



SLOVENSKI STANDARD
SIST EN 45510-2-3:2002
01-september-2002

Guide for procurement of power station equipment - Part 2-3: Electrical equipment - Stationary batteries and chargers

Guide for procurement of power station equipment -- Part 2-3: Electrical equipment - Stationary batteries and chargers

Leitfaden für die Beschaffung von Ausrüstungen für Kraftwerke -- Teil 2-3: Elektrische Ausrüstung - Stationäre Batterien und Ladegeräte

Guide pour l'acquisition d'équipements destinés aux centrales de production d'électricité -- Partie 2-3: Equipements électriques - Batteries stationnaires et chargeurs/redresseurs

<https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002>

Ta slovenski standard je istoveten z: EN 45510-2-3:2000

ICS:

27.100	Elektrarne na splošno	Power stations in general
29.220.01	Galvanske celice in baterije na splošno	Galvanic cells and batteries in general

SIST EN 45510-2-3:2002

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 45510-2-3:2002

<https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 45510-2-3

March 2000

ICS 27.100; 29.220.00

English version

**Guide for procurement of power station equipment
Part 2-3: Electrical equipment - Stationary batteries and chargers**

Guide pour l'acquisition d'équipements
destinés aux centrales de production
d'électricité
Partie 2-3: Equipements électriques -
Batteries stationnaires et
chargeurs/redresseurs

Leitfaden für die Beschaffung von
Ausrüstungen für Kraftwerke
Teil 2-3: Elektrische Ausrüstung -
Stationäre Batterien und Ladegeräte

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This European Standard was approved by CEN and CENELEC on 2000-02-01.

CEN and 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN or CENELEC member.

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

CEN and CENELEC members are the national standards bodies and national electrotechnical committees, respectively, of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



CEN Central Secretariat:
rue de Stassart 36, B - 1050 Brussels

CENELEC Central Secretariat:
rue de Stassart 35, B - 1050 Brussels

Contents

	Page
Foreword	5
1 Scope	7
2 Normative references	8
3 Definitions	8
3.1 Organisational terms	8
3.2 Technical terms	9
3.3 General terms	9
4 Brief overall project description	10
4.1 Role and organisation of purchaser	10
4.2 Site location	10
4.3 Equipment task	10
4.4 Equipment to be purchased	10
4.5 Control and instrumentation	11
4.6 Electrical supplies and other services	11
4.7 Other interfaces	11
4.8 Project programme	11
4.9 Equipment identification systems	12
5 Extent of supply	12
6 Terminal points	13
7 Operational requirements	13
7.1 Operating environment	13
7.2 Manning levels	13
7.3 Normal operation	14
7.4 Operating hours	14
7.5 Start-up and shut-down	14
7.6 Abnormal conditions	14
7.7 Further operational requirements	14
8 Life expectancy	15
8.1 Design life	15
8.2 Components requiring periodic maintenance	15

9	Performance requirements	15
9.1	Duty	15
9.2	Performance	18
9.3	Equipment margins	18
9.4	Availability	18
9.5	Levels of component redundancy	19
9.6	Further performance requirements	19
10	Design and fabrication	19
10.1	Specific equipment features	19
10.2	Design justification	22
10.3	Material selection	23
10.4	Safety	23
10.5	Interchangeability	23
10.6	Fabrication methods	24
11	Maintenance requirements	24
11.1	Planned maintenance	24
11.2	Personnel safety	24
11.3	Requirements for access	24
11.4	Lifting requirements	24
11.5	Special tools	24
11.6	Test equipment	25
11.7	Spare parts strategy	25
11.8	Special precautions	25
12	Technical documentation requirements	25
12.1	Tender documentation	25
12.2	Contract documentation	25
13	Applicable legislation, regulations, standards and further requirements	26
13.1	Legislation and regulations	26
13.2	Standards	26
13.3	Further requirements	26
14	Evaluation criteria	26
14.1	General	26
14.2	Technical criteria	27

ITeH STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 45510-2-3:2002](https://standards.iteh.ai/catalog/standards/sist/59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002)

