Determine a Model's Power Requirements:

1. Power can be measured in watts. For example: 1 horsepower = 746 watts
2. You determine watts by multiplying 'volts' times 'amps'. Example: 10 volts x 10 amps = 100 watts

Volts x Amps = Watts

3. You can determine the power requirements of a model based on the 'Input Watts Per Pound' guidelines found below, using the flying weight of the model (with battery):

- 50-70 watts per pound; Minimum level of power for decent performance, good for lightly loaded slow flyer and park flyer models
- 70-90 watts per pound; Trainer and slow flying scale models
- 90-110 watts per pound; Sport aerobatic and fast flying scale models
- 110-130 watts per pound; Advanced aerobatic and high-speed models
- 130-150 watts per pound; Lightly loaded 3D models and ducted fans
- 150-200+ watts per pound; Unlimited performance 3D models

NOTE: These guidelines were developed based upon the typical parameters of our E-flite motors. These guidelines may vary depending on other motors and factors such as efficiency and prop size.

4. Determine the Input Watts per Pound required to achieve the desired level of performance:

Model: Hangar 9 P-51 Miss America
Estimated Flying Weight w/Battery: 9.0 lbs
Desired Level of Performance: 90-110 (100 average) watts per pound; Fast flying scale model

**9.0 lbs x 100 watts = 900 Input Watts per Pound of power (minimum)
required to achieve the desired performance**

5. Determine a suitable motor based on the model's power requirements. The tips below can help you determine the power capabilities of a particular motor and if it can provide the power your model requires for the desired level of performance:

- Most manufacturers will rate their motors for a range of cell counts, continuous current and maximum burst current.
- In most cases, the input power a motor is capable of handling can be determined by:

Average Voltage (depending on cell count) x Continuous Current = Continuous Input Watts

Average Voltage (depending on cell count) x Max Burst Current = Burst Input Watts

HINT: The typical average voltage under load of a Ni-Cd/Ni-MH cell is 1.0 volt. The typical average voltage under load of a Li-Po cell is 3.3 volts. This means the typical average voltage under load of a 10 cell Ni-MH pack is approximately 10 volts and a 3 cell Li-Po pack is approximately 9.9 volts. Due to variations in the performance of a given battery, the average voltage under load may be higher or lower. These however are good starting points for initial calculations.

Model: Hangar 9 Miss America
Estimated Flying Weight w/Battery: 9.0 lbs
Input Watts Per Pound Required for Desired Performance: 900 (minimum)

Motor: Power 60
Max Continuous Current: 40A*
Max Burst Current: 60A*
Max Cells (Li-Po): 5-7

**6 Cells, Continuous Power Capability: 19.8 Volts (6 x 3.3) x 40 Amps = 792 Watts
6 Cells, Max Burst Power Capability: 19.8 Volts (6 x 3.3) x 60 Amps = 1188 Watts**

Per this example, the Power 60 motor (when using a 6S Li-Po pack) can handle up to 1188 watts of input power, readily capable of powering the P-51 Miss America with the desired level of performance (requiring 900 watts minimum). You must however be sure that the battery chosen for power can adequately supply the current requirements of the system for the required performance. You must also use proper throttle management and provide adequate cooling for the motor, ESC and battery.