	2025-07-11 14:20:52.259	304,95	2025-07-11 14:22:58.353	271,6	2025-07-11 14:24:54.604	248,12	2025-07-11 14:30:07.141	234,5	2025-07-11 14:33:15.479
12	420	2025-07-11 14:14:15.442	386,12	2025-07-11 14:16:48.468	358,12	2025-07-11 14:19:11.910	303,17	2025-07-11 14:20:52.769	304,97	2025-07-11 14:22:58.847	271,6	2025-07-11 14:24:55.097	248,12	2025-07-11 14:30:07.653	234,5	2025-07-11 14:33:15.978
13	428,75	2025-07-11 14:14:15.938	386,12	2025-07-11 14:16:48.977	373,52	2025-07-11 14:19:12.372	308,35	2025-07-11 14:20:53.268	304,97	2025-07-11 14:22:59.346	271,6	2025-07-11 14:24:55.561	248,12	2025-07-11 14:30:08.145	227,78	2025-07-11 14:33:16.472
14	428,75	2025-07-11 14:14:16.419	371	2025-07-11 14:16:49.457	373,52	2025-07-11 14:19:12.866	332,35	2025-07-11 14:20:53.807	304,97	2025-07-11 14:22:59.857	271,6	2025-07-11 14:24:56.103	248,12	2025-07-11 14:30:08.642	221,78	2025-07-11 14:33:16.990
15	428,75	2025-07-11 14:14:16.942	371	2025-07-11 14:16:49.973	374,01	2025-07-11 14:19:13.366	332,35	2025-07-11 14:20:54.314	304,97	2025-07-11 14:23:00.349	276,05	2025-07-11 14:24:56.596	233,24	2025-07-11 14:30:09.154	221,78	2025-07-11 14:33:17.491
16	428,75	2025-07-11 14:14:17.437	362,67	2025-07-11 14:16:50.463	374,01	2025-07-11 14:19:13.920	332,21	2025-07-11 14:20:54.813	283,36	2025-07-11 14:23:00.841	276,05	2025-07-11 14:24:57.106	233,24	2025-07-11 14:30:09.649	221,78	2025-07-11 14:33:17.969
17	434	2025-07-11 14:14:17.929	362,67	2025-07-11 14:16:50.959	377,02	2025-07-11 14:19:14.417	332,21	2025-07-11 14:20:55.311	283,36	2025-07-11 14:23:01.358	276,05	2025-07-11 14:24:57.605	233,24	2025-07-11 14:30:10.140	217,21	2025-07-11 14:33:18.479
18	434	2025-07-11 14:14:18.442	362,67	2025-07-11 14:16:51.470	377,02	2025-07-11 14:19:14.913	319,27	2025-07-11 14:20:55.819	304,41	2025-07-11 14:23:01.848	276	2025-07-11 14:24:58.100	233,24	2025-07-11 14:30:10.653	217,21	2025-07-11 14:33:18.977
19	427,63	2025-07-11 14:14:18.931	356,58	2025-07-11 14:16:51.980	377,02	2025-07-11 14:19:15.428	319,27	2025-07-11 14:20:56.316	304,41	2025-07-11 14:23:02.341	276	2025-07-11 14:24:58.611	231,14	2025-07-11 14:30:11.151	217,21	2025-07-11 14:33:19.467
20	427,63	2025-07-11 14:14:19.380	356,58	2025-07-11 14:16:52.460	383,25	2025-07-11 14:19:15.918	319,27	2025-07-11 14:20:56.814	304,41	2025-07-11 14:23:02.856	276	2025-07-11 14:24:59.109	231,14	2025-07-11 14:30:11.648	217,21	2025-07-11 14:33:19.983
21	405,37	2025-07-11 14:14:19.939	366,94	2025-07-11 14:16:52.969	383,25	2025-07-11 14:19:16.412	332,18	2025-07-11 14:20:57.320	286,23	2025-07-11 14:23:03.348	257,46	2025-07-11 14:24:59.601	231,14	2025-07-11 14:30:12.151	205,31	2025-07-11 14:33:20.475
22	405,37	2025-07-11 14:14:20.430	366,94	2025-07-11 14:16:53.465	381,64	2025-07-11 14:19:16.920	332,18	2025-07-11 14:20:57.819	286,23	2025-07-11 14:23:03.842	257,46	2025-07-11 14:25:00.110	230,79	2025-07-11 14:30:12.654	205,31	2025-07-11 14:33:20.968
23	390,74	2025-07-11 14:14:20.924	380,38	2025-07-11 14:16:53.968	381,64	2025-07-11 14:19:17.419	344,61	2025-07-11 14:20:58.315	286,23	2025-07-11 14:23:04.363	257,46	2025-07-11 14:25:00.603	230,79	2025-07-11 14:30:13.146	205,31	2025-07-11 14:33:21.482
24	390,74	2025-07-11 14:14:21.441	380,38	2025-07-11 14:16:54.471	377,86	2025-07-11 14:19:17.914	344,61	2025-07-11 14:20:58.817	288,12	2025-07-11 14:23:04.848	258,72	2025-07-11 14:25:01.100	230,79	2025-07-11 14:30:13.603	205,31	2025-07-11 14:33:21.975
25	392,28	2025-07-11 14:14:21.936	383,04	2025-07-11 14:16:54.963	377,86	2025-07-11 14:19:18.422	344,61	2025-07-11 14:20:59.316	288,12	2025-07-11 14:23:05.341	258,72	2025-07-11 14:25:01.610	230,79	2025-07-11 14:30:14.149	205,31	2025-07-11 14:33:22.473
26	392,28	2025-07-11 14:14:22.432	383,04	2025-07-11 14:16:55.461	373,45	2025-07-11 14:19:18.917	353,08	2025-07-11 14:20:59.811	288,12	2025-07-11 14:23:05.855	258,72	2025-07-11 14:25:02.109	233,59	2025-07-11 14:30:14.591	221,79	2025-07-11 14:33:22.980
27	403,69	2025-07-11 14:14:22.942	383,04	2025-07-11 14:16:55.969	373,45	2025-07-11 14:19:19.414	353,08	2025-07-11 14:21:00.318	295,82	2025-07-11 14:23:06.355	258,72	2025-07-11 14:25:02.600	233,59	2025-07-11 14:30:15.149	221,79	2025-07-11 14:33:23.480
28	403,69	2025-07-11 14:14:23.435	383,04	2025-07-11 14:16:56.460	373,45	2025-07-11 14:19:19.922	359,66	2025-07-11 14:21:00.816	295,82	2025-07-11 14:23:06.844	262,64	2025-07-11 14:25:03.111	233,59	2025-07-11 14:30:15.644	221,79	2025-07-11 14:33:23.970
29	403,69	2025-07-11 14:14:23.933	312,97	2025-07-11 14:16:56.961	358,68	2025-07-11 14:19:20.422	359,66	2025-07-11 14:21:01.311	304,49	2025-07-11 14:23:07.352	262,64	2025-07-11 14:25:03.606	248,43	2025-07-11 14:30:16.140	221,79	2025-07-11 14:33:24.480
30	403,69	2025-07-11 14:14:24.416	312,97	2025-07-11 14:16:57.469	358,68	2025-07-11 14:19:20.917	366,87	2025-07-11 14:21:01.819	304,49	2025-07-11 14:23:07.847	262,64	2025-07-11 14:25:04.101	248,43	2025-07-11 14:30:16.654	221,79	2025-07-11 14:33:24.977
	413,3033333		384,27		358,6		332,75		304,1		276,06		248,82		221,67	

