

## ***ABSTRACT***

### ***IMPLEMENTATION OF THERMOELECTRIC COOLER ON WATER-COOLED DIMROTH CONDENSER BASED ON PI CONTROL***

in this research will be made a water cooled dimroth condenser cooling system based on thermoelectric using PI method to control the temperature of the reactor. The PI method is a control method where the feedback signal is obtained from the sensor by continuously calculating the error value as the difference between the setpoint values. The sensor used is a thermocouple temperature sensor combined with IC MAX6675, the thermocouple temperature sensor is used for feedback control as a comparison with the setpoint value to control the power given to the thermoelectric with PWM settings by Arduino (microcontroller) so that the desired temperature can be achieved. There are four setpoint variations, namely 13 ° C, 15 ° C and 17 ° C, to determine the appropriate control parameters by using 2 methods, namely Ziegler Nichols 1 method and Trial and Error method. Tests are carried out by taking down the temperature data then the temperature reduction data is analyzed to get the system response specifications.