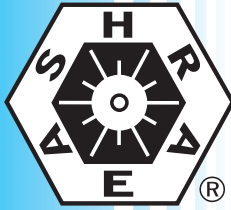


ANSI/ASHRAE Standard 125-1992 (RA 2006)
Reaffirmation of ANSI/ASHRAE Standard 125-1992



ASHRAE STANDARD

Method of Testing Thermal Energy Meters for Liquid Streams in HVAC Systems

Approved by the ASHRAE Standards Committee June 27, 1992, and reaffirmed October 2, 2005. Approved by the ASHRAE Board of Directors July 2, 1992, and reaffirmed January 22, 2006. Approved by the American National Standards Institute August 24, 1992, and reaffirmed January 23, 2006.

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ISSN 1041-2336

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FOREWORD

This is a reaffirmation of ASHRAE Standard 125-1992. This standard falls under the Standards Committee classification of Standard Method of Measurement. This standard was prepared under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interests of obtaining uniform standards throughout the industry.

This standard describes tests for determining the measurement accuracy of thermal energy meters for indicating the amount of thermal energy added to, or extracted from, a liquid stream. Procedures are provided for testing meters designed for domestic hot water, heating only, cooling only, or combined heating and cooling service. Two test facility concepts are described that have proved useful for calibrating such meters.

The changes made for the 2006 reaffirmation were updates to the references.

1. PURPOSE

The purpose of this standard is to provide a method of testing factory-assembled thermal energy meters used to measure the thermal energy added to or extracted from a liquid stream supplying an HVAC system.

2. SCOPE

2.1 The test methods, procedures, and facility descriptions in this standard are intended for use in determining measurement accuracy, pressure losses, service flow rate limits, temperature difference limits, and reliability effects of mounting attitude.

2.2 This standard is limited to applications in which the fluid remains in a completely liquid state while traversing the thermal energy meter.

2.3 The applications of this standard include, but are not limited to, thermal energy meters used for billing or revenue metering for hydronic applications.

2.4 This standard does not apply to meters using principles of change-of-state of the fluid, simple elapsed time, or measured indoor or outdoor temperature difference to allocate consumption among various end-use customers.

3. DEFINITIONS

3.1 Figure 1 illustrates the elements of a thermal energy meter.

3.2 The following definitions apply:

accuracy: the ability of an instrument to indicate the true value of the measured physical quantity.

Btu meter: see *thermal energy meter*.

flowmeter: see *flow sensor*.

flow sensor: a sensor capable of providing a signal (output) that is related to the volumetric flow of liquid through the sensor.

heat meter: see *thermal energy meter*.

integrator: a device using signals from temperature and flow sensors through time for computing thermal energy transferred.

negative sense: a test condition in which the temperature of the remote sensor is less than the temperature of the proximate sensor.

positive sense: a test condition in which the temperature of the remote sensor is greater than the temperature of the proximate sensor.

precision: the closeness of agreement among repeated measurements of a constant physical quantity.

proximate sensor: the temperature sensor located in the same temperature stream as the flow sensor.

remote sensor: the temperature sensor located in a stream whose temperature is different from the temperature of the proximate sensor.

temperature differential sensor: a sensor system composed of two temperature sensors, which is capable of providing a signal that is related to the temperature differential of the two sensors.

temperature sensor: a sensor, located in the liquid circuit, which is capable of producing a signal (output) that is related to the temperature of the sensor.

thermal energy meter: a metering system capable of measuring the thermal energy added to or extracted from a liquid stream.

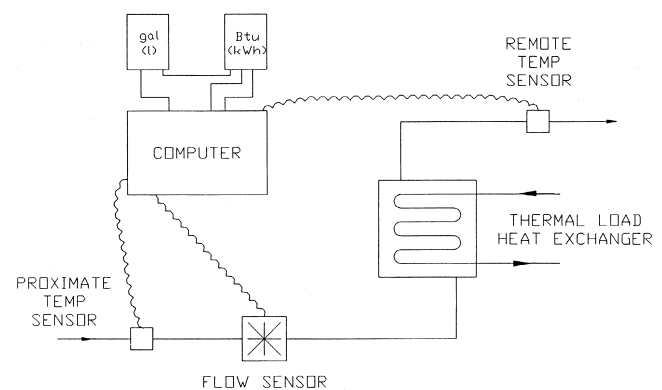


Figure 1 Elements of a thermal energy meter (i.e., test article) in an open-loop configuration.