

Rancang bangun prototipe sistem pengendali pengisian muatan baterai dengan tenaga surya sebagai catu daya base transceiver station (BTS) GSM = Designing and constructing prototype of battery charge controller system with solar power as power supply GSM base Bransceiver Station (BTS)

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Abstrak

Skripsi ini membahas perancangan dan realisasi prototipe sistem pengendali pengisian baterai dengan tenaga surya sebagai catu daya beban Base Transceiver Station (BTS) GSM. Baterai dapat menjadi catu daya cadangan, saat panel surya tidak bekerja secara optimal. Perlindungan baterai dari kondisi overcharging sangatlah penting untuk menjaga umur pemakaian baterai. Perancangan sistem ini mempunyai perlindungan dan dapat diterapkan. Baterai yang digunakan adalah baterai Valve Regulated Lead Acid 6 volt, 4,5 Ah, yaitu Panasonic dan Kenmaster.

Sistem pengendali pengisian muatan baterai menggunakan switching regulator untuk menstabilkan keluaran panel surya. Pengendali pengisian muatan baterai ini terdiri dari rangkaian voltage divider, komparator, dan relay driver. Voltage divider mengonversi tegangan switching regulator dari 7 volt menjadi tegangan referensi dari komparator, yang mana akan membandingkan tegangan baterai dengan tegangan referensi. Relay driver akan mengontrol hubungan penyaklaran masing-masing baterai untuk charging atau discharging tergantung pada keluaran komparator. Sistem pengendali muatan baterai terdiri dari satu cluster, yang mana termasuk empat baterai dan satu panel surya untuk menyuplai beban.

The focus of this study is designing and constructing battery charge controller system with solar power as power supply GSM Base Transceiver Station (BTS) and realizes it as a tool. Battery can be a back up power supply, if solar panel doesn't work optimum. It's necessary to protect batteries from overcharging condition to keep battery's age. The designed system has this kind of protection and reliable. The used batteries are Valve Regulated Lead Acid 6 volt batteries, Panasonic and Kenmaster.

Battery charge controller system uses switching regulator to stabilize output from solar panel. This charge controller consists of voltage divider, comparator, and relay driver circuit. The voltage divider converts switching regulator voltage from 7 volt to reference voltage for comparator, which will compare battery voltage with reference voltage. The relay driver will control the connection of switch each batteries to charging or discharging depends on the comparator's output. Battery charge controller system consists of one cluster, which include four batteries and one solar panel to supplies fan as a load.