

GP 03-03-08	Washing Systems for Steam Turbines	July 2001
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Washing Systems for Steam Turbines

GP 03-03-08

Scope

[I] This Global Practice (GP) covers the design of washing systems for special purpose steam turbines.

[I] An asterisk (*) indicates that additional information is required. If a job is contracted, this additional information is furnished in the Job Specification.

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1. Preliminary Considerations

1.1. Method of Washing

[I] Washing of a steam turbine is accomplished by gradually desuperheating the inlet steam from the initial temperature down to about 15°F (8°C) of superheat, holding the temperature at this near saturation value for a definite period of time, and then gradually restoring the temperature to its initial value.

1.2. Equipment Capabilities

* [O] The turbine equipment, steam inlet and exhaust piping, water and condenser facilities, and washing facilities shall be designed to permit washing at normal turbine speed with a reduced load, as determined by a review of expected plant operations.

1.3. Facility Requirements

[O] A reliable source of high purity water such as high-pressure condensate or polished demineralized water is required for desuperheating. If boiler feed water quality is satisfactory, water may be taken directly from the discharge of the boiler feed pumps. If suitable high-pressure condensate or boiler feed water is not available, a separate supply system, consisting of an atmospheric condensate storage tank and pumping facilities, shall be required.

1.4. Future Washing System Provisions

* [C] If “provision for future washing system” is specified, the system shall be fully designed, and the required connections shall be provided so that washing facilities may be added without interruption of normal operation.

2. System Design

- 1) [I] A typical washing system for a multiple turbine installation is shown in Figure 1.
- 2) [R] A minimum of 70 ft (21.3 m) shall be provided between the desuperheater and the turbine trip or trip and throttle valve.
- 3) [R] All valves in the steam line that must be operated during the washing cycle, and all low points, shall be equipped with trapped drains. All traps shall be installed with a valved bypass.

2.1. Acceptable Alternative Arrangement

[C] The desuperheater may be located directly in the steam supply lateral to the turbine, eliminating the bypass. In this case, the desuperheater shall be designed for minimum pressure drop and removal under line pressure to facilitate maintenance.

Note: The design is most applicable to single turbine installations.

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