4 kg		4,5 kg		5 kg		5,5 kg		6 kg		6,5 kg		7 kg	
Putaran	Tanggal/Waktu												
195,37	2025-07-11 14:37:15.400	167,33	2025-07-11 14:35:31.418	142,3	2025-07-11 14:40:05.336	123,97	2025-07-11 14:44:35.769	102,69	2025-07-11 14:46:50.347	67,97	2025-07-11 14:48:00.399	0	2025-07-11 14:48:00.399
195,37	2025-07-11 14:37:15.898	167,33	2025-07-11 14:35:31.901	142,3	2025-07-11 14:40:05.785	123,97	2025-07-11 14:44:36.280	102,69	2025-07-11 14:46:50.848	67,97	2025-07-11 14:48:00.908	0	2025-07-11 14:48:00.908
181,93	2025-07-11 14:37:16.442	167,33	2025-07-11 14:35:32.397	142,38	2025-07-11 14:40:06.281	123,97	2025-07-11 14:44:36.772	102,69	2025-07-11 14:46:51.406	67,97	2025-07-11 14:48:01.451	0	2025-07-11 14:48:01.451
181,93	2025-07-11 14:37:16.946	167,33	2025-07-11 14:35:32.956	142,38	2025-07-11 14:40:06.840	123,97	2025-07-11 14:44:37.333	102,69	2025-07-11 14:46:51.899	67,97	2025-07-11 14:48:01.945	0	2025-07-11 14:48:01.945
181,93	2025-07-11 14:37:17.444	167,33	2025-07-11 14:35:33.456	142,38	2025-07-11 14:40:07.331	113,38	2025-07-11 14:44:37.831	102,69	2025-07-11 14:46:52.408	67,97	2025-07-11 14:48:02.466	0	2025-07-11 14:48:02.466
181,93	2025-07-11 14:37:17.946	167,33	2025-07-11 14:35:33.942	142,38	2025-07-11 14:40:07.826	113,38	2025-07-11 14:44:38.326	86,74	2025-07-11 14:46:52.904	67,97	2025-07-11 14:48:02.958	0	2025-07-11 14:48:02.958
181,93	2025-07-11 14:37:18.451	187,67	2025-07-11 14:35:34.453	142,38	2025-07-11 14:40:08.342	113,38	2025-07-11 14:44:38.817	86,74	2025-07-11 14:46:53.397	67,97	2025-07-11 14:48:03.449	0	2025-07-11 14:48:03.449
167,93	2025-07-11 14:37:18.945	187,67	2025-07-11 14:35:34.954	142,38	2025-07-11 14:40:08.835	113,38	2025-07-11 14:44:39.325	86,74	2025-07-11 14:46:53.896	67,97	2025-07-11 14:48:03.960	0	2025-07-11 14:48:03.960
167,93	2025-07-11 14:37:19.440	187,67	2025-07-11 14:35:35.450	142,38	2025-07-11 14:40:09.326	113,38	2025-07-11 14:44:39.821	86,74	2025-07-11 14:46:54.421	67,97	2025-07-11 14:48:04.461	0	2025-07-11 14:48:04.461
167,93	2025-07-11 14:37:19.952	171,5	2025-07-11 14:35:35.961	142,38	2025-07-11 14:40:09.841	113,38	2025-07-11 14:44:40.321	86,74	2025-07-11 14:46:54.918	67,97	2025-07-11 14:48:04.947	0	2025-07-11 14:48:04.947
167,93	2025-07-11 14:37:20.444	171,5	2025-07-11 14:35:36.454	142,38	2025-07-11 14:40:10.337	113,38	2025-07-11 14:44:40.829	86,74	2025-07-11 14:46:55.389	67,97	2025-07-11 14:48:05.464	0	2025-07-11 14:48:05.464
167,93	2025-07-11 14:37:20.940	171,5	2025-07-11 14:35:36.958	139,58	2025-07-11 14:40:10.837	113,38	2025-07-11 14:44:41.338	86,74	2025-07-11 14:46:55.906	48,79	2025-07-11 14:48:05.954	0	2025-07-11 14:48:05.954
169,68	2025-07-11 14:37:21.453	171,5	2025-07-11 14:35:37.459	139,58	2025-07-11 14:40:11.344	119,7	2025-07-11 14:44:41.822	86,74	2025-07-11 14:46:56.399	48,79	2025-07-11 14:48:06.465	0	2025-07-11 14:48:06.465
169,68	2025-07-11 14:37:21.945	171,5	2025-07-11 14:35:37.950	139,58	2025-07-11 14:40:11.833	119,7	2025-07-11 14:44:42.334	86,74	2025-07-11 14:46:56.894	48,79	2025-07-11 14:48:06.957	0	2025-07-11 14:48:06.957
169,68	2025-07-11 14:37:22.440	171,5	2025-07-11 14:35:38.444	138,46	2025-07-11 14:40:12.329	119,7	2025-07-11 14:44:42.824	86,74	2025-07-11 14:46:57.416	48,79	2025-07-11 14:48:07.455	0	2025-07-11 14:48:07.455
169,68	2025-07-11 14:37:22.950	167,65	2025-07-11 14:35:38.958	138,46	2025-07-11 14:40:12.841	119,7	2025-07-11 14:44:43.317	86,74	2025-07-11 14:46:57.898	48,79	2025-07-11 14:48:07.945	0	2025-07-11 14:48:07.945
184,1	2025-07-11 14:37:23.446	167,65	2025-07-11 14:35:39.460	138,46	2025-07-11 14:40:13.333	119,7	2025-07-11 14:44:43.829	86,74	2025-07-11 14:46:58.395	48,79	2025-07-11 14:48:08.460	0	2025-07-11 14:48:08.460
184,1	2025-07-11 14:37:23.890	167,65	2025-07-11 14:35:39.950	138,46	2025-07-11 14:40:13.837	119,7	2025-07-11 14:44:44.325	86,74	2025-07-11 14:46:58.906	48,79	2025-07-11 14:48:08.903	0	2025-07-11 14:48:08.903
184,1	2025-07-11 14:37:24.451	167,65	2025-07-11 14:35:40.460	138,46	2025-07-11 14:40:14.347	119,7	2025-07-11 14:44:44.818	88,83	2025-07-11 14:46:59.397	48,79	2025-07-11 14:48:09.450	0	2025-07-11 14:48:09.450
184,1	2025-07-11 14:37:24.948	167,65	2025-07-11 14:35:40.951	138,46	2025-07-11 14:40:14.835	119,7	2025-07-11 14:44:45.329	88,83	2025-07-11 14:46:59.894	48,79	2025-07-11 14:48:09.961	0	2025-07-11 14:48:09.961
184,1	2025-07-11 14:37:25.438	167,65	2025-07-11 14:35:41.449	138,46	2025-07-11 14:40:15.333	119,7	2025-07-11 14:44:45.821	88,83	2025-07-11 14:47:00.405	48,79	2025-07-11 14:48:10.453	0	2025-07-11 14:48:10.453
192,64	2025-07-11 14:37:25.949	167,65	2025-07-11 14:35:41.956	136,5	2025-07-11 14:40:15.839	119,7	2025-07-11 14:44:46.319	88,83	2025-07-11 14:47:00.899	48,79	2025-07-11 14:48:10.947	0	2025-07-11 14:48:10.947
192,64	2025-07-11 14:37:26.439	167,65	2025-07-11 14:35:42.455	136,5	2025-07-11 14:40:16.337	119,7	2025-07-11 14:44:46.831	88,83	2025-07-11 14:47:01.395	61,32	2025-07-11 14:48:11.464	0	2025-07-11 14:48:11.464
192,64	2025-07-11 14:37:26.949	167,65	2025-07-11 14:35:42.946	136,5	2025-07-11 14:40:16.833	113,46	2025-07-11 14:44:47.328	88,83	2025-07-11 14:47:01.905	61,32	2025-07-11 14:48:11.949	0	2025-07-11 14:48:11.949
195,61	2025-07-11 14:37:27.448	154,35	2025-07-11 14:35:43.460	136,5	2025-07-11 14:40:17.343	113,46	2025-07-11 14:44:47.816	88,83	2025-07-11 14:47:02.398	61,32	2025-07-11 14:48:12.446	0	2025-07-11 14:48:12.446
195,61	2025-07-11 14:37:27.945	162,82	2025-07-11 14:35:43.951	136,5	2025-07-11 14:40:17.847	113,46	2025-07-11 14:44:48.327	88,83	2025-07-11 14:47:02.894	61,32	2025-07-11 14:48:12.954	0	2025-07-11 14:48:12.954
195,61	2025-07-11 14:37:28.441	162,82	2025-07-11 14:35:44.448	136,5	2025-07-11 14:40:18.330	113,46	2025-07-11 14:44:48.822	88,83	2025-07-11 14:47:03.404	61,32	2025-07-11 14:48:13.456	0	2025-07-11 14:48:13.456
195,61	2025-07-11 14:37:28.950	162,82	2025-07-11 14:35:44.906	136,08	2025-07-11 14:40:18.841	113,46	2025-07-11 14:44:49.322	88,83	2025-07-11 14:47:03.911	61,32	2025-07-11 14:48:13.949	0	2025-07-11 14:48:13.949
195,61	2025-07-11 14:37:29.451	162,82	2025-07-11 14:35:45.458	136,08	2025-07-11 14:40:19.335	113,46	2025-07-11 14:44:49.831	86,57	2025-07-11 14:47:04.398	61,32	2025-07-11 14:48:14.464	0	2025-07-11 14:48:14.464
195,61	2025-07-11 14:37:29.937	181,72	2025-07-11 14:35:45.895	136,08	2025-07-11 14:40:19.834	113,46	2025-07-11 14:44:50.324	86,57	2025-07-11 14:47:04.908	61,32	2025-07-11 14:48:14.961	0	2025-07-11 14:48:14.961
195,61		167,16		142,16		113,92		86,65		59,164		0	

