



Funded by  
the European Union

HORIZON EUROPE PROGRAMME – TOPIC: HORIZON-CL5-2022-D5-01-02



# **AENEAS**

## **innovActive ENERgy storage systems onboArd vessels**

### **Deliverable D 3.1**

SC, SSB and semi SSB cell samples are available and  
characterized

<b>Deliverable Type</b>	Report
<b>Dissemination Level</b>	Sensitive
<b>Due Date (Annex I)</b>	30.11.2023 (Month 10)
<b>Pages</b>	61
<b>Document Version</b>	Final
<b>GA Number</b>	101095902
<b>Project Coordinator</b>	Mohsen Akbarzadeh   Flanders Make (FM) (Mohsen.Akbarzadeh@flandersmake.be)

## LEGAL DISCLAIMER

Copyright ©, all rights reserved. No part of this report may be used, reproduced and or/disclosed, in any form or by any means without the prior written permission of AENEAS and the AENEAS Consortium. Persons wishing to use the contents of this study (in whole or in part) for purposes other than their personal use are invited to submit a written request to the project coordinator.

The authors of this document have taken any available measure in order for its content to be accurate, consistent and lawful. However, neither the project consortium as a whole nor the individual partners that implicitly or explicitly participated in the creation and publication of this document shall be liable or responsible, in negligence or otherwise, for any loss, damage or expense whatever sustained by any person as a result of the use, in any manner or form, of any knowledge, information or data contained in this document, or due to any inaccuracy, omission or error therein contained.



**Funded by  
the European Union**

## Public Summary

The deliverable D3.1 details the storage technologies studied in AENEAS project. In addition to the Supercapacitors (SC) and solid-state-batteries (SSB) as the initial targets of the project, commercial semi-solid-state-batteries (SSSB) were added to the study to improve knowledge on cutting-edge technologies. A dedicated characterization protocol was specified, being adapted to the final application and to the specificity of each technology to exhibit their advantages and drawbacks. A dedicated profile was identified for performance evaluation and support the validation of models at single cell level.

The SuperCaps show very high-power capabilities that can support any kind of power profile and support the use of batteries. In addition, this technology is highly robust to any kind of abuse, which can also be of interest at large system level by providing system continuity while batteries cannot. The SSB shows interesting performances in Wh/kg while Wh/L still needs improvement to reach expected performances. At last, the SSSB shows a high energy density (up to +30% compared to Li-ion) as well as power density. Regarding the safety behaviour of SSB or SSSB for thermal runaway, as the technologies are all in pouch casing, they are close to state-of-the-art for lithium-ion cells. At last, advanced safety will be conducted with support of WP4.