MAREK POLEWSKI
MECHANIKA LOTU 2
CESSNA 150M
PROWADZĄCY: DR INŻ. MACIEJ LASEK
WTOREK 14:15-16:00

Projekt 10

„Podłużna statyczna stateczność i sterowność samolotu”

DATA ODDANIA PROJEKTU:

OCENA: ....

Spis treści

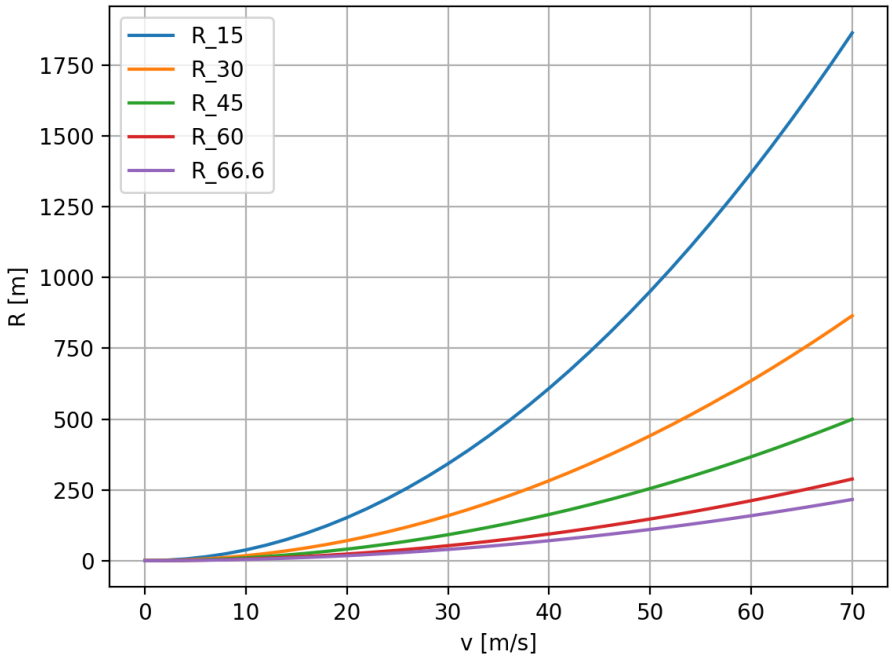
1 Wstęp - Naliza parametrów zakrętu

$$R = \frac{V^2}{g \cdot tg(\phi)} \quad c_z = \frac{2mg}{\rho S V^2} \cdot \frac{1}{cos(\phi)} \quad m_g = \frac{1}{cos(\phi)} \quad N_{n_z ark} = \frac{N_n}{(\sqrt{cos(\phi)})^3}$$

2 Promień zakrętu

R_15	R_30	R_45	R_60	R_66.6
0.00	0.00	0.00	0.00	0.00
1.52	0.71	0.41	0.24	0.18
6.09	2.82	1.63	0.94	0.71
13.70	6.36	3.67	2.12	1.59
24.35	11.30	6.52	3.77	2.82
38.04	17.66	10.19	5.89	4.41
54.78	25.42	14.68	8.47	6.35
74.56	34.61	19.98	11.54	8.65
97.39	45.20	26.10	15.07	11.29
123.26	57.21	33.03	19.07	14.29
152.17	70.62	40.77	23.54	17.64
184.13	85.45	49.34	28.48	21.35
219.13	101.70	58.72	33.90	25.41
257.17	119.35	68.91	39.78	29.82
298.26	138.42	79.92	46.14	34.58
342.39	158.90	91.74	52.97	39.70
389.56	180.80	104.38	60.27	45.17
439.78	204.10	117.84	68.03	50.99
493.04	228.82	132.11	76.27	57.17
549.35	254.95	147.20	84.98	63.70
608.69	282.50	163.10	94.17	70.58
671.08	311.45	179.82	103.82	77.81
736.52	341.82	197.35	113.94	85.40
805.00	373.60	215.70	124.53	93.34
876.52	406.79	234.86	135.60	101.63
951.08	441.40	254.84	147.13	110.28
1028.69	477.42	275.64	159.14	119.28
1109.34	514.85	297.25	171.62	128.63
1193.04	553.69	319.67	184.56	138.34
1279.78	593.95	342.92	197.98	148.39
1369.56	635.61	366.97	211.87	158.80
1462.39	678.70	391.85	226.23	169.57
1558.25	723.19	417.53	241.06	180.68
1657.17	769.09	444.04	256.36	192.15
1759.12	816.41	471.36	272.14	203.97
1864.12	865.14	499.49	288.38	216.15