Tabel L. 10 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 224

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg	
No.	Putaran	Tanggal/Waktu										
1	415,87	2025-07-14 11:42:32.013	357,49	2025-07-14 11:44:22.396	342,44	2025-07-14 11:50:00.644	315,63	2025-07-14 11:45:17.933	264,78	2025-07-14 11:53:41.700	221,97	2025-07-14 11:56:25.049
2	412,23	2025-07-14 11:42:32.523	357,49	2025-07-14 11:44:22.893	342,44	2025-07-14 11:50:01.154	315,63	2025-07-14 11:45:18.408	264,08	2025-07-14 11:53:42.195	221,97	2025-07-14 11:56:25.562
3	412,23	2025-07-14 11:42:33.067	367,85	2025-07-14 11:44:23.391	354,76	2025-07-14 11:50:01.708	292,25	2025-07-14 11:45:18.903	264,08	2025-07-14 11:53:42.705	221,97	2025-07-14 11:56:26.100
4	411,04	2025-07-14 11:42:33.557	367,85	2025-07-14 11:44:23.931	354,76	2025-07-14 11:50:02.198	292,25	2025-07-14 11:45:19.460	264,08	2025-07-14 11:53:43.247	221,97	2025-07-14 11:56:26.594
5	411,04	2025-07-14 11:42:34.072	367,85	2025-07-14 11:44:24.443	326,67	2025-07-14 11:50:02.704	292,25	2025-07-14 11:45:19.959	264,08	2025-07-14 11:53:43.740	225,12	2025-07-14 11:56:27.111
6	409,01	2025-07-14 11:42:34.572	364,91	2025-07-14 11:44:24.937	326,67	2025-07-14 11:50:03.203	285,53	2025-07-14 11:45:20.453	240,45	2025-07-14 11:53:44.254	225,12	2025-07-14 11:56:27.600
7	409,01	2025-07-14 11:42:35.076	364,91	2025-07-14 11:44:25.437	326,29	2025-07-14 11:50:03.699	285,53	2025-07-14 11:45:20.965	240,45	2025-07-14 11:53:44.747	225,12	2025-07-14 11:56:28.048
8	406,7	2025-07-14 11:42:35.573	352,17	2025-07-14 11:44:25.947	326,29	2025-07-14 11:50:04.203	285,53	2025-07-14 11:45:21.459	240,45	2025-07-14 11:53:45.243	225,12	2025-07-14 11:56:28.566
9	406,7	2025-07-14 11:42:36.063	352,17	2025-07-14 11:44:26.437	326,29	2025-07-14 11:50:04.702	284,13	2025-07-14 11:45:21.949	240,45	2025-07-14 11:53:45.752	228,55	2025-07-14 11:56:29.110
10	405,37	2025-07-14 11:42:36.565	352,17	2025-07-14 11:44:26.934	326,29	2025-07-14 11:50:05.192	284,13	2025-07-14 11:45:22.464	230,79	2025-07-14 11:53:46.250	228,55	2025-07-14 11:56:29.601
11	405,37	2025-07-14 11:42:37.062	347,9	2025-07-14 11:44:27.446	367,43	2025-07-14 11:50:05.703	284,13	2025-07-14 11:45:22.961	230,79	2025-07-14 11:53:46.742	228,55	2025-07-14 11:56:30.108
12	400,82	2025-07-14 11:42:37.566	347,9	2025-07-14 11:44:27.937	357,42	2025-07-14 11:50:06.199	283,29	2025-07-14 11:45:23.451	230,79	2025-07-14 11:53:47.251	231,06	2025-07-14 11:56:30.603
13	400,82	2025-07-14 11:42:38.062	343,84	2025-07-14 11:44:28.430	357,42	2025-07-14 11:50:06.695	283,29	2025-07-14 11:45:23.965	225,89	2025-07-14 11:53:47.750	231,06	2025-07-14 11:56:31.096
14	400,82	2025-07-14 11:42:38.552	343,84	2025-07-14 11:44:28.941	357,42	2025-07-14 11:50:07.202	287,35	2025-07-14 11:45:24.459	225,89	2025-07-14 11:53:48.247	231,06	2025-07-14 11:56:31.609
15	394,24	2025-07-14 11:42:39.068	337,4	2025-07-14 11:44:29.439	327,39	2025-07-14 11:50:07.699	287,35	2025-07-14 11:45:24.957	225,89	2025-07-14 11:53:48.756	231,06	2025-07-14 11:56:32.106
16	394,24	2025-07-14 11:42:39.563	337,4	2025-07-14 11:44:29.935	327,39	2025-07-14 11:50:08.194	287,35	2025-07-14 11:45:25.464	225,89	2025-07-14 11:53:49.250	231,06	2025-07-14 11:56:32.601
17	389,41	2025-07-14 11:42:40.052	337,4	2025-07-14 11:44:30.440	327,39	2025-07-14 11:50:08.704	293,86	2025-07-14 11:45:25.958	228,97	2025-07-14 11:53:49.742	231,06	2025-07-14 11:56:33.111
18	389,41	2025-07-14 11:42:40.564	344,68	2025-07-14 11:44:30.941	294,49	2025-07-14 11:50:09.206	293,86	2025-07-14 11:45:26.455	228,97	2025-07-14 11:53:50.253	231,06	2025-07-14 11:56:33.607
19	387,66	2025-07-14 11:42:41.062	344,68	2025-07-14 11:44:31.431	294,49	2025-07-14 11:50:09.694	293,86	2025-07-14 11:45:26.958	228,97	2025-07-14 11:53:50.749	244,16	2025-07-14 11:56:34.100
20	387,66	2025-07-14 11:42:41.577	368,34	2025-07-14 11:44:31.941	294,49	2025-07-14 11:50:10.203	295,81	2025-07-14 11:45:27.459	244,93	2025-07-14 11:53:51.242	244,16	2025-07-14 11:56:34.608
21	392	2025-07-14 11:42:42.018	368,34	2025-07-14 11:44:32.434	279,58	2025-07-14 11:50:10.702	295,81	2025-07-14 11:45:27.950	244,93	2025-07-14 11:53:51.755	244,16	2025-07-14 11:56:35.105
22	392	2025-07-14 11:42:42.562	374,57	2025-07-14 11:44:32.931	279,58	2025-07-14 11:50:11.193	295,81	2025-07-14 11:45:28.460	244,93	2025-07-14 11:53:52.253	244,16	2025-07-14 11:56:35.600
23	401,94	2025-07-14 11:42:43.060	374,57	2025-07-14 11:44:33.446	279,58	2025-07-14 11:50:11.711	295,29	2025-07-14 11:45:28.966	264,75	2025-07-14 11:53:52.762	231,42	2025-07-14 11:56:36.106
24	401,94	2025-07-14 11:42:43.562	374,57	2025-07-14 11:44:33.939	275,94	2025-07-14 11:50:12.232	295,29	2025-07-14 11:45:29.452	264,75	2025-07-14 11:53:53.258	231,42	2025-07-14 11:56:36.607
25	410,27	2025-07-14 11:42:44.083	376,88	2025-07-14 11:44:34.430	275,94	2025-07-14 11:50:12.697	295,29	2025-07-14 11:45:29.963	264,75	2025-07-14 11:53:53.752	231,42	2025-07-14 11:56:37.096
26	410,27	2025-07-14 11:42:44.556	376,88	2025-07-14 11:44:34.893	275,94	2025-07-14 11:50:13.202	295,29	2025-07-14 11:45:30.462	264,75	2025-07-14 11:53:54.243	231,42	2025-07-14 11:56:37.614
27	415,17	2025-07-14 11:42:45.065	368,55	2025-07-14 11:44:35.438	274,12	2025-07-14 11:50:13.703	295,76	2025-07-14 11:45:30.955	264,75	2025-07-14 11:53:54.751	244,3	2025-07-14 11:56:38.104
28	415,17	2025-07-14 11:42:45.565	368,55	2025-07-14 11:44:35.934	274,12	2025-07-14 11:50:14.198	295,76	2025-07-14 11:45:31.466	272,3	2025-07-14 11:53:55.253	244,3	2025-07-14 11:56:38.598
29	415,17	2025-07-14 11:42:46.071	346,92	2025-07-14 11:44:36.440	274,12	2025-07-14 11:50:14.710	295,57	2025-07-14 11:45:31.907	272,3	2025-07-14 11:53:55.745	244,3	2025-07-14 11:56:39.111
30	415,17	2025-07-14 11:42:46.565	346,92	2025-07-14 11:44:36.940	272,58	2025-07-14 11:50:15.151	290,57	2025-07-14 11:45:32.452	265,23	2025-07-14 11:53:56.255	236,74	2025-07-14 11:56:39.603
	380,96		357,83		326,86		295,1		264,02		231,49	

