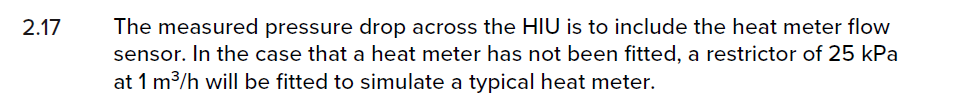
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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Technical Note** | | | **TN-025** | |
| **Test:** All tests | | | **Test no.:** | |
| **Assumption: Flow restrictor pressure loss** | | | **Assumption no: 58** | |
| **Rev: 03** | **Date: 18/01/2022** | **Author: Valeria Khnykina** | | **Checked:**  **Tom Naughton** |

# **Introduction**



# **Consideration** **1**

A number of heat meters types and manufacturers have been reviewed and the pressure loss compared with the test assumption.

Summary of results:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Qp | Nominal Diameter | Flow rate, m3/h | Pressure loss, **mbar** | Type |
| Sharky 775 | qp 1.0/1.5 | DN15 | 1.0 | 40 | Ultrasonic |
| Kamstrup 403 | qp 1.5 | DN15 | 1.0 | 40 | Ultrasonic |
| Sontex 749 | qp 1.5 | DN15 | 1.0 | 90 | Oscillation |
| Sontex 449 | qp 1.5 | DN15 | 1.0 | 90 | Oscillation |
| Danfoss SonoSelect 10 | qp 1.5 | DN15 | 1.0 | 70 | Ultrasonic |
| Ista Ultego III Smart plus | qp 1.5 | DN20 | 1.0 | 70 | Ultrasonic |
|  |  |  |  |  |  |
| Sharky 775 | qp 0.6 | DN15 | 1.0 | 250 | Ultrasonic |
| Kamstrup 403 | qp 0.6 | DN15 | 1.0 | 80 | Ultrasonic |
| Sontex 749 | qp 0.6 | DN15 | 1.0 | 500 | Oscillation |
| Danfoss SonoSelect 10 | qp 0.6 | DN15 | 1.0 | 85 | Ultrasonic |
| Ista Ultego III Smart plus | qp 0.6 | DN20 | 1.0 | 400 | Ultrasonic |

(1 kPa = 10 mbar = 0.01 bar)

Typically heat meters with Qp 1.5 within HIU units, heat meters with Qp 0.6 are shown for comparison.

1. Sharky 775

A screenshot of a computer

Description automatically generated with medium confidence

1. Kamstrup 403

A screenshot of a computer

Description automatically generated with medium confidence

1. Sontex Superstatic 749

Chart, line chart

Description automatically generated

1. Sontex Superstatic 449

Chart, line chart

Description automatically generated

1. Danfoss Sonoselect 10

Chart

Description automatically generated

1. Ista Ultego III Smart Heat Meter

Chart, line chart

Description automatically generated

# **Consideration 2**

British Standards: BS EN 1434-4, Table B.1 – Checklist for type approvals of heat meters according to EN 1434:

6.1.5. The Maximum pressure loss at Qp shall not exceed 0.25 bar (250mbar/25kPa), except where the heat meter includes a flow controller or also acts as a pressure reducing valve.

# **Recommendation**

For a typical domestic heat meter with Qp 1.5 the pressure loss at 1.0 m3/h is significantly lower than the restrictor pressure loss 25 kPa currently used in the test.

The recommendation is:

1. To reduce the pressure loss to 10 kPa (100 mbar) for the restrictor to simulate a typical heat meter.
2. HIU units are proposed to be tested with the restrictor installed to replace the meter.
3. The manufacturer can select an option to test with their preferred heat meter. The pressure loss of the meter “X” kPa at 1.0 m3/h should be stated in the components list.

If a HIU is tested with a specific heat meter (option 3 above), the test results will only be applicable for any HIU using a heat meter with the same pressure loss as the installed heat meter or an equivalent heat meter with the same or lower pressure loss when measured at 1.0 m3/h. An HIU that was supplied with a heat meter with a great pressure loss across the heat meter would need to be retested in order to be BESA certified.

# **References**

[1] Sharky 775 Data Sheet

[2] Kamstrup 403 Data Sheet

[3] Sontex Superstatic 749 and 449 Data Sheet

[4] Danfoss SonoSelect 10 Data Sheet

[5] Ista Ultego III Smart plus Data Sheet

[6] BS EN 1434-4:2015, Heat Meters