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Strongly improved, highly performant and safe all solid-state batteries for
electric vehicles.

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SAFELiMOVE – Deliverable Report D8.3 – Life Cycle Assessment

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Publishable summary

This deliverable represents the outcome of WP8 activities in the framework of the sustainability assessment of SAFELiMOVE project. This document is related to task 8.4 – Life Cycle Assessment and its main goal is to provide a comprehensive description of the performed work as well as describing project results in terms of environmental footprint.

LCE leads task 8.4 and aims at applying the Life Cycle Assessment (LCA) methodology to the developed battery solution in order to evaluate what the main benefits and shortcomings are in terms of environmental sustainability. Starting from lab-scale results, the full life cycle of the innovative battery developed within the project is analyzed. Primary data are obtained from experimental activities carried out by technical partners along the project duration; these data mainly apply to battery bill of materials (BOM), manufacturing and assembly. Use and decommissioning phases are modelled by applying a reasonable scenario based on battery characteristics and operational features, considering the target application (electric mobility on light to medium duty vehicles) and the available state of the art in terms of battery recycling at the end of life. The SAFELiMOVE LCA model is entirely fed with scaled-up data to allow a comparison with existing technologies delivering the same function. Result of this evaluation is a set of environmental KPIs describing battery performance in a multidimensional perspective.

To ease the interpretation of results, a benchmark analysis is performed comparing SAFELiMOVE results with a reference battery, currently available in the market, meeting the same functional requirements.

Results of this study show that SAFELiMOVE technology, with the given set of assumptions, could cut about 15% of GHG emissions along life cycle compared to traditional NMC batteries.

Appendix A- Acknowledgement

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Project partners:

#	Partner	Partner Full Name
1	CICe	CENTRO DE INVESTIGACION COOPERATIVA DE ENERGIAS ALTERNATIVAS FUNDACION, CIC ENERGIGUNE FUNDAZIOA
2	SCHOTT	SCHOTT AG
3	UMICORE	UMICORE
4	HYDRO-QUEBEC	HYDRO-QUEBEC
5	SAFT	SAFT
6	RENAULT SAS	RENAULT SAS
7	TME	TOYOTA MOTOR EUROPE NV
8	IKERLAN	IKERLAN S. COOP
9	CEA	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES
10	CIDETEC	FUNDACION CIDETEC
11	TUB	TECHNISCHE UNIVERSITAT BERLIN
12	RWTH AACHEN	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN
13	ABEE	AVESTA BATTERY & ENERGY ENGINEERING
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