News Events

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H2020 LOLABAT Project At a Glance

Title : Long LAsting BATtery

Topic: LC-BAT-8-2020 - Next-generation batteries for stationary energy storage

Grant number: 963576

Overall budget: € 7 080 216,25 (EU contribution)

Start date: 1 January 2021

End date: 31 March 2024

Project duration: 39 Months

Website: www.lolabat.eu

17 Partners, 7 European countries (Belgium, France, Spain, Portugal, Sweden, Germany, Italy)

LOLABAT

Countries
France

Categories
Energy Storage

Tags
EU-Funded

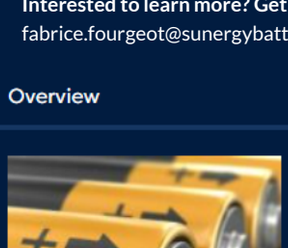
Overview | Library | Members

About: LOLABAT's 17 partners aim to develop a new promising rechargeable NiZn battery (RNZB), with ambition of 4000 cycles at 100% DoD, battery packs using 100Ah cell capacity up to 10kWh/kW with integration of BMS and test and demonstration in stationary energy storage applications via five use cases with the aim to increase RNZB Technology Readiness Level (TRL)
Project duration: 01 January 2021 – 31 March 2024

Looking for: Dissemination and communication of the LOLABAT project results contribute to make NiZn battery convincing by exploring its potential activity. The sought outcome is the emergence and strengthening of a battery value chain at European scale leading to Europe overall reindustrialization.

Interested to learn more? Get in touch via: Fabrice Fourgeot, Sunergy, fabrice.fourgeot@sunergybattery.com

Overview | Library | Members



Horizon Europe: Five energy storage projects

July 29, 2022

Energy storage is one of the key components for Europe to secure energy supply and decarbonization and five EU projects illustrate this.

News Events

LOLABAT PhD course held in the first half of September 2022 remotely

"Electrochemical Accumulators and Advances in Aqueous Rechargeable Batteries"

Total duration: 20 hours

Organised by: EU Horizon 2020 Project LOLABAT - LongLastingBATteries
University of Genoa, Italy
Stockholm University, Sweden

Topics: Fundamentals of batteries and their performance along with their integration in the energy systems - Results from the project and presentations from some industrial partners

Instructors

- Prof. M. Paola Carpanese - University of Genoa, Italy
- Prof Dag Noréus - Stockholm University, Sweden
- Dr. Gunder Karlsson - Manager at Stack of Fire AB, Sweden
- Fabrice Fourgeot - Sunergy, France (Coordinator of LOLABAT)
- Birger Horstmann - DLR, Germany
- Ashwani Malviya - AITEC, Spain
- Tommaso Reboli - University of Genoa, Italy
- Nora Ganzinelli - RINA Consulting
- Hugo Mesnage - SuperGrid Institute (SGI), France
- Eduardo Rodrigues - EDP, Portugal

The PhD course provided an opportunity for the delegates to learn innovative solutions, and to discuss future research directions in the area of energy storage.

More than 25 participants from different European Universities were present at the event

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News Events

LOLABAT Conference organization in synergy with similar projects

SUstainable PolyEnergy generation and HaRvesting – SUPEHR23",

September, 6-8, 2023 - Savona (Italy) - https://supehr23.unige.it/

LOLABAT
LONG LASTING BATTERY

Affiliated projects

flexnconfu

SOLSTICE
Sodium-Zinc molten salt batteries for low-cost stationary storage

Robinson

NEXT MGT

This conference will share the general objectives on innovative battery technologies focusing on advanced systems for energy storage and management, sustainable generation, energy harvesting.

Abstract submission: 15th December 2022

TOPICS DEFINITION

1st day: ENERGY STORAGE – ZN-BASED BATTERIES
- Zn-based Batteries
- Alternatives to Li-ion for battery stationary storage
- Other energy storage (thermal, water electrolysis, reversible fuel cell, air, sCO2, etc)

2nd day: THERMAL AND ELECTRICAL HYBRID SYSTEMS – SUSTAINABLE POWER PLANTS
- Integration with renewable power sources
- Fuel cell gas turbine hybrid systems
- Electrochemical production and storage
- Hybrid power generation and storage

3rd day: ENERGY MICROPOLYGENERATION AND HARVESTING
- Microturbines and small turbomachinery
- Smart grids and distributed generation
- Alternative fuels and power generation
- Polygeneration

