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PTC 11-1984

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Fans

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PERFORMANCE
TEST
CODES

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
United Engineering Center
345 East 47th Street New York, N.Y. 10017

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Date of Issuance: October 30, 1984

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FOREWORD

(This Foreword is not part of ANSI/ASME PTC 11-1984.)

PTC 11-1946, entitled Test Code for Fans, was published by the Society in 1946. As noted in its Foreword, the personnel of the committee that developed the Code consisted of members of the American Society of Heating and Ventilating Engineers, the National Association of Fan Manufacturers, and the American Society of Mechanical Engineers. The Code, as written, was basically a laboratory test standard in that it provided instructions for arrangement of test equipment such as ducts, plenum chamber, and flow straighteners, as well as instruments. It even stated that the test could be conducted in the manufacturer's shops, the customer's premises, or elsewhere. This Code was widely distributed and the principles set forth in it undoubtedly provided the basis for many other laboratory standards for testing fans.

Most ASME Power Test Codes (later called Performance Test Codes) provided instructions for testing equipment after it was installed. Since PTC 11-1946 was basically a laboratory standard, it was allowed to go out of print with the expectation that a revised code would be written that would provide directions for site testing of fans.

In July of 1961, a new PTC 11 Committee was formed. Several drafts were prepared, but all of them essentially provided laboratory directions. This Committee still considered field or site testing to be impractical unless laboratory conditions could be duplicated.

The PTC 11 Committee was reorganized in 1971. It initially attempted to resolve the difficulties of site testing by resorting to model testing. This was not acceptable to the Society. Ultimately, procedures were developed that could be used in the field without the need to modify the installation so as to condition the flow for measurement. The Committee performed tests to determine the acceptability of these procedures. These tests included full-scale field tests of two large mechanical-draft fans as well as various laboratory tests of various probes for measuring flow angles and pressures. Subsequent tests (Ref. 19) performed independently of the Committee have demonstrated the practicability of this Code with regard to both manpower and equipment in a large-power-plant situation.

The Committee has also monitored the progress of an International Committee which was writing test codes for fans. While this Committee, ISO 117, had not completed its work, it was obvious that several things they were doing should be incorporated in PTC 11. The major item contributed by ISO 117 is the concept of specific energy (also called work per unit mass) which, when combined with mass flow rate, provides an approach to fan performance that can be used instead of the volume flow rate/pressure approach. ISO also recognizes the distributionality of velocity across the measuring plane and PTC 11 incorporates provisions to account for this.

This Code was approved by the Board on Performance Test Codes on May 19, 1983. It was approved and adopted by the American National Standards Institute, Inc., on March 23, 1984.

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