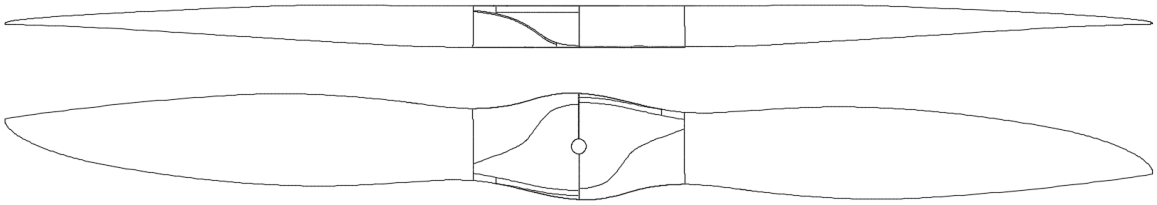
30.5x13.5 2B GAS Q

PN:230638

Product sheet

Rev.: 00
2024-04-19



293 g
Mass

36.9 kgf
Max Thrust

30.5”
Diameter

Fixed wing

Engine type:	Gas
Folding/Fixed	Fixed
Rotational direction:	Counter-clockwise
Weight [g]:	293 $\pm$ 6.0%
Moment of inertia [kgm^2]:	1.47e-02
Center hole [mm]:	$\varnothing$ 10
Max drilling diameter [mm]:	51
Mounting:	link to possible patterns
Limit RPM (0.7 Mach at blade tip)	5900
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: $I = \frac{1}{12} \cdot mass \cdot diameter^2$

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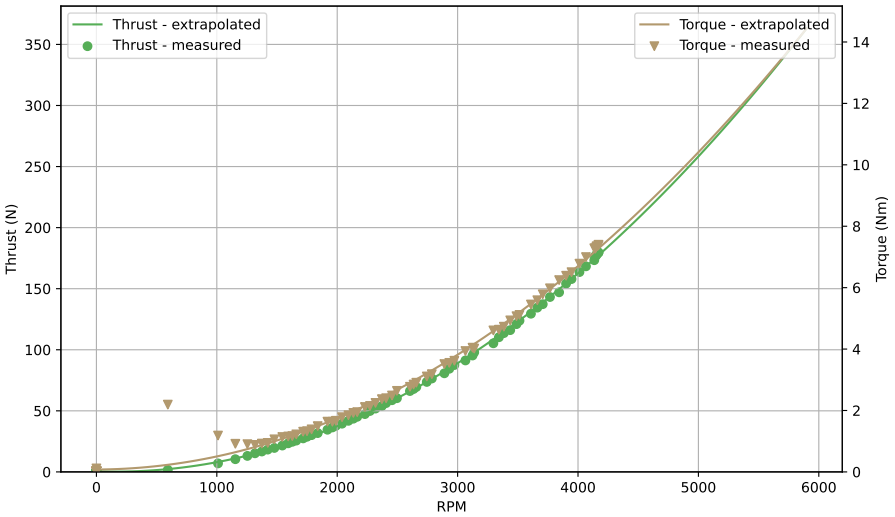
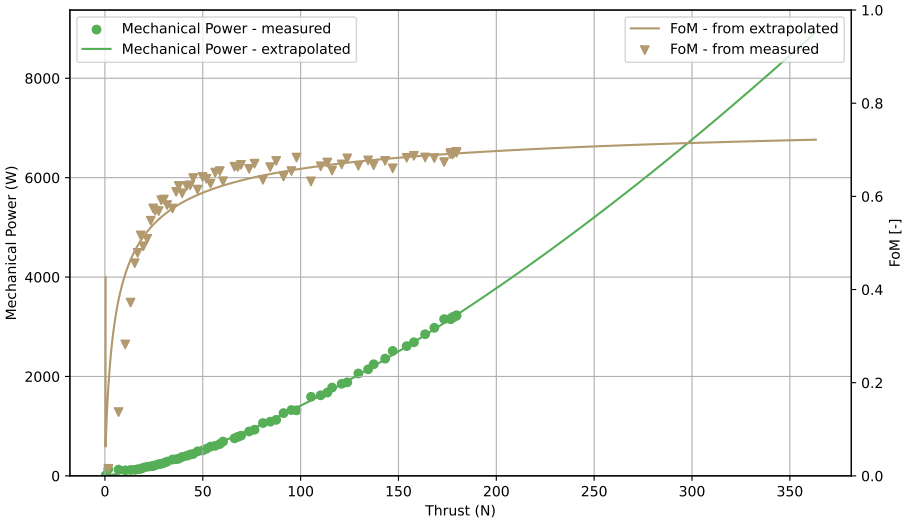
Measured data

