

1 Scope

The scope of this standard is to address the simulation of fossil fuel power plants typically consisting of:

- Boiler, turbine, and balance of plant with steaming capacities of 200,000 lbs/hr (25 kg/s) or greater
- Combustion turbine or combined cycle combustion turbine capacity of greater than 100MWs
- Associated or interactive processes

This standard will address high-fidelity process and control logic models, highly replicated user interfaces, highly functional instructor tools, high-realism physical fidelity trainee environments, simulator platform considerations, and minimum levels of documentation.

2 Purpose

The purpose of this standard is to establish the functional requirements for several types of plant-specific, fossil fuel power plant control room simulators. It sets minimum criteria for the degree of software modeling detail and hardware replication, performance, and functional capabilities of the simulator control room operator interfaces. This standard does not address DCS tie-back simulators, or simulators used primarily for engineering purposes. This standard does not establish criteria for the use of simulators in training programs.

Operating and training practices and procedures differ considerably among the various organizations that operate fossil fuel plant control room simulators, however, the goals of personnel safety, maximum equipment availability and lifetime, and efficiency of operations are common to all. Therefore, this standard is intended to provide flexibility in both design and use.

3 Definitions

The following definitions are included to clarify their use in this standard and may not correspond to the use of the word in other texts.

design control: A design approach that ensures that the initial simulator design and any subsequent changes to it are carried out in a systematic, controlled, and documented manner.

fidelity: The degree of both physical and functional realism.

functional fidelity: The degree of similarity between the simulator and the reference plant relative to the static and dynamic response of the equipment and controls.

part-task simulator: A simulator that incorporates detailed modeling of a single or very limited number of specific reference plant components or subsystems. Such a simulator demonstrates the expected response of those components or subsystems.

physical fidelity: The degree of similarity between the simulator and the reference plant in the physical design and location of the panels, equipment, instruments, and controls.

reference plant: The specific fossil fuel plant from which the simulator control room configuration, the system control arrangements, and the simulator database are derived.

replicate: To imitate the reference plant in such a way as to copy hardware, processes, and data, but not to the point of making substitution possible,

real time: Simulation of dynamic performance in the same time-based relationships, sequences,