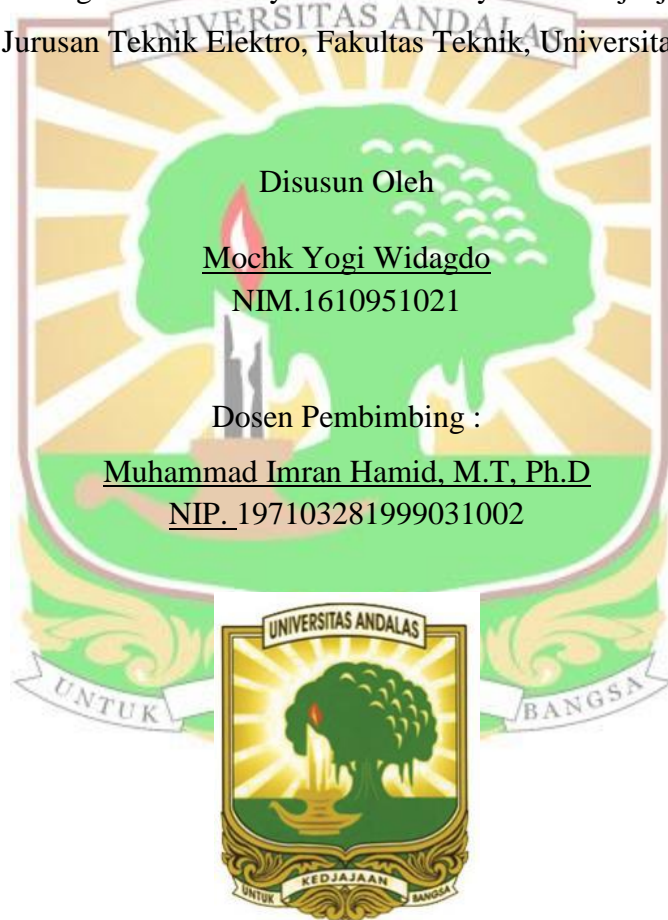


PERANCANGAN ALGORITMA SISTEM PENGONTROLAN *STATE OF CHARGE* DAN TEMPERATUR BATERAI LITHIUM ION SERTA MEMPROTEKSINYA TERHADAP KONDISI *OVERCHARGE* DAN *OVERHEAT* SELAMA PROSES PENGISIAN

TUGAS AKHIR

Karya Ilmiah sebagai salah satu syarat untuk menyelesaikan jenjang strata satu (S-1) di Jurusan Teknik Elektro, Fakultas Teknik, Universitas Andalas



Disusun Oleh

Mochk Yogi Widagdo

NIM.1610951021

Dosen Pembimbing :

Muhammad Imran Hamid, M.T, Ph.D

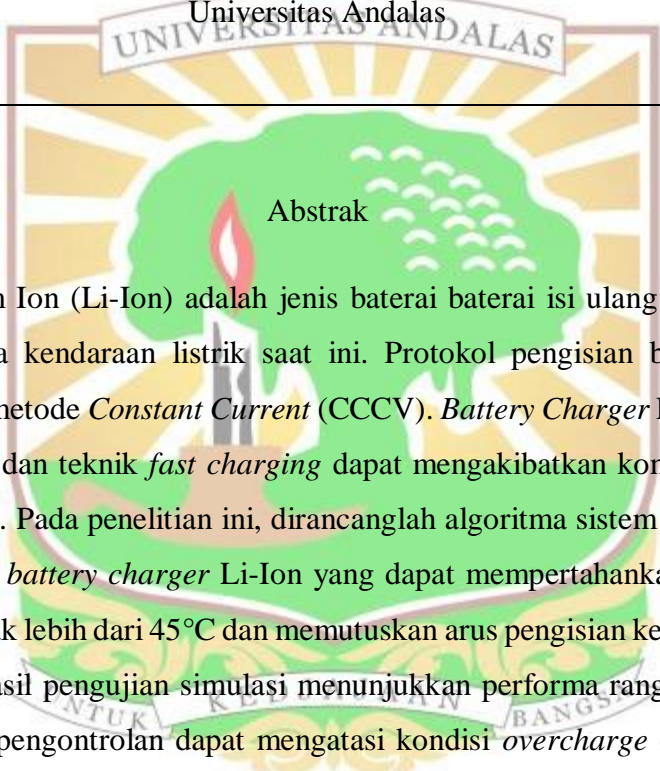
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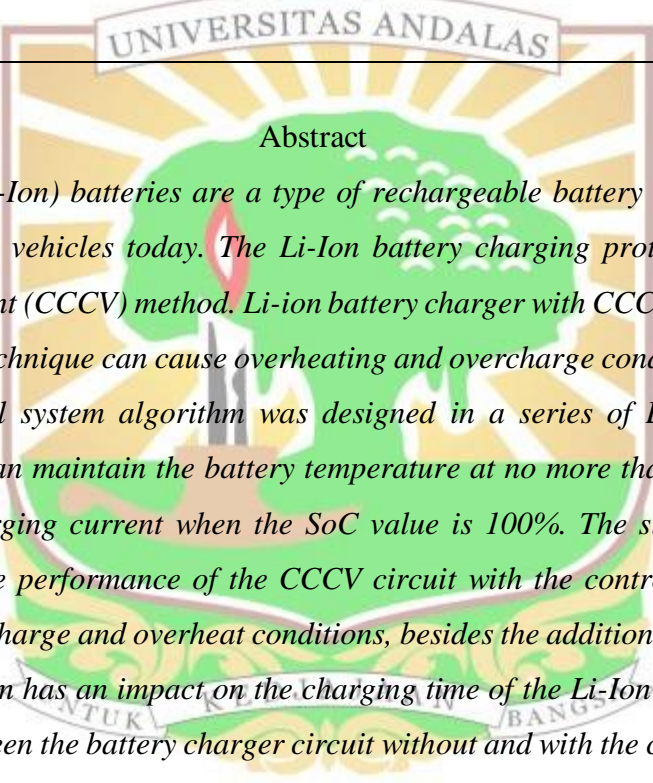
Program Studi Teknik Elektro

