



SLOVENSKI STANDARD
oSIST prEN IEC 63369-1:2024
01-marec-2024

Metodologija vrednotenja ogljičnega odtisa za industrijske litij-ionske baterije

Methodology for the carbon footprint calculation applicable to industrial lithium-ion batteries

Méthodologie pour le calcul de l'empreinte carbone applicable aux batteries lithium-ion industrielles

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Ta slovenski standard je istoveten z: prEN IEC 63369-1:2023

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ICS:

13.020.60	Življenjski ciklusi izdelkov	Product life-cycles
29.220.01	Galvanski členi in baterije na splošno	Galvanic cells and batteries in general

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en



21A/867/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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DATE OF CIRCULATION:

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CLOSING DATE FOR VOTING:

2024-03-15

SUPERSEDES DOCUMENTS:

21A/805/CD, 21A/818A/CC

IEC SC 21A : SECONDARY CELLS AND BATTERIES CONTAINING ALKALINE OR OTHER NON-ACID ELECTROLYTES

SECRETARIAT:

France

SECRETARY:

Mr Jean-Marie Bodet

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 21

PROPOSED HORIZONTAL STANDARD:

Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

EMC

ENVIRONMENT

QUALITY ASSURANCE

SAFETY

SUBMITTED FOR CENELEC PARALLEL VOTING

NOT SUBMITTED FOR CENELEC PARALLEL VOTING

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The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

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TITLE:

Methodology for the Carbon Footprint calculation applicable to industrial Lithium-ion batteries

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

During SC21A / WG6 Fall Meeting on October 24th, 2023, the answers of the IEC63369 project team to the comments have been presented to the WG6 experts and approved by the Secretary. The Revised Comments have been

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distributed to the Participating National Committees on October 27th, 2023 (21A/818A/CC). During the SC21A/WG6 Fall Meeting it has also been agreed to move from CD to the CDV.

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40
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42
43
44
45

CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references	9
3 Terms, definitions and abbreviated terms	10
3.1 Terms and definitions.....	10
3.2 Abbreviated terms.....	14
4 General information	15
5 Classification of industrial Li-ion batteries.....	16
5.1 Repetitive energy supply.....	16
5.1.1 Repetitive energy supply in mobile equipment (“REP-MOB”).....	16
5.1.2 Repetitive energy supply in stationary equipment (“REP-STA”).....	17
5.2 On-demand energy supply	17
5.2.1 On-demand energy supply in mobile equipment (“OND-MOB”).....	17
5.2.2 On-demand energy supply in stationary equipment (“OND-STA”).....	17
5.3 Potential combination of functionality classes	17
6 Functional unit.....	18
6.1 Functional Unit: generalities.....	18
Functional Unit and Reference Flow for repetitive energy supply (REP-MOB & REP-STA).....	19
6.2 19	
6.2.1 Example of REP-MOB load profile – Forklift.....	20
6.2.2 Example of REP-STA load profile – ESS container	21
6.3 Functional Unit and Reference Flow for On-demand energy supply (OND-MOB & OND-STA)	22
6.3.1 Example of OND-MOB load profile – IEC 62973-1 Regional train / EMU	25
6.3.2 Example of OND-STA load profile: IEC 60896-21	25
Calculation methodology	26
7 26	
7.1 Concept of virtual representative product	27
7.2 Composition of the virtual representative product.....	27
7.3 Derivation of the virtual representative products	29
7.4 System boundaries	32
7.5 Raw material acquisition stage and production stage	36
7.6 Distribution	40
7.7 Use stage	40
7.8 End-Of-Life stage	40
7.9 Carbon footprint assessment	41
7.10 Limitations	42
8 Life cycle inventory.....	42
9 Data quality requirements.....	45

