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LAMPIRAN

Lampiran A

A1. Tabel Hasil Pengamatan Sudu Bengkok 45^{o} Material Plastik (Daya dan Efisiensi Turbin)

Bukaan katup	m	n	A	t	h_s	h_{tho}	Q_1	Q_{tho}
	(kg)	(rpm)	(m^2)	(s)	(m)	(m)	(m^3/s)	(m^3/s)
25%	0	25	0.0217	0.7880	0.0836	0.1294	0.0114	0.0112
	0.1	22						
	0.2	19						
	0.3	17						
	0.4	14						
	0.5	11						
	0.6	9						
	0.7	6						
	0.8	4						
	0.9	1						
	1	0						
50%	0	29	0.0265	0.6880	0.1022	0.1376	0.0135	0.0131
	0.1	26						
	0.2	24						
	0.3	21						
	0.4	18						
	0.5	15						
	0.6	12						
	0.7	10						
	0.8	8						
	0.9	6						
	1	4						
75%	0	34	0.0291	0.6020	0.112	0.1440	0.0149	0.0146
	0.1	31						
	0.2	28						
	0.3	25						
	0.4	23						
	0.5	20						
	0.6	17						
	0.7	14						
	0.8	12						
	0.9	9						
	1	7						
100%	0	38	0.0310	0.5460	0.1194	0.1504	0.0164	0.0163
	0.1	36						
	0.2	33						
	0.3	30						
	0.4	27						
	0.5	25						
	0.6	22						
	0.7	19						
	0.8	16						
	0.9	13						
	1	11						

A2. Tabel Hasil Pengamatan Sudu Bengkok 45^o Material Plastik (Daya Listrik Turbin)

Bukaan katup	(n) Lampu	n	V	I	h_s	h_{tho}	Q_1	Q_{tho}
		(rpm)	(volt)	(A)	(m)	(m)	(m^3/s)	(m^3/s)
25%	1	8	1.92	0.0110	0.0836	0.1294	0.0114	0.0112
	2	8	1.87	0.0070				
	3	7	1.83	0.0045				
	4	7	1.76	0.0027				
	5	7	1.71	0.0018				
50%	1	9	2.14	0.0153	0.1022	0.1376	0.0135	0.0131
	2	9	2.02	0.0108				
	3	9	1.97	0.0086				
	4	9	1.91	0.0069				
	5	8	1.88	0.0047				
75%	1	13	2.78	0.0175	0.112	0.1440	0.0149	0.0146
	2	11	2.19	0.0164				
	3	11	2.08	0.0118				
	4	11	2.00	0.0098				
	5	11	2.00	0.0076				
100%	1	14	2.88	0.0226	0.1194	0.1504	0.0164	0.0163
	2	13	2.22	0.0210				
	3	13	2.18	0.0162				
	4	12	2.11	0.0125				
	5	12	2.08	0.0091				

A3. Tabel Hasil Pengamatan Sudu Bengkok 45^{o} Material Aluminium (Daya dan Efisiensi Turbin)

Bukaan katup	m	n	A	t	h_s	h_{tho}	Q_1	Q_{tho}
	(kg)	(rpm)	(m^2)	(s)	(m)	(m)	(m^3/s)	(m^3/s)
25%	0	24	0.0217	0.7880	0.0836	0.1294	0.0114	0.0112
	0.1	22						
	0.2	20						
	0.3	17						
	0.4	15						
	0.5	12						
	0.6	9						
	0.7	7						
	0.8	4						
	0.9	1						
	1	0						
50%	0	27	0.0265	0.6880	0.1022	0.1376	0.0135	0.0131
	0.1	25						
	0.2	24						
	0.3	22						
	0.4	19						
	0.5	16						
	0.6	13						
	0.7	10						
	0.8	8						
	0.9	6						
	1	4						
75%	0	32	0.0291	0.6020	0.112	0.1440	0.0149	0.0146
	0.1	29						
	0.2	27						
	0.3	25						
	0.4	23						
	0.5	21						
	0.6	18						
	0.7	15						
	0.8	12						
	0.9	9						
	1	7						
100%	0	37	0.0310	0.5460	0.1194	0.1504	0.0164	0.0163
	0.1	32						
	0.2	30						
	0.3	28						
	0.4	26						
	0.5	24						
	0.6	22						
	0.7	20						
	0.8	17						
	0.9	14						
	1	12						

A4. Tabel Hasil Pengamatan Sudu Bengkok 45^o Material Aluminium (Daya Listrik Turbin)

Bukaan katup	(n) Lampu	n	V	I	h_s	h_{tho}	Q_1	Q_{tho}
		(rpm)	(volt)	(A)	(m)	(m)	(m^3/s)	(m^3/s)
25%	1	8	1.82	0.0152	0.0836	0.1294	0.0114	0.0112
	2	8	1.85	0.0119				
	3	8	1.83	0.0070				
	4	8	1.82	0.0040				
	5	8	1.78	0.0028				
50%	1	11	2.05	0.0193	0.1022	0.1376	0.0135	0.0131
	2	11	2.01	0.0149				
	3	11	1.97	0.0100				
	4	10	1.95	0.0064				
	5	10	1.92	0.0046				
75%	1	13	2.30	0.0235	0.112	0.1440	0.0149	0.0146
	2	13	2.15	0.0198				
	3	13	2.11	0.0140				
	4	12	2.04	0.0108				
	5	12	1.96	0.0075				
100%	1	14	2.32	0.0300	0.1194	0.1504	0.0164	0.0163
	2	13	2.15	0.0246				
	3	13	2.13	0.0198				
	4	13	2.07	0.0156				
	5	13	2.14	0.0096				

