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Measurement of Fluid Flow by Means of Thermal Dispersion Mass Flowmeters

A Standard for Engineers Worldwide

ASME MFC-21.2-2010

This Standard establishes common terminology and gives guidelines for the quality, description, principle of operation, selection, installation, and flow calibration of thermal dispersion flowmeters for the measurement of the mass flow rate, and to a lesser extent, the volumetric flow rate, of the flow of a fluid in a closed conduit. Multivariable versions additionally measure fluid temperature. Thermal dispersion mass flowmeters are applicable to the flow of single-phase pure gases and gas mixtures of known composition and, less commonly, to single-phase liquids of known composition.

This national Standard offers the most complete description heretofore of the principle of operation and other aspects of thermal dispersion mass flowmeters. The text shows why these flowmeters directly measure the mass flow rate of gases—the quantity of interest in almost all applications, including combustion, chemical reactions, batching, and custody transfer.

Chapters in this new Standard describe typical mistakes made in installing thermal dispersion mass flowmeters in the process line. Also described is the need for built-in flow conditioners for in-line flowmeters with upstream flow disturbances. Safety considerations during installation and maintenance are given priority throughout.

All thermal dispersion mass flowmeters are flow calibrated by either the manufacturer or an independent laboratory. Inaccurate flow calibration can result in erroneous mass flow readings in the field. A mandatory appendix in the Standard provides, for the first time, a detailed description of the procedures and facilities required for accurate flow calibration.

Intended for engineers and other users of flowmeters for gas flow measurement in such industries as energy, food, semiconductors, waste water, and the environment.

Coming soon: Companion Standard ASME MFC-21.1-2011, which covers capillary tube type thermal mass and controllers.

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Description:

ISBN:9780791833087
No. Pages:.....36
Price:\$35.00 USD

Formats:

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Print-Book / Order No.: K15610

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