ABSTRACT

Magnetic levitation is one of technological innovations that much used today. Magnetic levitation can be define as the levitating process of an object to a reference assisted by a force of electromagnetic without any physical contact. The principle of this device by use magnetic energy resulting from electromagnetic force. The purpose made for this prototype of this system is to observe and prove the levitating proccess of an objects using the theory applied to this system. As well as finding a stable position within the range of objects during the process.

On this final project has been made a prototype from theory of Magnetic Levitation which used Fuzzy Logic Method. On the datas there are voltage, electricity current, PMW and also the result of sensor reading which will be processed system to set the ball balance when in the air with helped a method of a Fuzzy Logic Control. This method used to set PWM turn in to winding a solenoid which will be produce electromagnetic force based on input hall sensors effect.

From research conducted, prototype magnetic levitation system with Sugeno type fuzzy logic method that has been designed using five output value out defuzzy as well as three regional membership function on the second fuzzy input is to value limits -50,10,30 error and delta error boundary area -20,5,20, the prototype that has been created can make the levitating process for five seconds in the air at a distance of 1.2 cm measured from the lower limit of the solenoid with a fixed mass 18 grams and the voltage source 6, 63 volt. The distance will change according to the PWM output generated from the fuzzy logic process on the microcontroller.

Keywords *: Magnetic Levitation, Electromagnetic force, Fuzzy Logic*