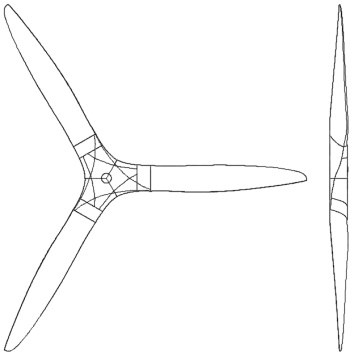
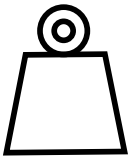
31x12 3B GAS

PN:331120, 33112001

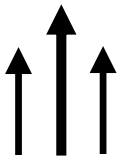
Product sheet

Rev.: 00
2024-04-19

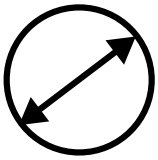




412 g
Mass



49.1 kgf
Max Thrust



31.0”
Diameter

Fixed wing

Engine type:	Gas
Folding/Fixed	Fixed
Rotational direction:	Counter-clockwise and Clockwise available
Weight [g]:	412 $\pm$ 10.0%
Moment of inertia [kgm^2]:	2.13e-02
Center hole [mm]:	$\varnothing$ 10
Max drilling diameter [mm]:	51
Mounting:	link to possible patterns
Limit RPM (0.7 Mach at blade tip)	5800
Working temperature [°C]	from -45°C to 65°C
Materials used:	carbon fiber, glass fiber, roving, polyurethane, epoxy
Tests performed:	balancing, visual Inspection, structural integrity (ATO)

Formula used to calculate moment of inertia: $I = \frac{1}{12} \cdot mass \cdot diameter^2$

To get more information about manufacturing process or possibility to customize propeller reach out to info@mejzlik.eu

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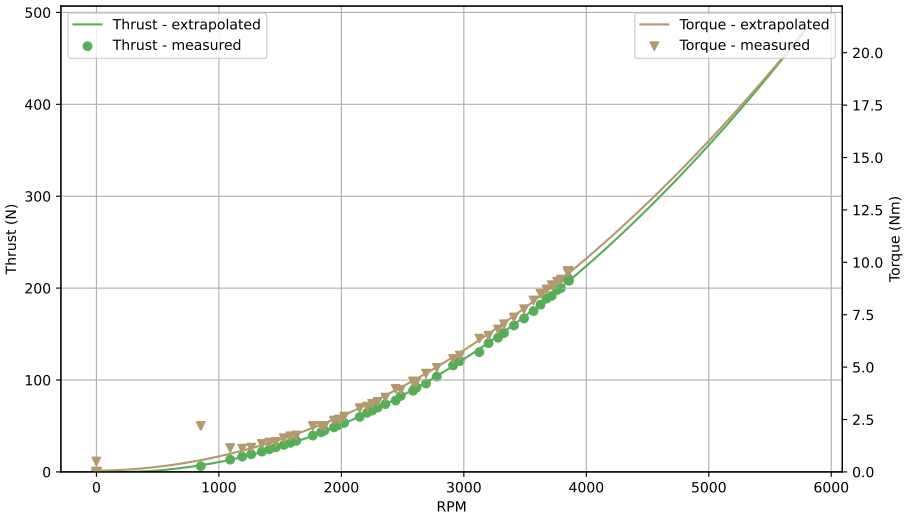
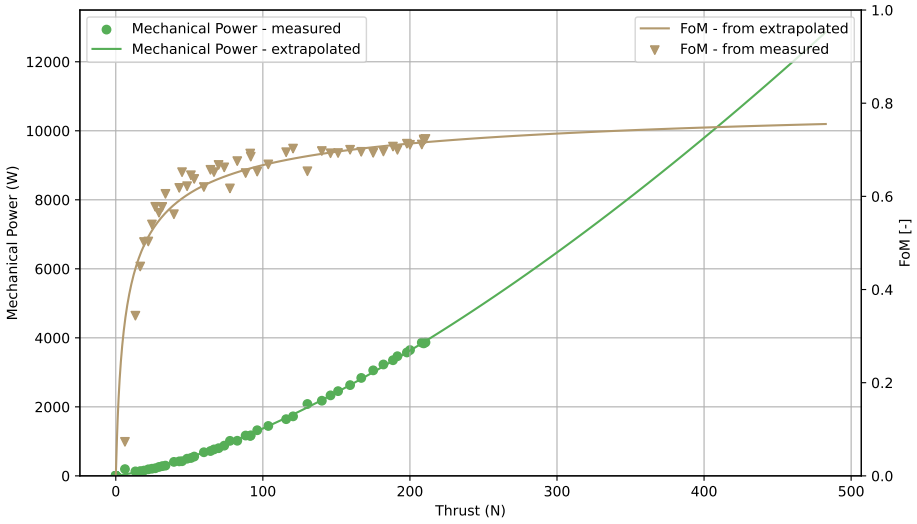
Measured data

