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Guidance on Practice for Fired Heaters

GP 22-10

BP GROUP
ENGINEERING TECHNICAL PRACTICES

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 22-10. This Guidance on Practice (GP) is based on parts of heritage documents from the merged BP companies as follows:

British Petroleum

GS 122-1	Fired Heaters to API 560.
GS 122-2	Natural Draught Burners for Fired Process Heaters.
GS 122-3	Forced Draught Burners for Fired Process Heaters.

Amoco

A FE-FH 560-G	Fabricated Equipment Fired Heaters Guide.
A FE-FH 560-E	Fabricated Equipment Fired Heaters API 560 Engineering Specification.

ARCO

ES 30	Fired Process Heaters.
ES 110	Refractory Linings.

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1. Scope

- a. This Guidance on Practice (GP) provides guidance on practice for design, material selection, and documentation of fired process heaters that comply with GIS 22-101.
- b. This standard does not cover steam boilers, except as steam generating and superheating becomes incidental to process and practical from standpoint of economic fuel usage.
- c. Indirect type oil field heaters or emulsion treaters are not covered by this GP and should be designed to API Spec 12K and API Spec 12L

Indirect type oil field heaters are usually located between the wellhead and pipeline used for preprocessing of oil field fluids, typically 0,03 to 1,5 MW (0,1 to 5,0 MM Btu/h) units. Emulsion treaters are usually located at oil field gathering facilities and are typically 0,03 to 0,94 MW (0,1 to 3,2 MM Btu/h) units.

ISO and API documents provide equipment data sheets in Annex A (Appendix A). Equipment data sheets are not included in this GP. Equipment data sheets and instructions for use of data sheets are included in DS 22-100 document. The equipment data sheets can be selected with SI units or U.S. customary units. The use of these equipment data sheets for new and existing fired heater systems is recommended. Completed equipment data sheets provide a uniform means of recording and communicating design information, such as general information, process design conditions, mechanical design data, and system performance data.

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

BP

DS 22-100	Data Sheet for Fired Heaters.
GIS 22-101	Guidance on Industry Standard for ISO 13705 Fired Heaters (API 560).
GP 52-10	Guidance on Practice for Insulation.
GP 06-67	Guidance on Practice for Design Decisions that Affect Corrosion.
GP 72-00	Guidance on Practice for Design and Selection of Refractory Lining Systems.

American Petroleum Institute (API)

API Spec 12K	Specification for Indirect Type Oil-Field Heaters.
API Spec 12L	Specification for Vertical and Horizontal Emulsion Treaters.
API Std 530	Calculation of Heater-Tube Thickness in Petroleum Refineries.
API Publ 535	Burners for Fired Heaters in General Refinery Services.
API Std 560	Fired Heaters for General Refinery Services.

International Organisation for Standardisation (ISO)

ISO 13704	Petroleum and Natural Gas Industries – Calculation of Heater-Tube Thickness in Petroleum Refineries.
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ISO 13705

Petroleum and Natural Gas Industries - Fired Heaters for General Refinery Service.

3. Terms and definitions

For the purposes of this GP, the following terms and definitions apply:

guillotine or isolation blind

Single blade device that is used to isolate equipment or heaters.

4. Symbols and abbreviations

For the purpose of this GP, the following symbols and abbreviations apply:

ID Induced draught.

MSDS Material Safety Data Sheet.

5. General

5.1. Applicable codes and standards

- a. Heater design shall be in accordance with ISO 13705. Due to the similarity between ISO 13705 and API Std 560, the user of this GP may opt to use API Std 560 as a base, for heater design.
- b. Engineers should be acquainted with BP and industry requirements for fired heater services and ensure appropriate requirements are applied to specific fired heater application.

BP process hazard analyses and heater location studies are important sources for both input and review of the engineering of fired heaters.

- c. BP experts in applicable areas of heater design should be consulted on new heater designs that have not been previously reviewed.
- d. Any national, state, or local applicable code or regulation shall be considered part of this GP.
- e. Responsibility for becoming familiar with such standard, specification, code, or regulation and compliance with such standard rests with users of this GP, such as BP facilities, contractor, and manufacturer.
- f. BP or E&C contractor representing BP as purchaser and Vendor shall mutually determine measures that must be taken to comply with any federal, state or local codes, regulations, ordinances, or rules that may be applicable to equipment.

5.2. MSDS

- a. Equipment or materials that contain or are coated with any regulated substances, such as the following, shall be prominently tagged at openings to indicate nature of contents and precautions for shipping, storage, and handling:
 1. Insulating oils.
 2. Corrosion inhibitors.
 3. Antifreeze solutions.
 4. Desiccants.

