
Posebna pravila za rotacijske električne stroje in pristop k ocenjevanju okoljske učinkovitosti izdelkov in materialov

Product Specific Rules for rotating electrical machines and approach for environmental product and material efficiency assessments

Sample Document

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ICS:

13.020.60	Življenjski ciklusi izdelkov	Product life-cycles
29.160.01	Rotacijski stroji na splošno	Rotating machinery in general

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EUROPEAN STANDARD
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English Version

**Product Specific Rules for rotating electrical machines and
approach for environmental product and material efficiency
assessments**

To be completed

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This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2027-01-29.

It has been drawn up by CLC/TC 2.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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Contents

Page

10	European foreword	4
11	Introduction	5
12	1 Scope	6
13	2 Normative references	7
14	3 Terms and definitions	8
15	4 Description of the elements of ecodesign, including material efficiency aspects for rotating electrical machines	16
16	4.1 General	16
17	4.2 Environmentally Conscious Design (ECD)	16
18	4.3 Material efficiency aspects	16
19	4.3.1 General	16
20	4.3.2 Product Specific Rules to assess material efficiency	17
21	4.3.3 Value Analysis of Ecodesign Parameters	17
22	4.4 Environmental Product Declaration (EPD)	17
23	4.5 Carbon Footprint of Product (CFP)	17
24	5 Product Life Cycle Assessment – Product Specific Rules	17
25	5.1 General	17
26	5.2 Functional unit	18
27	5.3 Declared unit	18
28	5.4 Reference Service Life and Reference Flow	18
29	5.5 System boundaries	19
30	5.5.1 General	19
31	5.5.2 Life cycle inventory	19
32	5.5.3 Exclusion from the System Boundary	20
33	5.6 Cut-off criteria	20
34	5.7 Allocation Rules	21
35	5.8 Default scenarios	21
36	5.8.1 General	21
37	5.8.2 Manufacturing scenarios	21
38	5.8.3 Transportation scenarios	23
39	5.8.4 Installation scenario	24
40	5.8.5 Use scenarios	24
41	5.8.6 End-of-Life Scenarios	24
42	5.9 Additional Rules	24
43	5.9.1 Rules of extrapolation LCIA scaling	24
44	5.9.2 Rules applying for the aggregation of environmental impacts on system level	26
45	5.10 LCA Report	26
46	6 Material Efficiency Assessment	27
47	6.1 General	27
48	6.2 Assessment of Reliability and Durability	28
49	6.3 Assessment of the ability to remanufacture (EN 45553)	30
50	6.4 Assessment of the ability to repair, reuse, and upgrade (EN 45554)	30
51	6.4.1 General	30
52	6.4.2 Assessment of reparability	32
53	6.4.3 Example	35
54	6.5 Assessing the recyclability and recoverability (EN 45555)	36
55	6.5.1 General	36
56	6.5.2 Identification of components and materials	36
57	6.5.3 Identification of EoL scenarios	37
58	6.5.4 Default values for recycling and recovery rate	38
59	6.5.5 Calculation of recyclability rate	38
60	6.5.6 Calculation flow	38
61	6.5.7 Example	40

63	6.6	Proportion of recycled material content (EN 45557)	40
64	7	Environmental Product Declaration	41
65	7.1	General.....	41
66	7.2	General Programme Instruction.....	42
67	7.2.1	Objective of the programme	42
68	7.2.2	Procedures for definition of product categories and the development of product specific rules (PSR)	42
69			
70	7.2.3	Life cycle impact assessment methodology	43
71	7.2.4	EPD / CFP development and verification process	43
72	7.3	Environmental Declaration / Carbon footprint Content.....	43
73	7.3.1	General.....	43
74	7.3.2	Information about the producer	44
75	7.3.3	Information about the product	44
76	7.3.4	Life Cycle Impact Assessment (LCIA) results	44
77	7.3.5	Additional environmental information.....	44
78	7.3.6	References within the environmental declaration.....	44
79	7.4	Verification of the environmental declaration process	45
80	Annex A (informative)	Application of the standard.....	46
81	Annex B (informative)	Approach for integrated products.....	47
82	Annex C (informative)	Product specific rules for low and high voltage induction motors	49
83	C.1	General.....	49
84	C.2	Product Life Cycle Assessment.....	49
85	C.3	Material Efficiency assessment.....	59
86	Annex D (normative)	Product specific rules for generators	61
87	D.1	General.....	61
88	D.2	Product Life Cycle Assessment.....	61
89	D.3	Material Efficiency	61
90	Bibliography		63

