ABSTRACT

Rapid technological developments, as well as the development of the automotive world, especially cars. Consuments wanted a car with a powerful engine, high performance, and most importantly is friendly with environmental. To get a car with the engine quality, engine research has been carried out by the automotive manufacturers in the world ranging from valved technology compound, injection until hybrid technology or mix of technologies that use multiple resources to drive the vehicle, one of them using propulsion fuel and electrical machinery claimed to be more friendly with environmental because it produces better combustion emissions, vehicles with electric fusion technology called hybrid electric vehicles which is called by HEV (Hybrid Electric Vehicle) in Indonesia commonly called hybrid cars. Solar cells can be used as a backup power supply in hybrid car batteries. With the solar cell, the energy of sunlight can be converted into electrical energy. But in general solar cell only stay in one place so that the utilization of solar light energy to be less than optimal.

To overcome this problem, it is necessary to added solar tracker on the solar cell in order to obtain optimum sunlight. Solar cells are only stay in one position only (fixed) and the reflective mirror as solar tracker can be moved so that the solar cell always receive sunlight. Solar tracker using DC motors for moving the tracker and LDR as a comparison of sunlight intensity. ATMega 16 microcontroller is used to compare the sunlight received by the LDR 1, 2 LDR, and LDR 3. The method used to compare the three LDR is the fuzzy logic method. After comparison, the DC motor will move the mirror reflector towards the LDR most value high light intensity.

The final results of the final project is a design implemented into a solar tracker control system which is capable of moving the mirror in the direction of the sun with power efficiency 3,7% by using 2 Watt DC motor for 12 hours in 5 days in a row.

Keywords : cars, hybrid, solar cell, battery, solar tracker, ATMega 16, LDR, fuzzy logic