3 kg		3,5 kg		4 kg		4,5 kg		5 kg		5,5 kg	
Putaran	Tanggal/Waktu										
199,32	2025-07-14 11:58:29.307	181,16	2025-07-14 11:59:37.127	164,01	2025-07-14 12:00:43.238	104,9	2025-07-14 12:01:40.695	81,27	2025-07-14 12:04:02.130	0	2025-07-14 12:04:02.130
199,32	2025-07-14 11:58:29.806	181,16	2025-07-14 11:59:37.622	164,01	2025-07-14 12:00:43.679	104,9	2025-07-14 12:01:41.205	81,27	2025-07-14 12:04:02.643	0	2025-07-14 12:04:02.643
199,32	2025-07-14 11:58:30.363	181,16	2025-07-14 11:59:38.197	164,01	2025-07-14 12:00:44.193	104,9	2025-07-14 12:01:41.703	81,27	2025-07-14 12:04:03.135	0	2025-07-14 12:04:03.135
199,32	2025-07-14 11:58:30.856	166,39	2025-07-14 11:59:38.677	164,01	2025-07-14 12:00:44.734	104,9	2025-07-14 12:01:42.243	81,27	2025-07-14 12:04:03.692	0	2025-07-14 12:04:03.692
228,27	2025-07-14 11:58:31.355	166,39	2025-07-14 11:59:39.171	155,12	2025-07-14 12:00:45.231	104,9	2025-07-14 12:01:42.751	81,27	2025-07-14 12:04:04.186	0	2025-07-14 12:04:04.186
228,27	2025-07-14 11:58:31.863	166,39	2025-07-14 11:59:39.682	155,12	2025-07-14 12:00:45.724	104,9	2025-07-14 12:01:43.244	81,27	2025-07-14 12:04:04.683	0	2025-07-14 12:04:04.683
228,27	2025-07-14 11:58:32.358	166,39	2025-07-14 11:59:40.175	155,12	2025-07-14 12:00:46.237	97,23	2025-07-14 12:01:43.747	81,27	2025-07-14 12:04:05.182	0	2025-07-14 12:04:05.182
228,27	2025-07-14 11:58:32.853	166,39	2025-07-14 11:59:40.670	155,12	2025-07-14 12:00:46.729	97,23	2025-07-14 12:01:44.255	81,27	2025-07-14 12:04:05.687	0	2025-07-14 12:04:05.687
230,72	2025-07-14 11:58:33.364	164,43	2025-07-14 11:59:41.178	155,12	2025-07-14 12:00:47.227	97,23	2025-07-14 12:01:44.747	81,27	2025-07-14 12:04:06.182	0	2025-07-14 12:04:06.182
230,72	2025-07-14 11:58:33.857	164,43	2025-07-14 11:59:41.669	135,99	2025-07-14 12:00:47.734	97,23	2025-07-14 12:01:45.243	81,27	2025-07-14 12:04:06.679	0	2025-07-14 12:04:06.679
230,72	2025-07-14 11:58:34.354	164,43	2025-07-14 11:59:42.168	135,99	2025-07-14 12:00:48.226	97,23	2025-07-14 12:01:45.749	66,85	2025-07-14 12:04:07.202	0	2025-07-14 12:04:07.202
230,72	2025-07-14 11:58:34.866	164,43	2025-07-14 11:59:42.678	135,99	2025-07-14 12:00:48.735	97,23	2025-07-14 12:01:46.249	66,85	2025-07-14 12:04:07.684	0	2025-07-14 12:04:07.684
199,71	2025-07-14 11:58:35.390	164,43	2025-07-14 11:59:43.188	135,99	2025-07-14 12:00:49.232	104,86	2025-07-14 12:01:46.740	66,85	2025-07-14 12:04:08.173	0	2025-07-14 12:04:08.173
199,71	2025-07-14 11:58:35.855	167,31	2025-07-14 11:59:43.674	135,99	2025-07-14 12:00:49.731	104,86	2025-07-14 12:01:47.252	66,85	2025-07-14 12:04:08.673	0	2025-07-14 12:04:08.673
199,71	2025-07-14 11:58:36.367	167,31	2025-07-14 11:59:44.177	135,99	2025-07-14 12:00:50.223	104,86	2025-07-14 12:01:47.748	66,85	2025-07-14 12:04:09.182	0	2025-07-14 12:04:09.182
199,71	2025-07-14 11:58:36.862	167,31	2025-07-14 11:59:44.677	135,99	2025-07-14 12:00:50.736	104,86	2025-07-14 12:01:48.245	66,85	2025-07-14 12:04:09.675	0	2025-07-14 12:04:09.675
199,71	2025-07-14 11:58:37.355	167,31	2025-07-14 11:59:45.173	135,99	2025-07-14 12:00:51.232	104,86	2025-07-14 12:01:48.754	66,85	2025-07-14 12:04:10.174	0	2025-07-14 12:04:10.174
199,71	2025-07-14 11:58:37.864	167,31	2025-07-14 11:59:45.677	135,99	2025-07-14 12:00:51.724	104,86	2025-07-14 12:01:49.247	66,85	2025-07-14 12:04:10.683	0	2025-07-14 12:04:10.683
220,15	2025-07-14 11:58:38.357	167,31	2025-07-14 11:59:46.173	135,99	2025-07-14 12:00:52.236	104,86	2025-07-14 12:01:49.742	66,85	2025-07-14 12:04:11.178	0	2025-07-14 12:04:11.178
220,15	2025-07-14 11:58:38.858	180,67	2025-07-14 11:59:46.674	173,04	2025-07-14 12:00:52.732	132,79	2025-07-14 12:01:50.253	66,85	2025-07-14 12:04:11.678	0	2025-07-14 12:04:11.678
216,23	2025-07-14 11:58:39.367	180,67	2025-07-14 11:59:47.174	173,04	2025-07-14 12:00:53.223	132,79	2025-07-14 12:01:50.747	66,85	2025-07-14 12:04:12.182	0	2025-07-14 12:04:12.182
216,23	2025-07-14 11:58:39.858	193,13	2025-07-14 11:59:47.673	173,04	2025-07-14 12:00:53.747	132,79	2025-07-14 12:01:51.244	66,85	2025-07-14 12:04:12.678	0	2025-07-14 12:04:12.678
216,23	2025-07-14 11:58:40.352	193,13	2025-07-14 11:59:48.168	173,04	2025-07-14 12:00:54.233	132,79	2025-07-14 12:01:51.756	66,85	2025-07-14 12:04:13.178	0	2025-07-14 12:04:13.178
216,23	2025-07-14 11:58:40.864	193,13	2025-07-14 11:59:48.678	135,95	2025-07-14 12:00:54.725	132,79	2025-07-14 12:01:52.252	69,02	2025-07-14 12:04:13.683	0	2025-07-14 12:04:13.683
209,16	2025-07-14 11:58:41.359	193,13	2025-07-14 11:59:49.175	135,95	2025-07-14 12:00:55.238	153,79	2025-07-14 12:01:52.746	69,02	2025-07-14 12:04:14.177	0	2025-07-14 12:04:14.177
209,16	2025-07-14 11:58:41.856	193,13	2025-07-14 11:59:49.667	135,95	2025-07-14 12:00:55.727	153,79	2025-07-14 12:01:53.264	69,02	2025-07-14 12:04:14.673	0	2025-07-14 12:04:14.673
209,16	2025-07-14 11:58:42.360	167,76	2025-07-14 11:59:50.177	135,95	2025-07-14 12:00:56.228	153,79	2025-07-14 12:01:53.748	69,02	2025-07-14 12:04:15.184	0	2025-07-14 12:04:15.184
209,16	2025-07-14 11:58:42.858	167,76	2025-07-14 11:59:50.673	135,95	2025-07-14 12:00:56.737	153,79	2025-07-14 12:01:54.245	69,02	2025-07-14 12:04:15.681	0	2025-07-14 12:04:15.681
196,07	2025-07-14 11:58:43.356	167,76	2025-07-14 11:59:51.169	178,78	2025-07-14 12:00:57.228	104,02	2025-07-14 12:01:54.757	69,02	2025-07-14 12:04:16.172	0	2025-07-14 12:04:16.172
196,07	2025-07-14 11:58:43.844	167,76	2025-07-14 11:59:51.697	178,78	2025-07-14 12:00:57.722	104,02	2025-07-14 12:01:55.251	69,02	2025-07-14 12:04:16.683	0	2025-07-14 12:04:16.683
199,25		167,01		135,37		104,11		72,163		0	

