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Guides for procurement of power station equipment - Part 4-5: Boiler auxiliaries - Coal handling and bulk storage plant

Guides for procurement of power station equipment -- Part 4-5: Boiler auxiliaries - Coal handling and bulk storage plant

Leitfaden für die Beschaffung von Ausrüstungen für Kraftwerke -- Teil 4-5: Nebenanlagen - Kohleumschlag- und Massengutlagerungsanlage

Guides pour l'acquisition d'équipements destinés aux centrales de production d'électricité -- Partie 4-5: Auxiliaires de chaudières - Installation de manutention et de stockage en vrac du charbon

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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 CEN Management Centre has the same status as the official versions.

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Foreword

This document (EN 45510-4-5:2002) has been prepared by Technical Committee CEN/CENELEC "Joint Task Force Power Engineering", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2003, and conflicting national standards shall be withdrawn at the latest by February 2003.

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

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
Part 2-7: Electrical equipment - Switchgear and control gear
Part 2-8: Electrical equipment - Power cables
Part 2-9: Electrical equipment - Cabling systems
Part 3-1: Boilers - Water tube boilers
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Part 3-3: Boilers - Boilers with fluidized bed firing
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Part 4-2: Boiler auxiliaries - Gas-air, steam-air and gas-gas heaters
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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 desulphurisation (De-SO_x) plant
Part 4-7: Boiler auxiliaries - Ash handling plant
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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.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

According to the CEN/CENELEC Internal Regulations, the national electrotechnical committees of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This standard gives guidance on writing the technical specification for the procurement of coal handling and bulk storage plant *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 all the permanent equipment which could be needed in **a coal handling and bulk storage plant**, for example**:**

- wagon unloaders or wagon tipplers;
- barges or ship unloaders;
- machines for coal handling on the yard, coal stackers and coal reclaimers (bucket wheels, scrapers);
- silos for coal mixing, **buffer silos**, hoppers, **boiler house bunkers**;
- **transfer towers** between **belt conveyors**;
- **belt conveyors**, bucket elevators;
- metal structures (towers, conveyor tunnels);
- screens and **crushers**;
- metal separators for coal (magnetic or non magnetic pieces);
- sampling devices, continuous weighers;
- **trippers** or **shuttle belt conveyors** filling up **boiler house bunkers**.

Some of the provisions may be applicable to other solid fuels, additives, by-products and waste.

This guide does not cover the wharf, railway line or roads, boats, trains, trucks and other modes of transport to the **site** and their extension within the **site**. It does not cover mobile equipment such as bulldozers to compact coal heaps.

*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 **purchaser**s 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 (including amendments).

EN ISO 9001, Quality management systems - Requirements (ISO 9001:2000).
IEC 60050-191, International electrotechnical vocabulary - Chapter 191: Dependability and quality of service.

3 Terms and definitions

For the purposes of this Guide, the following terms and 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 can be found in EN ISO 9000 (see Bibliography).

3.2 Technical terms

3.2.1
coal handling and bulk storage plant
equipment comprising unloaders, conveyors, silos, etc. which together form a system for unloading, transporting and storing coal

3.2.2
conveyor tunnel
enclosed or partially enclosed housing for one or more **belt conveyors**

3.2.3
buffer silo
intermediate coal store, whose capacity complements the available coal quantity to feed the boilers when the coal reclaimers are on stand-by (night, week end)

3.2.4
continuous maximum operating condition
maximum condition at which the plant may be operated for a period not exceeding the specified **design life**. This is the operating condition under which the **performance** tests are usually conducted

3.2.5
transfer tower
junction between successive **belt conveyors**. It houses the upstream conveyor head unit (head drive pulley, motor drive unit) and downstream conveyor end unit (feed hopper, tail pulley, tension station)

3.2.6
belt conveyor
equipment for the continuous conveyance of coal on a rubber belt with a trough section, supported by rollers and stretched between a head drive pulley and a tail pulley

3.2.7
tripper
movable **equipment** on rails above a series of silos or bunkers, pouring down coal from the belt conveyor to the silos or bunkers

3.2.8
shuttle belt conveyor
reversible **belt conveyor** (fixed or mobile on rails), conveying coal or other material on an endless loop to specific transfer point or points

3.2.9
counterweight stretcher (take-up device)
device for conveyor belt tension and stretch adjustment according to the load. The belt has a vertical U shape with a drum bearing a counterweight at its low point

3.2.10
boiler house bunkers
coal stores located above each coal mill

3.2.11
crusher
machine for reducing the raw coal to the size required for feeding to a mill or to a grate or fluidized bed boiler

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 coal reclaimer 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

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.* If appropriate, the **specification** should indicate the statistically observed maximum wind velocities and duration, for example if a stacking/reclaiming machine with boom and bucket wheel has to be shut-down when wind exceeds a certain speed (see 7.8).
- *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*, for example:

- the general arrangement of the coal yard and whether or not coal has to be compacted;
- the types of coal handling machines, for example reversible bucket-wheel, lateral scraper, frontal scraper, bucket-wheel on rolling girder, etc.;
- the redundancy of the main **equipment**;
- the arrangement of the wagon unloading station and whether it is outdoor or covered against rainfall and the type of unloading equipment (specific self discharging coal wagons with automatic bottom trap doors or high-sided open wagon);
- any unusual type of **equipment**, for example, curved conveyors, closed belts, bucket belts, conveyors with reversal of the return strand, etc.;
- the type of machine distributing coal to the **boiler house bunkers** (**trippers** or **shuttle belt conveyors**).

*The **specification** may also define preferences for **equipment** types (or give information)*