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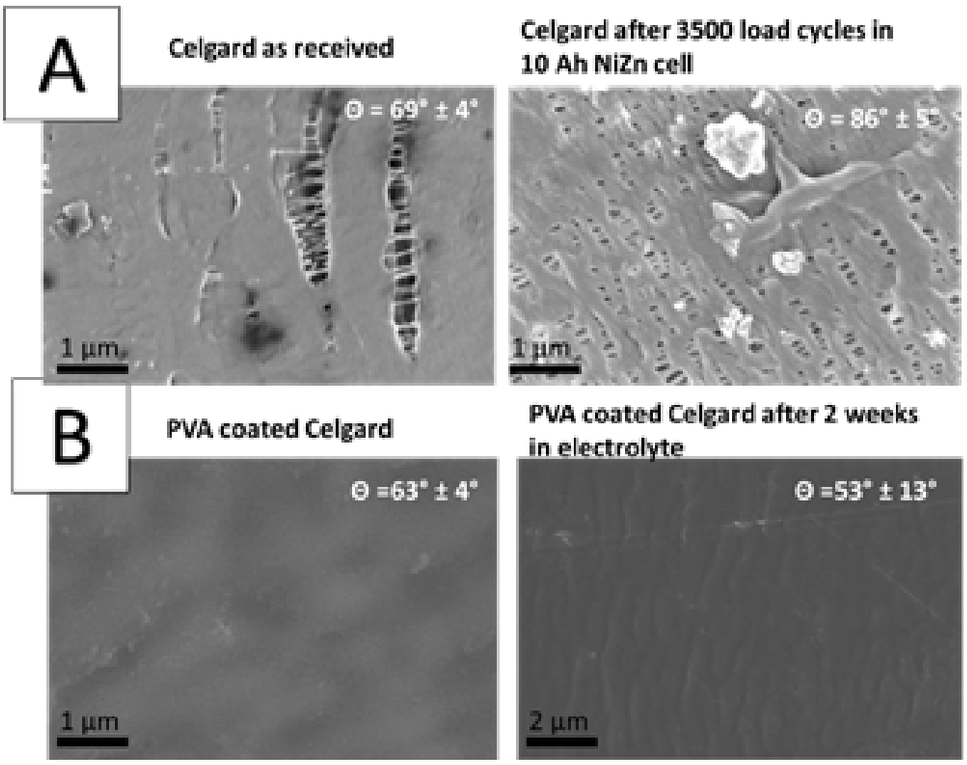
Project Technical Progress

WP3 : Task 3.2 : Development of better separators

Although electrodes are essential components of NiZn batteries, the separator employed to control selectively the diffusion of the ionic species towards and away from the electrode is another key element constituting the batteries. Thus, the separator must present an adequate ionic conductivity to avoid detrimental effects on the battery performance and acts as a physical barrier preventing electrical short circuits upon dendrite growth at the electrode. Separators are usually surfactant coated microporous membranes such as commercial Celgard®. However, we have shown that the coating of commercial separators is physically and chemically deteriorated, almost completely removed, after long term NiZn battery cycling and ex-situ degradation tests developed for the project (see SEM images A). Such degradation of the separator affects the durability of the NiZn cell performances.



To overcome this issue, a polypropylene membrane has been coated with a polyvinyl alcohol (PVA) network, which is not soluble in alkaline electrolyte. The coating increases the hydrophilicity of the polypropylene. The diffusion coefficient of hydroxide ions (the species in the battery electrolyte enabling the electrochemical reactions of charge and discharge at the electrodes) measured experimentally is comparable to those of commercial separators. The coating developed in the project resists more than 2 weeks against ageing in alkaline electrolyte (see SEM picture B), which is not the case for the commercial separators tested. Furthermore, the coating process can be considered green since it does not involve organic solvent (aqueous solutions are employed) and is completed at room temperature. Finally, a successful scale-up of the membrane coating process has been achieved up to 250 cm², and we are now looking forward to test this new separator in practical NiZn batteries.

