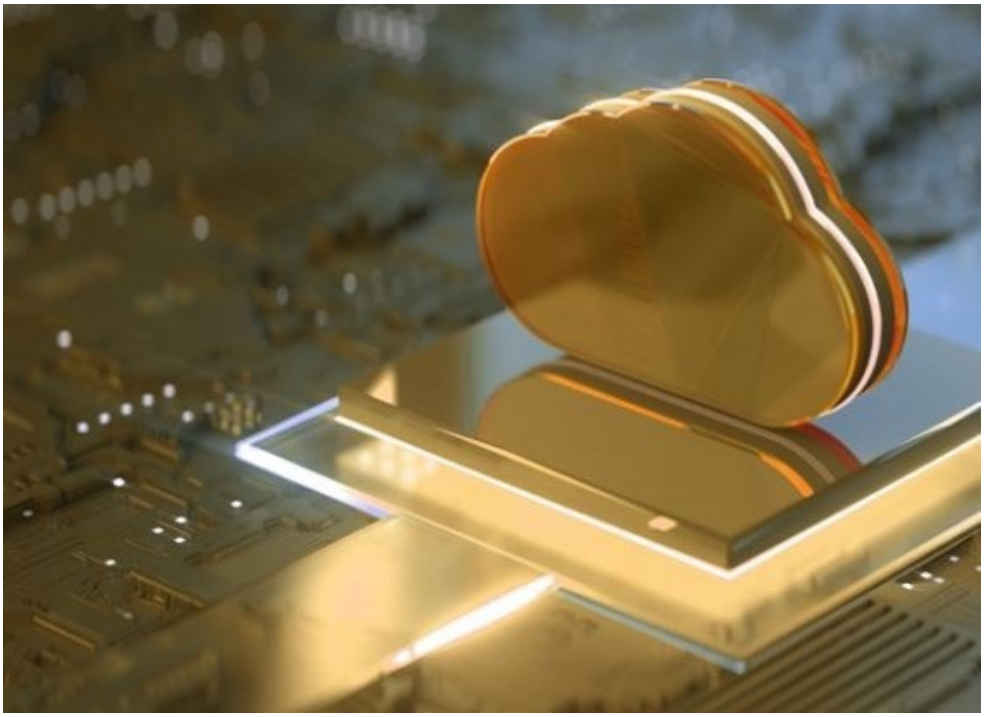
NEXTBMS

Advanced physics and data-based BMS for optimal battery utilization

Newsletter # 4 | December 2025



Dear reader,

Welcome to the Winter Edition of the NEXTBMS Newsletter.

In this fourth edition, we present the latest developments within the NEXTBMS project, including a recap of the latest Battery Innovation Days and other recent events where NEXTBMS was showcased. This issue also features insights from recent BMS Alliance webinars, highlights from the GA04 and GA05 meetings, and a collaborative joint workshop with InnoBMS. In addition, you will find our Coffee Break interviews, offering concise and insightful conversations with project partners.

As the year comes to a close, we would like to take this opportunity to thank everyone who has contributed to the success of the NEXTBMS project. Your commitment, collaboration, and support are greatly appreciated.

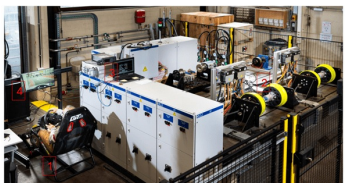
We wish you a joyful holiday season and a prosperous New Year.

Kind regards,

The NEXTBMS Team

Results

Milestone 4: Virtual Testing Platform Ready



Milestone 4: Virtual Testing Platform, led by VUB, focused on preparing the physical vehicle simulator, part of the VUB Open Vehicle Powertrain Platform (OVPP), to replicate the OEM-specific (TOFAS) battery pack response, such as for the Fiat E-Doblo. This enables the validation of critical functionalities and key performance metrics of the innovative technologies developed within the NEXTBMS project.

This achievement confirms that the virtual simulator platform has been successfully

realized and is ready for upscaling tasks with the support of TOFAS.

The image showcases the VUB Open Vehicle Powertrain Platform (OVPP), which includes four key components:

1. Driving scenario and environmental factor generation
2. Inverter and electric motor systems
3. Communication interfaces
4. Display system

In the coming months, the platform's performance will be validated as part of WP4, using WLTP test data from a test vehicle equipped with a 29.3kWh battery and E-motor. The OVPP provides an effective representation of the test vehicle for further development and validation at the battery pack level.

