

Task2: Brushless Motor

This report it's explained:

- Brushless Motor circuit design
- How does Brushless Motor working?



Introduction:

Brushless Motor is one type of Dc Motor it is called BLDC motor and it is used in many applications such as Drone and electrical scooters As well as some electric bikes.

Brushless Motor Architecture:

Figure 1 : Illustrative image

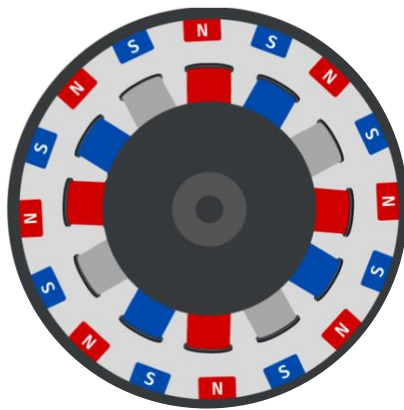
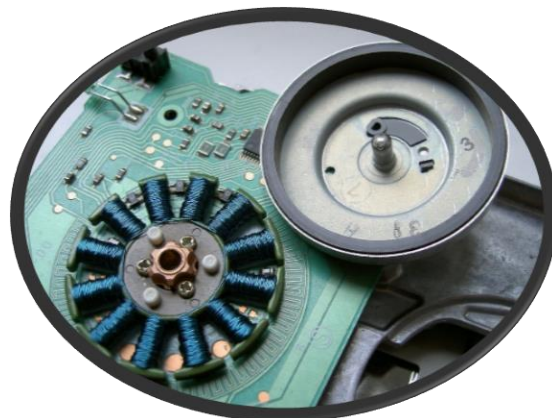


Figure 2 : Real picture



This is Brushless Motor with 12 poles as we can see above in **Figure 1** each pole means an inductor in the picture we have 3 color that's mean we have three inductors let these three inductors A, B, and C.

As we can see, it is surrounded by magnetic and divided into **North (N)** and **south (s)**. These poles attract and repel so that the Brushless Motor can move in a circular motion.

You can see in this link simulation:

<https://www.tytorobotics.com/blogs/articles/what-is-a-brushless-motor>

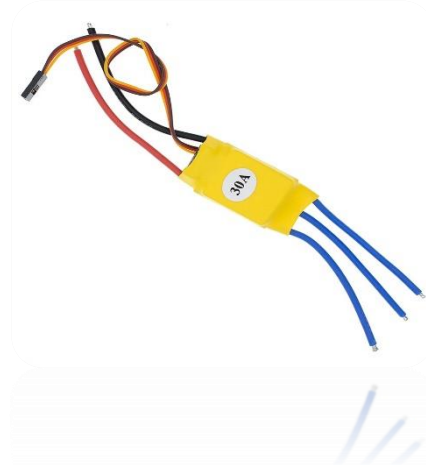
How does Brushless Motor working?

In the process of operating a brushless motor, we need to connect it to ESC.

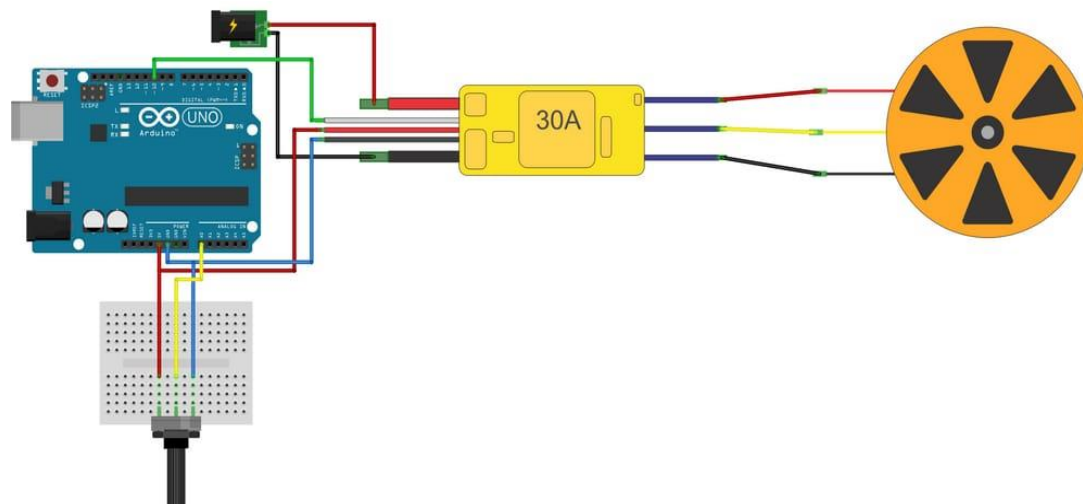
ESC:

ESC is Electronic Speed control. It consists of 6 transistors used to change the speed of an electric motor and its route and perform as a dynamic brake. These are frequently used on radio-controlled models which are electrically powered, with the change most frequently used for brushless motors providing an electronically produced 3-phase electric power low voltage source of energy for the motor.