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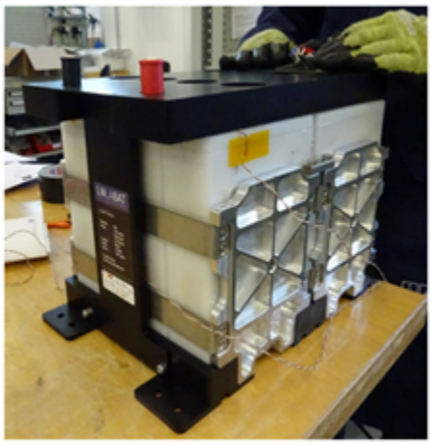
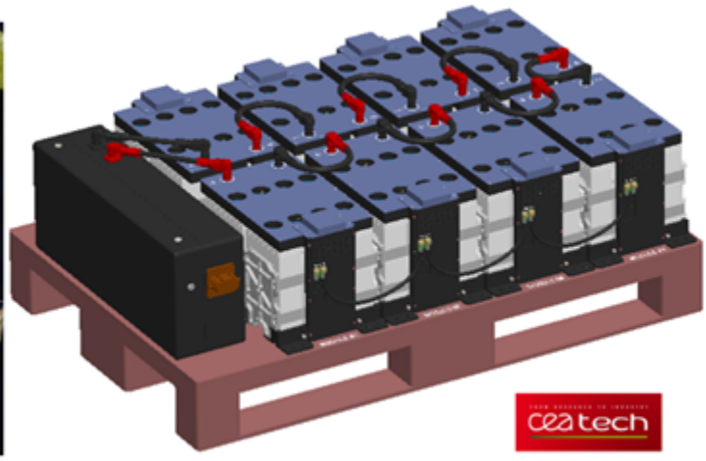
Project Technical Progress

During the last 6 months, the project partner, CEA, has developed a module design with incorporation of sensors, definition of assembly process and instrumentation of additional sensors for specific electrothermal characterisations to be done on the modules. The Powerbox and the central unit have been designed. The initial cycling and C rate characterisation tests performed by the CEA have provided satisfactory results.





The project partner, ZSW, has accomplished the abusive tests with satisfactory results, confirming the exceptional safety and robustness of NiZn battery technology, as highly promising candidate for stationary energy storage applications:

Ø Abuse tests on cells of 100Ah / 1.6V / 160 Wh

Nail penetration: the cell has been penetrated with a silversteel needle with a diameter of 3mm. No change has been noted during the first 7 hours, after which a slow voltage drop, during 10 hours, to 0V has been observed, with temperature rising to 57°C. No fume, no fire, no explosion.

Overcharge: overcharging the cell to 200% of SOC, with a current of C/3 led to no hydrogen/oxygen detected at the exit of the cell (valve). No temperature increases. No fire, no explosion.

Thermal stability: starting from a fully charged state, the temperature has been increased stepwise 5K. A first voltage drop happened around 125°C to 1.2V, following a second voltage drop at 195°C to 0V. No exothermal reaction, no flames and no fire were detected during the thermal stability test. However, the cell's casing was molten.

Ø Abuse tests on modules of 100Ah/13V/1.3kWh

Nail penetration: An external short circuit has been applied to the module using a resistance of 1.6mW. I_{max} of 1382A has been measured. Temperatures reached up to 120°C. The individual cell voltages tend to decay to 0V after the external short circuit test. No fume, no fire, no explosion.

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Dissemination Activities

Participation of the partners to events and conferences to present the project

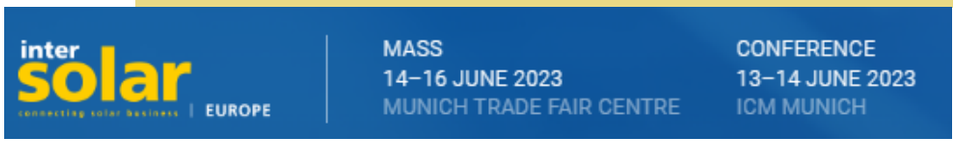
ModVal18 is the 18th event of an international symposium on Modeling and Experimental Validation on fuel cells and batteries. Initiated in 2004, the symposium aims to connect researchers in academia and industry as well as theorists and experimentalists.

ModVal - 18th Symposium on Modeling and Experimental Validation - 14-16 March 2022

R-Zinc 2.0 (Everzinc) - the European Meeting on rechargeable zinc batteries - 03-04 May 2022

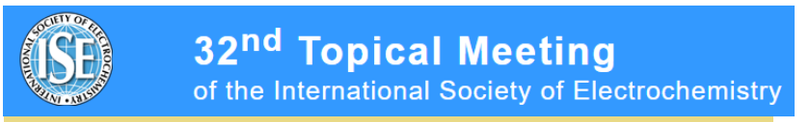
Topics:
The rechargeable battery market in 2020
The Li-ion battery value chain
The battery material market
Focus on non-xEV applications : ESS, UPS, Telecom, Forklift…
Focus on the rechargeable zinc battery market

Intersolar Europe Conference about markets, technologies and financing of PV projects. In addition to market development in Europe, the focus is on individual markets every year.