91 **European foreword**

92 This document (prEN 50769:2026) has been prepared by CLC/TC2 "Rotating machines".

93 This document is currently submitted to the Enquiry.

94 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dav + 6 months
- latest date by which this document shall be implemented at national level by publication of an identical national standard or by endorsement (dop) dav + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dav + 36 months (to be confirmed or modified when voting)

95 This document is read in conjunction with EN IEC 63366 (which replaces EN 50693).

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96 Introduction

97 This document provides a relevant, consistent, and harmonized approach for specifying substantiation and
98 respective scores on the material efficiency aspects of rotating electrical machines for supporting life cycle
99 assessment (LCA), using Product Specific Rules (PSR). It will also facilitate and harmonize the way to
100 prepare the Environmental Product Declarations (EPD) and/or Carbon Footprint of Products (CFP), and
101 claims and to provide information on Eco-design Criteria to different stakeholders including via the Digital
102 Product Passport (DPP).

103 This project has no objective for specifying the Environmentally Conscious Design (ECD) of rotating
104 electrical machines but should focus on assessment and measurement as well as relevant information to
105 be provided on material efficiency aspects. It is a standardization work for preparing the adaptability and
106 applicability of existing generic approaches for such a rotating electrical machines product-oriented
107 standard. This standard will support the necessary circularity requested by the different life cycle analysis
108 (LCA) scenarios, aiming for substantiating the quantitative green claims provided by the European
109 regulations, already published or still to come. For that purpose, in addition to deriving and adapting the
110 EN 4555x series for rotating electrical machines, this standard considers EN 50693 for the benefit of the
111 Manufacturers dealing with their product LCA. This standard should support the EU (EU) 2024/1781
112 Ecodesign for Sustainable Product Regulation (ESPR) and related Delegated Acts to be prepared for all
113 categories of products and systems defined in its scope.

114 This document will suggest common PSR for rotating electrical machines that are in the scope of the
115 CLC/TC 2 as much as possible. When particular PSR or other specific requirements can only be related to
116 a dedicated product or system (e.g. for low voltage induction motors only, or generators within the scope
117 of CLC/TC 2) PSR or other specific requirements for such products or systems will be embedded in a
118 dedicated normative Annex of this standard.

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1 Scope

This document defines product specific rules (PSR) rotating electrical machines. It specifies the process and requirements for conducting life cycle assessments (LCA) in the context of Environmental Product Declaration (EPD) and Carbon Foot Print of a Product (CFP) for rotating electrical machines operating direct-online or intended for frequency converter (variable speed drive) operation. The aim is to ensure transparency of the applied methodology and to provide verifiable and comparable results.

This document applies for products used in industrial applications:

- three phase and single-phase low voltage AC motors;
 - o for direct-online operation;
 - o operating with variable speed drives;
- low voltage motors intended for potentially explosive atmospheres;
- low voltage synchronous reluctance motors;
- low voltage permanent magnet motors;
- low voltage AC servomotors;
- high voltage AC motors for direct-online operation.

This document can be applicable to:

- low voltage integrated VSD motors;
- gear motors;
- high voltage AC motors operating with variable speed drives;
- high voltage motors intended for potentially explosive atmospheres;
- low and high voltage generators;
- low and high voltage synchronous compensator.

This document is not applicable for:

- motors used in consumer applications;
- traction motors;
- electric vehicles;
- high voltage AC motors operating in variable speed drives;
- low voltage DC motors.

NOTE 1 For rotating electrical machines with safety-critical design constraints (for example equipment for explosive atmospheres), material-efficiency indicators, ECD measures, and other circular economy related requirements are interpreted with respect to mandatory safety requirements.

This document defines functional units and default scenarios in the product-specific context and common rules and guidelines for:

- a) the Life Cycle Assessment (LCA), including the requirements for default scenarios;

- 153 b) the Material Efficiency Assessment, including the requirements for default scenarios;
- 154 c) the LCA report and Environmental Product Declaration (EPD) or claim.
- 155 The LCA principles and framework are based on ISO 14040 and ISO 14044 and therefore out of scope of
156 this standard.
- 157 In addition, this document defines specific ecodesign assessment methods and specifications for the
158 material efficiency aspects of rotating electrical machines and equipment that are derived from published
159 horizontal and generic standards for energy-related Products (EN 45550 to EN 45559 standard series).
- 160 The document specifies these generic standards in the context of rotating electrical machines further
161 through assessment requirements and default scenarios to support ecodesign and related customer
162 information.
- 163 Further, this document includes definitions and specifications to enable material efficiency assessments at
164 system level of rotating electrical machines.
- 165 It also provides consistent and common criteria for considering material efficiency-related data to be
166 operated by stakeholders along the lifecycle, supporting the building of digital product passport (DPP), data
167 migration and interoperability of products and systems, including digital twins.

