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ANSI/ASHRAE Standard 125-2020
Method of Testing Thermal Energy Meters for Liquid Streams in HVAC Systems

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NOTE

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FOREWORD

This is a revision of Standard 125-2016. This standard was prepared under the auspices of 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 2020 revision updates references in the standard.

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.