

Aplikasi Sistem Kontrol PI (*Proporsional Integral*) Pada Mesin Pendingin Tipe Lempeng Sentuh Sebagai Kontrol Katup Ekspansi Otomatis. (*The Application Of PI (Proportional Integral) Control System On Cooling Machine Touch Plate Type As Automatic Expansion Valve Control*)

Agus Susanto

Program Studi Teknik Energi Terbarukan
Jurusan Teknik

ABSTRACT

One way to make energy savings in the freezing process, by freezing gradually using a cooling machine touch plates type. Based on previous has developed a touch plate type cooling machine, but the performance cooling machine less optimal because the process of controlling temperature is done manually. The aims of this research are designing and manufacturing of automatic expansion control with PI control system, for controlling the temperature of evaporator in order to obtain a more optimal result of freezing process. LM35 sensor is used to read the evaporator temperature where sensor reading results are used as input signals to PI control system. Based on the test result LM35 sensor had a sensitivity reading of 0,009335 V/°C. Performance PI control system in this research obtained a good response on the value Kp 20 and Ki 10, with these values to achive the set point takes time 251 seconds with a lower overshoot maximum value -2,4°C. Cooling results obtained in this research using automatic expansion valve control system obtained the cooling process more faster and more efficient of energy needs that is 0,265 kWh.

Keywords : *PI, LM35, Automatic Expansion Valve Control*