DESIGN AND IMPLEMENTATION OF ADAPTIVE PID CONTROLLER FOR CONTROL SPEED OF THREE PHASE INDUCTION MOTOR

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ABSTRACT

Induction motor is the motor of the most widely used in industry. With the development and technological advancement in the field of microcontrollers, microcomputers, and control theory facilitate the operation and performance of induction motor so that it can replace the role of DC motors for electric propulsion. The advantages of induction motors include simple construction as shown in Figure 1.1, the price is cheaper than other types of motors, as well as easy.

At the end of this task will be designed and realized an adaptive PID controller Self Tuning Regulator (STR) for setting the speed of three phase induction motor using Matlab software and microcontroller AVR ATmega16 as input and output of the plant by using a serial RS-232 communication. The purpose of this study was to try to implement the adaptive PID method using Matlab a for the controller.

From the response of plant with a time constant which is given first: 4 seconds, the second: 8 seconds and a third: 12 seconds obtained transient response of the first plant with a time constant: 4.55 seconds, second: 7.9 seconds and a third, 12.2 seconds. Concluded that the adaptive PID controller with Self Tuning Regulator can work well to slow the plant response, ability when given the burden of recovery time 18.1 seconds and the ability of recovery time 18.35 seconds when the load is removed.

Keyword : Controller Adaptive PID, Self Tuning Regulator, Induction Motor, Inverter.