Tab. 1: Promień zakrętu

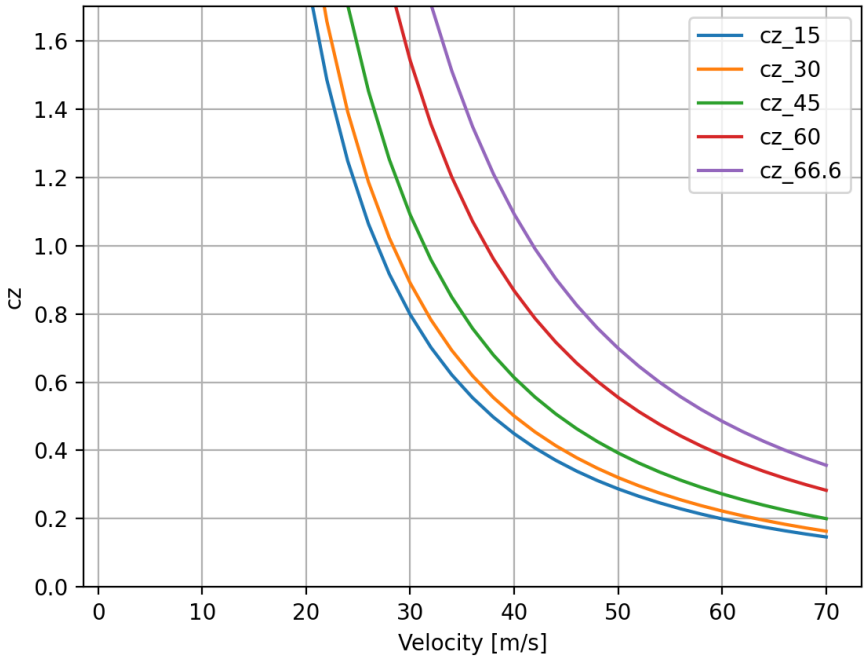


Rys. 1: Promień zakrętu

3 Współczynnik siły nośnej

cz_15	cz_30	cz_45	cz_60	cz_66.6
inf	inf	inf	inf	inf
179.63	200.35	245.38	347.02	436.89
44.91	50.09	61.35	86.76	109.22
19.96	22.26	27.26	38.56	48.54
11.23	12.52	15.34	21.69	27.31
7.19	8.01	9.82	13.88	17.48
4.99	5.57	6.82	9.64	12.14
3.67	4.09	5.01	7.08	8.92
2.81	3.13	3.83	5.42	6.83
2.22	2.47	3.03	4.28	5.39
1.80	2.00	2.45	3.47	4.37
1.48	1.66	2.03	2.87	3.61
1.25	1.39	1.70	2.41	3.03
1.06	1.19	1.45	2.05	2.59
0.92	1.02	1.25	1.77	2.23
0.80	0.89	1.09	1.54	1.94
0.70	0.78	0.96	1.36	1.71
0.62	0.69	0.85	1.20	1.51
0.55	0.62	0.76	1.07	1.35
0.50	0.55	0.68	0.96	1.21
0.45	0.50	0.61	0.87	1.09
0.41	0.45	0.56	0.79	0.99
0.37	0.41	0.51	0.72	0.90
0.34	0.38	0.46	0.66	0.83
0.31	0.35	0.43	0.60	0.76
0.29	0.32	0.39	0.56	0.70
0.27	0.30	0.36	0.51	0.65
0.25	0.27	0.34	0.48	0.60
0.23	0.26	0.31	0.44	0.56
0.21	0.24	0.29	0.41	0.52
0.20	0.22	0.27	0.39	0.49
0.19	0.21	0.26	0.36	0.45
0.18	0.20	0.24	0.34	0.43
0.16	0.18	0.23	0.32	0.40
0.16	0.17	0.21	0.30	0.38
0.15	0.16	0.20	0.28	0.36

