EUROPEAN COMMISSION

HORIZON 2020 PROGRAMME - TOPIC H2020-LC-BAT-2020
Sodium-Ion and sodium Metal BAtteries for efficient and sustainable next-generation energy storage

GRANT AGREEMENT No. 963542

SIMBA – Deliverable Report

<< D5.3 – Design of 12 V 1 Ah modules including a hybrid one >>

Deliverable No.	SIMBA D5.3	
Related WP	WP 5	
Deliverable Title	Design of 12 V 1 Ah modules including a hybrid one	
Deliverable Date	2023-12-31	
Deliverable Type	REPORT	
Dissemination level	Confidential – member only (CO)	
Written By	Yurii Maletin (YUN)	2023-12-27
Checked by	Piter Miedema (UNR)	2023-12-28
Reviewed by (if applicable)	Ivana Hasa (WMG)	2024-01-08
Approved by	Ralf Riedel (TUDa)	2024-01-13
Status	Final	2024-01-13

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 963542.

Publishable summary

One of the goals of the SIMBA project is to develop modular systems based on 1Ah Na-ion A7 pouch-type cells. Individual A7 pouch-type cells may have very limited use due to their low voltage and soft shell. With this in mind, the SIMBA project aims at developing a module consisting of 4 single cells connected in series to provide the rated voltage of 12 V. Before the realization of the module, work on the design of the module is necessary. This document summarizes the activities toward the design of a module also including a battery management system (BMS) and a temperature sensor, all packaged in a rugged box. Besides, taking into account possible surges of load current exceeding the rated power characteristics of Na-ion battery, a hybrid power supply has also been designed that includes a parallel combination of Na-ion module with a supercapacitor stack of the same voltage. In this combination, the supercapacitor will be able to effectively unload the battery by covering all current pulses and thereby ensuring the most smooth, safe and long operation of the Na-ion battery.

6 Appendix A- Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

Project partners:

#	Partner	Partner Full Name
1	TUDa	TECHNISCHE UNIVERSITAT DARMSTADT
2	UU	UPPSALA UNIVERSITET
3	UBham	THE UNIVERSITY OF BIRMINGHAM
4	WMG	THE UNIVERSITY OF WARWICK
5	KIT	KARLSRUHER INSTITUT FUER TECHNOLOGIE
6	CEA	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
7	IFE	INSTITUTT FOR ENERGITEKNIKK
8	SAS	USTAV ANORGANICKEJ CHEMIE SLOVENSKA AKADEMIA VIED (Institute of Inorganic Chemistry, Slovak Academy of Sciences)
9	FHG	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
10	Elkem	ELKEM AS
11	YUN	YUNASKO-UKRAINE LLC
12	SAFT	SAFT
13	Altris	ALTRIS AB
14	Recupyl	TES RECUPYL SAS
15	UNR	UNIRESEARCH BV

Appendix C – Disclaimer/Acknowledgement

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 963542. The information and views set out in this publication does not necessarily reflect the official opinion of the European Commission. Neither the European Union institutions and bodies nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained therein.