EESTI STANDARD EVS-EN 45510-2-7:2002

Guide for procurement of power station equipment - Part 2-7: Electrical equipment; Switchgear and controlgear

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EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 45510-2-7:2002 sisaldab Euroopa standardi EN 45510-2-7:2002 ingliskeelset teksti. Käesolev dokument on jõustatud 13.12.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 45510-2-7:2002 consists of the English text of the European standard EN 45510-2-7:2002. This document is endorsed on 13.12.2002 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This Standard gives guidance on writing the technical specification for the procurement of switchgear and controlgear 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.	**Scope:** This Standard gives guidance on writing the technical specification for the procurement of switchgear and controlgear 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.

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Võtmesõnad: definitions, design, efficiency, electric power stations, equipment, guide books, guidelines, management, performance in service, policy, procurements, specification (approval), specifications, switchgears

EUROPEAN STANDARD **EN 45510-2-7**

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English version

Guide for procurement of power station equipment Part 2-7: Electrical equipment – Switchgear and controlgear

Guide pour l'acquisition d'équipements destinés aux centrales de production d'électricité
Partie 2-7: Equipements électriques – Appareillage

Leitfaden für die Beschaffung von Ausrüstungen für Kraftwerke
Teil 2-7: Elektrische Ausrüstung - Schaltanlagen

This European Standard was approved by CEN and CENELEC on 2001-03-06.

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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 45510-2-7 on 2001-03-06.

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)* *2003-03-01*
- *latest date by which the national standards conflicting with the EN have to be withdrawn* *(dow)* *2004-04-01*

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

Part 1: Common clauses

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 convertors
Part 2-5: Electrical equipment - Motors
Part 2-6: Electrical equipment - Generators
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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 45510-1 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****.*

Where paragraphs of "common clauses" are omitted, each paragraph omitted is indicated by the symbol *****.

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

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 **switchgear** and **controlgear** 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 **switchgear** and **controlgear** within installations primarily concerned with the generation of electrical power and, where appropriate, their interconnection with the transmission and/or distribution system. It also includes main connections (**busbars**) associated with generator circuits and the ancillary plant forming part of switchboards and/or switching circuits.

*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 60044-1		Instrument transformers - Current transformers (IEC 60044-1, mod.)
EN 60071	series	Insulation co-ordination (IEC 60071 series)
EN 60129		Alternating current disconnectors and earthing switches (IEC 60129)
EN 60265-1		High-voltage switches for rated voltages above 1 kV and less than 52 kV (IEC 60265-1)
EN 60265-2		High-voltage switches - Part 2: High-voltage switches for rated voltages of 52 kV and above (IEC 60265-2)

EN 60282-1		High-voltage fuses - Part 1: Current-limiting fuses (IEC 60282-1)
EN 60298		AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV (IEC 60298)
EN 60420		High-voltage alternating current switch-fuse combinations (IEC 60420)
EN 60439-1		Low-voltage switchgear and controlgear assemblies - Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1)
EN 60439-3		Low-voltage switchgear and controlgear assemblies - Part 3: Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards (IEC 60439-3, mod.)
EN 60439-4		Low-voltage switchgear and controlgear assemblies - Part 4: Particular requirements for assemblies for construction sites (ACS) (IEC 60439-4)
EN 60470		High-voltage alternating current contactors and contactor-based motor starters (IEC 60470)
EN 60517		Gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above (IEC 60517)
EN 60622		Sealed-nickel-cadmium prismatic-rechargeable single cells (IEC 60622)
EN 60623		Vented nickel-cadmium prismatic rechargeable single cells (IEC 60623)
EN 60644		Specification for high-voltage fuse-links for motor circuit applications (IEC 60644)
EN 60694		Common clauses for high-voltage switchgear and controlgear standards (IEC 60694)
EN 60865	series	Short-circuit currents - Calculation of effects (IEC 60865 series)
EN 60896	series	Stationary lead-acid batteries - General requirements and methods of tests (IEC 60896 series)
EN 60947-1		Low-voltage switchgear and controlgear - Part 1: General rules (IEC 60947-1, mod.)
EN 60947-2		Low-voltage switchgear and controlgear - Part 2: Circuit-breakers (IEC 60947-2)
EN 60947-3		Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3)
EN 60947-4-1		Low-voltage switchgear and controlgear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor-starters (IEC 60947-4-1)
EN 60947-5-1 + A12		Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices (IEC 60947-5-1)
EN 60947-6-1		Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Automatic transfer switching equipment (IEC 60947-6-1)
EN 60947-7-1		Low-voltage switchgear and controlgear - Part 7-1: Ancillary equipment - Terminal blocks for copper conductors (IEC 60947-7-1)
EN 61264 + Corr.		Ceramic pressurized hollow insulators for high-voltage switchgear and controlgear (IEC 61264)
EN 62271-100		High-voltage switchgear and controlgear - Part 100: High-voltage alternating-current circuit-breakers (IEC 62271-100)

Harmonization Documents (HD)

HD 554	Voltage transformers (IEC 60186, mod.)
HD 578	Characteristics of indoor and outdoor post insulators for systems with nominal voltages greater than 1 kV (IEC 60273)
HD 637	Power installations exceeding a.c. 1 kV

International Standards

IEC 60050-191	*International electrotechnical vocabulary - Chapter 191: Dependability and Quality of Services*
IEC 60050-441	*International electrotechnical vocabulary - Chapter 441: Switchgear, controlgear and fuses*
IEC 60466	AC insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV
IEC 60478	Stabilized power-supplies, DC output
IEC 60815	Guide for the selection of insulators in respect of polluted conditions

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***