A5. Tabel Hasil Pengamatan Sudu Bengkok 45^o Material Besi (Daya dan Efisiensi Turbin)

Bukaan katup	m	n	A	t	h_s	h_{tho}	Q_1	Q_{tho}
	(kg)	(rpm)	(m^2)	(s)	(m)	(m)	(m^3/s)	(m^3/s)
25%	0	25	0.0217	0.7880	0.0836	0.1294	0.0114	0.0112
	0.1	21						
	0.2	18						
	0.3	16						
	0.4	14						
	0.5	11						
	0.6	8						
	0.7	5						
	0.8	3						
	0.9	0						
	1	0						
50%	0	29	0.0265	0.6880	0.1022	0.1376	0.0135	0.0131
	0.1	26						
	0.2	23						
	0.3	21						
	0.4	18						
	0.5	15						
	0.6	12						
	0.7	9						
	0.8	7						
	0.9	5						
	1	3						
75%	0	33	0.0291	0.6020	0.112	0.1440	0.0149	0.0146
	0.1	30						
	0.2	27						
	0.3	24						
	0.4	21						
	0.5	19						
	0.6	16						
	0.7	13						
	0.8	9						
	0.9	7						
	1	5						
100%	0	37	0.0310	0.5460	0.1194	0.1504	0.0164	0.0163
	0.1	34						
	0.2	31						
	0.3	28						
	0.4	26						
	0.5	24						
	0.6	21						
	0.7	18						
	0.8	15						
	0.9	12						
	1	10						

A6. Tabel Hasil Pengamatan Sudu Bengkok 45^o Material Besi (Daya Listrik Turbin)

Bukaan katup	(n) Lampu	n	V	I	h_s	h_{tho}	Q_1	Q_{tho}
		(rpm)	(volt)	(A)	(m)	(m)	(m^3/s)	(m^3/s)
25%	1	7	1.57	0.0090	0.0836	0.1294	0.0114	0.0112
	2	7	1.46	0.0061				
	3	6	1.41	0.0052				
	4	6	1.39	0.0024				
	5	6	1.28	0.0015				
50%	1	9	1.8	0.0146	0.1022	0.1376	0.0135	0.0131
	2	9	1.77	0.0104				
	3	8	1.71	0.0086				
	4	8	1.69	0.0066				
	5	8	1.66	0.0045				
75%	1	12	2.07	0.0199	0.112	0.1440	0.0149	0.0146
	2	12	2.00	0.0161				
	3	11	1.95	0.0115				
	4	11	1.88	0.009				
	5	11	1.85	0.0081				
100%	1	13	2.09	0.0283	0.1194	0.1504	0.0164	0.0163
	2	13	2.02	0.0210				
	3	13	2.00	0.0151				
	4	13	1.99	0.0121				
	5	13	1.95	0.009				

Lampiran B

B1. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Plastik (Secara Teori)

Bukaan katup	m (kg)	n (rpm)	v (m/s)	P_{air} (watt)	τ (N.m)	ω (rad/s)	P_{turbin} (watt)	η_{turbin} (%)
25%	0	25	0.5154	1.4828	0	2.6166	0	0
	0.1	22			0.0833	2.3026	0.1920	12.9488
	0.2	19			0.1667	1.9886	0.3316	22.3661
	0.3	17			0.2501	1.7793	0.4451	30.0176
	0.4	14			0.3335	1.4653	0.4887	32.9605
	0.5	11			0.4169	1.1513	0.4800	32.3719
	0.6	9			0.5003	0.9420	0.4713	31.7834
	0.7	6			0.5836	0.6280	0.3666	24.7204
	0.8	4			0.6670	0.4186	0.2793	18.8346
	0.9	1			0.7504	0.1046	0.0785	5.2972
	1	0			0.8338	0	0	0
50%	0	29	0.4916	1.5730	0	3.0353	0	0
	0.1	26			0.0833	2.7213	0.2269	14.4257
	0.2	24			0.1667	2.5120	0.4189	26.6321
	0.3	21			0.2501	2.1980	0.5498	34.9546
	0.4	18			0.3335	1.8840	0.6284	39.9481
	0.5	15			0.4169	1.5700	0.6546	41.6126
	0.6	12			0.5003	1.2560	0.6284	39.9481
	0.7	10			0.5836	1.0466	0.6109	38.8385
	0.8	8			0.6670	0.8373	0.5586	35.5095
	0.9	6			0.7504	0.6280	0.4713	29.9611
	1	4			0.8338	0.4186	0.3491	22.1934
75%	0	34	0.5026	1.8419	0	3.5586	0	0
	0.1	31			0.0833	3.2446	0.2706	14.6886
	0.2	28			0.1667	2.9306	0.4887	26.5342
	0.3	25			0.2501	2.6166	0.6546	35.5369
	0.4	23			0.3335	2.4073	0.8029	43.5919
	0.5	20			0.4169	2.0933	0.8728	47.3825
	0.6	17			0.5003	1.7793	0.8902	48.3301
	0.7	14			0.5836	1.4653	0.8553	46.4348
	0.8	12			0.6670	1.2560	0.8379	45.4872
	0.9	9			0.7504	0.9420	0.7069	38.3798
	1	7			0.8338	0.7326	0.6109	33.1677
100%	0	38	0.5256	2.2457	0	3.9773	0	0
	0.1	36			0.0833	3.7680	0.3142	13.9911
	0.2	33			0.1667	3.4540	0.5760	25.6504
	0.3	30			0.2501	3.1400	0.7855	34.9778
	0.4	27			0.3335	2.8260	0.9426	41.9734
	0.5	25			0.4169	2.6166	1.0910	48.5803
	0.6	22			0.5003	2.3026	1.1520	51.3008
	0.7	19			0.5836	1.9886	1.1608	51.6895
	0.8	16			0.6670	1.6746	1.1171	49.7462
	0.9	13			0.7504	1.3606	1.0211	45.4712
	1	11			0.8338	1.1513	0.9600	42.7507

