ABSTRAK

Rotary car parking system merupakan salah satu model parkir yang efektif digunakan pada area metropolitan karena sistem mekanik dibuat secara vertikal sehingga hemat lahan. Metode penelitian ini yaitu analisis persamaan kinematika, pengujian sistem kendali tanpa *fuzzy*, dan pengujian sistem kendali *fuzzy*. Analisis kinematika ini bertujuan untuk menganalisis persamaan kinematika pada sistem mekanik didapatkan menggunakan pendekatan persamaan trigonometri yang mana terdapat pembagian sudut yang berbeda diantaranya 0° - 90°, 90° - 166°, 166° - 180°, 180° - 194°, 194° - 270°, 270° - 360°. Persamaan kinematika ini juga berpengaruh terhadap besar daya motor minimum yaitu sebesar 492,72 watt dengan beban satu kendaraan sebesar 1800 kg. Selain itu, pada pengujian respon sistem tanpa kendali *fuzzy* didapatkan nilai *rise time* 0,58 detik, *peak time* 0,85 detik, *settling time* 0,89 detik, dan *overshoot* 0,20%. Sedangkan pada respon sistem kendali *fuzzy* didapatkan *rise time* 0,54 detik, *settling time* 0,36 detik tanpa adanya *peak time* dan *overshoot*. Nilai *steady state error* respon sistem kendali tanpa *fuzzy* sebesar 4,14% dan nilai *steady state error* pada respon sistem kendali fuzzy sebesar 2,32%. Berdasarkan data pengujian respon sistem tersebut, sistem kendali *fuzzy* lebih optimal digunakan pada miniatur RCPS dibandingkan sistem tanpa kendali *fuzzy* karena tidak adanya *overshoot* dan nilai eror yang lebih kecil.

Kata Kunci : Kinematika, RCPS, *Fuzzy Logic*

ABSTRACT

Rotary car parking system is one of the effective parking model used in the metropolitan area because of the mechanical system is created vertically so that thrifty spot. The research method consult for analysis of the equation kinematics, testing the system without control fuzzy, and testing using fuzzy control systems. Kinematics analysis aims to analyze the kinematics equations on a mechanical system was obtained by using the trigonometric equations approach where there are different angles of which are divisions of 0 °-90 °, 90 °-166 °, 166 °-180 °, 180 °-194 °, 194 °-270 °, 270 °-360 °. The equation kinematics is also a big influence on the minimum motor power i.e. of 492.72 watts with one vehicle load of 1800 kg. In addition, on testing system response without control fuzzy obtained values rise time 0.58 seconds, peak time 0.85 seconds, 0.89 seconds, settling time and overshoot 0.20%. While on the control fuzzy system response obtained rise time 0.54 seconds, settling time 0.36 seconds without any peak time and overshoot. The value of the steady state error response without fuzzy system full of 4.14% and the value of the steady state error on a fuzzy control system response amounted to 2.32%. Based on test data of the response of the system, the more optimal fuzzy control system used on miniature RCPS compare without fuzzy control system the absence of overshoot and smaller error values

Keywords : Kinematics, RCPS, Fuzzy Logic