1 Purpose

The purpose of this standard is to establish the minimum requirements for the functional design specification of steam temperature control systems for drum type and once-through type fossil fuel power plant boilers.

2 Scope

The scope of this standard addresses the major steam temperature control subsystems in boilers with steaming capacities of 200,000 lb/hr (25 kg/s) or greater. These subsystems include, but are not limited to, superheat temperature control and reheat temperature control. Specifically excluded from consideration are controls associated with fluidized-bed, stoker-fired furnace combustion units and mud drum desuperheaters.

3 Definitions

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

3.1 attemperator:
a device used for maintaining and controlling the temperature of superheated steam.

3.2 attemperator (direct contact type):
a device in which the steam and the cooling medium (water) are mixed.

3.3 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.

3.4 cascade control system:
a control system in which the output of one controller (the outer loop) is the setpoint for another controller (the inner loop). The outer loop is normally a slower responding process than the inner loop.

3.5 control loop:
a combination of field devices and control functions arranged so that a control variable is compared to a setpoint and its output returns to the process in the form of a manipulated variable.

3.6 controller:
any manual or automatic device or system of devices used to regulate a process within defined parameters. If automatic, the device or system responds to variations in a process variable.

3.7 desuperheater (direct contact type):
a device in which the steam and the cooling medium (water) are mixed.

3.8 deviation:
the difference between the loop setpoint and the process variable (also called error).

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