The BMS Alliance

Insights from the second BMS Alliance webinar

The second BMS Alliance webinar took place on 20 March 2025 and featured insightful presentations from leading industry experts. The speakers included:

- Stefan Waldhör (Fraunhofer IISB) - BATMAX Project
- Aurelien Hascoat (EDF) - ENERGETIC
- Bernhard Lutzer (TTTech) - NEMO EU Project
- Viral Vadaviya (AVL Software and Functions GmbH) - NEXTBMS

The presentations are available on our website in the related news item, and the full webinar recording can be viewed below.

A summary of the third webinar of the BMS Alliance.

On 2nd October, the BMS Alliance hosted the webinar "Securing Cell Supply: Navigating External Dependencies in European Battery Projects," bringing together leading experts from the BATMAX, ENERGETIC, NEMO, and NEXTBMS projects to discuss one of the most pressing issues in today's EU energy market: Europe's dependency on battery cell supply, a key aspect of the broader challenge of achieving European energy independence.

The session, moderated by Maitane Berecibar, Professor at Vrije Universiteit Brussel & Head of the Battery Innovation Center, featured the following speakers:

- Md Sazzad Hosen, Research Professor and Senior Researcher, MOBI – Electromobility Research Group at VUB, representing NEMO.
- Noshin Omar, Founder and President of Avesta Holding, representing BATMAX.
- Anh-Tai Hoang, Public Affairs Officer at Forsee Power, representing ENERGETIC.
- Markus Berger, Senior Project Leader at Robert Bosch (GmbH), representing NEXTBMS.

The speakers highlighted several key challenges of the European battery sector. These include supply risks for raw materials such as lithium, nickel, cobalt, and graphite, which make Europe dependent on imports and vulnerable to geopolitical tensions, also considering the limited domestic capacity for refining and producing these materials. In addition to this, large-scale projects are facing investment and

financing problems, due to high costs and slow approval processes.

Read the full summary of the webinar here.

Attended events

NEXTBMS at Battery Innovation Days 2025

At the Battery Innovation Days 2025 in Graz, the BMS Alliance attracted strong interest with its exhibition presence. The projects NEXTBMS, BATMAX, ENERGETIC and NEMO showcased their latest advances in physics- and data-driven battery management.

Hansjörg Kapeller, Project Coordinator of NEXTBMS and Research Engineer at AIT Austrian Institute of Technology GmbH, represented the project on site. The NEXTBMS prototype drew a steady stream of visitors and was a true eye-catcher on the exhibition floor.

During networking breaks, Kapeller continuously engaged with interested parties from industry and research.

The high level of interest underscored both the relevance of the BMS Alliance and the strong demand for next-generation battery management solutions.

AIT showcases NEXTBMS at Battery Show Europe 2025

AIT proudly participated in The Battery Show Europe 2025, the continent's premier event for advanced battery and H/EV technology. Held from 3-5 June at Messe Stuttgart, the event brought together industry leaders, engineers, designers, and innovators from around the world to explore the latest breakthroughs in automotive electrification, materials science, energy storage, and next-generation battery systems.

Simic Dragan represented AIT at the event, engaging with attendees and showcasing NEXTBMS, highlighting AIT's latest innovations in battery management technology.

News

Fifth NEXTBMS General Assembly in Renningen

The NEXTBMS consortium gathered for its fifth General Assembly (GA #5) at BOSCH Research Headquarters in Renningen, Germany. Over two productive days, project partners came together to review progress, address technical challenges, and plan the next steps as the project approaches its final year of research.

Day 1 Highlights:

- Comprehensive updates on all Work Packages (WPs), demonstrating significant progress across technical activities:
    - WP1: Due diligence, requirements capture, and impact assessment
    - WP2: Physics- and data-based models and BMS software
    - WP3: Development and prototyping of modular battery modules with BMS hardware
- In-depth discussions on key technical challenges, fostering collaboration and innovative solutions among partners:
    - Embedded software solutions: activities
    - Cloud model activities
- Technical discussions continued over a consortium dinner, allowing for deeper exchange of ideas and collaborative problem-solving.

Day 2 Highlights:

- Guided tour of BOSCH's cutting-edge research facilities, providing insights into advanced technologies and future trends.
- Interactive Exploitation Workshop, where participants split into three groups to explore pathways for bringing NEXTBMS innovations to market beyond

the project's lifetime.
- Review of dissemination activities and strategies to maximize outreach and impact.
- Detailed insights into WP4 use case realisation, covering lab-scale experiments and upscaling towards system-level validation.

