1 Scope

The scope of this standard is to address the major combustion control subsystems in boilers with steaming capabilities of 200,000 lb/hr (25 kg/s) or greater. These subsystems include, but are not limited to, furnace pressure control (balanced draft), airflow control, and fuel flow control when firing coal, oil, gas, or combinations thereof. Specifically excluded from consideration are development of boiler energy demand, all burner control, interface logic systems, and associated safety systems, as well as all controls associated with fluidized bed and stoker-fired combustion units.

2 Purpose

The purpose of this standard is to establish the minimum requirements for the functional design specification of combustion control systems for drum-type, fossil-fueled, power-plant boilers.

3 Definitions

The following definitions are provided to clarify their use in this standard and may not be relevant to the use of the word in other texts. For other definitions, please refer to ANSI/ISA-51.1-1979 (R1993), Process Instrumentation Terminology.

3.1 air:
the mixture of oxygen, nitrogen, and other gases, which, with varying amounts of water vapor, forms the atmosphere of the earth.

3.2 air purge:
a flow of air through the furnace, boiler-gas passages, and associated flues and ducts that will effectively remove any gaseous combustibles and replace them with air. Purging may also be accomplished by an inert medium.

3.3 alarm
an audible and/or visible means of indication to the plant operator, an equipment or process malfunction, or abnormal condition.

3.4 balanced draft:
a system of furnace pressure control in which the inlet airflow or the outlet flue gas flow is controlled to maintain the furnace pressure at a fixed value (typically slightly below atmospheric).

3.5 boiler:
the entire vessel in which steam or other vapor is generated for use external to the vessel. This includes the furnace, consisting of waterwall tubes; the firebox area, including burners and dampers; the convection area, consisting of any superheater, reheater, economizer sections or any combination thereof, as well as drums and headers.

3.6 burner:
A device or group of devices for the introduction of fuel and air into a combustion chamber at the velocity, turbulence, and concentration required to maintain ignition and combustion of fuel.

3.7 combustion:
the rapid chemical combination of oxygen with the combustible elements of a fuel, resulting in the production of heat.

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