Tabel L. 11 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 240

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg		2.5 kg	
No.	Putaran	Tanggal/Waktu										
1	397,67	2025-07-14 12:07:43.483	368,93	2025-07-14 12:09:03.242	331,14	2025-07-14 12:09:58.803	293,31	2025-07-14 12:11:32.070	255,79	2025-07-14 12:12:50.147	218,4	2025-07-14 12:14:16.199
2	397,67	2025-07-14 12:07:43.979	368,9	2025-07-14 12:09:03.675	331,14	2025-07-14 12:09:59.299	293,56	2025-07-14 12:11:32.567	255,79	2025-07-14 12:12:50.650	218,4	2025-07-14 12:14:16.707
3	397,67	2025-07-14 12:07:44.493	368,9	2025-07-14 12:09:04.183	331	2025-07-14 12:09:59.788	293,56	2025-07-14 12:11:33.121	255,64	2025-07-14 12:12:51.147	218,4	2025-07-14 12:14:17.205
4	393,75	2025-07-14 12:07:45.032	368,9	2025-07-14 12:09:04.727	331	2025-07-14 12:10:00.345	293,99	2025-07-14 12:11:33.619	255,64	2025-07-14 12:12:51.689	245,42	2025-07-14 12:14:17.749
5	393,75	2025-07-14 12:07:45.526	388,36	2025-07-14 12:09:05.222	331	2025-07-14 12:10:00.841	293,99	2025-07-14 12:11:34.113	255,64	2025-07-14 12:12:52.219	245,42	2025-07-14 12:14:18.256
6	397,04	2025-07-14 12:07:46.022	388,36	2025-07-14 12:09:05.730	366,8	2025-07-14 12:10:01.339	293,99	2025-07-14 12:11:34.617	255,64	2025-07-14 12:12:52.700	218,03	2025-07-14 12:14:18.756
7	397,04	2025-07-14 12:07:46.533	386,96	2025-07-14 12:09:06.226	366,8	2025-07-14 12:10:01.865	293,99	2025-07-14 12:11:35.116	255,64	2025-07-14 12:12:53.189	218,03	2025-07-14 12:14:19.244
8	410,9	2025-07-14 12:07:47.040	386,96	2025-07-14 12:09:06.725	368,27	2025-07-14 12:10:02.355	293,99	2025-07-14 12:11:35.611	303,17	2025-07-14 12:12:53.717	218,03	2025-07-14 12:14:19.757
9	410,9	2025-07-14 12:07:47.523	385,77	2025-07-14 12:09:07.253	368,27	2025-07-14 12:10:02.840	329,7	2025-07-14 12:11:36.125	303,17	2025-07-14 12:12:54.199	218,03	2025-07-14 12:14:20.250
10	410,9	2025-07-14 12:07:48.047	385,77	2025-07-14 12:09:07.740	368,48	2025-07-14 12:10:03.346	329,7	2025-07-14 12:11:36.620	303,17	2025-07-14 12:12:54.693	218,03	2025-07-14 12:14:20.745
11	410,9	2025-07-14 12:07:48.526	382,9	2025-07-14 12:09:08.226	368,48	2025-07-14 12:10:03.845	329,7	2025-07-14 12:11:37.115	302,47	2025-07-14 12:12:55.206	218,03	2025-07-14 12:14:21.260
12	421,96	2025-07-14 12:07:49.024	382,9	2025-07-14 12:09:08.748	368,48	2025-07-14 12:10:04.340	330,19	2025-07-14 12:11:37.629	302,47	2025-07-14 12:12:55.701	251,58	2025-07-14 12:14:21.702
13	421,96	2025-07-14 12:07:49.532	388,01	2025-07-14 12:09:09.231	371	2025-07-14 12:10:04.849	330,19	2025-07-14 12:11:38.117	302,47	2025-07-14 12:12:56.193	252,49	2025-07-14 12:14:22.201
14	421,96	2025-07-14 12:07:50.041	388,01	2025-07-14 12:09:09.722	371	2025-07-14 12:10:05.341	336,35	2025-07-14 12:11:38.610	298,41	2025-07-14 12:12:56.705	252,49	2025-07-14 12:14:22.772
15	421,96	2025-07-14 12:07:50.521	394,1	2025-07-14 12:09:10.235	368,27	2025-07-14 12:10:05.838	336,35	2025-07-14 12:11:39.120	298,41	2025-07-14 12:12:57.195	252,49	2025-07-14 12:14:23.247
16	421,75	2025-07-14 12:07:51.032	394,1	2025-07-14 12:09:10.730	368,27	2025-07-14 12:10:06.350	336,35	2025-07-14 12:11:39.612	298,41	2025-07-14 12:12:57.705	252,91	2025-07-14 12:14:23.745
17	421,75	2025-07-14 12:07:51.528	394,1	2025-07-14 12:09:11.221	365,96	2025-07-14 12:10:06.841	339,78	2025-07-14 12:11:40.107	298,69	2025-07-14 12:12:58.235	252,91	2025-07-14 12:14:24.258
18	410,06	2025-07-14 12:07:52.020	391,09	2025-07-14 12:09:11.733	365,96	2025-07-14 12:10:07.335	339,78	2025-07-14 12:11:40.618	298,69	2025-07-14 12:12:58.699	252,91	2025-07-14 12:14:24.753
19	410,06	2025-07-14 12:07:52.535	391,09	2025-07-14 12:09:12.228	331,43	2025-07-14 12:10:07.845	293,96	2025-07-14 12:11:41.113	255,52	2025-07-14 12:12:59.193	253,68	2025-07-14 12:14:25.246
20	397,74	2025-07-14 12:07:53.034	384,16	2025-07-14 12:09:12.724	331,43	2025-07-14 12:10:08.343	293,96	2025-07-14 12:11:41.607	255,52	2025-07-14 12:12:59.702	253,68	2025-07-14 12:14:25.761
21	397,74	2025-07-14 12:07:53.524	384,16	2025-07-14 12:09:13.234	331,43	2025-07-14 12:10:08.839	293,96	2025-07-14 12:11:42.118	255,52	2025-07-14 12:13:00.196	253,68	2025-07-14 12:14:26.254
22	391,72	2025-07-14 12:07:54.030	385,42	2025-07-14 12:09:13.731	367,01	2025-07-14 12:10:09.349	293,96	2025-07-14 12:11:42.617	255,52	2025-07-14 12:13:00.693	253,68	2025-07-14 12:14:26.746
23	391,72	2025-07-14 12:07:54.526	385,42	2025-07-14 12:09:14.224	367,01	2025-07-14 12:10:09.840	293,96	2025-07-14 12:11:43.110	255,52	2025-07-14 12:13:01.203	251,72	2025-07-14 12:14:27.253
24	396,76	2025-07-14 12:07:55.024	391,65	2025-07-14 12:09:14.730	361,27	2025-07-14 12:10:10.337	293,96	2025-07-14 12:11:43.626	255,52	2025-07-14 12:13:01.698	251,72	2025-07-14 12:14:27.753
25	396,76	2025-07-14 12:07:55.533	391,65	2025-07-14 12:09:15.223	361,27	2025-07-14 12:10:10.849	331,17	2025-07-14 12:11:44.119	316,75	2025-07-14 12:13:02.195	251,72	2025-07-14 12:14:28.248
26	405,86	2025-07-14 12:07:56.030	368,5	2025-07-14 12:09:15.727	357,63	2025-07-14 12:10:11.341	331,17	2025-07-14 12:11:44.615	316,75	2025-07-14 12:13:02.703	218,59	2025-07-14 12:14:28.762
27	405,86	2025-07-14 12:07:56.522	368,5	2025-07-14 12:09:16.249	357,63	2025-07-14 12:10:11.835	329,42	2025-07-14 12:11:45.122	317,45	2025-07-14 12:13:03.193	218,59	2025-07-14 12:14:29.268
28	409,43	2025-07-14 12:07:57.038	368,45	2025-07-14 12:09:16.728	357,63	2025-07-14 12:10:12.346	329,42	2025-07-14 12:11:45.613	317,45	2025-07-14 12:13:03.695	218,59	2025-07-14 12:14:29.749
29	409,43	2025-07-14 12:07:57.527	368,45	2025-07-14 12:09:17.236	331,11	2025-07-14 12:10:12.843	329,42	2025-07-14 12:11:46.114	317,45	2025-07-14 12:13:04.206	218,59	2025-07-14 12:14:30.259
30	411,88	2025-07-14 12:07:58.024	368,45	2025-07-14 12:09:17.730	331,11	2025-07-14 12:10:13.351	329,42	2025-07-14 12:11:46.626	301,7	2025-07-14 12:13:04.699	218,59	2025-07-14 12:14:30.755
	399,15		368,53		331,31		293,61		255,98		218,71	

