

## ABSTRACT

The use of electric cars growing along with the scarcity of fuel oil. it raises a problem when the electric cars used at long distance, there is no place refueling when capacity / energy of the battery up in the way. Based on this problem, in this final project research will have been done velocity control at electrical vehicle based on energy and distance target in every time. By controlling the velocity of electrical car, the user can set the efficient use of battery power<sup>3</sup>. So, the electrical car can run to an optimal distance and can travel a predetermined distance without running out of electrical power.

For Hardware specification, in this electrical car use High speed Encoder for speed sensor. This device can count the Brushless motor's pulse based on the time, so, computer can get speed data by USB communication. To get the current and voltage data, the system use *30 Amp Current Sensor AC/DC* dan *Precision Voltage Sensor*. Output of that sensor is read by ADC port of microcontroller AVR ATMega8535 and further data sent to a computer via serial communication for control purposes. Output level is controlled by the computer results will be sent to the DAC via a microcontroller to provide a voltage to the motor. Energy which is available in the battery can be determined based on the current hours value ( Ah) or batterie's capacity. For software implementation, the system use CV AVR for microcontroller programming and Borland C ++ Builder 4 software for computer programming. The result of this project shown that been an maximum increase of distance as far as 8 % when system using control with the appropriate value of k and the greater of throttle change can cause the greater energy used.

Key words: microcontroller, management, movement, energy