

§ 431.444

Three-Phase Small Motors, IBR approved for § 431.444.

(2) [Reserved]

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(1) IEEE Std 112™-2004 (Revision of IEEE Std 112-1996) (“IEEE Std 112”), *IEEE Standard Test Procedure for Polyphase Induction Motors and Generators*, approved February 9, 2004, IBR approved for § 431.444.

(2) IEEE Std 114-2001™ (Revision of IEEE Std 114-1982) (“IEEE Std 114”), *IEEE Standard Test Procedure for Single-Phase Induction Motors*, approved December 6, 2001, IBR approved for § 431.444.

§ 431.444 Test procedures for the measurement of energy efficiency.

(a) *Scope*. Pursuant to section 346(b)(1) of EPCA, this section provides the test procedures for measuring, pursuant to EPCA, the efficiency of small electric motors pursuant to EPCA. (42 U.S.C. 6317(b)(1)) For purposes of this Part 431 and EPCA, the test procedures for measuring the efficiency of small electric motors shall be the test procedures specified in § 431.444(b).

(b) *Testing and Calculations*. Determine the energy efficiency and losses by using one of the following test methods:

(1) Single-phase small electric motors: either IEEE Std 114, (incorporated by reference, see § 431.443), or CAN/CSA C747, (incorporated by reference, see § 431.443);

(2) Polyphase small electric motors less than or equal to 1 horsepower (0.746 kW): IEEE Std 112 (incorporated by reference, see § 431.443), Test Method A; or

(3) Polyphase small electric motors greater than 1 horsepower (0.746 kW): IEEE Std 112 (incorporated by reference, see § 431.443), Test Method B.

§ 431.445 Determination of small electric motor efficiency.

(a) *Scope*. When a party determines the energy efficiency of a small electric motor to comply with an obligation imposed on it by or pursuant to

10 CFR Ch. II (1-1-10 Edition)

Part A-1 of Title III of EPCA, 42 U.S.C. 6311-6317, this section applies.

(b) *Provisions applicable to all small electric motors*—(1) *General requirements*. The average full-load efficiency of each basic model of small electric motor must be determined either by testing in accordance with § 431.444 of this subpart, or by application of an alternative efficiency determination method (AEDM) that meets the requirements of paragraphs (a)(2) and (3) of this section, provided, however, that an AEDM may be used to determine the average full-load efficiency of one or more of a manufacturer’s basic models only if the average full-load efficiency of at least five of its other basic models is determined through testing.

(2) *Alternative efficiency determination method*. An AEDM applied to a basic model must be:

(i) Derived from a mathematical model that represents the mechanical and electrical characteristics of that basic model, and

(ii) Based on engineering or statistical analysis, computer simulation or modeling, or other analytic evaluation of performance data.

(3) *Substantiation of an alternative efficiency determination method*. Before an AEDM is used, its accuracy and reliability must be substantiated as follows:

(i) The AEDM must be applied to at least five basic models that have been tested in accordance with § 431.444; and

(ii) The predicted total power loss for each such basic model, calculated by applying the AEDM, must be within plus or minus 10 percent of the mean total power loss determined from the testing of that basic model.

(4) *Subsequent verification of an AEDM*. (i) Each manufacturer that has used an AEDM under this section shall have available for inspection by the Department of Energy records showing the method or methods used; the mathematical model, the engineering or statistical analysis, computer simulation or modeling, and other analytic evaluation of performance data on which the AEDM is based; complete test data,