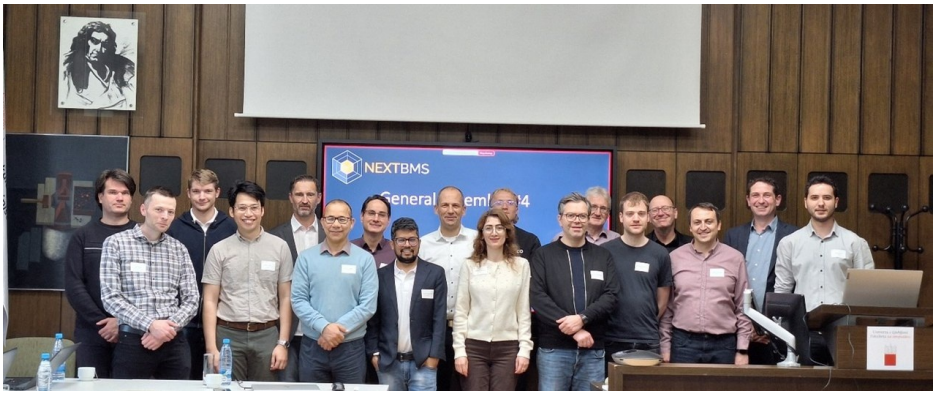
The GA concluded with a strong sense of alignment and commitment to advancing the NEXTBMS project. A group photo taken during the BOSCH facility tour will accompany this update.

Highlights from General Assembly #4

The fourth General Assembly took place on 7–8 May 2025 in Ljubljana, Slovenia, hosted by our partner, the University of Ljubljana (UL).

The first day focused on the progress of Work Package 2 (WP2): Physics- and Data-Based Models and BMS Software, with a special emphasis on the physics-based modeling work led by the University of Ljubljana. The agenda also included an in-depth discussion on the next steps for integrating software and cloud development with the hardware—an essential focus during this critical phase of WP2. The discussion led to concrete actions and planning for the remaining 18 months of the project.

On the second day, attention shifted to the other work packages. Presentations on the hardware development and testing setups offered a promising preview of the next project stages.



NEXTBMS collaboration with InnoBMS

NEXTBMS has joined forces with InnoBMS, a related EU project, to develop and demonstrate future-ready Battery Management System (BMS) software and hardware solutions. This collaboration aims to advance next-generation BMS technology, enabling higher performance, enhanced safety, and longer lifetimes for battery cells in EVs and other energy storage applications.

On Thursday, 8 May 2025, the NEXTBMS consortium participated in the second cluster workshop with the InnoBMS consortium. With several partners in common, the workshop provided an excellent opportunity to align the two projects. While the first workshop focused on exploring synergies, the second workshop was a more hands-on session. The consortia were divided into three working groups to discuss key topics, including: defining the technical and common challenges between the projects, and planning future exchanges of experience, knowledge, and data.

Read more about the workshop here.

This partnership demonstrates their shared commitment to advancing sustainable energy storage solutions.

Under "Collaborations," you can learn more about InnoBMS and other linked projects.


The NEXTBMS coffee break interviews

Get to know Samo Penič from University of Ljubljana (UL)

Samo Penič is an Electrical Engineer who earned his PhD from the Faculty of Electrical Engineering at the University of Ljubljana (UL). He initially worked as a teaching assistant in Fundamentals of Electromagnetics and developed interests in electronics, microcontrollers, numerical modeling, and programming, as well as supporting free and open-source software.

He later joined the Laboratory for Internal Combustion Engines and Electromobility (LICeM) at the Faculty of Mechanical Engineering, where he became involved in the NEXTBMS project. He develops firmware for the NEXTBMS motherboard and collaborates with partners on hardware communication and cloud integration.

Get to know Kazumi Kaneko from AVL List GmbH

Kazumi Kaneko contributed to mass production of the world's first BEV as a BMS engineer. He is now using his knowledge and experience as an BMS expert engineer at AVL, to work to put new technologies into practical use as quickly as possible. NEXTBMS project provides him with a great opportunity to validate the practicality of new technologies that can maximize battery performance.

What was your original motivation to become a researcher/project manager?
"Reducing greenhouse gas emissions has become an important issue in recent years, and as an engineer, I would like to lower the technical hurdles for introducing energy storage systems and contribute in my small way to promoting their widespread use."

Get to know Aytuğ Çakır from TOFAŞ

Aytuğ is an electrical & electronics engineer who graduated from İzmir Dokuz Eylül University in Turkey in 2021. During his university years, he focused mainly on projects related to microelectronics. However, after graduation, he decided to broaden his expertise and pursue a career in the automotive sector, driven by his interest in electric vehicles.

What was your original motivation to become a researcher/project manager?
"Advanced research projects are always an area that allows an individual to improve themselves technically. There are many research and development activities specifically for electric vehicles. Indeed, following and working on trending studies is a part of our job. As R&D, one of our most important motivations is to take part in such European Union projects as part of our job and improve ourselves technically. With this role, I also aim to gain experience and develop in different areas."

Partners NEXTBMS

Funded by the European Union. Views and opinions expressed

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