

**RANCANG BANGUN *SOLAR CHARGER CONTROLLER* DENGAN  
*SERIES REGULATOR* UNTUK SISTEM PENGGERAK MOTOR LISTRIK  
PERAHU NELAYAN**

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**ABSTRAK**

Transformasi perahu nelayan dari mesin motor bakar ke motor listrik membutuhkan sistem catu daya listrik yang handal terutama dalam proses konversi daya listrik dari panel surya ke baterai. Penelitian ini bertujuan merancang dan mengembangkan alat *Solar Charge Controller* (SCC) untuk mengatur proses penyimpanan energi listrik dari panel surya ke baterai. Rancangan SCC menggunakan metode *Series Regulator* yang mengatur kestabilan tegangan pengisian baterai dan memberikan proteksi terhadap pengisian berlebih (*over charger*). Hasil pengujian tegangan keluaran SCC tanpa beban sebesar 14,1 Volt dengan regulasi tegangan keluaran rata rata dalam kondisi berbeban sebesar 7,6 %. Kemudian efisiensi SCC dalam mengkonversi daya dari panel surya ke baterai sebesar 73,5%. Kesimpulan dari penelitian ini adalah rancangan SCC mampu bekerja dalam mengatur proses pengisian daya listrik dari panel surya ke baterai dengan efisiensi sebesar 73,5% dengan proteksi tegangan sebesar 14,1 Volt. Kontribusi alat ini adalah dapat menjadi solusi dalam penerapan teknologi energi terbarukan khususnya pada proses konversi daya listrik panel surya ke baterai.

**Kata kunci :** Penelitian *Solar Carger Control*, *Series Regulator*, Efisiensi Energi

**DESIGN AND DEVELOPMENT OF A SOLAR CHARGER CONTROLLER  
USING SERIES REGULATOR FOR THE ELECTRIC MOTOR DRIVE  
SYSTEM OF A FISHING BOAT**

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**ABSTRACT**

The transformation of fishermen boats from combustion engines to electric motors requires a reliable electrical power supply system, especially in the process of converting electrical power from solar panels to batteries. This study aims to design and develop a *Solar Charge Controller* (SCC) to regulate the process of storing electrical energy from solar panels into batteries. The SCC design uses a *Series Regulator* method that maintains the stability of the battery charging voltage and provides protection against (*overcharging*). The test results showed that the SCC output voltage without load was 14.1 volts, with an average voltage regulation under load conditions of 7.6%. Furthermore, the efficiency of the SCC in converting power from the solar panel to the battery was 73.5%. The conclusion of this study is that the SCC design can effectively regulate the process of charging electrical power from solar panels to batteries with an efficiency of 73.5% and voltage protection at 14.1 volts. This device's contribution is to provide a solution in the application of renewable energy technology, particularly in the process of converting electrical power from solar panels to batteries.

**Keywords:** *Solar Charge Controller Research, Series Regulator, Energy Efficiency*