Nederlands Meetinstituut

CERTIFICATE

Certificate number : 39330809
Project number : 707551

Applicant	Impulse Pumps B.V. Schooltinkweg 12 7021 MC Zelhem The Netherlands
Submitted	A liquid flow meter.

Manufacturer	: --
Type	: Digi-flow 80
Serial number	: 1005
Q_{max}	: 100 m³/h

The meter is provided with a digital display.

Calibration method

The deviation of the meter as a function of flow rate has been determined by direct comparison with the Dutch National Standard for liquid quantity measurements(reference meters).
Tests have been carried out using water with a pressure up to $3{,}1.10^5$ Pa and a mean temperature of 20,2°C (± 0,5°C).

Date of calibration

4 september 2007.

Results

The results of the calibration are presented on page 2 of 2.

Traceability

The results of the calibration services of NMi VSL are traceable to primary and/or (inter)nationally accepted measurement standards.

Dordrecht, 20 September 2007
NMi Van Swinden Laboratorium B.V.

J.C. Rath
Section Liquid Flow & Volume

This certificate is consistent with Calibration and Measurement Capabilities (CMCs) that are included in Appendix C of the Mutual Recognition Arrangement (MRA) drawn up by the International Committee for Weights and Measures (CIPM). Under the MRA, all participating institutes recognize the validity of each other's calibration and measurement certificates for the quantities, ranges and measurement uncertainties specified in Appendix C (for details see http://kcdb.bipm.fr).

CIPM MRA

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Results

Flow rate [m3/h]	Deviation [%]
2,0	+2,04
5,2	-1,23
10,1	-2,21
14,4	-2,26
29,6	-1,19
61,9	-1,54
90,3	-2,38

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The flow meter was not adjusted.

$$\text{Deviation [\%]} = \frac{\text{Indicated volume} - \text{Reference volume}}{\text{Reference volume}} * 100\ \%$$

The uncertainty in the deviation is less then or equal to 0,10%.
The reported uncertainty of measurement is based on the standard uncertainty of measurement multiplied by a coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with the Guide to the Expression of Uncertainty in Measurement (GUM).

Remarks

Because of the measuring principle of the flow meter it is necessary to use the right pipes on the up- and downstream side of the flow meter. During the calibration the following pipes where mounted.
Length of the test-pipe upstream 1500 mm and internal diameter 80 mm.
Length of the test-pipe downstream 1000 mm and internal diameter 80 mm.
Internal diameter of the flow meter is 77 mm.