Static test result





Thrust (RPM)	$= 1.10327e-05 \cdot RPM^2 + -0.00362 \cdot RPM + 0.55133$
Torque (RPM)	$= 4.10149e-07 \cdot RPM^2 + 1.56728e-05 \cdot RPM + 0.07784$
Mechanical power (RPM)	$= 5.57074e-08 \cdot RPM^3 + -7.00656e-05 \cdot RPM^2 + 0.09675 \cdot RPM + 1.50062$

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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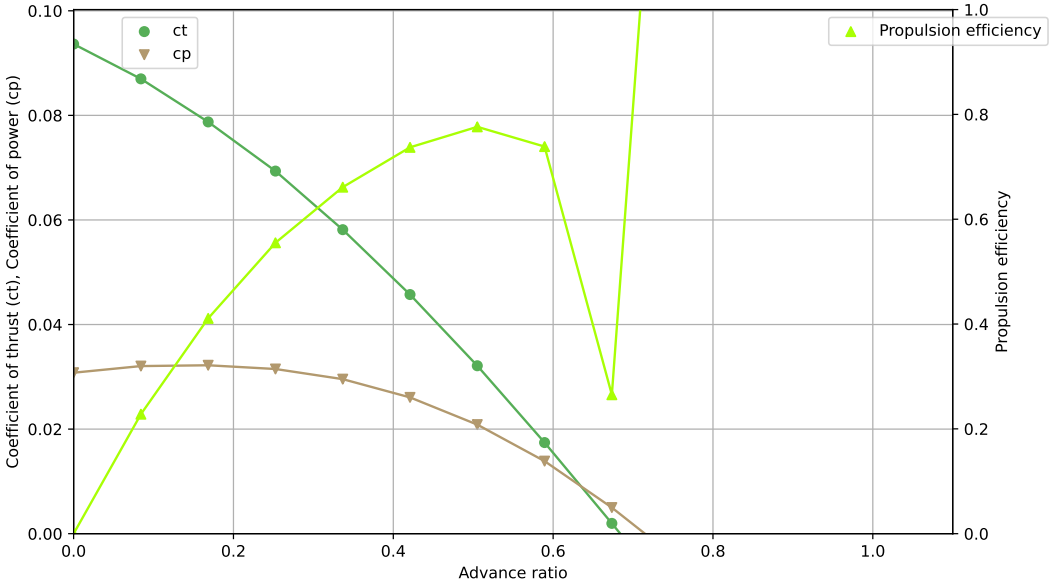
Simulated data

Dynamic simulation result - at rpm-sim



v_inf	Ct	Cp	Propulsion efficiency	Advance ratio
0.0	0.0936	0.0308	0.0	0.0
5.0	0.087	0.0321	0.228	0.0842
10.0	0.0787	0.0322	0.4109	0.1684
15.0	0.0693	0.0315	0.555	0.2526
20.0	0.0581	0.0296	0.6612	0.3367
25.0	0.0457	0.0261	0.7372	0.4209
30.0	0.0321	0.0209	0.7763	0.5051
35.0	0.0174	0.0139	0.7386	0.5893
40.0	0.002	0.005	0.2651	0.6735
45.0	-0.0137	-0.0052	2.0089	0.7577
50.0	-0.0275	-0.0126	1.8266	0.8418
55.0	-0.0382	-0.0168	2.0947	0.926

Formulas for forward flight:

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

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