ASME PTC 70-2009

REAFFIRMED 2019

Ramp Rates

Performance Test Codes

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Date of Issuance: April 15, 2009

This Code will be revised when the Society approves the issuance of a new edition. There will be no addenda issued to ASME PTC 70-2009.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Code. Periodically certain actions of the ASME PTC Committee may be published as Code Cases. Code Cases and interpretations are published on the ASME Web site under the Committee Pages at http://cstools.asme.org as they are issued.

The American Society of Mechanical Engineers
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NOTICE

All Performance Test Codes must adhere to the requirements of ASME PTC 1, General Instructions. The following information is based on that document and is included here for emphasis and for the convenience of the user of the Code. It is expected that the Code user is fully cognizant of Sections 1 and 3 of ASME PTC 1 and has read them prior to applying this Code.

ASME Performance Test Codes provide test procedures that yield results of the highest level of accuracy consistent with the best engineering knowledge and practice currently available. They were developed by balanced committees representing all concerned interests and specify procedures, instrumentation, equipment-operating requirements, calculation methods, and uncertainty analysis.

When tests are run in accordance with a Code, the test results themselves, without adjustment for uncertainty, yield the best available indication of the actual performance of the tested equipment. ASME Performance Test Codes do not specify means to compare those results to contractual guarantees. Therefore, it is recommended that the parties to a commercial test agree before starting the test and preferably before signing the contract on the method to be used for comparing the test results to the contractual guarantees. It is beyond the scope of any Code to determine or interpret how such comparisons shall be made.

FOREWORD

The PTC Standards Committee approved the development of a test code on ramp rates. During their June 2007 meeting, a proposed Charter was approved, and the effort to constitute a committee was undertaken. An organizational meeting (via teleconferencing) was held in September 2007. After several teleconferences, a document was completed for industry review by the end of March 2008.

This Code was approved as a Standard practice of the Society by action of the Board on Standardization and Testing on December 8, 2008. It was also approved as an American National Standard by the ANSI Board of Standards Review on February 2, 2009.

ASME PTC COMMITTEE
Performance Test Codes

(The following is the roster of the Committee at the time of approval of this Code.)

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CORRESPONDENCE WITH THE PTC COMMITTEE

General. ASME Codes are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Code may interact with the Committee by requesting interpretations, proposing revisions, and attending Committee meetings. Correspondence should be addressed to

Secretary, PTC Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Proposing Revisions. Revisions are made periodically to the Code to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Code. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Code. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued for the purpose of providing alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Code, the paragraph, figure or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Code to which the proposed Case applies.

Interpretations. Upon request, the PTC Standards Committee will render an interpretation of any requirement of the Code. Interpretations can only be rendered in response to a written request sent to the Secretary of the PTC Standards Committee.

The request for interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable edition of the Code for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format will be rewritten in this format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The PTC Standards Committee regularly holds meetings, which are open to the public. Persons wishing to attend any meeting should contact the Secretary of the PTC Standards Committee.

RAMP RATES

Section 1
Object and Scope

1-1 OBJECT

This Code provides the procedures, direction, and guidance for the accurate determination, via testing, of the maximum repeatable load change ramp rate, startup load change rate, or shutdown load change rate of a power plant. The load change rate is distinguished by starting from one operating point at steady state condition and transitioning to another. Startup commences at a shutdown condition, or intermediary startup condition, and proceeds to a defined running condition. Shutdown begins at a running condition and proceeds to a shutdown condition or intermediary shutdown condition.

Measurements of actual net generation as a function of time are the primary test parameters. Additional data and information will be collected as part of this analysis to determine the long- and short-term effects of various ramp rates on the equipment and systems in the power plant of interest. This information includes and is not limited to design specifications and actual operating conditions.

1-2 SCOPE

This Code is applicable to all electrical generating facilities, independent of fuel source or prime movers.

This Code is directed at providing guidelines for measuring the machinery impact of controlled transients that are initiated by the operator. It is not the intent of this Code to address uncontrolled transients that may be initiated by system activity such as load rejection or governor response to grid frequency disturbances.

1-3 EXPECTED MEASUREMENT UNCERTAINTY

Uncertainties shall be determined utilizing techniques specified in ASME PTC 19.1. The expected uncertainties of tests completed following this Code are dependent upon the type of power plant, its size, and the test objective(s). For a simple ramp rate test from one operating load to another, resulting in an average MW/min value, uncertainties of better than 0.2% should be achievable when following this Code.