Burners for Fired Heaters in General Refinery Services

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Burners for Fired Heaters in General Refinery Services

1 Scope

This recommended practice (RP) provides guidelines for the selection and/or evaluation of burners installed in fired heaters in general refinery services. Details of fired heater and related equipment designs are considered only where they interact with the burner selection. This RP does not provide rules for design but indicates areas that need attention. It offers information and descriptions of burner types available to the designer/user for purposes of selecting the appropriate burner for a given application.

The burner types discussed are those currently in industry use. It is not intended to imply that other burner types are not available or recommended. Many of the individual features described in these guidelines will be applicable to most burner types.

In addition to specification of burners, this RP has been updated to include practical guidelines for troubleshooting in service burners as well as including considerations for safe operation.

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. Changes in referenced standards, codes, and specifications shall be mutually agreed to by the owner and the vendor.

API Standard 560, *Fired Heaters for General Refinery Services*

3 Terms and Definitions

For the purposes of this document, the following definitions apply.

3.1
adiabatic flame temperature
Temperature that results from a complete combustion process without any heat transfer or changes in kinetic or potential energy.

3.2
aerosols
A suspension of fine solid or liquid particles in gas (smoke, fog, and mist are aerosols).

3.3
air/fuel ratio
The ratio of the combustion air flow rate to the fuel flow rate. This may either be in mass or volume units and needs to be specified.

3.4
air register
That part of a burner that can admit combustion air through openings around the burner assembly.

3.5
atomization
The breaking of a liquid into tiny droplets to improve fuel–air mixing, thereby improving combustion efficiency. Steam, air, and fuel gas can be used as atomizing media. Steam is the most common in the refining industry. Atomization may also be accomplished by mechanical means.