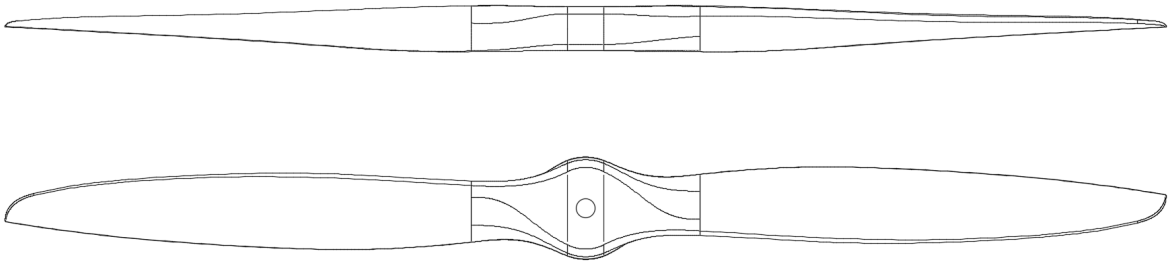
32x18 2B GAS

PN:232180, 232181

Product sheet

Rev.: 00
2024-04-19



334 g
Mass

45.5 kgf
Max Thrust

32.0”
Diameter

Fixed wing

Engine type:	Gas
Folding/Fixed	Fixed
Rotational direction:	Counter-clockwise and Clockwise available
Weight [g]:	334 ± 10.0%
Moment of inertia [kgm^2]:	1.84e-02
Center hole [mm]:	⌀ 10
Max drilling diameter [mm]:	51
Mounting:	link to possible patterns
Limit RPM (0.7 Mach at blade tip)	5600
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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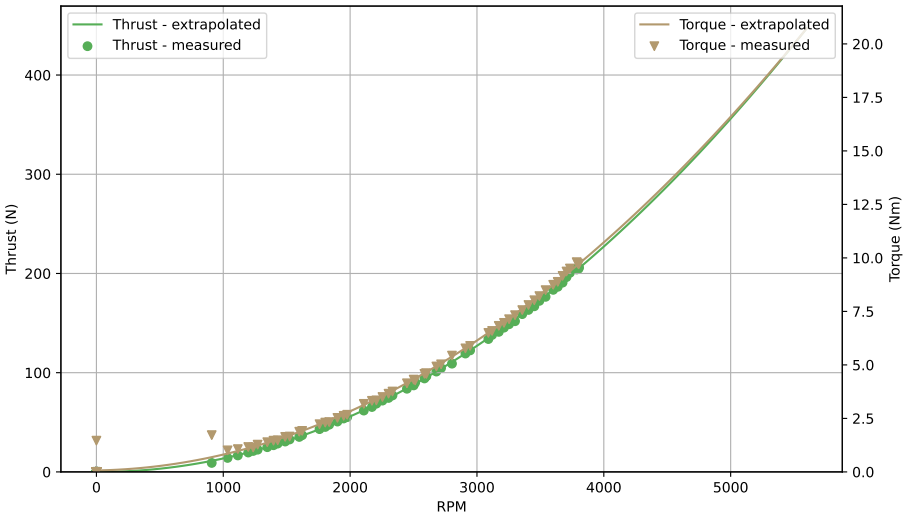
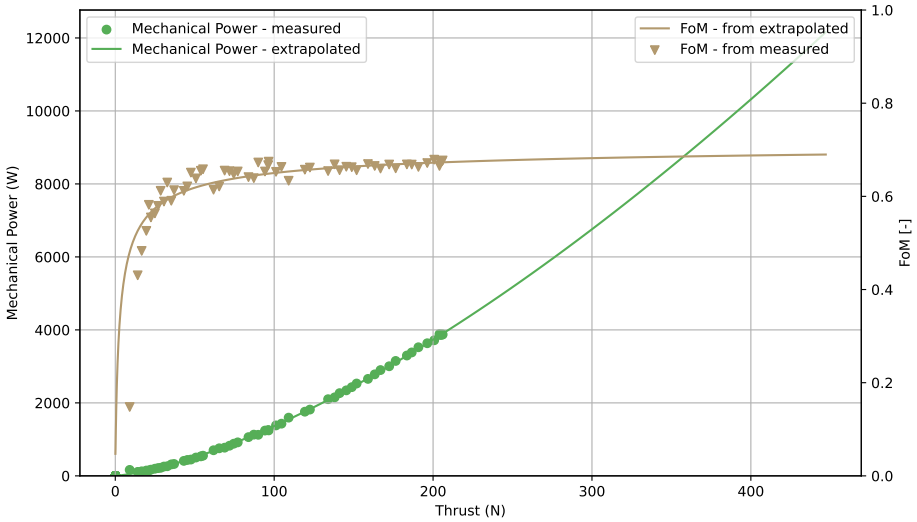
Measured data