46	9.1	Company specific foreground datasets.....	46
47	9.2	Secondary datasets	49
48	10	End of Life Modelling	50
49	10.1	The Circular Footprint Formula (CFF)	50
50	10.2	Parameters of the CFF	51
51	10.3	The A factor	52
52	10.4	The B factor	52
53	10.5	The quality ratios: Qsin/Qp and Qsout/Qp	52
54	10.6	Recycled content (R1)	53
55	10.7	Recycling output rate (R2)	53
56	10.8	Erecycled (Erec) and ErecyclingEoL (ErecEoL).....	54
57	10.9	The E*v.....	55
58	11	Battery Carbon Footprint results	55
59	12	Verification	56
60	12.1	Defining the scope of the verification	56
61	12.2	Verification procedure	57
62	12.3	Verifier(s).....	57
63	12.3.1	Minimum requirements for verifier(s)	57
64	Annex A (normative) DATA SOURCE AND METHODOLOGY FOR TRANSPORTATION		59
65	A.1	SEA & FLUVIAL	59
66	A.2	RAIL :	59
67	A.3	AIR	59
68	A.4	Road transport :	59
69	Bibliography.....		61
70			
71	Table 1: Example with dummy figures of a repetitive-cycling functional unit and resulting carbon footprint		19
72			
73	Table 2 - Key aspects of the Functional Unit defining the key aspects used to define the FU. REP-MOB		
74			
75	Table 3 - Key aspects of the Functional Unit defining the key aspects used to define the FU. REP-STA		
76			
77	Table 4 - Key aspects of the Functional Unit defining the key aspects used to define the FU OND-MOB.....		
78			
79	Table 5 - Key aspects of the Functional Unit defining the key aspects used to define the OND-STA		
80			
81	Table 6 – Example with dummy figures of the on-demand functional unit and resulting carbon footprint		
82			
83	Table 7 – Representative products for the 4 functionality classes		
84			
85	Table 8 – Life cycle stages		
86			
87	Table 9 – Battery Carbon footprint calculation indicator		42
88			
89	Table 10 - Data Quality Rating (DQR) and data quality levels of each data quality criterion		
90			
91	Table 11 - Overall data quality level of compliant-datasets, according to the achieved data quality rating		
92			
93	Table 12 - How to assign the values to DQR criteria when using company-specific information. No criteria shall be modified		
94			
95	Table 13 - How to assign the values to DQR criteria when using secondary datasets.....		
96			
97	Table 14 - Scoring system for each relevant competence and experience topic for the assessment of the competences of verifier(s)		
98			

94	
95	Figure 1 – Example of OND-MOB: load profile for regional train / EMU (without starting
96	up segment).....
97	Figure 2 – Example of OND-STA: load profile for UPS/ data centers
98	Figure 3 – representative products components
99	Figure 4 – System Boundaries- life cycle of a Li-ion battery system 35
100	Figure 5 –Li-ion battery production cradle-to-gate processes 39
101	Figure 6 – Disassembly and recycling processes 41
102	Figure 7 – Typical daily solar generation & load curve 44
103	Figure 8 - Graphical representation of a company-specific dataset. A company-specific
104	dataset is a partially disaggregated one: the DQR of the activity data and direct
105	elementary flows shall assessed..... 46
106	Figure 9 – point of substitution for recycling..... 55
107	

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108 INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**CARBON FOOTPRINT CALCULATION APPLICABLE TO INDUSTRIAL
LITHIUM-ION BATTERIES**
Part 1: General requirements and methodology

FOREWORD

- 118 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all
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- 145 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is
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149 IEC 63369 has been prepared by subcommittee SC21A/WG6, of IEC technical committee SC21A.
150 It is an International Standard.

151 The text of this International Standard is based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

152

153 Full information on the voting for its approval can be found in the report on voting indicated in the
154 above table.

155 The language used for the development of this International Standard is English.

156 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
157 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at

158 www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described
159 in greater detail at <http://www.iec.ch/standardsdev/publications>.

160 The committee has decided that the contents of this document will remain unchanged until the
161 stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific
162 document. At this date, the document will be

- 163 • reconfirmed,
- 164 • withdrawn,
- 165 • replaced by a revised edition, or
- 166 • amended.

