

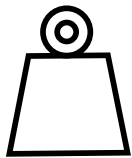
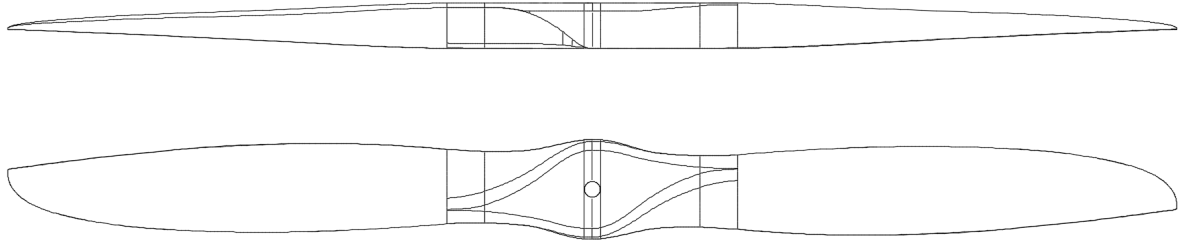


# 31x12 2B GAS EVO LF

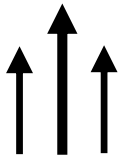
PN:231127, 231128

## Product sheet

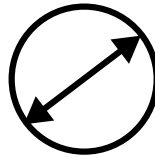
Rev.: 00  
2024-04-19



252 g  
Mass



38.0 kgf  
Max Thrust



31.0"  
Diameter



Fixed wing

Engine type:	Gas
Folding/Fixed	Fixed
Rotational direction:	Counter-clockwise and Clockwise available
Weight [g]:	252 ± 2.0%
Moment of inertia [kgm <sup>2</sup> ]:	1.30e-02
Center hole [mm]:	∅ 10
Max drilling diameter [mm]:	48
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:  $I = \frac{1}{12} \cdot mass \cdot diameter^2$

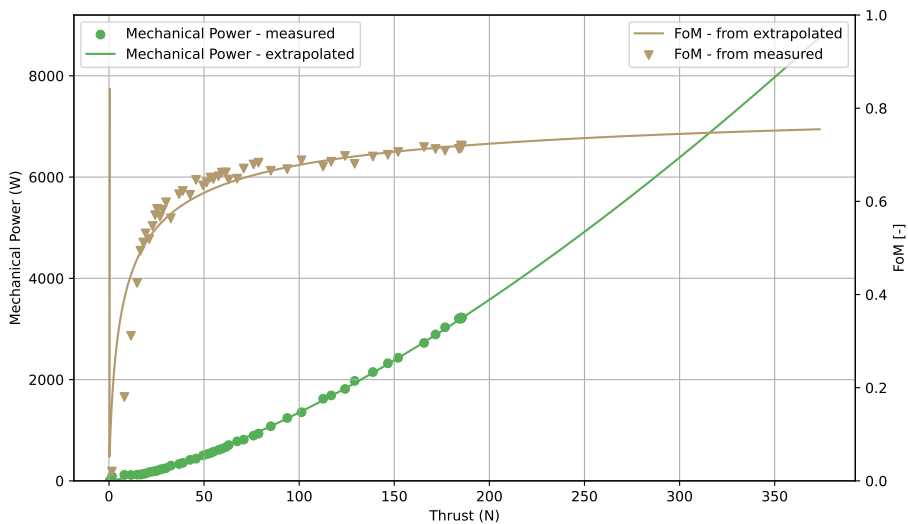
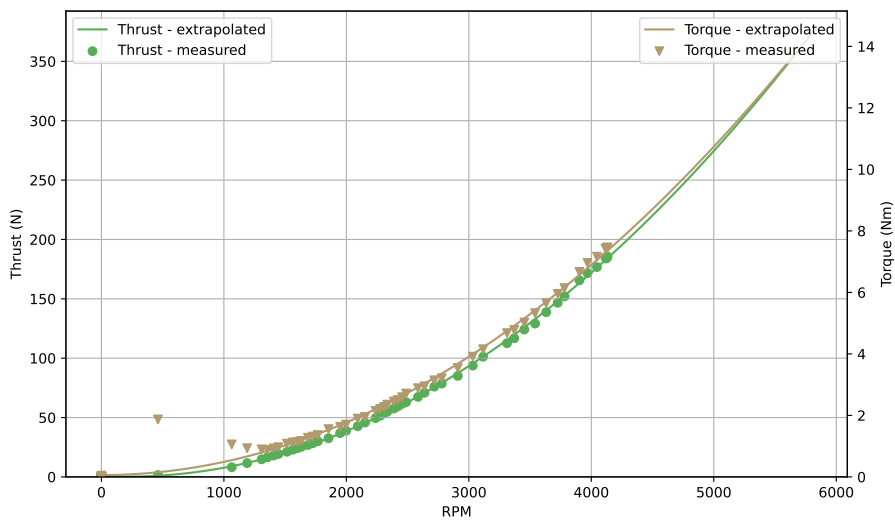


