

ABSTRACT

DCS (Distribute Control System) power supply allocation of the production system in a Petrochemical Industry requires a power supply with a constant voltage. In the research carried out at PT. Asahimas Chemical in Cilegon Banten, especially within the system device of the production process, such condition was not reached so that a solution was needed to overcome the problem. Therefore on the occasion of compiling this final assignment was designed an electronic power system device to solve said problem, namely in the form of Boost Chopper Step-Up (BCSU) electric device.

This device was designed by means of a switching process using Mosfet power in close loop system, output voltage was fed back and turned into input of comparison series to meet expectation. This device was assembled by using IRF30 Mosfet, IC Op-Amp 741, IC NE555, BC 109 Transistor, MR 821 diode and 24 mH coil through the result of calculation analysis and as comparison a simulation was carried out by using Multisim software. The result of the final research showed that the BCSU device which was designed by means of the result of the calculation analysis worked quite effectively and the result of the simulation showed that the value and performance of the system were not very much different, constantly producing 12 to 48 volt.

ABSTRAK

Catu daya DCS (Distribute Control System) pada sistem produksi di satu industri Petrochemical diperlukan suplai daya dengan tegangan yang konstan. Dalam penelitian yang dilakukan di PT. X di Cilegon, terutama pada perangkat sistem proses pengendalian produksi kondisi tersebut tidak tercapai. Sehingga diperlukan satu solusi yang dapat mengatasi permasalahan tersebut. Maka dalam kesempatan menyusun Tugas Akhir (TA) ini dibuat satu rancangan perangkat sistem elektronik daya yang bertujuan agar dapat menghasilkan catu daya yang stabil berupa perangkat elektronik *Boost Chopper Step Up (BCSU)*.

Alat ini dirancang dengan memanfaatkan proses switching dengan menggunakan power mosfet dalam *system close loop*, yaitu tegangan output diumpun balik dan dijadikan input dari rangkaian pembanding. Alat ini dirangkai dengan menggunakan mosfet IRF 530, IC Op-Amp LM 741, IC NE555, Transistor BC 109 , diode MR 821 dan Lilitan 24 mH. Dari hasil analisis perhitungan dan hasil simulasi untuk rangkaian BCSU dengan menggunakan software Multisim, diperoleh gambaran bahwa perangkat BCSU yang dirancang bekerja cukup efektif dan nilai kinerja sistem yang jauh berbeda yaitu membangkitkan tegangan mulai dari 12 ~ 48 volt secara konstan.