ISO 14511:2001-10 (E)

Measurement of fluid flow in closed conduits - Thermal mass flowmeters

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 1
3.1 General terms 1
3.2 Specific terms 2

4 Selection of thermal mass flowmeters 4

5 Capillary thermal mass flowmeter (CTMF meter) 5
5.1 Principles of measurement 5
5.2 Typical design 7
5.3 Applications and limitations of use 8
5.4 Meter selection 10
5.5 Installation and commissioning 12

6 Insertion and/or in-line thermal mass flowmeter (ITMF meter) 13
6.1 Principles of measurement 13
6.2 Typical design 16
6.3 Applications and limitations of use 18
6.4 Meter selection 20
6.5 Installation and commissioning 22

7 Instrument specification sheet and marking 24
7.1 User specification sheet 24
7.2 Manufacturer's data sheet 24
7.3 Marking 25

8 Calibration 27
8.1 General considerations 27
8.2 Use of the desired gas under process conditions 27
8.3 Use of a surrogate gas 27
8.4 In-situ calibration 27
8.5 Insertion-ITMF meter 27
8.6 Calibration frequency 28
8.7 Calibration certificate 28

9 Pre-installation inspection and testing 29

10 Maintenance 29
10.1 General 29
10.2 Visual inspection 29
10.3 Functional test 30
10.4 Record keeping (maintenance audit trail) 30

Bibliography 31