

RANCANG BANGUN SISTEM AUTOMATIC TRANSFER SWITCH (ATS) DAN AUTOMATIC MAINS FAILURE (AMF) PLN DAN GENSET BERBASIS MODUL DEEP SEA ELECTRONICS 4520 MKII

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ABSTRAK

Pada tugas akhir ini dilakukan rancang bangun sistem Automatic Transfer Switch (ATS) dan Automatic Mains Failure (AMF) PLN dan generator set berbasis modul Deep Sea Electronics 4520 MKII. Modul Deep Sea Electronics 4520 MKII adalah peralatan elektromekanikal yang dapat dikendalikan dan difungsikan untuk memindahkan posisi sumber tenaga listrik dari jaringan utama (PLN) ke sumber tenaga listrik cadangan (genset) ketika pasokan listrik dari jaringan utama terputus. Sistem terdiri rangkaian daya, rangkaian kontrol modul DSE 4520, rangkaian interlock PLN dan genset, rangkaian kontrol non essential load, modul DSE 4520 MKII, pilot lamp, relai, kontaktor, selector switch, emergency stop dan Current Transformer (CT). Dari hasil pengujian diperoleh adanya selisih hasil pembacaan tegangan, frekuensi, arus dan cos phi antara modul DSE 4520 MKII dibandingkan dengan multimeter dan clamp meter. Selisih tegangan sebesar 0,88Vac, frekuensi 0,016Hz, arus 0,08A dan cos phi 0,06. Non essential load tidak aktif saat genset menyuplai beban. ATS dan AMF akan memcuti tegangan dari bus sistem ke beban ketika tegangan berada pada keadaan normal yaitu 220 volt, dan memcuti frekuensi dari bus sistem ke beban ketika frekuensi genset pada keadaan normal yaitu 50 Hz. Proses down time yang dibutuhkan genset untuk menyuplai beban setelah starting adalah 11 detik.

Keywords : ATS, AMF, DSE 4520 MKII, Genset, Down time.

ABSTRACT

In this final project, the design of Automatic Transfer Switch (ATS) and Automatic Mains Failure (AMF) PLN and the generator set based on the Deep Sea Electronics 4520 MKII module. The Deep Sea Electronics 4520 MKII module is electromechanical equipment that can be controlled and enabled to move the position of power source, from the main network (PLN) to the backup power source (generator) when the power supply from the main network is lost. System consists of power circuit, DSE 4520 module control circuit, PLN interlock circuit and generator set, non essential load control circuit, DSE 4520 MKII module, pilot lamp, relay, contactor, selector switch, emergency stop and Current Transformer (CT). From the test results obtained the difference in the results of voltage readings, frequency, current and cos phi between DSE module 4520 MKII compared with multimeter and clamp meter. Difference of voltage equal to 0.88Vac, frequency 0.016Hz, current 0.08A and cos phi 0.06. Non essential load is inactive when the generator supplies the load. ATS and AMF will supply the voltage from the system bus to the load when the voltage is in the normal state of 220 volts, and feed the frequency from the system bus to the load when the frequency of the generator in the normal state is 50 Hz. Down time process required genset to supply the load after the starting is 11 seconds.

Keywords: ATS, AMF, DSE 4520 MKII, Genset, Down time.

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