= iSTORMY =

EUROPEAN COMMISSION

HORIZON 2020 PROGRAMME – TOPIC: Hybridisation of battery systems for stationary energy storage

Interoperable, modular and Smart hybrid energy STORage systeM for stationarY applications

GRANT AGREEMENT No. 963527

Deliverable Report

D1.1 – Specification and requirement

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 963527

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Deliverable Title	Specification and requirement document	
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Disclaimer/ Acknowledgment

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Publishable summary

The objective of this document is to provide detailed technical specifications for the Hybrid Battery Energy Storage System (HBESS) prototype based on the desired performance for on-grid operation. Using the top-down design approach, requirements specified in this document will be used to identify a specific design for all the related sub-systems of the HBESS. In particular, the results outlined in this document are intended to be used as the reference specification for the prototyping process tackled in the work packages 2, 3 and 4 for the different subsystems.
Technical specifications outlined in this document need to ensure that the overall design complies with the local and the European standards. In practice, we will use the standards for the on-site installation in France. Therefore, all the requirements for the prototype regarding electrical interface, communication protocol and safety features should be aligned with the standards already in place at the EDF's testing facility.
For the demonstration purpose, several use-cases will be specified in order to test the prototype on a real electrical grid. The selection of the proper system specifications is also based on the use-case scenarios detailed in the document.

3 Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

Project partners:

#	Partner short name	Partner Full Name
1	VUB	VRIJE UNIVERSITEIT BRUSSEL
2	PWD	POWERDALE
3	CEG	CEGASA ENERGIA S.L.U.
4	CEA	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
5	MGEP	MONDRAGON GOI ESKOLA POLITEKNIKOA JOSE MARIA ARIZMENDIARRIETA S COOP
6	ZIG	ZIGOR RESEARCH & DEVELOPMENT AIE
7	EDF	ELECTRICITE DE FRANCE
8	TNO	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO
9	PT	PRODRIVE TECHNOLOGIES BV
10	GW	GREENWAY INFRASTRUCTURE SRO
11	AIT	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH
12	UNR	UNIRESEARCH BV

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Appendix A – Quality Assurance Review Form

The following questions should be answered by all reviewers (WP Leader, reviewer, Project Coordinator) as part of the Quality Assurance procedure. Questions answered with NO should be motivated. The deliverable author will update the draft based on the comments. When all reviewers have answered all questions with YES, only then can the Deliverable be submitted to the EC.

NOTE: This Quality Assurance form will be removed from Deliverables with dissemination level "Public" before publication.

Question	WP Leader	Reviewer	Project Coordinator
	Korneel Wijnands (PT)	Abdul Mannan Rauf (PWD)	Omar Hegazy (VUB)
1. Do you accept this Deliverable as it is?	Yes	Yes	Yes
2. Is the Deliverable complete? - All required chapters? - Use of relevant templates?	Yes	Yes	Yes
3. Does the Deliverable correspond to the DoA? - All relevant actions preformed and reported?	Yes	Yes	Yes
4. Is the Deliverable in line with the iSTORMY objectives? - WP objectives - Task Objectives	Yes	Yes	Yes
5. Is the technical quality sufficient? - Inputs and assumptions correct/clear? - Data, calculations, and motivations correct/clear? - Outputs and conclusions correct/clear?	Yes	Yes	Yes
6. Is created and potential IP identified and are protection measures in place?	No IP generated yet.	No IP generated yet.	No IP generated yet.
7. Is the Risk Procedure followed and reported?	Yes	Yes	Yes
8. Is the reporting quality sufficient? - Clear language - Clear argumentation - Consistency - Structure	Yes	Yes	Yes