1. Scope

This standard addresses steam turbine governor controls and overspeed protection of steam turbine generators in fossil power plants. Specifically excluded from consideration are single valve and controlled extraction turbines, mechanical drive turbines, automated startup/shutdown systems, turbine supervisory instrumentation, steam bypass systems, and turbine water induction prevention (TWIP) systems.

2. Purpose

The purpose of this standard is to establish the minimum requirements for functional design specifications of steam turbine control systems for use in fossil fueled power generation plants.

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:

3.1. Bumpless transfer:

Automatic tracking such that any control mode transfer is accomplished without a sudden process upset.

3.2. Controller:

Any manual or automatic device or system of devices used to regulate processes within defined parameters.

3.3. Control valve:

A valve or set of valves used to regulate inlet steam flow to the turbine during normal operation and controlled by the turbine control system.

3.4. Distributed control system (DCS):

A digital control system in which the control computations are performed on multiple processing units. Decision-making equipment with its associated power supplies, control processor(s), I/O hardware, and sensing devices.

3.5. Emergency condition:

Any condition that requires operator or control system intervention to prevent personal injury or equipment damage.

3.6. Failsafe:

The capability to go to a predetermined safe state in the event of a specific malfunction.

3.7. Fault tolerant:

Built-in capability of a system to provide continued correct execution of its assigned function in the presence of one or more hardware and/or software faults.

3.8. First-stage pressure:

The pressure within a steam turbine at the point where the steam exits the first row of turbine blades. The pressure at this point is closely proportional to the flow rate of steam through the turbine. First-stage pressure is also referred to as impulse pressure by some turbine manufacturers.

3.9. Full arc:

Steam admission that throttles steam equally through all nozzle segments or partitions simultaneously. See **partial arc**.

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