

ABSTRAK
PERANCANGAN STASIUN PENGISIAN KENDARAAN
ENERGI LISTRIK BERBASIS PANEL SURYA
(2025: xv + 65 Halaman + 12 Tabel + 35 Gambar + Lampiran)

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Perancangan Stasiun Pengisian Kendaraan Energi Listrik Berbasis Panel Surya yang bertujuan untuk memanfaatkan energi matahari sebagai sumber daya alternatif ramah lingkungan. Berdasarkan hasil pengujian, tegangan, arus, dan daya menunjukkan fluktuasi akibat perubahan intensitas cahaya matahari sepanjang hari. Sistem Solar Charge Controller (SCC) terbukti mampu menstabilkan tegangan keluaran meskipun intensitas cahaya tidak konstan. Nilai daya tertinggi yang dihasilkan mencapai 102,44 W pada pukul 09.30, sedangkan daya rata-rata selama pengujian sebesar 83,25 W. Efisiensi sistem pengisian berbasis panel surya diperoleh sebesar 3,44%, menunjukkan bahwa kinerja stasiun pengisian masih perlu ditingkatkan agar lebih optimal. Secara keseluruhan, hasil penelitian ini menunjukkan bahwa sistem mampu bekerja sesuai fungsi dasarnya, namun efisiensinya masih rendah akibat keterbatasan intensitas cahaya dan kapasitas panel yang digunakan.

Kata Kunci: Panel Surya, Efisiensi, Daya, Stasiun Pengisian

ABSTRACT
DESIGN OF A SOLAR PANEL BASED ELECTRIC VEHICLE
CHARGING STATIONS

(2025: xv + 65 Pages + 12 Table + 35 Images + Attachment)

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Design of a Solar Panel-Based Electric Vehicle Charging Station that aims to utilize solar energy as an environmentally friendly alternative energy source. Based on the test results, voltage, current, and power showed fluctuations due to changes in sunlight intensity throughout the day. The Solar Charge Controller (SCC) system proved to be capable of stabilizing the output voltage even though the light intensity was not constant. The highest power value produced reached 102.44 W at 09:30, while the average power during testing was 83.25 W. The efficiency of the solar panel-based charging system was 3.44%, indicating that the performance of the charging station still needs to be improved to be more optimal. Overall, the results of this study show that the system is capable of functioning as intended, but its efficiency is still low due to limitations in light intensity and the capacity of the panels used.

Keywords: Solar Panel, Efficiency, Power, Charging Station