B2. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Plastik (Secara Eksperimen)

Bukaan katup	m (kg)	n (rpm)	v (m/s)	P_{air} (watt)	τ (N.m)	ω (rad/s)	P_{turbin} (watt)	η_{turbin} (%)
25%	0	25	0.5255	1.5711	0	2.6166	0	0
	0.1	22			0.0833	2.3026	0.1920	12.2215
	0.2	19			0.1667	1.9886	0.3316	21.1099
	0.3	17			0.2501	1.7793	0.4451	28.3317
	0.4	14			0.3335	1.4653	0.4887	31.1094
	0.5	11			0.4169	1.1513	0.4800	30.5538
	0.6	9			0.5003	0.9420	0.4713	29.9983
	0.7	6			0.5836	0.6280	0.3666	23.3320
	0.8	4			0.6670	0.4186	0.2793	17.7768
	0.9	1			0.7504	0.1046	0.0785	4.9997
	1	0			0.8338	0	0	0
50%	0	29	0.5070	1.7257	0	3.0353	0	0
	0.1	26			0.0833	2.7213	0.2269	13.1497
	0.2	24			0.1667	2.5120	0.4189	24.2764
	0.3	21			0.2501	2.1980	0.5498	31.8628
	0.4	18			0.3335	1.8840	0.6284	36.4146
	0.5	15			0.4169	1.5700	0.6546	37.9319
	0.6	12			0.5003	1.2560	0.6284	36.4146
	0.7	10			0.5836	1.0466	0.6109	35.4031
	0.8	8			0.6670	0.8373	0.5586	32.3685
	0.9	6			0.7504	0.6280	0.4713	27.3109
	1	4			0.8338	0.4186	0.3491	20.2303
75%	0	34	0.5134	1.9632	0	3.5586	0	0
	0.1	31			0.0833	3.2446	0.2706	13.7816
	0.2	28			0.1667	2.9306	0.4887	24.8958
	0.3	25			0.2501	2.6166	0.6546	33.3425
	0.4	23			0.3335	2.4073	0.8029	40.9002
	0.5	20			0.4169	2.0933	0.8728	44.4567
	0.6	17			0.5003	1.7793	0.8902	45.3458
	0.7	14			0.5836	1.4653	0.8553	43.5676
	0.8	12			0.6670	1.2560	0.8379	42.6784
	0.9	9			0.7504	0.9420	0.7069	36.0099
	1	7			0.8338	0.7326	0.6109	31.1197
100%	0	38	0.5310	2.3152	0	3.9773	0	0
	0.1	36			0.0833	3.7680	0.3142	13.5707
	0.2	33			0.1667	3.4540	0.5760	24.8795
	0.3	30			0.2501	3.1400	0.7855	33.9266
	0.4	27			0.3335	2.8260	0.9426	40.7120
	0.5	25			0.4169	2.6166	1.0910	47.1203
	0.6	22			0.5003	2.3026	1.1520	49.7591
	0.7	19			0.5836	1.9886	1.1608	50.1360
	0.8	16			0.6670	1.6746	1.1171	48.2512
	0.9	13			0.7504	1.3606	1.0211	44.1046
	1	11			0.8338	1.1513	0.9600	41.4659

B3. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Plastik (Daya Listrik)

Bukaan katup	(n) Lampu	n (rpm)	v (m/s)	P_{air} (watt)	V (volt)	I (A)	$P_{listrik}$ (watt)
25%	1	8	0.5154	1.4828	1.92	0.0110	0.0211
	2	8			1.87	0.0070	0.0131
	3	7			1.83	0.0045	0.0082
	4	7			1.76	0.0028	0.0049
	5	7			1.71	0.0019	0.0032
50%	1	9	0.4916	1.5730	2.14	0.0153	0.0327
	2	9			2.02	0.0108	0.0218
	3	9			1.97	0.0086	0.0169
	4	9			1.91	0.0069	0.0132
	5	8			1.88	0.0047	0.0088
75%	1	13	0.5026	1.8419	2.78	0.0175	0.0487
	2	11			2.19	0.0164	0.0359
	3	11			2.08	0.0118	0.0245
	4	11			2.00	0.0098	0.0196
	5	11			2.00	0.0076	0.0152
100%	1	14	0.5256	2.2457	2.88	0.0226	0.0651
	2	13			2.22	0.0210	0.0466
	3	13			2.18	0.0162	0.0353
	4	12			2.11	0.0125	0.0264
	5	12			2.08	0.0091	0.0189

B4. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Aluminium (Secara Teori)