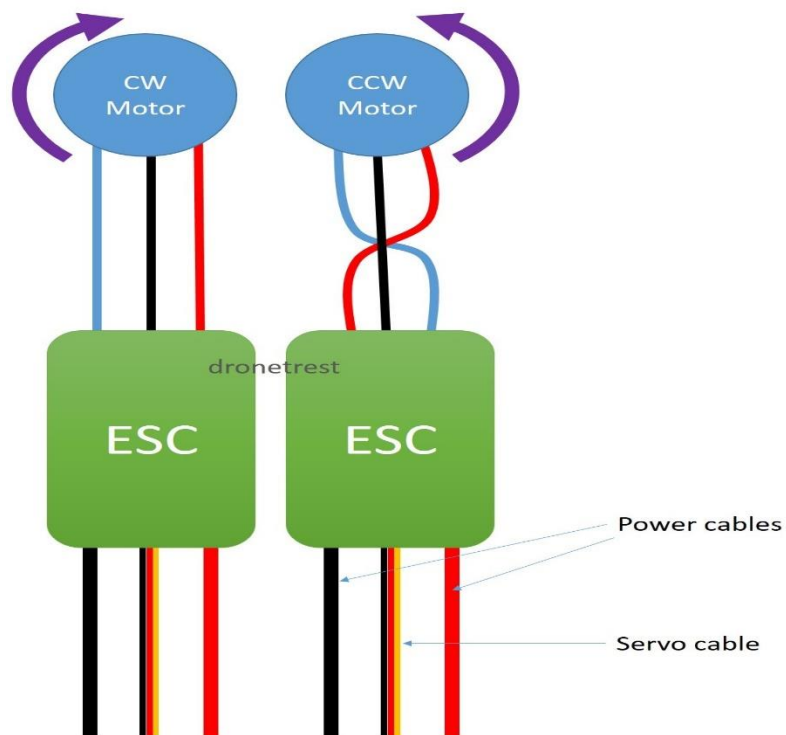
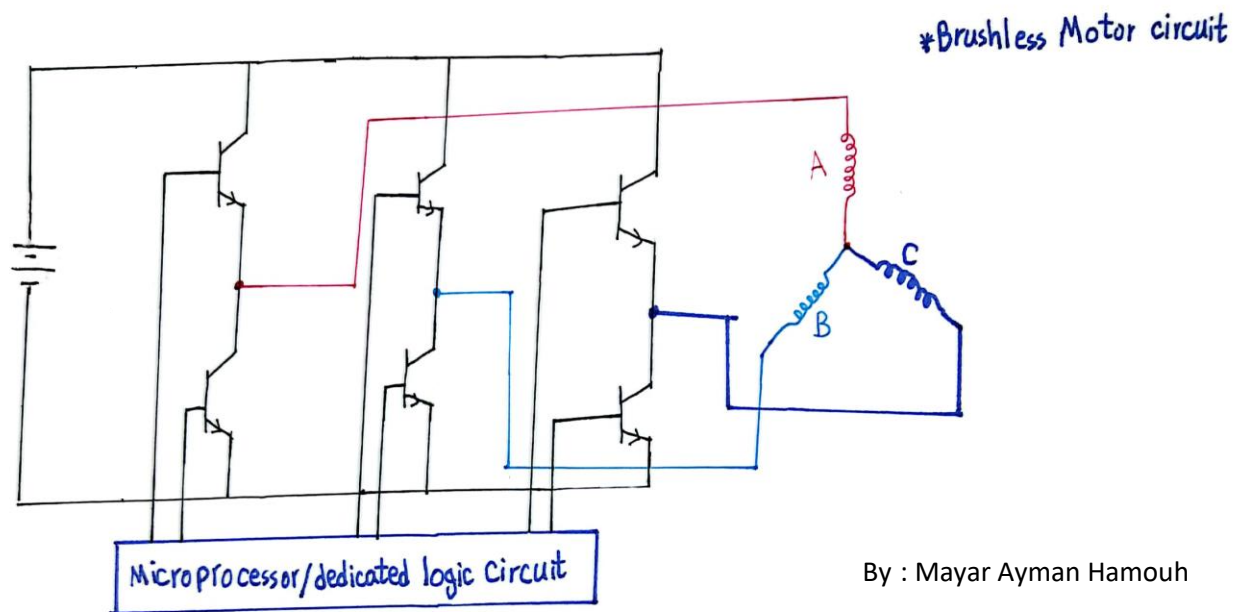
Figure 3 : ESC



Brushless Motor connected:



- **Brushless Motor circuit design**



information written on Brushless Motor:



A2212/15T

930KV

22: Diameter (width)

12: Hight

15T: The number of turns of the inductor

930KV: Number of turns for each voltage

That means 930 turns for each voltage

Reference:

- <https://www.gmelectronic.com/brushless-outrunner-motor-930ot-v-a2212-5t>
- <https://www.dronetrest.com/t/esc-to-motor-connection-guide-how-to-reverse-your-motor-direction-the-easy-way/1297>
- <https://www.tytorobotics.com/blogs/articles/what-is-a-brushless-moto>
- <https://www.youtube.com/watch?v=LnZQ9UoWUHE&t=912s>
- <https://www.youtube.com/watch?v=0tkMlnA11bk&t=638s>

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