

## 1 Purpose

The purpose of this standard is to establish the minimum design requirements for the functional design specifications of selective catalytic reduction control systems for use in fossil-fired power plants.

## 2 Scope

This standard will address the control functions associated with the selective catalytic reduction systems on fossil-fired steam boilers greater than 200,000 lbs/hr and combustion turbines greater than 25 megawatts. This includes the outlet NO<sub>x</sub> control using ammonia flow control, startup and shutdown logic, bypass/isolation logic, dilution air system control, ammonia storage and delivery system control, and catalyst cleaning systems. Urea to ammonia systems are excluded from the scope of this document.

## 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 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 of an equipment or process malfunction or abnormal condition.

### 3.4 aqueous ammonia

a liquid solution of ammonia and water. Normally the concentration of aqueous ammonia for use in SCRs is below 30%. Typical commercial concentrations are 29% and 19%.

### 3.5 ammonia slip

ammonia that passes through the SCR without reacting with the NO<sub>x</sub> in the flue gas.

### 3.6 anhydrous ammonia

essentially pure ammonia, 99.8% or higher ammonia content, typically referred to as commercial or metallurgical grade. Not diluted with water.

### 3.7 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.