

Abstrak

Climatic chamber merupakan ruang tertutup tertutup atau lingkungan terisolasi, yang akan memberikan kondisi lingkungan kelembaban dan suhu relative. Tujuan dalam penelitian ini melakukan analisis perbandingan sistem kontrol suhu PID dan Fuzzy Logic pada alat Climatic Chamber (Sistem Fuzzy Logic) yang berperan dalam proses pengukuran suhu dan kelembaban ruangan saat di lapangan. Climatic Chamber ini telah dilakukan pengujian pada titik ukur suhu 25°C, 30°C, 35°C, dan kelembaban 50% RH, 60% RH, 70% RH kemudian hasil pengukuran dibandingkan dengan alat thermohygrometer yang sudah dikalibrasi. Hasil pengukuran pada suhu 25°C memiliki respon time 7 menit 30 detik dan overshoot 0.1°C, pada suhu 30°C memiliki respon time 5 menit 15 detik dan overshoot 0.1°C, pada suhu 35°C memiliki respon time 5 menit 30 detik dan overshoot 0.2°C. Pada Kelembaban 50%RH memiliki respon time 13 menit 30 detik, pada Kelembaban 60%RH memiliki respon time 12 menit, Pada Kelembaban 70%RH memiliki respon time 6 menit. Hasil pengukuran menunjukkan bahwa kontrol fuzzy logic memiliki lebih banyak keunggulan dari kontrol PID. Kontrol fuzzy logic memiliki respon time terhadap setpoint lebih cepat dari pada kontrol PID serta kontrol fuzzy logic memiliki overshoot lebih kecil dibandingkan dengan kontrol PID

Kata Kunci : Thermohygrometer, Climatic Chamber, Fuzzy Logic, PID

Abstract

The climatic chamber is a closed space or isolated environment, which will provide environmental conditions of relative humidity and temperature. The purpose of this study is to analyze the comparison of the PID temperature control system and Fuzzy Logic on the Climatic Chamber (Fuzzy Logic System) device which plays a role in the process of measuring room temperature and humidity in the field. This climatic chamber has been tested at temperature measuring points of 25°C, 30°C, 35°C, and humidity of 50% RH, 60% RH, 70% RH then the measurement results are compared with a calibrated thermohygrometer. The measurement results at 25°C have a response time of 7 minutes 30 seconds and an overshoot of 0.1°C, at a temperature of 30°C it has a response time of 5 minutes 15 seconds and an overshoot of 0.1°C, at a temperature of 35°C it has a response time of 5 minutes 30 seconds. and 0.2°C overshoot. At humidity 50%RH it has a response time of 13 minutes 30 seconds, at humidity 60%RH it has a response time of 12 minutes, at humidity 70%RH it has a response time of 6 minutes. The measurement results show that fuzzy logic control has more advantages than PID control. Fuzzy logic control has a faster response time to setpoint than PID control and fuzzy logic control has smaller overshoot than PID control

Keywords: *Thermohygrometer, Climatic Chamber, Fuzzy Logic, PID*