CHAPTER 3
RESEARCH METHODOLOGY

1. Tool assemblies

   This project use arduino uno microcontroler which added a optocoupler sensor, INA219 sensor and wifi shield. The optocoupler sensor is used to calculate the number of rotational speeds on the encoder disk. The INA219 sensor is use to measure the dc current flow on the power source. Compass hmc5883L is also used in this project. It is used to know the direction of the wind in the degree view. Generator dc will produce electricity. powerbank will be used as the storage of electrical power from the generator. After assembly completion, the next step is connect into thinkspeak server using wifi shield. The connection to thinkspeak will save the record of wind speed data and the speed of charging powerbank.

2. Testing tools

   At the first step the optocoupler sensor will be tested. The optocoupler sensor will measure the rotation of the encoder installed with the dc dinamod. The results of this testing process will be known how much speed generated by the generator with units of rpm. Sensor INA219 will measure the flow of electricity. This sensor will measure the voltage of the electric current on the power generator to the powerbank.

3. Data analysis

   The result data from the INA219 sensor and the optocoupler sensor will be sent to the thinkspeak server. This data will be processed to analyze the minimum and maximum values for the effect of battrey charging speed.