Bukaan katup	m (kg)	n (rpm)	v (m/s)	P_{air} (watt)	τ (N.m)	ω (rad/s)	P_{turbin} (watt)	η_{turbin} (%)
25%	0	24	0.5154	1.4828	0	2.5120	0	0
	0.1	22			0.0833	2.3027	0.1920	12.9488
	0.2	20			0.1667	2.0933	0.3491	23.5432
	0.3	17			0.2501	1.7793	0.4451	30.0176
	0.4	15			0.3335	1.5700	0.5237	35.3148
	0.5	12			0.4169	1.2560	0.5237	35.3148
	0.6	9			0.5003	0.9420	0.4713	31.7834
	0.7	7			0.5836	0.7327	0.4277	28.8404
	0.8	4			0.6670	0.4187	0.2793	18.8346
	0.9	1			0.7504	0.1047	0.0785	5.2972
	1	0			0.8338	0	0	0
50%	0	27	0.4916	1.5730	0	2.8260	0	0
	0.1	25			0.0833	2.6167	0.2182	13.8709
	0.2	24			0.1667	2.5120	0.4189	26.6321
	0.3	22			0.2501	2.3027	0.5760	36.6191
	0.4	19			0.3335	1.9887	0.6633	42.1675
	0.5	16			0.4169	1.6747	0.6982	44.3868
	0.6	13			0.5003	1.3607	0.6808	43.2771
	0.7	10			0.5836	1.0467	0.6109	38.8385
	0.8	8			0.6670	0.8373	0.5586	35.5095
	0.9	6			0.7504	0.6280	0.4713	29.9611
	1	4			0.8338	0.4187	0.3491	22.1934
75%	0	32	0.5026	1.8419	0	3.3493	0	0
	0.1	29			0.0833	3.0353	0.2531	13.7409
	0.2	27			0.1667	2.8260	0.4713	25.5865
	0.3	25			0.2501	2.6167	0.6546	35.5369
	0.4	23			0.3335	2.4073	0.8029	43.5919
	0.5	21			0.4169	2.1980	0.9164	49.7516
	0.6	18			0.5003	1.8840	0.9426	51.1731
	0.7	15			0.5836	1.5700	0.9164	49.7516
	0.8	12			0.6670	1.2560	0.8379	45.4872
	0.9	9			0.7504	0.9420	0.7069	38.3798
	1	7			0.8338	0.7327	0.6109	33.1677
100%	0	37	0.5256	2.2457	0	3.8727	0	0
	0.1	32			0.0833	3.3493	0.2793	12.4366
	0.2	30			0.1667	3.1400	0.5237	23.3186
	0.3	28			0.2501	2.9307	0.7331	32.6460
	0.4	26			0.3335	2.7213	0.9077	40.4188
	0.5	24			0.4169	2.5120	1.0473	46.6371
	0.6	22			0.5003	2.3027	1.1520	51.3008
	0.7	20			0.5836	2.0933	1.2219	54.4100
	0.8	17			0.6670	1.7793	1.1870	52.8554
	0.9	14			0.7504	1.4653	1.0997	48.9690
	1	12			0.8338	1.2560	1.0473	46.6371

B5. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Aluminium (Secara Eksperimen)

Bukaan katup	m (kg)	n (rpm)	v (m/s)	P_{air} (watt)	τ (N.m)	ω (rad/s)	P_{turbin} (watt)	η_{turbin} (%)
25%	0	24	0.5255	1.5711	0	2.5120	0	0.0000
	0.1	22			0.0833	2.3027	0.1920	12.2215
	0.2	20			0.1667	2.0933	0.3491	22.2210
	0.3	17			0.2501	1.7793	0.4451	28.3317
	0.4	15			0.3335	1.5700	0.5237	33.3315
	0.5	12			0.4169	1.2560	0.5237	33.3315
	0.6	9			0.5003	0.9420	0.4713	29.9983
	0.7	7			0.5836	0.7327	0.4277	27.2207
	0.8	4			0.6670	0.4187	0.2793	17.7768
	0.9	1			0.7504	0.1047	0.0785	4.9997
	1	0			0.8338	0	0	0
50%	0	27	0.5070	1.7257	0	2.8260	0	0
	0.1	25			0.0833	2.6167	0.2182	12.6440
	0.2	24			0.1667	2.5120	0.4189	24.2764
	0.3	22			0.2501	2.3027	0.5760	33.3800
	0.4	19			0.3335	1.9887	0.6633	38.4376
	0.5	16			0.4169	1.6747	0.6982	40.4607
	0.6	13			0.5003	1.3607	0.6808	39.4491
	0.7	10			0.5836	1.0467	0.6109	35.4031
	0.8	8			0.6670	0.8373	0.5586	32.3685
	0.9	6			0.7504	0.6280	0.4713	27.3109
	1	4			0.8338	0.4187	0.3491	20.2303
75%	0	32	0.5134	1.9632	0	3.3493	0	0
	0.1	29			0.0833	3.0353	0.2531	12.8924
	0.2	27			0.1667	2.8260	0.4713	24.0066
	0.3	25			0.2501	2.6167	0.6546	33.3425
	0.4	23			0.3335	2.4073	0.8029	40.9002
	0.5	21			0.4169	2.1980	0.9164	46.6795
	0.6	18			0.5003	1.8840	0.9426	48.0132
	0.7	15			0.5836	1.5700	0.9164	46.6795
	0.8	12			0.6670	1.2560	0.8379	42.6784
	0.9	9			0.7504	0.9420	0.7069	36.0099
	1	7			0.8338	0.7327	0.6109	31.1197
100%	0	37	0.5310	2.3152	0	3.8727	0	0
	0.1	32			0.0833	3.3493	0.2793	12.0628
	0.2	30			0.1667	3.1400	0.5237	22.6178
	0.3	28			0.2501	2.9307	0.7331	31.6649
	0.4	26			0.3335	2.7213	0.9077	39.2041
	0.5	24			0.4169	2.5120	1.0473	45.2355
	0.6	22			0.5003	2.3027	1.1520	49.7591
	0.7	20			0.5836	2.0933	1.2219	52.7748
	0.8	17			0.6670	1.7793	1.1870	51.2669
	0.9	14			0.7504	1.4653	1.0997	47.4973
	1	12			0.8338	1.2560	1.0473	45.2355

