Instrumentation, Control, and Protective Systems for Gas Fired Heaters

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1 Scope

1.1 Purpose

1.1.1 This recommended practice (RP) provides guidelines that specifically apply to instrument, control and protective system installations for gas fired heaters in petroleum production, refineries, petrochemical and chemical plants.

1.1.2 A gas fired general service heater defined in this practice liberates heat by the combustion of fuel gas and this heat is transferred to liquids and/or gases in tubular coils all contained within an internally insulated enclosure.

1.1.3 **Not** covered in this RP are the following:

— oil fired and combination fired heaters;

— water tube boilers which consist of single or multiple burners and are designed for utility operation or where the primary purpose is steam generation (covered by NFPA 85);

— fired steam generators used to recover heat from combustion turbines [i.e. heat recovery steam generators (HSRG)];

— oven and furnaces used for the primary purpose of incineration, oxidation, reduction or destruction of the process medium (covered by NFPA 86);

— water bath or oil bath indirect fired heaters (covered by API 12K);

— CO boilers, pyrolysis furnaces (e.g. ethylene and hydrogen reformers), and other specialty heaters.

1.1.4 This RP includes primary measuring and actuating instruments, controls, alarms, and protective systems as they apply to fired heaters. For additional subject matter review, refer to the referenced or industry standards.

1.2 General

1.2.1 Instrumentation and control applications incorporate systems and devices to satisfy equipment specific requirements. Equipment specific requirements include safety, process control, data collection, environmental reporting and other local applications.

1.2.2 Documentation including schedules, drawings, sketches, specifications and other data should be provided to install the equipment in the desired manner and for the users to maintain, inspect, test and operate the system in a safe manner.

1.2.3 The various industry codes and standards as well as laws and rules of local regulating bodies shall be followed where applicable.

1.2.4 Although it is no substitute for experience and proficiency in these fields, this document is intended to assist users with achieving such experience and proficiency. Because of the lack of uniformity in the design and requirements of the processes, the complete instrumentation and control system must be studied to determine if it will enable the unit to be started-up, operated, and shut down satisfactorily and safely.