

i-HeCoBatt

Intelligent Heating and Cooling solution for enhanced range EV Battery packs

Editorial

Dear reader,

Welcome to the third and final issue of the i-HeCoBatt newsletter! This edition will present the main achievements, demonstrated results presented during webinars, updated versions of the dissemination and communication materials, reports from the events and future activities as the organization of the final workshop in Valencia (Spain) on the following 17th and 18th of May 2022.



Overview

The envisaged European CO₂ fleet emission limits for 2025-2030 already require a massive market introduction of EVs. However, there are still some obstacles to user acceptance of EVs: high cost, slow charging, limited range, perceived lack of added value and concerns of limited mobility.

In this context, the European funded project, i-HeCoBatt (Grant Agreement No 824300), starting in 2019, is developing a **smart, cost bursting industrial battery heat exchanger** to minimize the impact on fully electric vehicles range in extreme conditions.

The **key features and gains developed** in the project are related to:



Efficiency by increasing the e-powertrain overall efficiency by up to 5% through a novel heat exchanger



Cost reduction by providing a minimum of 20% cost reduction in mass production of the thermal system by introducing of an innovative heat exchanger



By integrating of new components and functionalities leads to higher user-friendliness, reduction of range anxiety and temperature impact on the degradation of the battery packs using control strategy integration and external tool



Virtual on-board validation by demonstration of the developed solutions in AUDI electric vehicles



Automotive quality by the achievement of automotive class quality

Partners

To achieve these goals, the project performance was carried out by a highly focused consortium covering the whole relevant value chain of the EV batteries industry: a top automobile manufacturer ([AUDI](#)), a leading automotive components manufacturer ([MIBA](#)), an automotive data management software developer ([DATIK](#)), and an eco-design expert ([LOMARTOV](#)), supported by first-order two European research centres ([CEA](#)) and ([CIDETEC](#)) as the project coordinator.



Main Results



During these 4 years, i-HeCoBatt has achieved its primary objectives established in the initial phase of the project lifetime being:

Smart, because new sensing functionalities are implemented in the thermal system to monitor the whole battery pack thermal system.

Cost bursting because cost-efficient components replace expensive components of current state-of-the-art (SoA) products, and the number of parts is minimised.

Industrial, in two different senses: (i) it has been tested in a relevant simulated industrial environment, and (ii) it has been produced through high throughput manufacturing routes, applying the eco-design methodology to optimise its environmental and economic performance.

To do so, all involved partners participated in numerous activities providing their expertise and contributing to the project performance through the different tasks, among others:

- Thermal enhancing strategy by measuring and analysing the entire thermal behaviour of the vehicle battery pack and building up a complete numerical model (CEA);
- Developing a thermal management strategy to efficiently operate the heating and cooling system and reduce the impact of extreme conditions on the battery (CIDETEC);
- Providing innovative thermal management FLEXcooler® solution for batteries and work on design, manufacturing and assembly of A-sample and virtual B-Sample development as a redesigned industrialised set-up (MIBA);
- Testing processes in an appropriate simulated industrial environment and produced through high-throughput manufacturing routes and standards (AUDI);
- Implementing a cloud data system with a suitable interface for each end-user to ensure optimal diagnostics and safety of the critical components in the vehicle (DATIK);
- Implementing eco-design, Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) approaches to each step of the process of the heat-exchanger development in order to guide all previous studies' development in a sustainable frame (LOMARTOV).

Presentation of i-HeCoBatt results during the #1 project webinar

On the past 4th of November of 2021, the i-HeCoBatt team organised the **first project webinar on the “Safety and Standards of Batteries in Electric Vehicles (EV)”**. 53 participants attended the event representing “Research and Development Organizations”, “Public Authorities”, SMEs and other organisations.



This webinar (moderated by LOMARTOV) offered an excellent opportunity to disseminate the project intermediate results, share the experiences of other invited speakers ([UNE](#), [LEITAT](#) and [EURECAT](#)) and learn from related EU funded projects including [LISA](#) and [MARBEL](#) projects in terms of safety and standards.

During the webinar, preliminary i-HeCoBatt results were presented. The project partners from DATIK and CIDETEC provided detailed presentations, respectively on the Battery Testing Methods and Standards, presenting a novel monitoring system for diagnostic and safety concerns connected to a cloud service, and on the optimised Thermal Management Strategy (TMS) developed in i-HeCoBatt for safety purposes. The main conclusions and presentations used during the event are available in open access on the project website.