InterSolar Europe - 11-13-May 2022

32nd ISE Topical Meeting experimental and modelling tools for electrochemical energy devices -20-22 June 2022



Electrochemical Energy Devices, Experimental tools, Modelling tools

Nanoelectronic materials and devices; Energy materials; Functional materials; Methods; Bio- and soft materials

European Materials Research Society (E-MRS) - May 30 to June 3, 2022

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Dissemination Activities

Participation of the partners to events and conferences to present the project

mESC-IS2022

Discussion in recent progress made in four major activity areas, namely i) batteries and supercapacitors, ii) fuel/electrolytic cells iii) hydrides for energy storage and conversion and iv) active material development and recycling

6th International Symposium on Materials for Energy Storage and Conversion
05.07.2022. - 08.07.2022.

Article on **Sunergy website** https://www.sunergybattery.com/news/sunergy-is-proud-to-be-back-at-r-zinc-20-

SUNERGY HOME NEWS WHY ZINC TECHNOLOGIES ? OUR EXPERTISE WHO ARE WE ?

SUNERGY IS PROUD TO BE BACK AT R-ZINC 2.0 !

21 APRIL 2022

Sunergy is proud to sponsor and speak at R-ZINC 2.0, the European meeting on Rechargeable Zinc Batteries.

This event is organized by our LOLABAT partner Everzinc, who are doing a terrific job at showcasing the possibilities zinc batteries can offer !

IT HAS BEEN **THREE YEARS** SINCE THE LAST IN-PERSON MEETING DEDICATED TO RECHARGEABLE ZINC BATTERIES, AND IT HAS BEEN TOO LONG. WE ARE VERY HAPPY TO JOIN OUR COLLEAGUES AND MEET NEW PARTNERS AT THE EVENT ORGANISED BY **EVERZINC** ON MAY 3RD AND 4TH IN BRUSSELS.

THE TWO-DAYS EVENT WILL INCLUDE A VISIT OF EVERZINC'S BATTERY GRADE ZINC OXIDE PRODUCTION PLANT, BATTERY DEMOS, A NETWORKING DINNER AT BRUSSELS GRAND-PLACE, AN OVERVIEW OF THE BATTERY INDUSTRY IN EUROPE AND THE LATEST DEVELOPMENTS IN THE FIELD OF ZINC BATTERY.

AMONGST THE DEMO CASES, SUNERGY WILL BE SHOWING OUR **NI-ZN POWERED SCOOTER** BRANDED WITH THE LOLABAT COLORS.

H2020 GA n°963576

Eu Sister Projects Identification

WORK IN PROGRESS

Possibile Interaction with battery oriented & smart grid-oriented EU projects

SOLSTICE - Sodium-Zinc molten salt batteries for low-cost stationary storage - 963599

The EU-funded SOLSTICE project plans to develop two sodium-zinc molten salt batteries operating at high temperatures that could be used for stationary energy storage.

SOLSTICE
Sodium-Zinc molten salt batteries for low-cost stationary storage

SIMBA - Sodium-Ion and sodium Metal BAtteries for efficient and sustainable next-generation energy storage - 963542

The SIMBA project aims at developing a highly cost-effective, safe, all-solid-state-battery with sodium as mobile ionic charge carrier for next generation stationary energy storage applications.

SIMBA
SODIUM-ION AND SODIUM METAL BATTERIES

ROBINSON - smart integRation Of local energy sources and innovative storage for flexiBle, secure and cost-efficIent eNergy Supply ON industrialized islands - 957752

ROBINSON aims to develop an integrated energy system to help decarbonise (industrialised) islands. To this end, the project will develop and deploy an integrated, smart and cost-efficient energy system that couples thermal, electrical and gas networks, which will optimise the utilisation of local renewable energy sources.