Static test result





Thrust (RPM)	$= 1.44241e-05 \cdot RPM^2 + -0.00094461 \cdot RPM + 0.09055$
Torque (RPM)	$= 6.40787e-07 \cdot RPM^2 + 0.000101379 \cdot RPM + 0.06824$
Mechanical power (RPM)	$= 7.56393e-08 \cdot RPM^3 + -3.33959e-05 \cdot RPM^2 + 0.05757 \cdot RPM + 0.4202$

Formulas used to calculate FOM:

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

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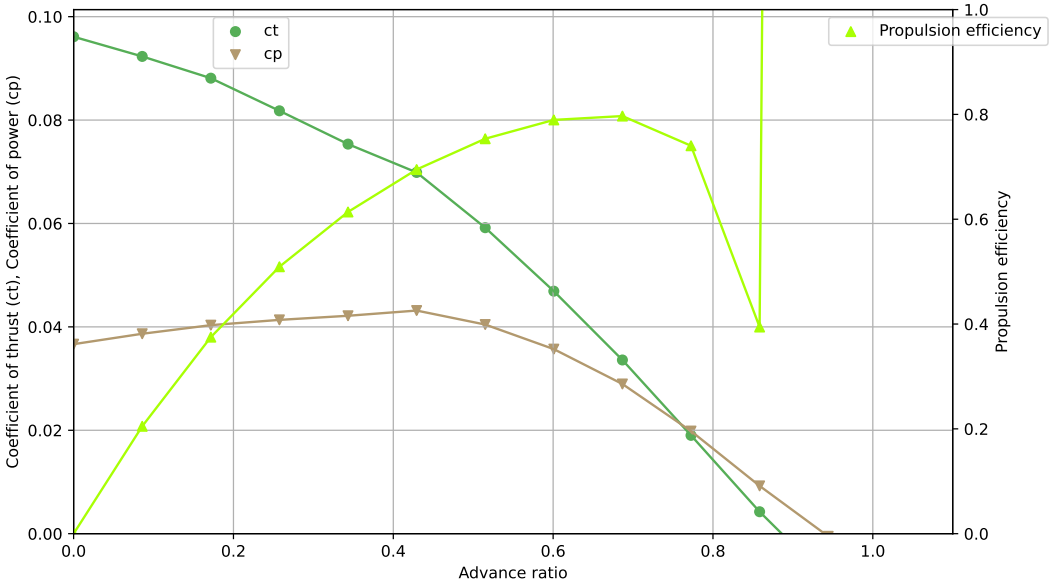
Simulated data

Dynamic simulation result - at rpm-sim



v_inf	Ct	Cp	Propulsion efficiency	Advance ratio
0.0	0.0961	0.0367	0.0	0.0
5.0	0.0923	0.0387	0.2049	0.0858
10.0	0.0881	0.0403	0.375	0.1717
15.0	0.0818	0.0414	0.5093	0.2575
20.0	0.0754	0.0421	0.6138	0.3433
25.0	0.0699	0.0432	0.6949	0.4292
30.0	0.0592	0.0404	0.7535	0.515
35.0	0.0469	0.0357	0.7895	0.6009
40.0	0.0336	0.029	0.7968	0.6867
45.0	0.019	0.0198	0.7402	0.7725
50.0	0.0042	0.0092	0.3943	0.8584
55.0	-0.0089	-0.0005	16.3892	0.9442

Formulas for forward flight:

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

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