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168

INTRODUCTION

169 This document was prepared by the WG6 of the SC21A

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CARBON FOOTPRINT CALCULATION APPLICABLE TO INDUSTRIAL LITHIUM-ION BATTERIES

Part 1: General requirements and methodology

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176 **1 Scope**

177 This document is part of a series. The first part addresses general requirements and methodology
178 whereas the second part addresses applications of the methodology.

179 This document provides a comprehensive methodology for the calculation of carbon footprint of
180 industrial type Li-ion battery systems from cradle to grave.

181 Second life and/or usage that was not intended when the battery is put on the market is not taken
182 into account.

183 This document along with the other parts of the standard does not pertain to Li-ion batteries of
184 portable type or for use in electric road vehicles.

185 The definition of the parameters used for the calculation allows for an improved comparability of
186 results for all rechargeable Li-ion chemistries. Classes of representative products are defined in
187 this document to allow comparison inside each class.

188 This methodology, based on the data provided by the battery manufacturer, is mainly intended for
189 use by the battery purchaser or the battery end-user in order to compare the carbon footprint to
190 select between battery systems being considered for their use over their Reference Service Life
191 (RSL).

192 The methodology can also be used for a variety of purposes such as for battery system
193 development, eco-design and participation in voluntary or mandatory programs.

194 After cell manufacturing, and for the benefit of any downstream user, an intermediate collection of data such
195 as the data for processes & material components, related to carbon footprint weight of the cell, can be
196 performed by the cell manufacturer. Primary data are to be collected by cell/components manufacturers. This
197 document with the other parts of the standard offers also general guidance for the specific
198 application of ISO 14067 to such a calculation. The methodology in this document is based
199 exclusively on attributional LCA.

200 The carbon footprint calculation of charging equipment and power conversion equipment is not
201 covered in this document.

202

203 **2 Normative references**

204 The following documents are referred to in the text in such a way that some or all of their content
205 constitutes requirements of this document. For dated references, only the edition cited applies.
206 For undated references, the latest edition of the referenced document (including any amendments)
207 applies.

208

209 IEC 62619:2022 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety
210 requirements for secondary lithium cells and batteries, for use in industrial applications

211	
212	IEC TS 62933-2-2:2022 Electrical energy storage (EES) systems - Part 2-2: Unit parameters and testing methods - Application and performance testing
213	
214	
215	IEC TS 62933-3-1:2018 Electrical energy storage (EES) systems 212 - Part 3-1: Planning and performance assessment of electrical energy storage systems - General specification
216	
217	
218	IEC 62973-1:2018 Railway applications - Rolling stock - Batteries for auxiliary power supply systems - Part 1: General requirements
219	
220	
221	IEC 60896-21:2004 Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test
222	
223	ISO/IEC 17020:2012 Conformity assessment -- Requirements for the operation of various types of bodies performing inspection
224	
225	
226	ISO 15686-8:2008 Buildings and constructed assets — Service-life planning — Part 8: Reference service life and service-life estimation
227	
228	
229	ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
230	
231	
232	ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework
233	
234	ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines
235	
236	ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures
237	

238 **3 Terms, definitions and abbreviated terms**

239 **3.1 Terms and definitions**

240 For the purposes of this document, the following terms and definitions apply.

241 ISO and IEC maintain terminological databases for use in standardization at the following
242 addresses:

- 243 • IEC Electropedia: available at <http://www.electropedia.org/>
- 244 at
- 245 • ISO Online browsing platform: available at <http://www.iso.org/obp>

247 **3.1.1**

248 **primary data**

249 **foreground data**

250 **company-specific data**

251 quantified value of a process or an activity obtained from a direct measurement or a calculation based on
252 direct measurements

253 **[source : ISO 14 067 (2018) 3.1.6.1]**

254

255 **3.1.2**

256 **Site-specific data** /??