Static test result





Thrust (RPM) $= 1.51239e-05 \cdot RPM^2 + -0.0045 \cdot RPM + 0.07942$

Torque (RPM) $= 6.15379e-07 \cdot RPM^2 + 7.09455e-05 \cdot RPM + 0.0547$

Mechanical power (RPM) $= 7.92056e-08 \cdot RPM^3 + -7.04876e-05 \cdot RPM^2 + 0.09702 \cdot RPM + 0.93463$

Formulas used to calculate FOM:

$C_T = \frac{T_0}{\rho A V_T^2}$ $C_P = \frac{P_0}{\rho A V_T^3}$ $FOM = \sqrt{\frac{2}{\pi}} \frac{C_T^{\frac{3}{2}}}{C_P}$

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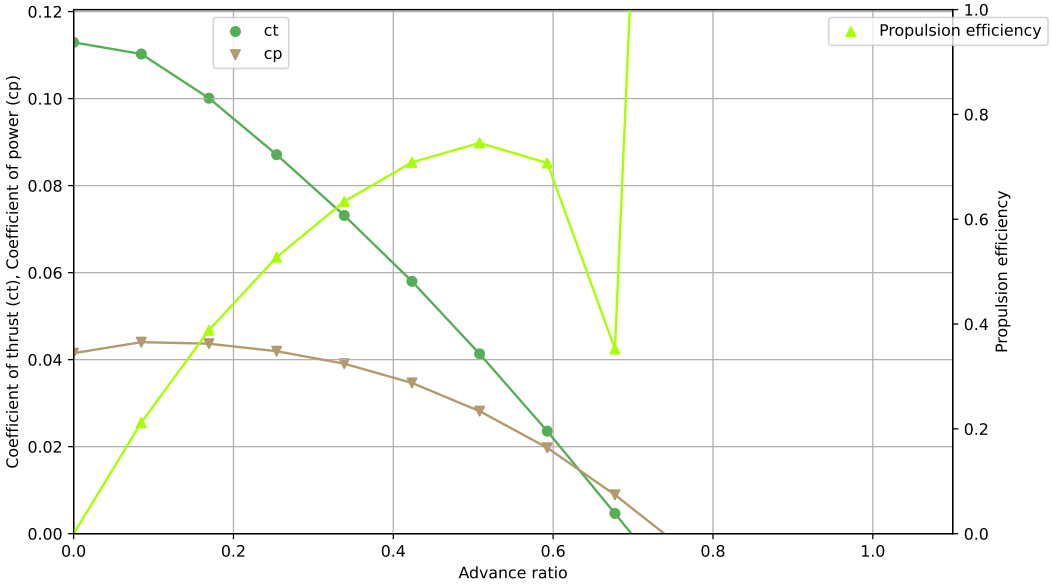
Simulated data

Dynamic simulation result - at rpm-sim



v_inf	Ct	Cp	Propulsion efficiency	Advance ratio
0.0	0.1129	0.0415	0.0	0.0
5.0	0.1103	0.044	0.2121	0.0847
10.0	0.1001	0.0437	0.3882	0.1693
15.0	0.0871	0.0419	0.5276	0.254
20.0	0.0731	0.0391	0.6339	0.3387
25.0	0.058	0.0346	0.7085	0.4233
30.0	0.0413	0.0282	0.7456	0.508
35.0	0.0236	0.0197	0.7073	0.5927
40.0	0.0046	0.0089	0.3525	0.6773
45.0	-0.0145	-0.0033	3.3188	0.762
50.0	-0.0287	-0.0084	2.9052	0.8467
55.0	-0.0377	-0.0099	3.5524	0.9313

Formulas for forward flight:

Propulsion efficiency: $\eta = \frac{C_T \cdot J}{C_P}$

Advance ratio: $J = \frac{v}{n \cdot D}$