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
280,5	2025-07-14 12:15:32.649	166,53	2025-07-14 12:16:46.168	130,76	2025-07-14 12:17:37.556	53,2	2025-07-14 12:19:33.384	0	2025-07-14 12:19:33.384
180,62	2025-07-14 12:15:33.160	189,42	2025-07-14 12:16:46.677	130,76	2025-07-14 12:17:38.054	53,2	2025-07-14 12:19:33.879	0	2025-07-14 12:19:33.879
180,62	2025-07-14 12:15:33.703	189,42	2025-07-14 12:16:47.224	130,76	2025-07-14 12:17:38.547	53,2	2025-07-14 12:19:34.437	0	2025-07-14 12:19:34.437
180,62	2025-07-14 12:15:34.202	189,42	2025-07-14 12:16:47.711	130,76	2025-07-14 12:17:39.109	53,2	2025-07-14 12:19:34.932	0	2025-07-14 12:19:34.932
180,62	2025-07-14 12:15:34.709	189,42	2025-07-14 12:16:48.228	130,76	2025-07-14 12:17:39.603	53,2	2025-07-14 12:19:35.433	0	2025-07-14 12:19:35.433
180,62	2025-07-14 12:15:35.205	142,32	2025-07-14 12:16:48.725	130,76	2025-07-14 12:17:40.092	53,2	2025-07-14 12:19:35.943	0	2025-07-14 12:19:35.943
180,62	2025-07-14 12:15:35.695	142,32	2025-07-14 12:16:49.218	127,26	2025-07-14 12:17:40.608	53,2	2025-07-14 12:19:36.434	0	2025-07-14 12:19:36.434
223,16	2025-07-14 12:15:36.206	142,32	2025-07-14 12:16:49.728	127,26	2025-07-14 12:17:41.106	74,41	2025-07-14 12:19:36.931	0	2025-07-14 12:19:36.931
223,16	2025-07-14 12:15:36.705	142,32	2025-07-14 12:16:50.224	127,26	2025-07-14 12:17:41.598	74,41	2025-07-14 12:19:37.444	0	2025-07-14 12:19:37.444
180,24	2025-07-14 12:15:37.200	142,55	2025-07-14 12:16:50.717	127,26	2025-07-14 12:17:42.107	74,41	2025-07-14 12:19:37.934	0	2025-07-14 12:19:37.934
180,24	2025-07-14 12:15:37.708	142,55	2025-07-14 12:16:51.225	127,26	2025-07-14 12:17:42.606	74,41	2025-07-14 12:19:38.447	0	2025-07-14 12:19:38.447
180,24	2025-07-14 12:15:38.205	142,55	2025-07-14 12:16:51.721	127,26	2025-07-14 12:17:43.095	74,41	2025-07-14 12:19:38.959	0	2025-07-14 12:19:38.959
180,24	2025-07-14 12:15:38.701	142,55	2025-07-14 12:16:52.218	133,49	2025-07-14 12:17:43.606	74,41	2025-07-14 12:19:39.452	0	2025-07-14 12:19:39.452
180,24	2025-07-14 12:15:39.212	142,55	2025-07-14 12:16:52.732	133,49	2025-07-14 12:17:44.099	74,41	2025-07-14 12:19:39.945	0	2025-07-14 12:19:39.945
180,24	2025-07-14 12:15:39.707	142,55	2025-07-14 12:16:53.217	133,49	2025-07-14 12:17:44.594	74,41	2025-07-14 12:19:40.440	0	2025-07-14 12:19:40.440
215,04	2025-07-14 12:15:40.216	142,55	2025-07-14 12:16:53.716	133,49	2025-07-14 12:17:45.103	74,41	2025-07-14 12:19:40.934	0	2025-07-14 12:19:40.934
215,04	2025-07-14 12:15:40.713	143,25	2025-07-14 12:16:54.226	133,49	2025-07-14 12:17:45.597	74,41	2025-07-14 12:19:41.431	0	2025-07-14 12:19:41.431
212,03	2025-07-14 12:15:41.209	143,25	2025-07-14 12:16:54.721	133,49	2025-07-14 12:17:46.093	74,41	2025-07-14 12:19:41.938	0	2025-07-14 12:19:41.938
212,03	2025-07-14 12:15:41.703	143,25	2025-07-14 12:16:55.215	105,36	2025-07-14 12:17:46.627	74,41	2025-07-14 12:19:42.433	0	2025-07-14 12:19:42.433
212,03	2025-07-14 12:15:42.228	143,25	2025-07-14 12:16:55.732	105,36	2025-07-14 12:17:47.102	74,41	2025-07-14 12:19:42.927	0	2025-07-14 12:19:42.927
212,03	2025-07-14 12:15:42.703	143,25	2025-07-14 12:16:56.216	105,36	2025-07-14 12:17:47.595	68,95	2025-07-14 12:19:43.441	0	2025-07-14 12:19:43.441
207,62	2025-07-14 12:15:43.204	143,25	2025-07-14 12:16:56.712	105,36	2025-07-14 12:17:48.101	68,95	2025-07-14 12:19:43.935	0	2025-07-14 12:19:43.935
207,62	2025-07-14 12:15:43.709	143,25	2025-07-14 12:16:57.229	105,36	2025-07-14 12:17:48.602	68,95	2025-07-14 12:19:44.429	0	2025-07-14 12:19:44.429
207,62	2025-07-14 12:15:44.205	134,26	2025-07-14 12:16:57.721	105,99	2025-07-14 12:17:49.100	68,95	2025-07-14 12:19:44.939	0	2025-07-14 12:19:44.939
207,62	2025-07-14 12:15:44.696	134,26	2025-07-14 12:16:58.214	105,99	2025-07-14 12:17:49.609	68,95	2025-07-14 12:19:45.438	0	2025-07-14 12:19:45.438
200,83	2025-07-14 12:15:45.205	134,26	2025-07-14 12:16:58.725	105,99	2025-07-14 12:17:50.100	68,95	2025-07-14 12:19:45.927	0	2025-07-14 12:19:45.927
200,83	2025-07-14 12:15:45.711	134,26	2025-07-14 12:16:59.219	105,99	2025-07-14 12:17:50.598	68,95	2025-07-14 12:19:46.440	0	2025-07-14 12:19:46.440
200,83	2025-07-14 12:15:46.201	134,26	2025-07-14 12:16:59.715	105,99	2025-07-14 12:17:51.104	68,95	2025-07-14 12:19:46.938	0	2025-07-14 12:19:46.938
200,83	2025-07-14 12:15:46.714	134,26	2025-07-14 12:17:00.228	105,99	2025-07-14 12:17:51.599	68,95	2025-07-14 12:19:47.432	0	2025-07-14 12:19:47.432
196,77	2025-07-14 12:15:47.204	134,26	2025-07-14 12:17:00.723	105,99	2025-07-14 12:17:52.098	76,79	2025-07-14 12:19:47.943	0	2025-07-14 12:19:47.943
180,85		142,48		105,53		67,902333		0	

Tabel L. 12 Data pengukuran beban dan putaran turbin angin Savonius empat sudu variasi jumlah *dimple* 256

Tanpa beban			0.5 kg		1 kg		1.5 kg		2 kg	
No.	Putaran	Tanggal/Waktu								
1	379,47	2025-07-14 12:22:27.835	347,41	2025-07-14 12:24:08.153	310,3	2025-07-14 12:25:14.035	281,1	2025-07-14 12:26:50.258	244,23	2025-07-14 12:28:06.592
2	379,47	2025-07-14 12:22:28.337	342,79	2025-07-14 12:24:08.651	310,3	2025-07-14 12:25:14.530	281,1	2025-07-14 12:26:50.768	244,23	2025-07-14 12:28:07.108
3	379,47	2025-07-14 12:22:28.845	342,79	2025-07-14 12:24:09.149	318,08	2025-07-14 12:25:15.076	281,1	2025-07-14 12:26:51.313	244,23	2025-07-14 12:28:07.599
4	369,32	2025-07-14 12:22:29.384	342,3	2025-07-14 12:24:09.709	318,08	2025-07-14 12:25:15.585	281,1	2025-07-14 12:26:51.807	244,84	2025-07-14 12:28:08.161
5	369,32	2025-07-14 12:22:29.883	342,3	2025-07-14 12:24:10.203	318,08	2025-07-14 12:25:16.080	281,51	2025-07-14 12:26:52.321	244,84	2025-07-14 12:28:08.656
6	373,52	2025-07-14 12:22:30.388	342,3	2025-07-14 12:24:10.697	314,16	2025-07-14 12:25:16.576	281,51	2025-07-14 12:26:52.814	244,84	2025-07-14 12:28:09.149
7	373,52	2025-07-14 12:22:30.888	340,76	2025-07-14 12:24:11.207	314,16	2025-07-14 12:25:17.100	281,51	2025-07-14 12:26:53.307	244,84	2025-07-14 12:28:09.643
8	383,81	2025-07-14 12:22:31.382	340,76	2025-07-14 12:24:11.698	318,01	2025-07-14 12:25:17.576	281,51	2025-07-14 12:26:53.820	244,84	2025-07-14 12:28:10.161
9	383,81	2025-07-14 12:22:31.889	338,8	2025-07-14 12:24:12.199	318,01	2025-07-14 12:25:18.078	281,51	2025-07-14 12:26:54.313	244,48	2025-07-14 12:28:10.656
10	393,47	2025-07-14 12:22:32.384	338,8	2025-07-14 12:24:12.704	318,01	2025-07-14 12:25:18.588	281,51	2025-07-14 12:26:54.811	244,48	2025-07-14 12:28:11.147
11	393,47	2025-07-14 12:22:32.878	338,8	2025-07-14 12:24:13.205	310,95	2025-07-14 12:25:19.082	281,51	2025-07-14 12:26:55.321	244,48	2025-07-14 12:28:11.657
12	399,63	2025-07-14 12:22:33.391	337,61	2025-07-14 12:24:13.696	310,95	2025-07-14 12:25:19.573	248,78	2025-07-14 12:26:55.815	244,48	2025-07-14 12:28:12.152
13	399,63	2025-07-14 12:22:33.886	337,61	2025-07-14 12:24:14.206	310,95	2025-07-14 12:25:20.086	248,78	2025-07-14 12:26:56.309	252,91	2025-07-14 12:28:12.676
14	399,63	2025-07-14 12:22:34.375	336,7	2025-07-14 12:24:14.707	310,95	2025-07-14 12:25:20.583	248,78	2025-07-14 12:26:56.818	252,91	2025-07-14 12:28:13.153
15	385,49	2025-07-14 12:22:34.895	336,7	2025-07-14 12:24:15.208	319,34	2025-07-14 12:25:21.092	254,03	2025-07-14 12:26:57.320	252,91	2025-07-14 12:28:13.647
16	385,49	2025-07-14 12:22:35.385	336,7	2025-07-14 12:24:15.702	320,74	2025-07-14 12:25:21.588	254,03	2025-07-14 12:26:57.812	241,92	2025-07-14 12:28:14.143
17	344,33	2025-07-14 12:22:35.879	339,64	2025-07-14 12:24:16.201	320,74	2025-07-14 12:25:22.077	254,03	2025-07-14 12:26:58.323	241,92	2025-07-14 12:28:14.649
18	344,33	2025-07-14 12:22:36.391	339,64	2025-07-14 12:24:16.694	320,74	2025-07-14 12:25:22.573	261,73	2025-07-14 12:26:58.831	241,92	2025-07-14 12:28:15.147
19	344,33	2025-07-14 12:22:36.890	345,73	2025-07-14 12:24:17.206	323,33	2025-07-14 12:25:23.103	261,73	2025-07-14 12:26:59.308	241,92	2025-07-14 12:28:15.662
20	311,15	2025-07-14 12:22:37.380	345,73	2025-07-14 12:24:17.695	323,33	2025-07-14 12:25:23.534	261,73	2025-07-14 12:26:59.823	234,5	2025-07-14 12:28:16.150
21	311,15	2025-07-14 12:22:37.898	345,73	2025-07-14 12:24:18.199	322,63	2025-07-14 12:25:24.025	272,65	2025-07-14 12:27:00.317	234,5	2025-07-14 12:28:16.647
22	323,54	2025-07-14 12:22:38.387	343,56	2025-07-14 12:24:18.704	322,63	2025-07-14 12:25:24.583	272,65	2025-07-14 12:27:00.810	234,5	2025-07-14 12:28:17.147
23	323,54	2025-07-14 12:22:38.884	343,56	2025-07-14 12:24:19.203	322,63	2025-07-14 12:25:25.083	272,65	2025-07-14 12:27:01.323	231,14	2025-07-14 12:28:17.659
24	323,54	2025-07-14 12:22:39.395	338,38	2025-07-14 12:24:19.695	317,24	2025-07-14 12:25:25.578	285,25	2025-07-14 12:27:01.812	231,14	2025-07-14 12:28:18.152
25	353,08	2025-07-14 12:22:39.885	338,38	2025-07-14 12:24:20.203	317,24	2025-07-14 12:25:26.087	285,25	2025-07-14 12:27:02.312	231,14	2025-07-14 12:28:18.641
26	353,08	2025-07-14 12:22:40.379	338,38	2025-07-14 12:24:20.699	317,24	2025-07-14 12:25:26.579	285,25	2025-07-14 12:27:02.818	231,14	2025-07-14 12:28:19.161
27	370,44	2025-07-14 12:22:40.894	338,66	2025-07-14 12:24:21.195	310,2	2025-07-14 12:25:27.075	292,6	2025-07-14 12:27:03.319	231,84	2025-07-14 12:28:19.651
28	370,44	2025-07-14 12:22:41.399	338,66	2025-07-14 12:24:21.707	310,2	2025-07-14 12:25:27.583	292,6	2025-07-14 12:27:03.808	231,84	2025-07-14 12:28:20.144
29	379,61	2025-07-14 12:22:41.883	338,94	2025-07-14 12:24:22.206	310,2	2025-07-14 12:25:28.079	292,6	2025-07-14 12:27:04.323	231,84	2025-07-14 12:28:20.653
30	379,61	2025-07-14 12:22:42.396	338,94	2025-07-14 12:24:22.753	310,2	2025-07-14 12:25:28.575	300,58	2025-07-14 12:27:04.817	237,44	2025-07-14 12:28:21.148
	366,02		340,57		310,43		281,79		244,41	