257 Primary data obtained within the product system.

258 **[source : ISO 14 067 (2018) 3.1.6.2]**

259
260 Note 1 to entry: All site-specific data are primary data but not all primary data are site-specific data because
261 they may be obtained from a different product system.

262 Note 2 to entry: In case the component is manufactured in several facilities, to determine the level
263 of representativeness of the primary data collected, a statistical combination may be applied.

264 **3.1.3**

265 **secondary data**
266 background data

267 data which do not fulfil the requirements for primary data

268
269 Note 1 to entry: Secondary data can include data from databases and published literature, default
270 emission factors from national inventories, calculated data, estimates or other representative data,
271 validated by competent authorities.

272
273 Note 2 to entry: Secondary data can include data obtained from proxy processes or estimates not
274 directly collected, measured, or estimated by the company, but sourced from a third party LCI
275 database or other sources.

276 Note 1 to entry: data not originated from a specific process within the supply-chain of the company
277 performing the carbon footprint study.

278 Note 2 to entry: Secondary data include industry average data (e.g., from published production data,
279 government statistics, and industry associations), literature studies, engineering studies and
280 patents, and may also be based on financial data, and contain other generic data.

281 Note 3 to entry: Primary data that go through a horizontal aggregation step are considered as
282 secondary data.

283 Note 4 to entry: details on secondary data selection is provided in IEC63369- 2

284
285 **[source : ISO 14 067 (2018) 3.1.6.3]**

286
287 **3.1.4**
288 **Battery manufacturer**
289 Entity which is supplying the battery system(s) to meet the Reference Service Life of the
290 application as expressed in the technical specifications from the user.

291 Note 1 to entry: The component manufacturer that does not know the sizing of the battery is NOT
292 defined as the battery manufacturer in the case of this standard.

293 **3.1.5**

294 **Battery system sizing**
295 Activity that takes into account the final usage of the battery system and selects the most optimized
296 solution including all its technical parameters.

297 Note 1 to entry: It includes for example efficiencies, life expectations, selection of sub-systems,
298 safety, etc.

299 **3.1.6**300 **Component manufacturer**

301 Entity which is supplying a component of the battery system.

302 Note 1 to entry: The component manufacturer does not perform the battery system sizing.

303 **3.1.7**304 **Functionality class**

305 < of battery systems >

306 Grouping where the battery system presents similarities in their operation in service

307 Note 1 to entry: Battery systems in the same functionality class can be compared in terms of carbon
308 footprint309 **3.1.8**310 **Representative virtual product**

311 Market weighted-average model of existing batteries in a given functionality class.

312 Note 1 to entry: There is one representative virtual products per functionality class except when
313 the bill of materials is significantly different.314 **3.1.9**315 **Battery System**316 **Battery**

317 <for Li-ion>

318 System which comprises one or more cells, modules or battery packs and has a battery
319 management system intended to provide the Reference Service Life as stated by the user.320 Note 1 to entry: The battery system can have multiple additional components eg thermal
321 management. More than one battery system can constitute a larger battery system.322 [SOURCE: IEC 62619:2022, 3.11, modified – “capable of controlling current in case of
323 overcharge, overcurrent, overdischarge, and overheating” has been replaced by “intended to
324 provide the Reference Service Life as stated by the user” and Note1 to entry deleted.]

325

326 **3.1.10**327 **Functional unit**328 quantified performance, as stated in the user specifications, of the service provided by an industrial
329 battery system

330

331

332 [SOURCE: ISO 14040:2006, 3.20, modified , deleted “of a product system for use as a reference
333 unit” and replaced by “as stated in the user specifications, of the service provided by an industrial
334 battery system” —]335 **3.1.11**336 **Reference flow**337 Amount of product needed to fulfil the defined function, measured in kg of battery system per kWh
338 of the total energy required (for repetitive cycling REP) or per kWh of the “back-up cycle” (for on
339 demand usage OND) by the application over its Reference Service Life.