

Battery and motor selection



Figure 1. MEGA ACn 22/45/4S [1]

MEGA ACn 22/45/4S

1.5kW engine, weighing 305 g, with a motor velocity constant at 870 RPM/V, internal resistance of 9.8mOhms withstanding 70A of continuous current. Professionally made, perfect for high performance acrobatic UAVs

The Propeller was chosen using propCalc feature on Ecalc.ch service [2], optimizing for the highest average speed at motor runtime >30min. Ensuring The most use out of the limited capacity in the battery.

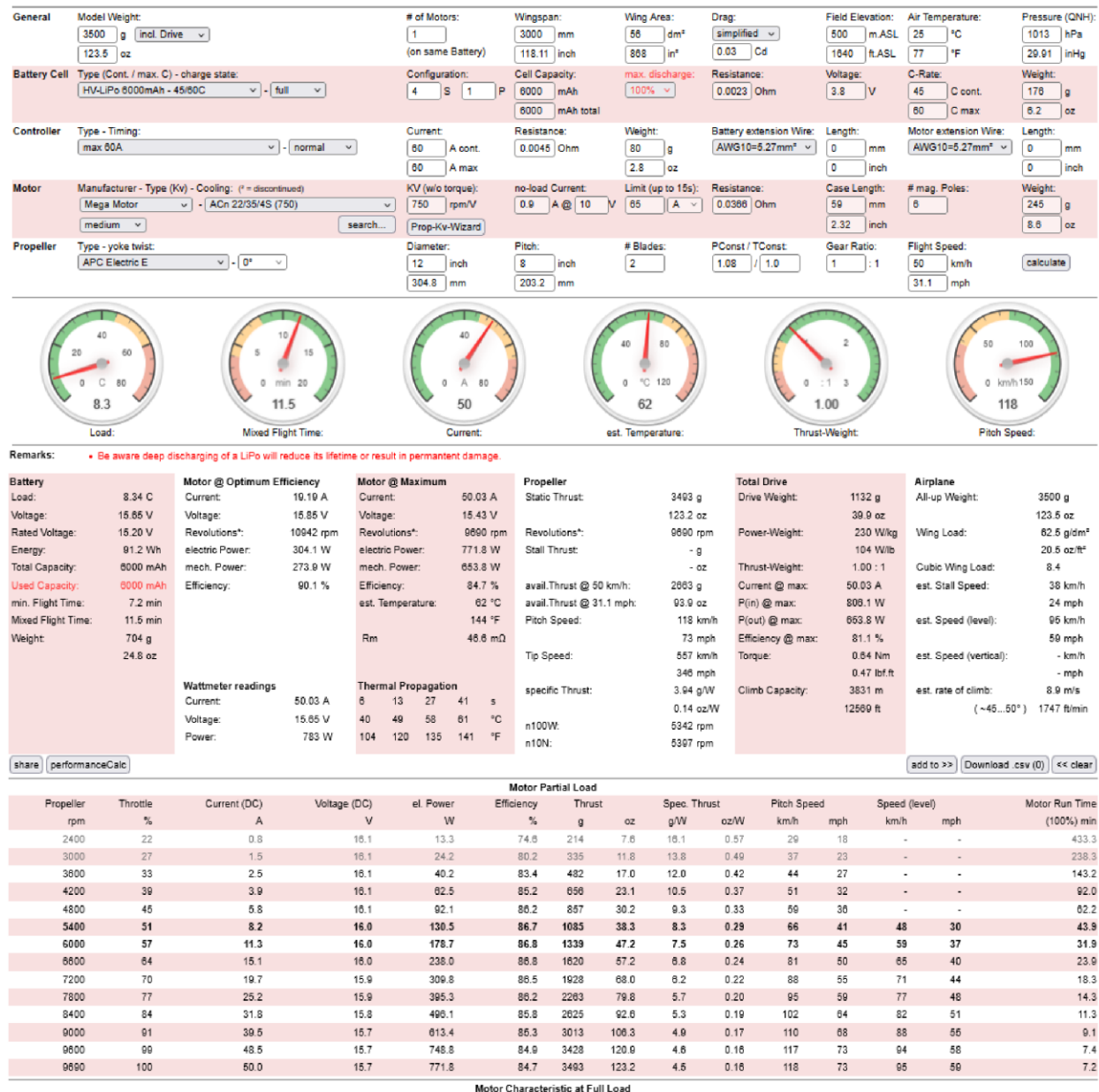


Figure 2. Ecalc.ch [3]

Screen capture from ecalc.ch program expecting 37mph at 31.9min of motor runtime (bottom right corner), for a variant with a 12x8 propeller.

LI-Po Battery



Figure 3. GRAPHENE-4.1 LiPo Battery [3]

HV LCG GRAPHENE-4.1 6550mAh Hardcase Akku - 15.2V LiPo - 120C/60C

This model was chosen to power the electric motor and the rest of the aircraft while taking the biggest advantage out of the <100 Wh limit. As a High Voltage Lithium Polymer Battery with 4 cells in series, with capacity of 6550 mAh it reaches 99.56 Wh. At 540g it has a specific energy of 184 Wh/kg and an energy density of 350 Wh/L. Both very important aspects in an aircraft where space and mass are so efficiently optimized. 60C of continuous current (393A) is also sufficient in any situation the motor could put it in.

R. Websites

[1] ICare-Icarus, *Mega ACn 22/45/1.5kW 4S*, ICare-Icarus. [Online]. Available: https://icare-icarus.3dcartstores.com/Mega-ACn-224515kW-4S_p_952.html (accessed: May 12, 2025).

[2] eCalc, *Motor Calculator*, eCalc. [Online]. Available: <https://www.ecalc.ch/motorcalc.php> (accessed: May 12, 2025).

[3] LRP, *Graphene 4.1 LiPo Battery - 15.2V 6550mAh*, LRP. [Online]. Available: <https://www.lrp.cc/en/product/432277/> (accessed: May 12, 2025).