[code]

```
#include <Servo.h>
Servo ESC;     // create servo object to control the ESC
int potValue;  // value from the analog pin
int Sensor1;
int Sensor2;
int Speed;
int Pressure;
int BatteryVoltage;

double Input, Time, OldTime, TimeElapsed;

void setup() {
  //Initiate Serial communication.
  Serial.begin(9600);

  //Setup Battery Life Outputs
  pinMode(2,OUTPUT);
  pinMode(3,OUTPUT);
  pinMode(4,OUTPUT);

  //Inital Resistance Value
  potValue = (analogRead(A0) + analogRead(A4))/2;
  Speed = 0;

  // Attach the ESC on pin 8
  ESC.attach(8,1000,2000); // (pin, min pulse width, max pulse width in microseconds)

  //Initalise ESC
  ESC.write(0);
  delay(3000); //allow time for start sequence
```

```
  //Initalise Timing for Intergrator
  Time = millis();
}

void loop() {

  Sensor1 = analogRead(A0);   // reads the value of the potentiometer (value between 0 and 1023)
  Sensor2 = analogRead(A4);   // reads the value of the potentiometer (value between 0 and 1023)

  if (Sensor1 <= potValue){
    Pressure = (Sensor2 - potValue);
  }
  else if (Sensor2 <= potValue){
    Pressure = (Sensor1 - potValue);
  }
  else{
    Pressure = (Sensor1 + Sensor2 - potValue*2)/2;
  }

//Saturates Intergrator input and adds negative values
  Pressure = Pressure - 350;
  if (Pressure <50){
    if (Pressure > -50){
      Pressure = 0;
    }
  }

//Calls Acceleration Function
  Intergrator();
  Serial.print(Pressure);
```

```
  Serial.print(' ');
  Serial.print(Speed);
  Serial.print('\n');

// Add Limits to the Speed of the Device
  if (Speed >= 100) {
    Speed = 100;
  }
  else if (Speed <= 0) {
    Speed = 0;
  }

  ESC.write(Speed);    // Send the signal to the ESC

  BatteryLifeMonitor();

  delay(500);
}

void BatteryLifeMonitor(){

  BatteryVoltage = analogRead(A2);

  if (BatteryVoltage > 836){
    digitalWrite(2,HIGH);
    digitalWrite(3,HIGH);
    digitalWrite(4,HIGH);
  }
  else if (BatteryVoltage > 788){
    digitalWrite(2,HIGH);
    digitalWrite(3,HIGH);
```

```
    digitalWrite(4,LOW);
  }
  else if (BatteryVoltage < 764){
    Warning();
  }
  else{
    digitalWrite(2,HIGH);
    digitalWrite(3,LOW);
    digitalWrite(4,LOW);
  }
  return;
}

void Warning() {
  //Add a buzzer
  ESC.write(0);
  digitalWrite(2,HIGH);
  digitalWrite(3,HIGH);
  digitalWrite(4,HIGH);
  delay(500);
  digitalWrite(2,LOW);
  digitalWrite(3,LOW);
  digitalWrite(4,LOW);
  delay(500);
}

void Intergrator() {
  OldTime = Time;
  Time = millis();
  TimeElapsed = Time - OldTime;
  Input = Pressure * 0.00005;
```

```
  Speed = Speed + (Input * TimeElapsed);
}
```
[/code]