**MOTORS**

We are using bldc motors because they have many advantages in comparison with other motors:

The characteristics of a bldc motor are:

1. the diameter : if the name of a motor is eg. A2207 then 22 is the diameter in millimetres.
2. the height : the height of the coil inside the motor is the second number in the name and referring to the example above is 7mm.
3. number of poles : usually 6 or 12 ( always a multiple of 3)
4. number of turns
5. kV : is the measure of the back EMF generated when the motor is turning in a certain speed. the kv rating indicated the number of revolutions per volt . eg 2000kv means that you get 2000 rpms with 1 volt (in no-load conditions).
6. torque
7. watts

the above properties are related as described below

the more turns a motor have => the lower the kV => lower rpm => but bigger torque

however with more turns the resistive losses are increased and as a result the amps decrease => torque remains the same

for a given wattage if you supply with higher voltage you will have less amps.( P = V \* I)

and as a result a smaller ESC is needed.

**WEIGHT AND THRUST**

rule of thumb:

thrust = wattage of the motor \* 3

eg. a motor draws 300watt then thrust is about 900grams

thrust minimum value is defined from the equation below:

total = totalweight \* 2

thrust = total + 0,2 \* total

EFFICIENCY

=mechanical power out / electrical power in

Regarding the racestar 2280kv motors: the red cap indicates CW and the black cap indicates CCW.