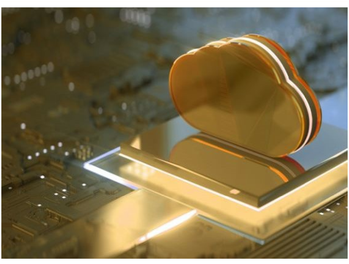
# Advanced physics and data-based BMS for optimal battery utilization

Newsletter | March 2024





## Dear reader,

Welcome to the NEXTBMS community and to the first newsletter update. We are excited to bring you the latest news on the pioneering EU project NEXTBMS! This ambitious initiative is set to boost next-generation battery management systems to achieve optimal utilization of battery systems in Europe through the development of physicochemical processes of lithium-ion batteries to significantly enhance current modelling approaches and achieves optimal utilization of the battery system.

NEXTBMS has formed a formidable consortium comprising 12 partners covering an essential part of the battery value chain.

The NEXTBMS project aims to surpass contemporary Battery Management System (BMS) limitations by introducing physics-based and data-driven models and algorithms to the BMS itself. This technology has the potential to boost the European battery chain and clean energy transition.

Join us on this exciting journey and explore all the possibilities that NEXTBMS is set to unlock.

Subscribe to the newsletter to stay tuned for more NEXTBMS updates.

## Welcome by the coordinator!

The Austrian Institute of Technology (AIT) is very proud to be the coordinator of the NEXTBMS project. The goal of this highly innovative and exciting project is to efficiently improve the electrical and lifetime performance of current and future battery systems through innovative physics- and data-driven approaches. NEXTBMS develops scalable, physics-based models for battery management with data transferability between detailed electrochemical models and computationally efficient equivalent circuit models. These modeling approaches will be further improved by optimizing sensors and measurement techniques. The accuracy of cell measurements (temperature, voltage, current, battery states) will be increased by combining information from physical sensors with virtual sensors. This will allow advanced battery states, such as SoC, SoH, SoF, and SoP, to be accurately estimated, which can be used to improve (Li) battery utilization for higher performance, safety, and longer battery cell lifetime.

The NEXTBMS consortium is well-balanced with 8 industrial (including 3 SME's and 1 OEM) and 4 research partners and very well experienced in running these kind of EC projects. In the next three years, the NEXTBMS project will disseminate its results through its website and newsletter. Therefore, stay tuned to NEXTBMS!

With kind regards,

Hansjörg Kapeller

## NEXTBMS General Assembly #2

The NEXTBMS consortium met on Wednesday 24 January 2024 to hold its second General Assembly. The GA was hosted by the Vrije Universiteit Brussel (VUB) and included a full day of work package update presentations, breakout sessions and a tour across the VUB-MOBI labs.

Please check the website for more information: nextbms.eu.

## The first results – D1.1 & D2.1

In M9 (February 2024) of the project, the first results of the NEXTBMS project were delivered in the form of two deliverables.

D1.1 Report on stationary and mobile use cases
This deliverable addresses the derivation of most relevant mobile and stationary use cases. The use cases are linked and translated to technical KPIs. These KPIs are the basis for the following hardware (HW) and software (SW) related requirements and engineering steps within the NEXTBMS project.

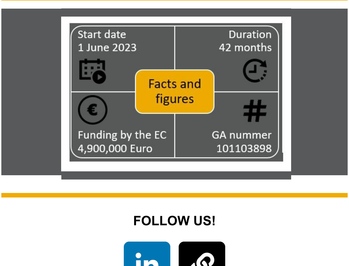
For more information, please click here and check the entire deliverable on the website.

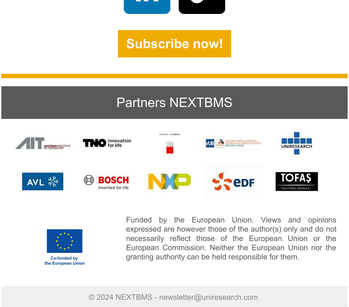
D2.1 – Characterisation test results of physics-based cell models
The goal of the NEXTBMS project is to enhance the performance contemporary BMS limitations by introducing physics-based and data-driven models and algorithms to the BMS itself. To train, validate and analyse the performance of these models and algorithms a complete set of data is required consisting of beginning of life characterisation data and extensive ageing testing. This deliverable describes the acquired data, explains why this exact data is required and outlines detailed planning of the to-be-acquired ageing data.

For more information, please click here and check the entire deliverable on the website.

## NEXTBMS project @ ModVal 2024

Dominik Dvorak (AIT) will present a poster on the NEXTBMS project at the ModVal 2024, the 20th Symposium on Modeling and Validation of Electrochemical Energy Technologies, which will be held on 13-14 March 2024 in Baden, Switzerland.

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