168 2 Normative references

- 169 The following documents are referred to in the text in such a way that some or all of their content constitutes
170 requirements of this document. For dated references, only the edition cited applies. For undated
171 references, the latest edition of the referenced document (including any amendments) applies.
- 172 EN 45552, *General method for the assessment of the durability of energy-related products*
- 173 EN 45554, *General methods for the assessment of the ability to repair, reuse and upgrade energy-related*
174 *products*
- 175 EN 45557, *General method for assessing the proportion of recycled material content in energy-related*
176 *products*
- 177 EN ISO 14020:2023, *Environmental statements and programmes for products - Principles and general*
178 *requirements (ISO 14020:2022)*
- 179 EN ISO 14021, *Environmental statements and programmes for products - Self-declared environmental*
180 *claims (ISO 14021)*
- 181 EN ISO 14025, *Environmental statements and programmes for products - Environmental product*
182 *declarations (EPDs) (ISO 14025)*
- 183 EN ISO 14040, *Environmental management - Life cycle assessment - Principles and framework (ISO*
184 *14040)*
- 185 EN ISO 14044, *Environmental management - Life cycle assessment - Requirements and guidelines (ISO*
186 *14044)*
- 187 EN ISO 14067, *Greenhouse gases - Carbon footprint of products - Requirements and guidelines for*
188 *quantification (ISO 14067)*
- 189 EN IEC 62430, *Environmentally conscious design (ECD) — Principles, requirements and guidance (IEC*
190 *62430)*
- 191 EN IEC 63366:2025, *Product category rules for life cycle assessment of electrical and electronic products*
192 *and systems (IEC 63366:2025)*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp/>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1

accelerated life test

ALT

test in which the applied stress level is chosen to exceed that stated in the reference conditions to shorten the test duration required to observe the life of the device without altering the basic fault modes and failure mechanisms

[SOURCE: IEC ref 845-27-103]

3.2

conformity assessment

demonstration that specified requirements relating to a product, process, system, person or body are fulfilled

Note 1 to entry: The subject field of conformity assessment includes activities defined elsewhere in EN ISO/IEC 17000, such as testing, inspection and certification, as well as the accreditation of conformity assessment bodies.

[SOURCE: IEC ref. 902-01-01]

3.3

declared unit

quantity of the product used as a reference unit for an environmental declaration when a functional unit cannot be directly used

Note 1 to entry: The declared unit might differ from the functional unit in terms of the declaration.

[SOURCE: EN 50693:2019, 3.4]

3.4

end of life

EOL

life cycle stage of a product starting when it is removed from its intended use phase

[SOURCE: IEC/TR 62635]

3.5

end of life treatment

operation after a waste has been handed over to a facility for product and product part reuse, material recycling, energy recovery and residue disposal

Note 1 to entry: This includes dismantling, material separation and disposal.

[SOURCE: IEC/TR 62635]

3.6

environmental aspect

element of an organization's activities or products that interacts or can interact with the environment

233 Note 1 to entry: Typically, environmental aspects can include emissions to air, discharges to water and waste arisings,
 234 which in turn can generate environmental and health impacts such as global warming, smog, water pollution or
 235 contaminated land.

236 [SOURCE: EN ISO 14050:2020, 3.2.20]

237 **3.7**

238 **environmental claim**

239 statement, symbol or graphic that indicates an environmental aspect of a product, a component or
 240 packaging; also known as type II environmental labelling or self-declared claims

241 Note 1 to entry: An environmental claim may be made on product or packaging labels, through product literature,
 242 technical bulletins, advertising, publicity, telemarketing, as well as through digital or electronic media such as the
 243 Internet.

244 [SOURCE: EN ISO 14021:2026, 3.1.4]

245 **3.8**

246 **environmentally conscious design**

247 **ECD**

248 systematic approach which considers environmental aspects in the design and development process with
 249 the aim to reduce adverse environmental impacts

250 [SOURCE: EN IEC 62430:2019]

251 **3.9**

252 **environmental impact**

253 change to the environment whether adverse or beneficial, including possible consequences, wholly or
 254 partially resulting from an organization's environmental aspects

255 [SOURCE: EN ISO 14020:2023]

256 **3.10**

257 **environmental label**

258 claim which indicates the environmental aspects of a product or service, for example a type I, a type II or
 259 a type III environmental declaration or a product environmental footprint

260 Note 1 to entry: An environmental label or declaration may take the form of a statement, symbol or graphic on a product
 261 or package label, in product literature, in technical bulletins, in advertising or in publicity, amongst other things.