<https://standards.iteh.ai/catalog/standards/sist/59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002>

15	Quality measures	28
15.1	General	28
15.2	Approvals procedure	28
15.3	Inspection requirements	28
15.4	Non-conformity	28
16	Site factors	28
16.1	Access	28
16.2	Facilities	28
16.3	Site specific requirements	29
17	Verification of specified performance	29
17.1	General	29
17.2	Works tests	29
17.3	Tests during installation and commissioning	30
17.4	Technical conditions for trial run	30
17.5	Functional and performance tests	31
Annex A (informative)	Bibliography	32

Foreword

This standard takes the form of a recommendation and is therefore entitled a "Guide".

This Guide for procurement has been prepared by the CEN/CENELEC Joint Task Force Power Engineering (JTFPE) of which the secretariat is held by the British Standards Institution.

The text of the draft was submitted to the formal vote and was approved by CEN and CENELEC as EN 45510-2-3 on 2000-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2001-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-01-01

Annexes designated "informative" are given for information only. In this standard, annex A is informative.

This Guide for procurement has been prepared under mandates given to CEN and CENELEC by the European Commission and the European Free Trade Association.

This Guide for procurement is a part of a series of Guides mandated to cover the procurement of power station plant and equipment in conformity with European Procurement Directives. The Guides are:

EN 45510: Guide for procurement of power station equipment 2002

[https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-](https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002)

Part 1: Common clauses

[54c4a6127243/sist-en-45510-2-3-2002](https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002)

Part 2-1: Electrical equipment - Power transformers

Part 2-2: Electrical equipment - Uninterruptible power supplies

Part 2-3: Electrical equipment - Stationary batteries and chargers

Part 2-4: Electrical equipment - High power static converters

Part 2-5: Electrical equipment - Motors

Part 2-6: Electrical equipment - Generators

Part 2-7: Electrical equipment - Switchgear and controlgear

Part 2-8: Electrical equipment - Power cables

Part 2-9: Electrical equipment - Cabling systems

Part 3-1: Boilers - Water tube boilers

Part 3-2: Boilers - Shell boilers

Part 3-3: Boilers - Boilers with fluidized bed firing

Part 4-1: Boiler auxiliaries - Equipment for reduction of dust emissions

Part 4-2: Boiler auxiliaries - Gas-air, steam-air and gas-gas heaters

Part 4-3: Boiler auxiliaries - Draught plant

Part 4-4: Boiler auxiliaries - Fuel preparation equipment

Part 4-5: Boiler auxiliaries - Coal handling and bulk storage plant

Part 4-6: Boiler auxiliaries - Flue gas desulphurization (De-SO_x) plant

Part 4-7: Boiler auxiliaries - Ash handling plant

Part 4-8: Boiler auxiliaries - Dust handling plant

Part 4-9: Boiler auxiliaries - Sootblowers

Part 4-10: Boiler auxiliaries - Flue gas denitrification (De-NO_x) plant

Part 5-1: Turbines - Steam turbines
Part 5-2: Turbines - Gas turbines
Part 5-3: Turbines - Wind turbines
Part 5-4: Turbines - Hydraulic turbines, storage pumps and pump-turbines

Part 6-1: Turbine auxiliaries - Deaerators
Part 6-2: Turbine auxiliaries - Feedwater heaters
Part 6-3: Turbine auxiliaries - Condenser plant
Part 6-4: Turbine auxiliaries - Pumps
Part 6-5: Turbine auxiliaries - Dry cooling systems
Part 6-6: Turbine auxiliaries - Wet and wet/dry cooling towers
Part 6-7: Turbine auxiliaries - Moisture separator reheaters
Part 6-8: Turbine auxiliaries - Cranes
Part 6-9: Turbine auxiliaries - Cooling water systems

Part 7-1: Pipework and valves - High pressure piping systems
Part 7-2: Pipework and valves - Boiler and high pressure piping valves

Part 8-1: Control and instrumentation

*EN 45510 Part 1 contains those clauses common to all the above Guides giving the provisions of a non **equipment** specific nature for use in the procurement of power station plant. EN 45510 is the responsibility of JTFPE. The so called "common clauses", as appropriate, also appear in italics in the documents specific to particular **equipment**.*

In this Guide, words in bold type indicate that they have the meaning given in the definitions, clause 3.