B6. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Aluminium (Daya Listrik)

Bukaan katup	(n) Lampu	n (rpm)	v (m/s)	P_{air} (watt)	V (volt)	I (A)	$P_{listrik}$ (watt)
25%	1	8	0.5154	1.4828	1.82	0.0152	0.0277
	2	8			1.85	0.0119	0.0220
	3	8			1.83	0.0070	0.0128
	4	8			1.82	0.0041	0.0074
	5	8			1.78	0.0028	0.0050
50%	1	11	0.4916	1.5730	2.05	0.0193	0.0396
	2	11			2.01	0.0149	0.0299
	3	11			1.97	0.0100	0.0197
	4	10			1.95	0.0064	0.0125
	5	10			1.92	0.0046	0.0088
75%	1	13	0.5026	1.8419	2.30	0.0235	0.0541
	2	13			2.15	0.0198	0.0426
	3	13			2.11	0.0140	0.0295
	4	12			2.04	0.0108	0.0220
	5	12			1.96	0.0075	0.0147
100%	1	14	0.5256	2.2457	2.32	0.0300	0.0696
	2	13			2.15	0.0246	0.0529
	3	13			2.13	0.0198	0.0422
	4	13			2.07	0.0157	0.0324
	5	13			2.14	0.0096	0.0205

B7. Tabel Hasil Perhitungan Sudu Bengkok 45^o Material Besi (Secara Teori)

Bukaan katup	m (kg)	n (rpm)	v (m/s)	P_{air} (watt)	τ (N.m)	ω (rad/s)	P_{turbin} (watt)	η_{turbin} (%)
25%	0	25	0.5154	1.4828	0	2.6167	0	0
	0.1	21			0.0833	2.1980	0.1833	12.3602
	0.2	18			0.1667	1.8840	0.3142	21.1889
	0.3	16			0.2501	1.6747	0.4189	28.2519
	0.4	14			0.3335	1.4653	0.4887	32.9605
	0.5	11			0.4169	1.1513	0.4800	32.3719
	0.6	8			0.5003	0.8373	0.4189	28.2519
	0.7	5			0.5836	0.5233	0.3055	20.6003
	0.8	3			0.6670	0.3140	0.2095	14.1259
	0.9	0			0.7504	0	0	0
	1	0			0.8338	0	0	0
50%	0	29	0.4916	1.5730	0	3.0353	0	0
	0.1	26			0.0833	2.7213	0.2269	14.4257
	0.2	23			0.1667	2.4073	0.4015	25.5224
	0.3	21			0.2501	2.1980	0.5498	34.9546
	0.4	18			0.3335	1.8840	0.6284	39.9481
	0.5	15			0.4169	1.5700	0.6546	41.6126
	0.6	12			0.5003	1.2560	0.6284	39.9481
	0.7	9			0.5836	0.9420	0.5498	34.9546
	0.8	7			0.6670	0.7327	0.4887	31.0708
	0.9	5			0.7504	0.5233	0.3927	24.9676
	1	3			0.8338	0.3140	0.2618	16.6451
75%	0	33	0.5026	1.8419	0	3.4540	0	0
	0.1	30			0.0833	3.1400	0.2618	14.2147
	0.2	27			0.1667	2.8260	0.4713	25.5865
	0.3	24			0.2501	2.5120	0.6284	34.1154
	0.4	21			0.3335	2.1980	0.7331	39.8013
	0.5	19			0.4169	1.9887	0.8291	45.0134
	0.6	16			0.5003	1.6747	0.8379	45.4872
	0.7	13			0.5836	1.3607	0.7942	43.1181
	0.8	9			0.6670	0.9420	0.6284	34.1154
	0.9	7			0.7504	0.7327	0.5498	29.8510
	1	5			0.8338	0.5233	0.4364	23.6912
100%	0	37	0.5256	2.2457	0	3.8727	0	0
	0.1	34			0.0833	3.5587	0.2967	13.2138
	0.2	31			0.1667	3.2447	0.5411	24.0958
	0.3	28			0.2501	2.9307	0.7331	32.6460
	0.4	26			0.3335	2.7213	0.9077	40.4188
	0.5	24			0.4169	2.5120	1.0473	46.6371
	0.6	21			0.5003	2.1980	1.0997	48.9690
	0.7	18			0.5836	1.8840	1.0997	48.9690
	0.8	15			0.6670	1.5700	1.0473	46.6371
	0.9	12			0.7504	1.2560	0.9426	41.9734
	1	10			0.8338	1.0467	0.8728	38.8643

B8. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Besi (Secara Eksperimen)