262 Note 2 to entry: The additional environmental information may be quantitative or qualitative.

263 [SOURCE: EN ISO 14020:2023, modified]

264 **3.11**

265 **environmental parameter**

266 quantifiable attribute of an environmental aspect

267 Note 1 to entry: Environmental parameters include the type and quantity of materials used (weight, volume), power
 268 consumption, emissions, rate of recyclability, etc.

269 **3.12**

270 **environmental product declaration**

271 **EPD**

272 environmental statement providing environmental data of a product using predetermined impact indicators
 273 and predetermined inventory indicators resulting from an LCA and, where relevant and available, additional
 274 environmental information; also known as Type III environmental declaration according to EN ISO 14025

prEN 50769:2026 (E)

275 Note 1 to entry: The predetermined indicators address relevant environmental impacts and aspects, the results of those
276 predetermined indicators are derived from an LCA using PCR

277 Note 2 to entry: Requirements for an LCA are given in EN ISO 14040 and EN ISO 14044.

278 Note 3 to entry: EPDs can include quantitative and qualitative data.

279 Note 4 to entry: EPDs can include, where relevant and available, data related to additional sustainability-related
280 information.

281 Note 5 to entry: general requirements for PCRs are given in CEN ISO/TS 14027; requirements for PCRs for electrical
282 and electronic products and systems (EEPS) are given in EN IEC 63366.

283 [SOURCE: EN ISO 14020:2023, modified]

284 **3.13**

285 **environmental statement**

286 information on one or more environmental aspect(s) or environmental impact(s) of a product which intends
287 to inform an intended audience and intends to influence the market of this product

288 Note 1 to entry: An environmental claim may be made on product or packaging labels, through product literature,
289 technical bulletins, advertising, publicity, telemarketing, as well as through digital or electronic media such as the
290 Internet.

291 Note 1 to entry: The environmental statement can represent a point in time or can cover a period of time.

292 Note 2 to entry: Types of environmental statement include, but are not limited to:

293 a) self-declared environmental claims;

294 b) ecolabels;

295 c) environmental product declarations;

296 d) footprint communications.

297 Note 3 to entry: An environmental statement can appear on a product or packaging as a label, a symbol, a logo, an
298 electronic product label or a machine-readable code. It can also be communicated in other ways, e.g. in web-based
299 product data or in an advertisement.

300 Note 4 to entry: In some countries, the term “environmental claim” is used to indicate all types of product environmental
301 statements. However, for the sake of clarity, within this document the word “claim” is only used in relation to a self-
302 declared environmental claim.

303 [SOURCE: EN ISO 14020:2023, modified]

304 **3.14**

305 **environmental statement programme**

306 rules and procedures for providing an environmental statement

307 Note 1 to entry: Environmental statement programmes can be carried out at international, regional, national or sub-
308 national levels.

309 Note 2 to entry: An environmental statement programme can include requirements for conformity assessment.

310 Note 3 to entry: In the case of self-declared environmental claims, made in accordance with this document the
311 environmental statement programme is typically established by the responsible party. For other types of environmental
312 statement, the environmental statement programme is typically established by a party that is external to the responsible
313 party.

314 Note 4 to entry: In the case of self-declared environmental claims, the environmental statement programme consists
315 of the information and records used to support the claim, in accordance with this document.

316 [SOURCE: EN ISO 14020:2023, modified]

317 **3.15**

318 **footprint**

319 metric(s) used to report life cycle assessment results addressing an area of concern

320 EXAMPLE Carbon footprint of a product (CFP) within the area of concern of climate change.

321 Note 1 to entry: Requirements for footprint communication are given in ISO 14026.

322 [SOURCE: EN ISO 14020:2023]

323 **3.16**

324 **functional unit**

325 quantified performance of a product system for use as a reference unit

326 Note 1 to entry: For example, one product providing a certain function like power in kW.

327 [SOURCE: EN ISO 14040:2006]

328 **3.17**

329 **General Programme Instructions**

330 **GPI**

331 overarching guidelines and rules that govern the operation and management of the International EPD
332 System

333 Note 1 to entry: They define how EPDs are created, verified, and published to ensure transparency, comparability, and
334 credibility of environmental product declarations. The GPI ensure that all EPDs comply with the requirements of
335 ISO 14025 and align with the respective PCRs, such as EN IEC 63366 for electrical and electronic products

336 Note 2 to entry: The GPIs are centrally managed and regularly updated by the International EPD System to reflect the
337 latest standards and requirements.