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Presentation of i-HeCoBatt results during the #2 project webinar

After the first webinar, on the past 3rd of March of 2022, the i-HeCoBatt team organised the **second project webinar on “Innovation and Industrialisation Challenges for Next-Generation Electric Vehicles (EV) Components”**. The event counted with the participation of 49 attendees representing SME’s (47%), Large Companies (21%), Research and Development Organizations (16%), and other organisations.



Apart from the promotional goal, this online event aimed to share the knowledge related to the innovation and industrialisation of electric vehicles components and presented experiences from other EU-funded projects in the same field, such as [SELFIE \(Vrije Universiteit Brussel\)](#) and [MULTI-MOBY \(University of Surrey\)](#).

During the second webinar, project partners from CIDETEC, CEA and MIBA presented respectively the main achievements of the next-generation EV, along with a brief contextualisation of the simulation process of the project’s battery packs and technical aspects in terms of components and systems. At the same time, they provided detailed presentations on the simulation aspects of battery pack thermal architectures, their technical configurations and an explanation of the components and systems for the next-generation electric vehicles. The main conclusions and presentations used during the second webinar are available in open access on the project website.

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Presentation of the results in Brussels (Belgium)



On the past 30th of March 2022, the i-HeCoBatt project, along with other 65 selected H2020 funded projects on road transport areas, was represented by the project coordinator Mikel Arrinda Martinez from CIDETEC Energy Storage during the parallel sessions in the scope of the #H2020RTR21 Conference organized by the European Commission in Brussels (Belgium).

With a strong focus on the scientific achievements of EU-funded projects, this conference was an excellent occasion to disseminate the knowledge generated through these 40 months of the project covering all work packages.

More information about this event can be found [here](#).

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Upcoming Events: Electromobility Technology Workshop in Valencia (Spain) | 17-18 of May 2022



On the following 17th – 18th of May 2022, i-HeCoBatt project will organize the “Electromobility Technology Workshop: Driving a Greener Value Chain” hosted by LOMARTOV in Valencia (Spain). The event will be recorded and streamed on i-HeCoBatt YouTube channel giving the possibility to attend the event online.

The main objective of the workshop will be to gather key stakeholders and relevant projects on the topic of Green Electric Vehicles and to bring into the spotlight the latest innovations in the field of the components for EV, and in general the green mobility, presenting the outstanding results of i-HeCoBatt project.

More than 25 speakers will give technical presentations on the political framework and trends in the energy and mobility sector, the present and future solutions & challenges for the green mobility, and finally, the latest innovations in the field of EV components covering their whole value chain: from advanced materials, testing & use phase, up to end-of-life solutions.

Electromobility Technology Workshop:
Driving a Greener Value Chain by **i-HeCoBatt**

Save the Date  **17th – 18th May 2022**  **Valencia (Spain)**

 **Horizon 2000**
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824300

hosted by **LOMARTOV**
[Applied Innovation Engineering]

i-HeCoBatt results will be presented during the first day with presentations on the following topics:

- Ensuring thermal safety and battery efficiency through an optimized Thermal Management Strategy (CIDETEC)
- Simulation of battery pack thermal architectures and strategy controls towards EV impact reduction (CEA)
- FLEXcooler® – Battery cooling with high efficiency, low weight and no need for gap-fillers (MIBA)
- The integration of i-HeCoBatt in the AUDI Q4 e-Tron (AUDI)
- Benefits and opportunities of Eco designed EV components: the case of the i-HeCoBatt thermal management system (LOMARTOV)

If you are interested in sustainable solutions for transport, the future of electromobility and EV battery value chain, we invite you to book your trip to Valencia (Spain).

[Register Now](#)

Stay Connected with i-HeCoBatt

All this work would not have been possible without our team. The project consortium consists of six partners from four European countries representing different sectors and providing their knowledge to make i-HeCoBatt and the electromobility development a reality.



You can find all the partner's information using this [link](#)

All the downloads and materials are available in open access on the project website [here](#)

Finally, we also presented on YouTube, where we invite you to watch all the video content provided by the i-HeCoBatt project on our [channel](#)

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