Bukaan katup	m (kg)	n (rpm)	v (m/s)	P_{air} (watt)	τ (N.m)	ω (rad/s)	P_{turbin} (watt)	η_{turbin} (%)
25%	0	25	0.5255	1.5711	0	2.6167	0	0
	0.1	21			0.0833	2.1980	0.1833	11.6660
	0.2	18			0.1667	1.8840	0.3142	19.9989
	0.3	16			0.2501	1.6747	0.4189	26.6652
	0.4	14			0.3335	1.4653	0.4887	31.1094
	0.5	11			0.4169	1.1513	0.4800	30.5538
	0.6	8			0.5003	0.8373	0.4189	26.6652
	0.7	5			0.5836	0.5233	0.3055	19.4433
	0.8	3			0.6670	0.3140	0.2095	13.3326
	0.9	0			0.7504	0	0	0
	1	0			0.8338	0	0	0
50%	0	29	0.5070	1.7257	0	3.0353	0	0
	0.1	26			0.0833	2.7213	0.2269	13.1497
	0.2	23			0.1667	2.4073	0.4015	23.2649
	0.3	21			0.2501	2.1980	0.5498	31.8628
	0.4	18			0.3335	1.8840	0.6284	36.4146
	0.5	15			0.4169	1.5700	0.6546	37.9319
	0.6	12			0.5003	1.2560	0.6284	36.4146
	0.7	9			0.5836	0.9420	0.5498	31.8628
	0.8	7			0.6670	0.7327	0.4887	28.3225
	0.9	5			0.7504	0.5233	0.3927	22.7591
	1	3			0.8338	0.3140	0.2618	15.1727
75%	0	33	0.5134	1.9632	0	3.4540	0	0
	0.1	30			0.0833	3.1400	0.2618	13.3370
	0.2	27			0.1667	2.8260	0.4713	24.0066
	0.3	24			0.2501	2.5120	0.6284	32.0088
	0.4	21			0.3335	2.1980	0.7331	37.3436
	0.5	19			0.4169	1.9887	0.8291	42.2339
	0.6	16			0.5003	1.6747	0.8379	42.6784
	0.7	13			0.5836	1.3607	0.7942	40.4556
	0.8	9			0.6670	0.9420	0.6284	32.0088
	0.9	7			0.7504	0.7327	0.5498	28.0077
	1	5			0.8338	0.5233	0.4364	22.2284
100%	0	37	0.5310	2.3152	0	3.8727	0	0
	0.1	34			0.0833	3.5587	0.2967	12.8167
	0.2	31			0.1667	3.2447	0.5411	23.3717
	0.3	28			0.2501	2.9307	0.7331	31.6649
	0.4	26			0.3335	2.7213	0.9077	39.2041
	0.5	24			0.4169	2.5120	1.0473	45.2355
	0.6	21			0.5003	2.1980	1.0997	47.4973
	0.7	18			0.5836	1.8840	1.0997	47.4973
	0.8	15			0.6670	1.5700	1.0473	45.2355
	0.9	12			0.7504	1.2560	0.9426	40.7120
	1	10			0.8338	1.0467	0.8728	37.6963

B9. Tabel Hasil Perhitungan Sudu Bengkok 45^{o} Material Besi (Daya Listrik)

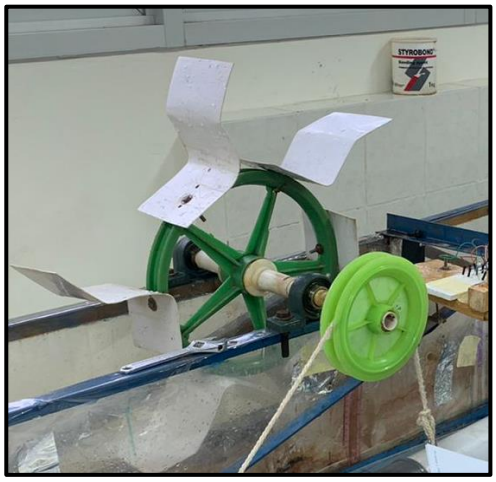
Bukaan katup	(n) Lampu	n (rpm)	v (m/s)	P_{air} (watt)	V (volt)	I (A)	$P_{listrik}$ (watt)
25%	1	7	0.5154	1.4828	1.57	0.0090	0.0141
	2	7			1.46	0.0061	0.0089
	3	6			1.41	0.0052	0.0073
	4	6			1.39	0.0025	0.0034
	5	6			1.28	0.0016	0.0020
50%	1	9	0.4916	1.5730	1.80	0.0146	0.0263
	2	9			1.77	0.0104	0.0184
	3	8			1.71	0.0086	0.0147
	4	8			1.69	0.0066	0.0112
	5	8			1.66	0.0045	0.0075
75%	1	12	0.5026	1.8419	2.07	0.0199	0.0412
	2	12			2.00	0.0161	0.0322
	3	11			1.95	0.0115	0.0224
	4	11			1.88	0.0090	0.0169
	5	11			1.85	0.0081	0.0150
100%	1	13	0.5256	2.2457	2.09	0.0283	0.0591
	2	13			2.02	0.0210	0.0424
	3	13			2.00	0.0151	0.0302
	4	13			1.99	0.0121	0.0241
	5	13			1.95	0.0090	0.0176

B10. Tabel Sifat fisik air pada 1 atm (Frank M.Wahite, 1986)