<https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-54c4a6127243/sist-en-45510-2-3-2002>

In this Guide, words and sentences not in italics are specific to this Guide and refer to the particular **equipment** covered.

1 Scope

This standard gives guidance on writing the technical **specification** for the procurement of stationary batteries and chargers for use in electricity generating stations (power stations). This Guide for procurement is not applicable to **equipment** for use in the nuclear reactor plant area of nuclear power stations. Other possible applications of such **equipment** have not been considered in the preparation of this Guide.

This Guide covers stationary lead-acid and nickel-cadmium batteries, chargers, battery accommodation battery main connections and battery accessories.

This **equipment** usually forms part of either a centralised or unit d.c. supplies system for duties such as switchgear closing/tripping, protection, control, alarm, instrumentation and telecommunication supplies, emergency lighting and emergency drives.

The **equipment** covered by this Guide is defined by its function rather than design type. Therefore, the guidance to the **specification** is stated in performance terms rather than being specified by a detailed description of the **equipment** to be supplied.

This Guide indicates to potential **purchasers** how their **specification** should be prepared so that:

- the **equipment** type and capacity interfaces correctly with other elements of the systems;
- predicted performance is achieved;
- ancillary **equipment** is properly sized;
- **reliability, availability** and safety requirements are achieved;
- proper consideration is given to the evaluation process and the quality measures to be applied.

This Guide does not determine the type of **specification** (e.g. detailed, performance, functional) or the extent of supply for any given contract which is normally decided on the basis of the **purchaser's** project strategy. It does not cover:

- any commercial, contractual or legal issues which are normally in separate parts of an **enquiry**;
- any allocation of responsibilities which are determined by the contract.

This Guide does not prescribe the arrangement of the documents in the **enquiry**.

NOTE: As a comprehensive European environmental policy is still under preparation, this Guide does not address the environmental implications of the **equipment**.

2 Normative references

This Guide for Procurement incorporates by dated or undated reference, provisions from other publications. These normative references are cited in the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Guide only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

European Standards

EN ISO 9001	Quality systems - Model for quality assurance in design, development, production, installation and servicing
EN ISO 9002	Quality systems - Model for quality assurance in production, installation and servicing
EN 45510	Guide for procurement of power station equipment Part 2-7: Electrical equipment - Switchgear and controlgear Part 2-9: Electrical equipment - Cabling systems
EN 50081-2	EMC - Generic emission standard - Part 2: Industrial environment
EN 50082-2	EMC - Generic immunity standard - Part 2: Industrial environment
EN 60269-1	Low-voltage fuses - Part 1: General requirements (IEC 60269-1)
EN 60529	Degrees of protection provided by enclosures (IP code) (IEC 60529)
EN 60896-1	Stationary lead-acid batteries - General requirements and methods of test - Part 1: Vented types (IEC 60896-1)
EN 60896-2	Stationary lead-acid batteries - General requirements and methods of test - Part 2: Valve regulated types (IEC 60896-2)

International standards

IEC 60050-191	International electrotechnical vocabulary Chapter 191: Dependability and Quality of Services
IEC 60050-486	International Electrotechnical Vocabulary (IEV) Chapter 486: Secondary cells and batteries

3 Definitions

For the purposes of this Guide, the following definitions apply:

3.1 Organisational terms

3.1.1 **purchaser:** Recipient of a product and/or a service provided by a **supplier**.

3.1.2 **supplier:** Person or organisation that provides a product and/or a service to the **purchaser**.

3.1.3 **specification**: Document stating technical requirements of the **purchaser**. It may form part of an **enquiry** issued by a **purchaser**.

3.1.4 **enquiry**: Invitation to **tender** issued by a **purchaser**. It will normally include a **specification** together with the necessary contractual and commercial conditions.