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## Measured data

Static test result



$$\text{Thrust (RPM)} = 1.19381e-05 \cdot \text{RPM}^2 + -0.00494 \cdot \text{RPM} + 0.74012$$

$$\text{Torque (RPM)} = 4.26601e-07 \cdot \text{RPM}^2 + 2.80742e-06 \cdot \text{RPM} + 0.05956$$

$$\text{Mechanical power (RPM)} = 5.81607e-08 \cdot \text{RPM}^3 + -7.45416e-05 \cdot \text{RPM}^2 + 0.09765 \cdot \text{RPM} + 0.84091$$

Formulas used to calculate FOM:

$$C_T = \frac{T_0}{\rho AV_T^2}$$

$$C_P = \frac{P_0}{\rho AV_T^3}$$

$$FOM = \sqrt{\frac{2}{\pi}} \frac{C_T^{\frac{3}{2}}}{C_P}$$

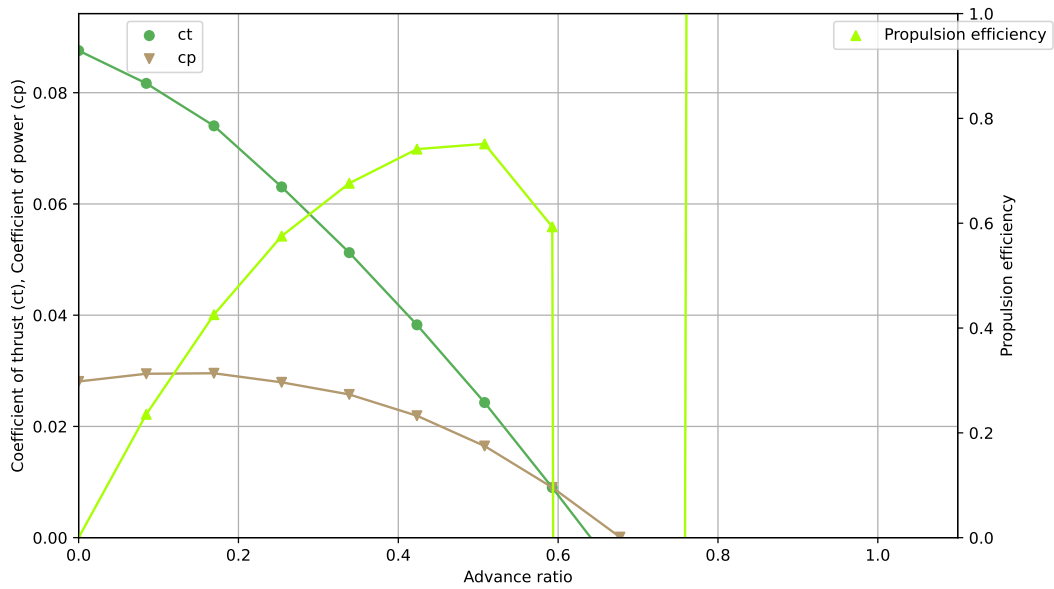


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## Simulated data

Dynamic simulation result - at rpm-sim



v_inf	Ct	Cp	Propulsion efficiency	Advance ratio
0.0	0.0876	0.0281	0.0	0.0
5.0	0.0817	0.0295	0.2354	0.0847
10.0	0.074	0.0296	0.4255	0.1693
15.0	0.0631	0.0279	0.5754	0.254
20.0	0.0512	0.0258	0.6762	0.3387
25.0	0.0383	0.0219	0.7414	0.4233
30.0	0.0243	0.0165	0.7514	0.508
35.0	0.009	0.009	0.5932	0.5927
40.0	-0.0068	0.0001	-45.6114	0.6773
45.0	-0.022	-0.0093	1.803	0.762
50.0	-0.0344	-0.0175	1.6756	0.8467
55.0	-0.0456	-0.0264	1.611	0.9313

Formulas for forward flight:

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

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