KERAPATAN DAN KEKENTALAN AIR PADA 1 atm

T, °C	ρ, kg/m^3	μ, (N·s)/m^2	ν, m^2/s	T, °F	ρ, slug/ft^3	μ, (lb·s)/ft^2	ν, ft^2/s
0	1000	1.788 E−3	1.788 E−6	32	1.940	3.73 E−5	1.925 E−5
10	1000	1.307 E−3	1.307 E−6	50	1.940	2.73 E−5	1.407 E−5
20	998	1.003 E−3	1.005 E−6	68	1.937	2.09 E−5	1.082 E−5
30	996	0.799 E−3	0.802 E−6	86	1.932	1.67 E−5	0.864 E−5
40	992	0.657 E−3	0.662 E−6	104	1.925	1.37 E−5	0.713 E−5
50	988	0.548 E−3	0.555 E−6	122	1.917	1.14 E−5	0.597 E−5
60	983	0.467 E−3	0.475 E−6	140	1.908	0.975 E−5	0.511 E−5
70	978	0.405 E−3	0.414 E−6	158	1.897	0.846 E−5	0.446 E−5
80	972	0.355 E−3	0.365 E−6	176	1.886	0.741 E−5	0.393 E−5
90	965	0.316 E−3	0.327 E−6	194	1.873	0.660 E−5	0.352 E−5
100	958	0.283 E−3	0.295 E−6	212	1.859	0.591 E−5	0.318 E−5

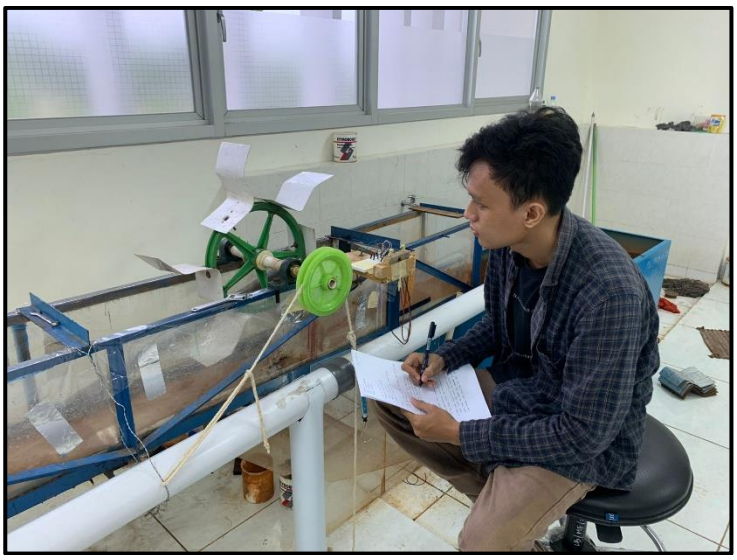
Lampiran C



Gambar C1. Turbin Air Sudu Bengkok 45^{o} Material Sudu Plastik

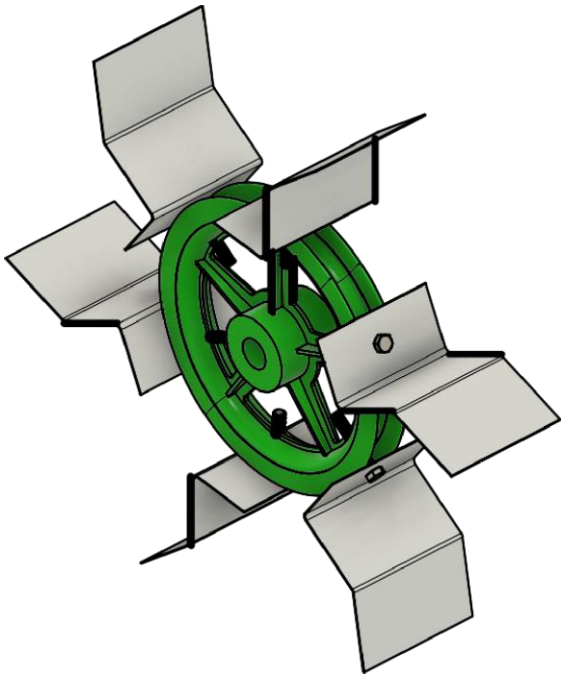
Gambar C2. Turbin Air Sudu Bengkok 45^{o} Material Sudu Aluminium

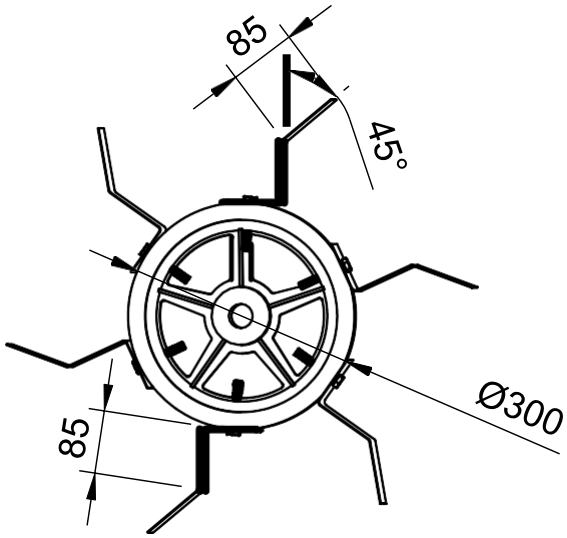
Gambar C3. Turbin Air Sudu Bengkok 45^{o} Material Sudu Besi