Tab. 2: Współczynnik siły nośnej

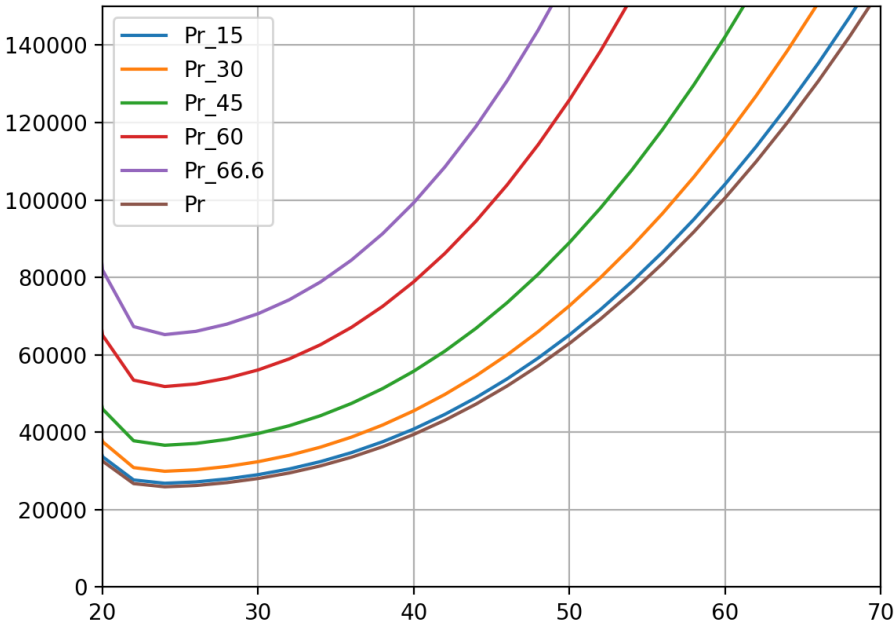


Rys. 2: Współczynnik siły nośnej

4 Moc

Pr_15	Pr_30	Pr_45	Pr_60	Pr_66.6	
NaN	NaN	NaN	NaN	NaN	
2798187773059812.00	3120972924112429.50	3822395582558709.00	5405683673609533.00	6805630598930498.00	27028418
1358901531701.71	1515657715257.01	1856294013546.12	2625196169708.91	3305061202154.36	13125
15503544963.81	17291957503.95	21178236269.28	29950548959.16	37707047759.07	149
637065330.58	710554047.43	870247425.44	1230715711.67	1549442588.89	6
52025148.75	58026513.51	71067674.83	100504869.59	126533304.04	
6440708.85	7183677.28	8798171.91	12442494.04	15664811.94	
1049720.56	1170811.15	1433944.95	2027904.40	2553084.69	
216447.87	241416.23	295673.29	418145.18	526435.10	
64096.64	71490.51	87557.64	123825.20	155893.06	
33691.39	37577.86	46023.29	65086.77	81942.73	
27669.90	30861.77	37797.79	53454.15	67297.54	
26818.80	29912.49	36635.16	51809.94	65227.52	
27163.40	30296.83	37105.89	52475.66	66065.64	
27934.00	31156.33	38158.55	53964.34	67939.86	
29039.72	32389.60	39669.00	56100.43	70629.15	
30514.94	34034.99	41684.19	58950.34	74217.11	
32402.65	36140.46	44262.84	62597.11	78808.31	
34735.68	38742.62	47449.82	67104.18	84482.62	
37537.94	41868.13	51277.77	72517.72	91298.13	
40828.01	45537.72	55772.09	78873.65	99300.10	
44621.95	49769.32	60954.72	86202.99	108527.57	
48934.93	54579.82	66846.36	94535.02	119017.40	
53782.08	59986.11	73467.69	103899.00	130806.43	
59178.96	66005.56	80839.97	114324.98	143932.50	
65141.73	72656.16	88985.26	125844.16	158434.89	
71687.16	79956.64	97926.49	138488.97	174354.40	
78832.64	87926.39	107687.39	152292.97	191733.33	
86596.11	96585.41	118292.48	167290.83	210615.29	
94995.99	105954.26	129766.93	183518.15	231045.11	
104051.14	116053.96	142136.50	201011.36	253068.65	
113780.78	126905.97	155427.44	219807.59	276732.67	
124204.47	138532.08	169666.45	239944.60	302084.70	
135342.00	150954.39	184880.62	261460.67	329172.94	
147213.45	164195.27	201097.31	284394.55	358046.15	
159839.06	178277.30	218344.21	308785.34	388753.60	

Tab. 3: Moc


Pr_15
Pr_30
Pr_45
Pr_60
Pr_66.6
Pr
140000
120000
100000
80000
60000
40000
20000
0
20
30
40
50
60
70

Rys. 3: Moc