2.5 kg		3 kg		3,5 kg		4 kg		4,5 kg	
Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu	Putaran	Tanggal/Waktu
202,23	2025-07-14 12:29:19.972	156,52	2025-07-14 12:30:42.159	121,66	2025-07-14 12:31:34.859	83,3	2025-07-14 12:32:43.210	0	2025-07-14 12:32:43.210
200,33	2025-07-14 12:29:20.477	169,05	2025-07-14 12:30:42.656	121,66	2025-07-14 12:31:35.355	83,3	2025-07-14 12:32:43.709	0	2025-07-14 12:32:43.709
200,33	2025-07-14 12:29:20.984	169,05	2025-07-14 12:30:43.197	121,66	2025-07-14 12:31:35.897	83,3	2025-07-14 12:32:44.266	0	2025-07-14 12:32:44.266
200,33	2025-07-14 12:29:21.523	169,05	2025-07-14 12:30:43.708	120,96	2025-07-14 12:31:36.407	83,3	2025-07-14 12:32:44.755	0	2025-07-14 12:32:44.755
200,33	2025-07-14 12:29:22.016	169,05	2025-07-14 12:30:44.198	120,96	2025-07-14 12:31:36.897	83,3	2025-07-14 12:32:45.255	0	2025-07-14 12:32:45.255
200,33	2025-07-14 12:29:22.528	169,05	2025-07-14 12:30:44.731	120,96	2025-07-14 12:31:37.406	83,3	2025-07-14 12:32:45.762	0	2025-07-14 12:32:45.762
200,11	2025-07-14 12:29:23.025	160,46	2025-07-14 12:30:45.211	120,96	2025-07-14 12:31:37.903	68,18	2025-07-14 12:32:46.258	0	2025-07-14 12:32:46.258
200,11	2025-07-14 12:29:23.519	160,46	2025-07-14 12:30:45.713	120,96	2025-07-14 12:31:38.397	68,18	2025-07-14 12:32:46.753	0	2025-07-14 12:32:46.753
200,11	2025-07-14 12:29:24.029	160,46	2025-07-14 12:30:46.201	120,96	2025-07-14 12:31:38.892	68,18	2025-07-14 12:32:47.263	0	2025-07-14 12:32:47.263
200,11	2025-07-14 12:29:24.528	160,46	2025-07-14 12:30:46.709	120,96	2025-07-14 12:31:39.405	68,18	2025-07-14 12:32:47.760	0	2025-07-14 12:32:47.760
200,11	2025-07-14 12:29:25.017	160,46	2025-07-14 12:30:47.211	117,74	2025-07-14 12:31:39.897	68,18	2025-07-14 12:32:48.252	0	2025-07-14 12:32:48.252
189,77	2025-07-14 12:29:25.531	160,58	2025-07-14 12:30:47.703	117,74	2025-07-14 12:31:40.392	68,18	2025-07-14 12:32:48.763	0	2025-07-14 12:32:48.763
189,77	2025-07-14 12:29:26.026	160,58	2025-07-14 12:30:48.211	117,74	2025-07-14 12:31:40.902	68,18	2025-07-14 12:32:49.259	0	2025-07-14 12:32:49.259
189,77	2025-07-14 12:29:26.523	160,58	2025-07-14 12:30:48.702	117,74	2025-07-14 12:31:41.404	68,18	2025-07-14 12:32:49.753	0	2025-07-14 12:32:49.753
189,77	2025-07-14 12:29:27.025	160,58	2025-07-14 12:30:49.198	117,74	2025-07-14 12:31:41.896	68,18	2025-07-14 12:32:50.262	0	2025-07-14 12:32:50.262
185,22	2025-07-14 12:29:27.519	160,58	2025-07-14 12:30:49.660	117,74	2025-07-14 12:31:42.406	88,27	2025-07-14 12:32:50.756	0	2025-07-14 12:32:50.756
185,22	2025-07-14 12:29:28.019	160,58	2025-07-14 12:30:50.152	117,74	2025-07-14 12:31:42.900	88,27	2025-07-14 12:32:51.257	0	2025-07-14 12:32:51.257
185,22	2025-07-14 12:29:28.538	160,58	2025-07-14 12:30:50.671	121,03	2025-07-14 12:31:43.412	88,27	2025-07-14 12:32:51.766	0	2025-07-14 12:32:51.766
185,22	2025-07-14 12:29:29.023	145,46	2025-07-14 12:30:51.214	121,03	2025-07-14 12:31:43.902	88,27	2025-07-14 12:32:52.260	0	2025-07-14 12:32:52.260
184,1	2025-07-14 12:29:29.517	145,46	2025-07-14 12:30:51.704	121,03	2025-07-14 12:31:44.396	88,27	2025-07-14 12:32:52.755	0	2025-07-14 12:32:52.755
184,1	2025-07-14 12:29:30.031	145,46	2025-07-14 12:30:52.218	121,03	2025-07-14 12:31:44.893	88,27	2025-07-14 12:32:53.264	0	2025-07-14 12:32:53.264
184,1	2025-07-14 12:29:30.520	145,46	2025-07-14 12:30:52.709	121,03	2025-07-14 12:31:45.403	88,27	2025-07-14 12:32:53.757	0	2025-07-14 12:32:53.757
184,1	2025-07-14 12:29:31.020	145,46	2025-07-14 12:30:53.218	125,82	2025-07-14 12:31:45.900	88,27	2025-07-14 12:32:54.253	0	2025-07-14 12:32:54.253
195,16	2025-07-14 12:29:31.529	145,46	2025-07-14 12:30:53.699	141,82	2025-07-14 12:31:46.393	88,27	2025-07-14 12:32:54.749	0	2025-07-14 12:32:54.749
195,16	2025-07-14 12:29:32.020	145,46	2025-07-14 12:30:54.212	141,82	2025-07-14 12:31:46.898	95,13	2025-07-14 12:32:55.259	0	2025-07-14 12:32:55.259
195,16	2025-07-14 12:29:32.521	145,46	2025-07-14 12:30:54.703	141,82	2025-07-14 12:31:47.400	95,13	2025-07-14 12:32:55.752	0	2025-07-14 12:32:55.752
195,16	2025-07-14 12:29:33.045	113,26	2025-07-14 12:30:55.198	141,82	2025-07-14 12:31:47.894	95,13	2025-07-14 12:32:56.252	0	2025-07-14 12:32:56.252
212,52	2025-07-14 12:29:33.528	113,26	2025-07-14 12:30:55.708	141,82	2025-07-14 12:31:48.400	95,13	2025-07-14 12:32:56.761	0	2025-07-14 12:32:56.761
212,52	2025-07-14 12:29:34.017	113,26	2025-07-14 12:30:56.206	141,82	2025-07-14 12:31:48.893	95,13	2025-07-14 12:32:57.257	0	2025-07-14 12:32:57.257
212,52	2025-07-14 12:29:34.543	113,26	2025-07-14 12:30:56.701	141,82	2025-07-14 12:31:49.394	95,13	2025-07-14 12:32:57.750	0	2025-07-14 12:32:57.750
200,66		160,1		125,3196667		82,621		0	