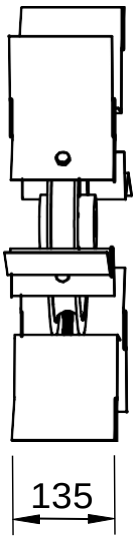


Gambar C4. Dokumentasi Pengambilan Data Turbin air (1)

Gambar C5. Dokumentasi Pengambilan Data Turbin air (2)







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		Document type	Document status
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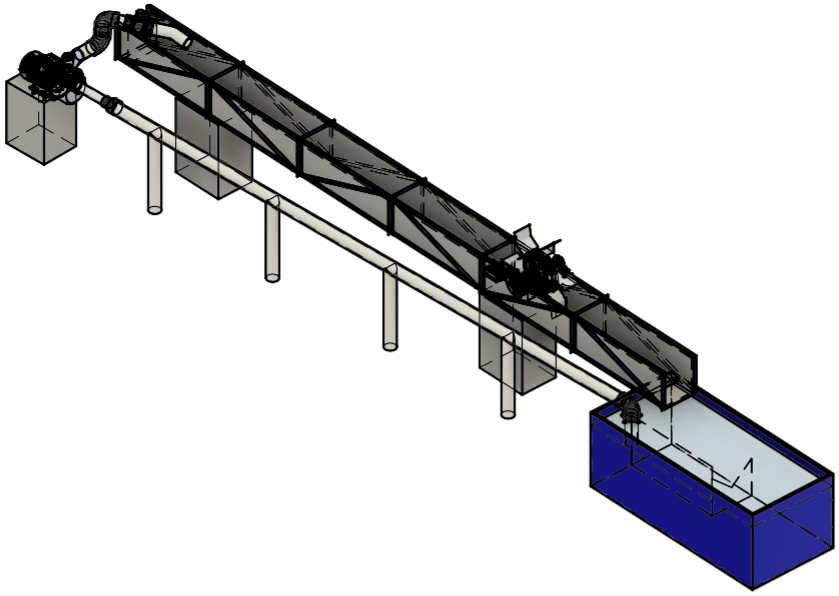
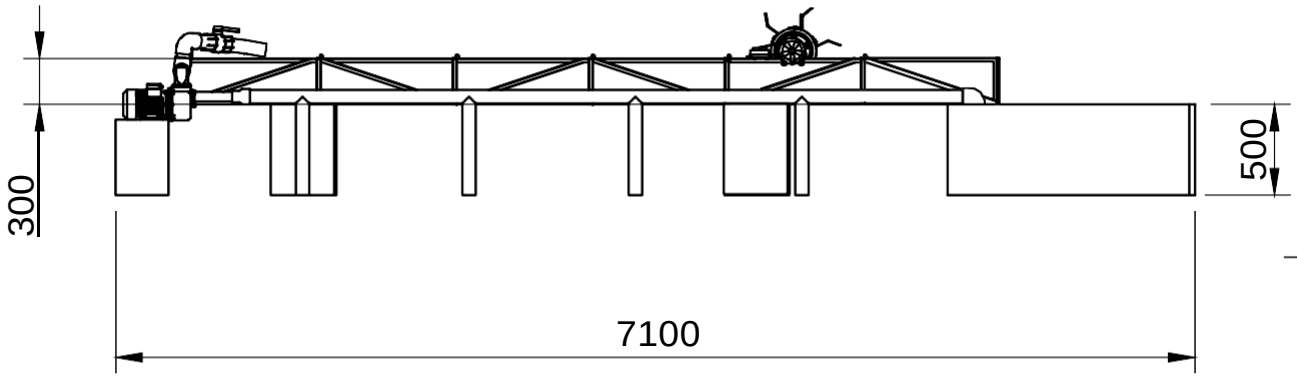
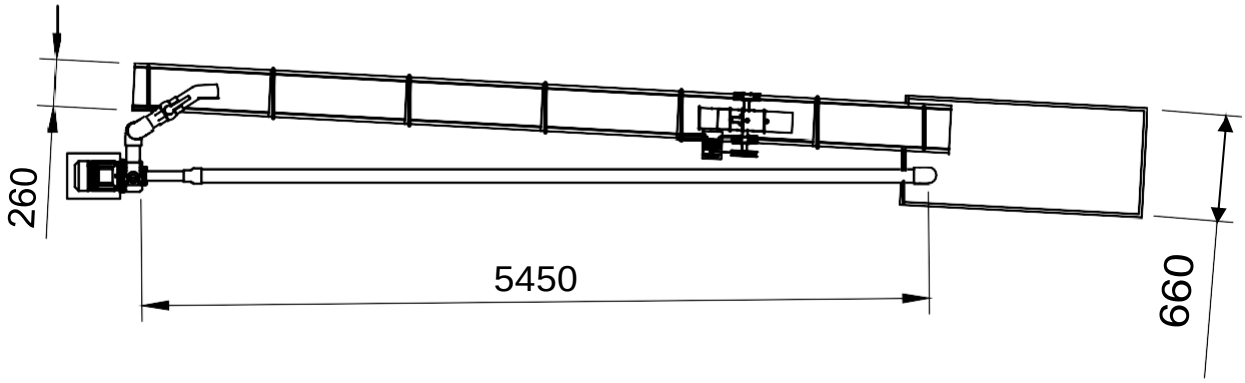
			Rev. / Date of issue: 9/18/2021 / Sheet: 1/2







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		Document type	Document status
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			Rev. / Date of issue: 9/18/2021 / Sheet: 2/2