

Guide for procurement of power station equipment —

Part 6-2: Turbine auxiliaries — Feedwater heaters

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British Standard

ICS 27.040; 27.100

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National foreword

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 17 and a back cover.

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English version

Guide for procurement of power station equipment — Part 6-2: Turbine auxiliaries — Feedwater heaters

Guide pour l'acquisition d'équipements destinés aux
centrales de production d'électricité —
Partie 6-2: Auxiliaires de turbine — Réchauffeurs
d'eau d'alimentation

Leitfaden für die Beschaffung von Ausrüstungen für
Kraftwerke — Teil 6-2: Turbinenhilfseinrichtungen —
Speisewasservorwärmer

This European Standard was approved by CEN/CENELEC on 11 December 1997.

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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 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of an identical text or by endorsement, at the latest by July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

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

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

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 desulphurisation (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 plants. 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.*

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

*This standard gives guidance on writing the technical **specification** for the procurement of **feedwater heaters** 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 surface **feedwater heaters** installed in power plants and used to heat the main condensate and feedwater to be supplied to the steam producing system.

Shell and tube type **feedwater heaters** are included in this Guide, while direct contact **feedwater heaters** are covered by a separate guide (see EN 455106-1 "Guide for procurement of power station **equipment** — Part 6-1: Turbine auxiliaries — Deaerators").

Feedwater heaters may or may not have a separate or internal drain cooler or desuperheater.

The **feedwater heaters** heating the main condensate are low pressure (LP) and those heating the feedwater are high pressure (HP) **feedwater heaters**.

Depending on their installation and design they may belong to the following types:

- horizontal type;
- horizontal in the condenser exhaust neck;
- vertical water box up;
- vertical water box down;
- **feedwater heaters** with condensing zone only;
- two zone **feedwater heaters** (condensing and drain cooling or condensing and desuperheating zone);
- three zone **feedwater heaters** (desuperheating, condensing and drain cooling zones);
- duplex LP heaters;
- **header type feedwater heaters**;
- **tube sheet type feedwater heaters**;
- separate drain coolers;
- separate desuperheaters.

This Guide does not cover feedwater heating systems using waste heat taken from the exhaust of gas turbines or from the exhaust of a boiler or gland steam; generally, it only applies to systems which use extraction steam.

*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, such as other heaters, deaerator, condenser, steam generator, etc.;
- 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.

EN ISO 9001, Quality systems — Model for quality assurance in design, development, production, installation and servicing (ISO 9001:1994).

EN ISO 9002, Quality systems — Model for quality assurance in production, installation and servicing (ISO 9002:1994).

IEC 50 (191), International electrotechnical vocabulary — Chapter 191: Dependability and quality of service.