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**oSIST prEN IEC 62933-3-1:2024**  
**01-oktober-2024**

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**Električne naprave za shranjevanje energije (EES) - 3-1. del: Načrtovanje in ocenjevanje delovanja sistemov za shranjevanje električne energije - Splošna specifikacija**

Electrical energy storage (EES) systems - Part 3-1: Planning and performance assessment of electrical energy storage systems - General specification

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**ICS:**

13.020.30      Ocenjevanje vpliva na okolje      Environmental impact assessment

**oSIST prEN IEC 62933-3-1:2024**      en





# 120/376/CDV

## COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:  
**IEC 62933-3-1 ED1**

DATE OF CIRCULATION:  
**2024-08-09**

CLOSING DATE FOR VOTING:  
**2024-11-01**

SUPERSEDES DOCUMENTS:  
**120/328/CD, 120/344/CC**

IEC TC 120 : ELECTRICAL ENERGY STORAGE (EES) SYSTEMS	
SECRETARIAT: Japan	SECRETARY: Mr Masatake SAKUMA
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 8,TC 21,TC 22,TC 57,TC 69	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
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TITLE:

**Electrical energy storage (EES) systems - Part 3-1: Planning and performance assessment of electrical energy storage systems - General specification**

PROPOSED STABILITY DATE: 2031

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190 INTERNATIONAL ELECTROTECHNICAL COMMISSION

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192  
193 **ELECTRICAL ENERGY STORAGE (EES) SYSTEMS –**

194  
195 **Part 3-1: Planning and performance assessment of**  
196 **electrical energy storage systems – General specification**

197  
198 **FOREWORD**

- 199 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising  
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- 236 • the required support cannot be obtained for the publication of an International Standard,  
237 despite repeated efforts, or
- 238 • the subject is still under technical development or where, for any other reason, there is the  
239 future but no immediate possibility of an agreement on an International Standard.

240 Technical Specification IEC 62933-3-1 has been prepared by IEC technical committee TC 120:  
241 Electrical Energy Storage (EES) Systems.

242 The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
120/118/DTS	120/123/RVDTS

243  
244 Full information on the voting for the approval of this technical specification can be found in  
245 the report on voting indicated in the above table.

246 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

247 A list of all parts in the IEC 62933 series, published under the general title *Electrical energy*  
248 *storage (EES) systems*, can be found on the IEC website.

249 The committee has decided that the contents of this publication will remain unchanged until  
250 the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data  
251 related to the specific publication. At this date, the publication will be

- 252 • transformed into an International standard,
- 253 • reconfirmed,
- 254 • withdrawn,
- 255 • replaced by a revised edition, or
- 256 • amended.

257 A bilingual version of this publication may be issued at a later date.

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261

## INTRODUCTION

262 IEC 62933-2-1 should be used as a reference when selecting testing items and their  
263 corresponding evaluation methods as well as principal parameters. Principal terms used in  
264 this document are defined in IEC 62933-1. Environmental issues are covered by  
265 IEC TS 62933-4-1. The personnel safety issues are covered by IEC TS 62933-5-1.

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## ELECTRICAL ENERGY STORAGE (EES) SYSTEMS –

### Part 3-1: Planning and performance assessment of electrical energy storage systems – General specification

#### 273 1 Scope

274 This part of IEC 62933 is applicable to EES systems designed for grid-connected indoor or  
275 outdoor installation and operation. This document considers

- 276 • necessary functions and capabilities of EES systems
- 277 • sizing and design of EES system
- 278 • operation of EES system
- 279 • test items and performance assessment methods for EES systems
- 280 • requirements for monitoring and acquisition of EES system operating parameters
- 281 • exchange of system information and control capabilities required
- 282 • maintenance of EES system

283 Stakeholders of this document comprise personnel involved with EES systems, which include

- 284 – planners of electric power systems and EES systems
- 285 – owners of EES systems
- 286 – operators of electric power systems and EES systems
- 287 – constructors
- 288 – suppliers of EES systems and its equipment
- 289 – aggregators

290 Use-case-specific technical documentation, including planning and installation specific tasks  
291 such as system design, monitoring, measurement, tests, operation and maintenance, are very  
292 important and can be found throughout this document.

293 NOTE This document has been written for AC grids, however parts can also apply to DC grids.

#### 294 2 Normative references

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

299 IEC 60721-1, *Classification of environmental conditions – Part 1: Environmental parameters*  
300 *and their severities*

301 IEC 61850-7-420, *Communication networks and systems for power utility automation –Part 7-*  
302 *420: Basic communication structure – Distributed energy resources logical nodes*

303 IEC 62351 (all parts), *Power systems management and associated information exchange –*  
 304 *Data and communications security*

305 IEC 62443 (all parts), *Industrial communication networks – Network and system security*

306 IEC 62933-1, *Electrical energy storage (EES) systems – Part 1: Vocabulary*

307 IEC 62933-2-1, *Electrical energy storage (EES) systems – Part 2-1: Unit parameters and*  
 308 *testing methods – General specification*

309 IEC TS 62933-5-1, *Electrical energy storage (EES) systems – Part 5-1: Safety considerations*  
 310 *for grid-integrated EES systems – General specification*

311 ISO/IEC 27000, *Information technology – Security techniques – Information security*  
 312 *management systems – Overview and vocabulary*

### 313 **3 Terms, definitions and symbols**

#### 314 **3.1 Terms and definitions**

315 For the purposes of this document, the terms and definitions given in IEC 62933-1 and the  
 316 following apply.

317 ISO and IEC maintain terminological databases for use in standardization at the following  
 318 addresses:

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

321 Note 1 to entry: The definition is loosely based on IEC 60050-447:2010, 447-05-08.

322

#### 323 **3.2 Symbols**

324	$\cos\varphi$	power factor
325	$E$	energy
326	$E_C$	energy storage capacity
327	$\eta$	efficiency
328	$f$	frequency
329	$I$	current
330	$P$	active power
331	$Q$	reactive power
332	$S$	apparent power
333	$SOH$	state of energy
334	$SOH$	state of health
335	$U$	voltage