Fakultas Teknik

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Judul	Perancangan Algoritma Sistem Pengontrolan State Of Charge Dan Temperatur Baterai Lithium Ion Serta Memproteksinya Terhadap Kondisi Overcharge Dan Overheat Selama Proses Pengisian	Mochk Yogi Widagdo
Program Studi	Teknik Elektro	1610951021
Fakultas Teknik Universitas Andalas		
		
Abstrak		
<p>Baterai Lithium Ion (Li-Ion) adalah jenis baterai isi ulang yang banyak digunakan pada kendaraan listrik saat ini. Protokol pengisian baterai Li-Ion menggunakan metode <i>Constant Current (CCCV)</i>. <i>Battery Charger</i> Li-ion dengan metode CCCV dan teknik <i>fast charging</i> dapat mengakibatkan kondisi <i>overheat</i> dan <i>overcharge</i>. Pada penelitian ini, dirancanglah algoritma sistem pengontrolan pada rangkaian <i>battery charger</i> Li-Ion yang dapat mempertahankan temperatur baterai agar tidak lebih dari 45°C dan memutuskan arus pengisian ketika nilai SoC telah 100%. Hasil pengujian simulasi menunjukkan performa rangkaian CCCV dengan sistem pengontrolan dapat mengatasi kondisi <i>overcharge</i> dan <i>overheat</i>, selain itu penambahan algoritma sistem pengontrolan berdampak pada waktu pengisian baterai Li-Ion. Selisih waktu rangkaian <i>battery charger</i> tanpa dan dengan sistem pengontrolan selama 52 menit.</p> <p>Kata Kunci : CCCV, <i>fast charging</i>, <i>battery charger</i>, temperatur baterai, <i>overcharge</i>, <i>overheat</i></p>		

Title	Algorithm Design of Lithium Ion Battery State of Charge and Temperature Control System and Protect it Against Overcharge and Overheat Conditions during the Charging Process	Mochk Yogi Widagdo
Major	Electrical Engineering	1610951021
Faculty of Engineering Universitas Andalas		
<div style="text-align: center;">  </div> <p style="text-align: center;">Abstract</p> <p><i>Lithium Ion (Li-Ion) batteries are a type of rechargeable battery that is widely used in electric vehicles today. The Li-Ion battery charging protocol uses the Constant Current (CCCV) method. Li-ion battery charger with CCCV method and fast charging technique can cause overheating and overcharge conditions. In this study, a control system algorithm was designed in a series of Li-Ion battery chargers that can maintain the battery temperature at no more than 45 ° C and cut off the charging current when the SoC value is 100%. The simulation test results show the performance of the CCCV circuit with the control system can overcome overcharge and overheat conditions, besides the addition of the control system algorithm has an impact on the charging time of the Li-Ion battery. Time difference between the battery charger circuit without and with the control system for 52 minutes.</i></p> <p><i>Keywords: CCCV, fast charging, battery charger, battery temperature, overcharge, overheat</i></p>		