Robinson

ENVISION - Monitoring of Environmental Practices for Sustainable Agriculture Supported by Earth Observation - 869366

ENVISION develops and pilot tests innovative tools for the continuous, large scale and uninterrupted monitoring of farm management activities with regards to sustainability, in compliance with the CAP's agri-environmental objectives

envision

NextMGT has received funding from the European Union's Horizon 2020 research and innovation programme under Marie Sklodowska-Curie grant agreement No 861079

The NextMGT project research programme aims at the development of the technical expertise and scientific knowledge that will enable a significantly improved understanding of the fundamental design and operational aspects of Micro Gas Turbine (MGT) technology and requirements for successful commercialisation

NEXT MGT

H2020 GA n°963576

Eu Sister Projects Identification

WORK IN PROGRESS

Possibile Interaction with battery oriented & smart grid-oriented EU projects

The HIDDEN project develops self-healing processes to enhance the lifetime and to increase the energy density of Li-metal batteries 50% above the current level achievable with current Li-ion batteries

HIDDEN - HINDERING DENDRITE GROWTH IN LITHIUM METAL BATTERIES - 957202

SENSIBAT: Cell-integrated SENSIng functionalities for smart BATtery systems with improved performance and safety - 957273

SENSIBAT is a research and innovation project aimed at developing a sensing technology for Li-ion batteries that measures in real-time the internal battery cell temperature, pressure, conductivity and impedance of different cell parts

INSTABAT is intended to monitor in operando, key parameters of a Li-ion battery cell, in order to provide higher accuracy states of charge, health, power, energy and safety cell indicators, allowing us to improve the safety and the quality, reliability and life (QRL) of batteries.

INSTABAT - Improving batteries' performance and safety for our battery-dependent lifestyle - 955930

BAT4EVER - Autonomous Polymer based Self-Healing Components for high performant LIBs - 957225

The BAT4EVER project focuses on the self-healing mechanisms of the micro-damage and loss of material generated during repetitive cycles of charge and discharge.

BIG-MAP aims to reinvent the way we invent batteries and to develop core modules and key demonstrators of a Materials Acceleration Platform specifically designed for the accelerated discovery of battery materials and interfaces

BIG-MAP - The Battery Interface Genome – Materials Acceleration Platform -

SPARTACUS - Spatially resolved acoustic, mechanical and ultrasonic sensing for smart batteries - 957221

The global objective of the Spartacus project is to develop an affordable sensor solution to detect degradation and failure mechanisms, intentionally before a loss of performance

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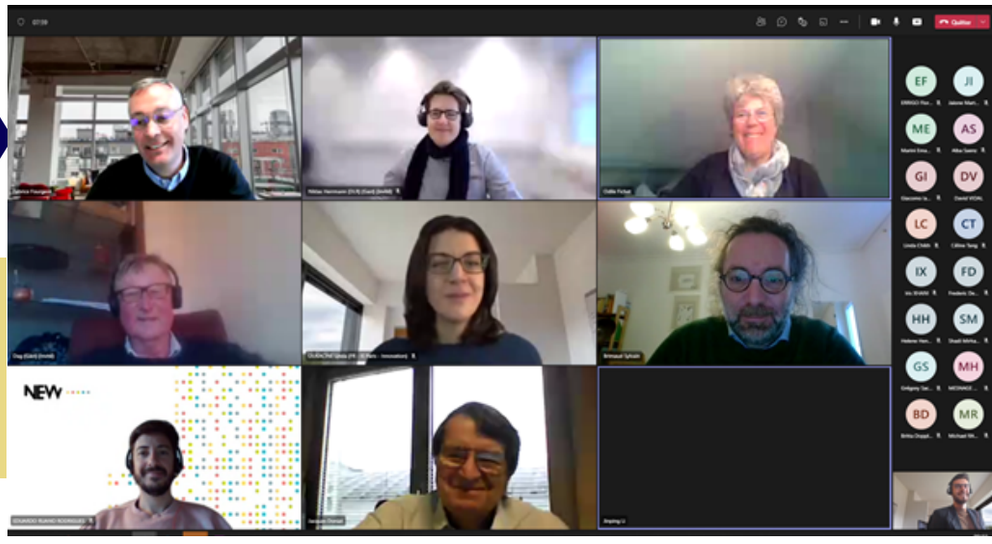
Project Meetings (Jan 2022-Sep 2022)

Steering Committee #2 - Remote meeting - 18/01/2022 - M12



23/06/2021 ➔ 18/01/2022

18/01/2022 ➔ 17/06/2022

Steering Committee #3 Face to face (Espace Diderot" – Paris) and remote meeting 17/06/2022 - M18

First Steering Committee meeting that happened face-to-face, with participation of most of the partners in place

Review Meeting European Commission - Remote meeting - 02/09/2022

First reporting 01/01/2021 ➔ 30/06/2022

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