

GP 07-02-01	Industrial Boilers	March 2002
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Industrial Boilers

GP 07-02-01

Scope

- 1) [I] This Global Practice (GP) covers the design, fabrication, and inspection of gas and oil fired water tube (membrane or tangent tube) industrial boilers (other than gas turbine exhaust boilers) having steam outlet conditions not exceeding 1700 psig (11730 kPa) and 950°F (510°C).
 - 2) [I] An asterisk (*) indicates that a decision by Purchaser is required or that additional information is specified by Purchaser.
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1. Required References

[I] This Section lists the Practices, codes, standards, and specifications which shall be used with this Practice.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 01-01-01	Drawings, Diagrams, and Line Lists
GP 02-01-01	Plant Noise Design Criteria
GP 03-04-01	Piping for Fired Equipment
GP 03-06-01	Piping for Instruments
GP 03-12-01	Valve Selection
GP 03-16-01	Flanged Joints, Gaskets, and Bolting
GP 03-18-01	Piping Fabrication Shop or Field
GP 04-01-02	Structural Steel Design
GP 04-01-03	Design Loads for Structures
GP 04-02-01	Auxiliary Structures for Operation and Maintenance
GP 07-05-01	Coils for Fired Heaters and Boilers
GP 07-08-01	Dampers and Guillotines for Fired Equipment
GP 10-13-01	Special Purpose Centrifugal Fans
GP 14-01-01	External Insulation
GP 15-02-01	Temperature Instruments
GP 15-03-01	Pressure Instruments
GP 15-04-01	Flow Instruments
GP 15-05-01	Level Instruments
GP 15-06-02	Environmental Protection for Instrumentation
GP 15-07-02	Protective Systems
GP 15-09-01	Control Valves
GP 15-11-01	Instrument Control Panels
GP 18-07-01	Welding Procedures
GP 18-08-01	Precommission Cleaning of Steam Generating Equipment and Piping Systems for Rotating Equipment
GP 18-10-01	Additional Requirements for Materials

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GP 18-12-01	Positive Material Identification
GP 19-01-01	Paint and Protective Coatings
GP 19-03-03	Linings for Fired Heaters
GP 20-01-01	Inspection of Equipment and Materials

1.2. AMCA–Air Movement and Control Association

AMCA 210	Laboratory Methods of Testing Fans for Rating
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1.3. ASME–American Society of Mechanical Engineers

Unless specific references to the ASME Code are listed, an IHS link to the Introduction is provided to facilitate accessing the relevant parts of the Code.

ASME SEC I	BPVC Section I - Rules for Construction of Power Boilers
ASME SEC II A	BPVC Section II A - Materials Part A - Ferrous Material Specifications
ASME SEC II B	BPVC Section II B - Materials Part B - Nonferrous Material Specifications
ASME SEC II C	BPVC Section II C - Materials Part C - Specifications for Welding Rods, Electrodes, and Filler Metals
ASME SEC II D	BPVC Section II D - Materials Part D - Properties
ASME SEC V	BPVC Section V - Nondestructive Examination
ASME SEC V A-2	Article 2 Radiographic Examination
ASME B1.20.1	Pipe Threads, General Purpose (Inch)
ASME B31.3	Process Piping
ASME PTC 4	Fire Steam Generators
ASME PTC 19.11	Steam and Water Sampling, Conditioning, and Analysis in the Power Cycle (Performance Test Codes)

1.4. ASTM–American Society for Testing and Materials

ASTM C 680	Standard Practice for Determination of Heat Gain or Loss and the Surface Temperatures of Insulated Pipe and Equipment Systems by the Use of a Computer Program
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1.5. NFPA–National Fire Protection Association

NFPA 85	Boiler and Combustion Systems Hazards Code Errata
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1.6. SSPC–Society for Protective Coatings

SSPC SP 7	Joint Surface Preparation Standard Brush-Off Blast Cleaning NACE No. 4: 2000 (Steel Structures Painting Manual, Ch 2–Surface Preparation Specs.)
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2. Additional Requirements

* [I] This Section lists the Practices, code, and standards which shall be used with this Practice as specified by Purchaser.

2.1. Global Practices–ExxonMobil Engineering Practices

GP 04-05-01	Steel Stacks
GP 04-05-02	Reinforced Concrete Chimneys
GP 05-01-02	Additional Requirements for Special Criteria Pressure Vessels
GP 07-03-01	Sootblowers for Fired Equipment
GP 07-09-01	Expansion Joints for Fired Equipment
GP 10-07-02	Special Purpose Steam Turbines
GP 15-08-01	Process Stream Analyzers
GP 16-09-01	Low Voltage AC Motors Up to 200 HP (150 kW)
GP 18-03-02	Statically Cast Steel and Alloy Pressure Containing Parts and Tube Supports for Fired Heaters

2.2. ASME–American Society of Mechanical Engineers

Unless specific references to the ASME Code are listed, an IHS link to the Introduction is provided to facilitate accessing the relevant parts of the Code.

ASME SEC VIII D1	BPVC SECTION VIII Rules for Construction of Pressure Vessels DIVISION 1 Non-Interfiled (Boiler and Pressure Vessel Codes)
ASME SEC VIII D1 MA APP 6	Appendix 6 Methods for Magnetic Particle Examination (MT)
ASME SEC VIII D1 MA APP 12	Appendix 12 Ultrasonic Examination of Welds (UT)

2.3. ASTM–American Society for Testing and Materials

ASTM A 276	Standard Specification for Stainless Steel Bars and Shapes
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ASTM A 578/A 578M	Standard Specification for Straight-Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications
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- 1) * [I] Proposals to use codes other than listed in Section 1 shall be submitted to Purchaser for approval by Purchaser. To be considered for acceptance, the code must be acceptable to the inspecting authority of the country in which the boiler will be installed.
- 2) [R] A corrosion allowance of $\frac{1}{16}$ in. shall be used for drums, headers, and all tube and crossover piping.

3. Definitions

Term	[I] Description
Effective projected radiant surface	[I] In the furnace, this shall be calculated as the flat projected area of exposed tubes and exposed extended surface integral with tubes. Refractory covered surfaces shall not be included. Calculation of furnace heat absorption is to be based on this definition.
Radiant heating surface	[I] In the furnace, this is defined as the flat projected area of all surfaces enclosing the furnace volume exclusive of superheater cavity opening. Calculation of furnace heat release is to be based on this definition.

4. Documentation

4.1. Proposal information

[I] A technical description, including the following information for the boiler and auxiliaries, shall be supplied:

- 1) An itemized descriptive list of valves, instruments, controls, piping, and other boiler accessories included in the scope of supply.
- 2) The system resistance curve, overplotted on the fan characteristic curve for all FD and ID fans, for each operating combination.
- 3) Guaranteed ramp rates (load change) through entire range for:
 - a) Cold start-up
 - b) Upward load charge
 - c) Downward load charge
- 4) A functional logic diagram showing the light-off and shutdown sequence for the burners.

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