Heat Recovery Steam Generators for Combustion Turbine Exhaust Applications

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Introduction

Heat recovery steam generators for combustion turbine exhaust applications are used in oil and gas applications typically for power generation, process heating, or both. Designs often include provisions for combustion of fuel in duct burners to supplement the energy provided from turbine exhaust gas. This document defines common terms and requirements for the design, fabrication, inspection, testing, preparation for shipment, and erection of heat recovery steam generators.

Once-through type heat recovery steam generators without a steam drum and forced circulation type are not specifically covered in this standard. However, many of the requirements contained in this standard are considered applicable to those designs. The users of this standard should assess to what extent this standard may be applied to other types of heat recovery steam generators.

Users of this standard should be aware that further or differing requirements may be needed for individual applications. This standard is not intended to inhibit a supplier from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the supplier should identify any variations from this standard and provide details.

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A bullet (●) at the beginning of a clause or subclause indicates that either a decision is required or further information is to be provided by the purchaser. This information should be indicated on the purchaser's checklist (see Annex E) or stated in the inquiry or purchase order.

Heat Recovery Steam Generators for Combustion Turbine Exhaust Applications

1 Scope

This standard specifies minimum requirements and provides guidance for the design, materials, fabrication, inspection, testing, preparation for shipment, and erection of heat recovery steam generators (HRSGs) downstream of combustion turbines in oil and gas application.

The scope of this standard covers water tube drum type HRSG with typical operating conditions up to 14000 kPa(g) (2030 psig) and 565 °C (1050 °F) and using a natural circulation evaporator system.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Standard 536, *Post-combustion NOx Control for Fired Equipment in General Refinery and Petrochemical Services*

API Recommended Practice 582, *Welding Guidelines for the Chemical, Oil, and Gas Industries*

API Standard 607, *Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats*

API Standard 673, *Centrifugal Fans for Petroleum, Chemical, and Gas Industry Services*

API Standard 6FA, *Standard for Fire Test of Valves*

API Technical Report 938-B, *Use of 9CR-1Mo-V (Grade 91) Steel in the Oil Refining Industry*, First Edition, 2008

ANSI S1.4-1983 (R2006) [1], *Specifications for Sound Level Meters*

ANSI/ISA 75 [2] (all parts), *Control Valve Standards*

ASME *Boiler and Pressure Vessel Code (BPVC)* [3], *Section I, Rules for Construction of Power Boilers*

ASME *BPVC, Section VIII, Division 1, Rules for Construction of Pressure Vessels*

ASME BTH-1, *Design of Below-the-Hook Lifting Devices*

ASME B30.20, *Below-the-Hook Lifting Devices*

ASME CRTD-81, *Consensus on Operating Practices for the Sampling and Monitoring of Feedwater and Boiler Water Chemistry in Modern Industrial Boilers*

ASME PTC 4.4, *Gas Turbine Heat Recovery Steam Generators*

ASME PTC 19.11:2008, *Steam and Water Sampling, Conditioning, and Analysis in the Power Cycle*

ASME STS-1, *Steel Stacks*

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1 American National Standards Institute, 1899 L Street, NW, Washington, DC 20036, www.ansi.org.

2 International Society of Automation, 3252 S. Miami Blvd., #102, Durham, NC 27703, www.isa.org.

3 American Society of Mechanical Engineers, Two Park Avenue, New York, New York 10016, www.asme.org.