338 **3.18**

339 **hazardous substances and preparations**

340 substance or preparation that can adversely impact the environment with immediate or retarded effect

341 [SOURCE: IEC Guide 109:2003, modified]

342 **3.19**

343 **homogenous product family**

344 **HPF**

345 subgroup of a product family based on the underlying technology or build where the environmental aspects
346 can reasonably be expected to be similar and therefore scalable over the group through a function of certain
347 parameter, e.g., power or weight

348 [SOURCE: EN IEC 63366:2025, 3.1.15]

349 **3.20**

350 **LCA report**

351 accompanying document to the life cycle assessment as a basis to the environmental declaration giving
352 further detailed information about the inputs, outputs, used LCI-data and the made assumptions in regard
353 to this document

prEN 50769:2026 (E)

354 **3.21**
 355 **life cycle**
 356 consecutive and interlinked stages of a product system, from raw material acquisition or generation from
 357 natural resources to the final disposal

358 [SOURCE: EN ISO 14040:2006]

359 **3.22**
 360 **life cycle assessment**
 361 **LCA**
 362 compilation and evaluation of the inputs, outputs, and the potential environmental impacts of a product
 363 system throughout its life cycle

364 [SOURCE: EN ISO 14040:2006]

365 **3.23**
 366 **life cycle inventory**
 367 **LCI**
 368 inventory of flows from and to nature for a product system. Inventory flows include inputs of water, energy,
 369 and raw materials, and releases to air, land, and water

370 **3.24**
 371 **life cycle inventory analysis**
 372 **LCIA**
 373 life cycle inventory analysis LCI phase of life cycle assessment involving the compilation and quantification
 374 of inputs and outputs for a product throughout its life cycle

375 [SOURCE: EN ISO 14040:2006, 3.3]

376 **3.25**
 377 **life cycle stage**
 378 element of a life cycle

379 Note 1 to entry: The phrase 'life cycle phase' is sometimes used interchangeably with 'life cycle stage'.

380 Note 2 to entry: Examples of life cycle stages are: raw material acquisition and production; manufacturing; packaging
 381 and distribution; installation and use, maintenance and upgrading and end of life.

382 **3.26**
 383 **life cycle thinking**
 384 **LCT**
 385 consideration of all relevant environmental aspects during the entire life cycle of products

386 [SOURCE: IEC Guide 109:2003, modified]

387 **3.27**
 388 **maintenance**
 389 combination of all technical and management actions intended to retain an item in, or restore it to, a state
 390 in which it can perform as required

391 Note 1 to entry: Management is assumed to include supervision activities.

392 [SOURCE: IEV ref 192-06-01]

393 **3.28**
 394 **manufacturer-authorised professional repairer**
 395 professional repairer authorised by the manufacturer, importer or authorized representative to repair safety
 396 critical products they place on the market

397 [SOURCE: EU 2024/1834]

398 **3.29**

399 **material**

400 substance or mixture within a product or product part

401 [SOURCE: IEC 62674]

402 **3.30**

403 **ongoing reliability testing**

404 **ORT**

405 testing performed to ensure that no changes have occurred in components or production processes that
406 will have a systematic impact on reliability

407 Note 1 to entry: Sample units are randomly selected from actual production, depending on the risk level that has been
408 set. If a failure occurs during testing, a thorough root cause analysis is carried out to check whether the failure was a
409 random event or due to a change in the product or one of the components.

410 **3.31**

411 **organization**

412 group of people and facilities with an arrangement of responsibilities, authorities and relationships

413 [SOURCE: EN ISO 9000:2005, 3.3.1, modified]

414 **3.32**

415 **packaging**

416 material that is used to protect or contain a product during transportation, storage, marketing or use

417 Note 1 to entry: For the purposes of this International Standard, the term “packaging” also includes any item that is
418 physically attached to, or included with, a product or its container for the purpose of marketing the product or
419 communicating information about the product.

420 [SOURCE: EN ISO 14021]

421 **3.33**

422 **process**

423 set of interrelated or interacting activities which transform inputs into outputs

424 Note 1 to entry: Inputs to a process are generally outputs of other processes.

425 Note 2 to entry: Processes in an organization are generally planned and carried out under controlled conditions to add
426 value.

427 [SOURCE: EN ISO 9000:2005, 3.4.1, modified]

428 **3.34**

429 **product**

430 any goods or service

431 [SOURCE: EN ISO 14024:2023]

432 **3.35**

433 **product category**

434 group of products that can fulfil equivalent functions

435 [SOURCE: EN ISO 14025:2026]