Gambar L. 1 Proses Pemotongan Poros



Gambar L. 2 Proses Pemotongan pipa PVC



Gambar L. 3 Proses Pembuatan Rotor



Gambar L. 4 Proses Pembuatan *dimple* pada rotor



Gambar L. 5 Proses Pengecatan Suhu



Gambar L. 6 Proses merapikan suhu menggunakan head gun



Gambar L. 7 Proses pemasangan sudu ke rotor turbin savonius dengan *dimple* empat sudu



Gambar L. 8 Proses Pengukuran Kecepatan Angin Dengan Variasi jumlah *dimple* Menggunakan *Anemometer Data Logger*



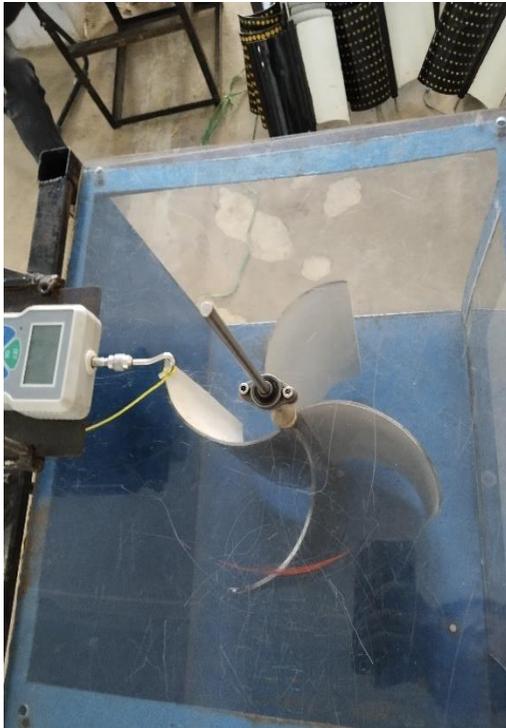
Gambar L. 9 .Proses pengambilan data



Gambar L. 10 Rotor model Savonius empat sudu dengan variasi tanpa *dimple* dan jumlah *dimple* 160, 176, 192.



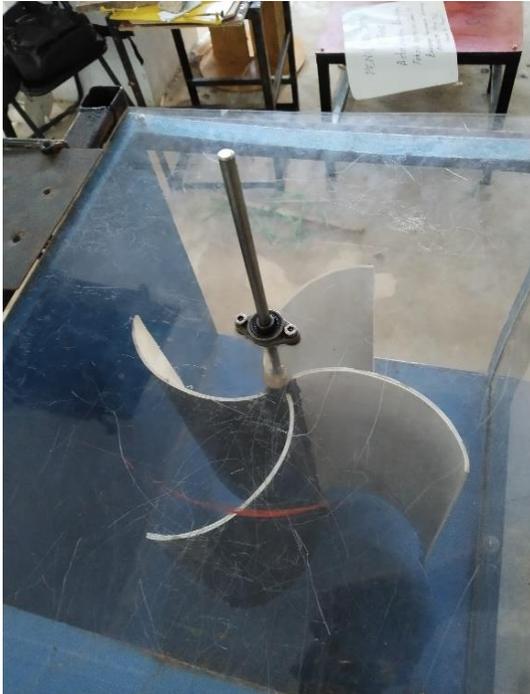
Gambar L. 11 Rotor model Savonius empat sudu dengan variasi jumlah *dimple* 208, 224, 240, dan 256.



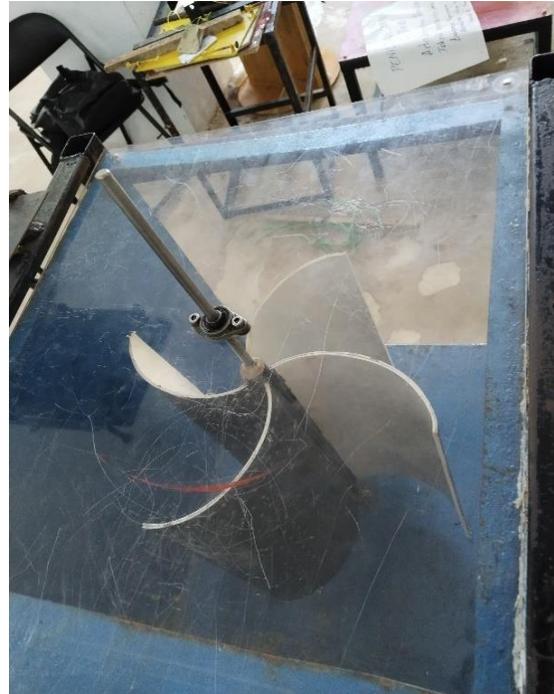
Sudu tanpa *dimple*



Sudu dengan jumlah *dimple* 160



Sudu dengan jumlah *dimple* 176



Sudu dengan jumlah *dimple* 192



Sudu dengan jumlah *dimple* 208



Sudu dengan jumlah *dimple* 224

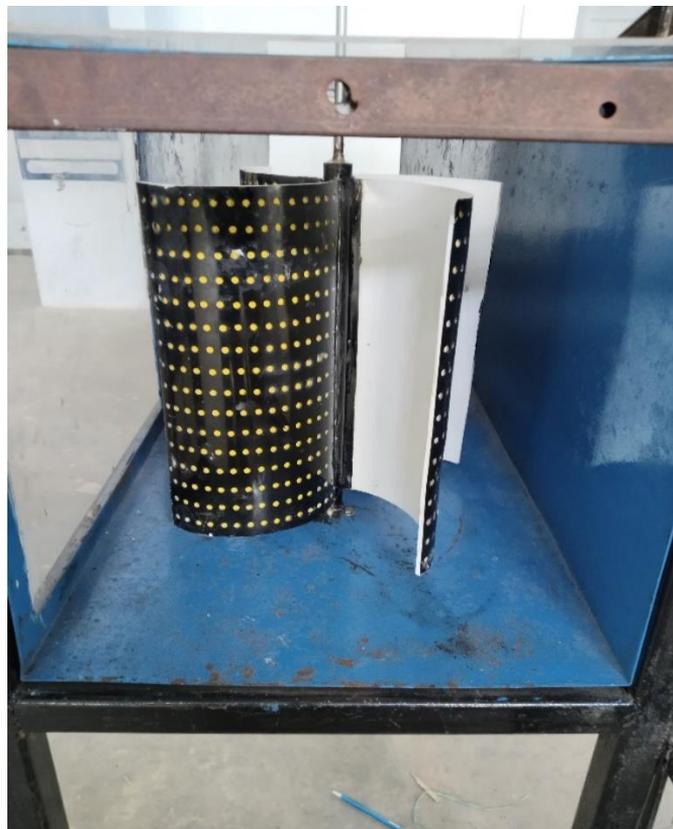


Sudu dengan jumlah *dimple* 240

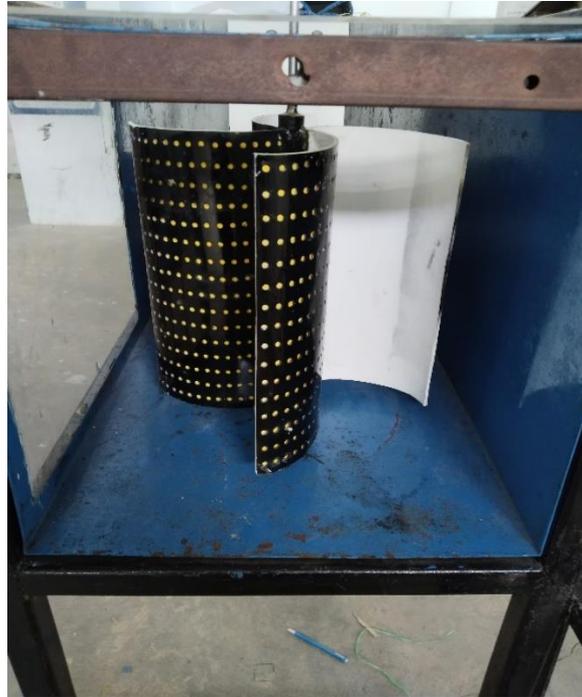


Sudu dengan jumlah *dimple* 256

Gambar L. 12 Variasi jumlah dimple



Gambar L. 13 Turbin angin Savonius empat sudu variasi jumlah *dimple*



Gambar L. 14 Turbin angin savonius empat sudu dengan *dimple* tampak belakang



Gambar L. 15 Turbin angin Savonius empat sudu dengan *dimple* tampak depan



Gambar L. 16 *Wind tunnel* turbin angin Savonius tampak samping



Gambar L. 17 *Wind tunnel* turbin angin Savonius empat sudu dengan *dimple* tampak belakang



Gambar L. 18 *Blower* tampak depan



Gambar L. 19 *Blower* tampak belakang



Gambar L. 20 *Blower* tampak samping