3.1.5 **tender**: Offer made by a **tenderer** in response to an **enquiry**.

3.1.6 **tenderer**: Person or organisation submitting a **tender** for the **equipment** in response to the **enquiry**.

3.1.7 **site**: Place to which the **equipment** is to be delivered or where work is to be done by the **supplier**, together with so much of the area surrounding as the **supplier** may, with the consent of the **purchaser**, use for the purposes of the contract.

NOTE: Further definitions of useful organisational terms may be found in EN ISO 8402 (see Annex A).

3.2 Technical terms

The technical terms used are in accordance with the international definitions of IEC 60050-486.

3.3 General terms

3.3.1 **equipment**: Plant, component, system and/or associated service to be provided in response to the **enquiry**.

3.3.2 **conformity**: Fulfilment of specified requirements by a product, process or service.

3.3.3 **performance**: Obligations verified by specified tests.

3.3.4 **operating period**: Time between planned outages or maintenance periods during which the **equipment** is in operation and/or does not restrict operational requirements of the power station.

3.3.5 **life expectancy**: Time period over which the **equipment** might be expected to operate with planned maintenance but without replacement of a significant component. For example a rectifier, or battery cell, is a significant component.

3.3.6 **design life**: Operating hours of the **equipment** on which design calculations are based.

3.3.7 **acceptability**: Compliance with criteria defined by the **purchaser** for assessing the suitability of **equipment**.

3.3.8 **equipment margins**: Allowance for design, fabrication or operating contingency defined in the **specification**. These are separate to those normally included by the **supplier** for his own purposes.

3.3.9 **proven equipment**: **Equipment** which may be demonstrated to be similar to that offered and has operated for a sufficient time to have demonstrated performance and availability.

3.3.10 **availability**: As defined in IEC 60050-191.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 45510-2-3:2002

<https://standards.iteh.ai/catalog/standards/sist/f59f1006-0ee9-40a6-b21d-54c4a6127245/sist-en-45510-2-3-2002>

3.3.11 **reliability**: As defined in IEC 60050-191.

3.3.12 **maintainability**: As defined in IEC 60050-191.

4 Brief overall project description

4.1 Role and organisation of purchaser

The **enquiry** should define the **purchaser's** role in the project, including whether the **purchaser** will assume responsibility for the planning and technical coordination of the project, or whether other organisations will be appointed to carry out all or part of this function. The **enquiry** should define all organisational interfaces and the procedures to be employed for managing the contract and the **site**.

4.2 Site location

The **specification** should describe the geographical location of the **site** which may include surveying points, the previous use of the **site** and any local features such as impact of industrial or military activities and planning restrictions.

Where applicable, the **specification** should indicate **site** datum on **specification** drawings and specify **site** and drawing orientation and define co-ordinate axes (x,y,z) and numbering order to ensure consistency between suppliers of connected equipment.

Where appropriate, the **specification** should define the permitted ground loading, dimensional and time restrictions on access routes up to but not including public roads or railways.

The **specification** should identify, where appropriate, the environment of the **site** in which the **equipment** will operate. The following factors may normally be included if appropriate:

- climatic e.g. atmospheric pressure, annual variation of air and cooling water temperature, relative humidity, rain fall, icing, snow, wind velocity (normal and maximum), lightning;
- geological e.g. seismic conditions and characteristics of subsoil (e.g. caverns, gliding stratifications, load bearing capability of subsoils);
- geographic e.g. elevation, influence of local topography and structures;
- hydrological e.g. flooding and tides.

4.3 Equipment task

The **specification** should describe in general terms the function, task or role of the **equipment** to be purchased. e.g. whether it is part of a new power generating plant, a modification to an existing power generating plant or replacement **equipment**.

Where appropriate, the **specification** should define the function and the known limitations, if any, in the **equipment** connected to that which is being supplied so that the **equipment** may avoid imposing adverse conditions or the **supplier** may suggest modifications to connected equipment which would ensure satisfactory operation.

4.4 Equipment to be purchased

The **specification** may define the **equipment** type or arrangement to be purchased.