

Nederlands Meetinstituut

# Certificate

Certificate number : 3930833  
Project number : 302322  
Page 1 of 2

**Applicant** Emerson Process Management  
Groeneveldselaan 6-8  
3903 AZ VEENENDAAL  
The Netherlands

**Submitted** A test installation for the calibration of flowmeters.

Installation name : Stand 4  
Tool number : 32221-01  
Test liquid : water

The test installation mainly consist of:

- a storage tank with 46 m<sup>3</sup> water,
- a frequency controlled centrifugal pump,
- a section for meters under test,
- a transfer point for the standing start stop method,
- two weighing scales namely:

No.	Maximum load	Model	Serial number	Tool number
1	3000 kg	KE3000	1804903	10130-01
2	24000 kg	GCU 45	11847	23226-01

- a set of counters,
- a temperature- and pressure transmitter,
- a computer data acquisition system,

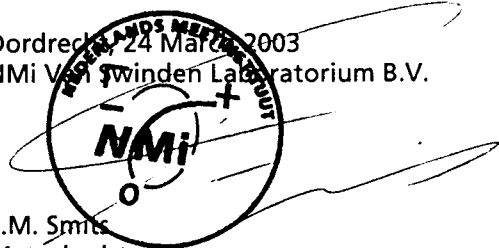
The test installation is in use for the calibration of flowmeters by means of weighing directly according to the static gravimetric method.

**Test method** The Calibration Measurement Capabilities (CMC) were determined in accordance with the Guide to the expression of uncertainty in measurement. The method is reported in the addendum to this certificate, called "CMC of stand 4", version 1; 24 March 2003, edited by Mr. A. R. Pruysen from Emerson Process Management in Veenendaal. This addendum was verified and hallmarked by NMi Van Swinden Laboratorium B.V..

**Period of Investigation** March 2003.

**Results** The results are presented on page 2 of 2.

Dordrecht, 24 March 2003  
NMi Van Swinden Laboratorium B.V.



F.M. Smits  
Metrologist

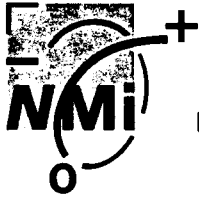
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**NMi B.V.**  
(Chamber of Commerce no. 27.228.701)

**Subsidiary Companies:**  
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- Results**            The Calibration Measurement Capability of Stand 1 for mass, is less then or equal to 0,03%.  
The Calibration Measurement Capability of Stand 1 for density, is less then or equal to 0,13 kg/m<sup>3</sup>.
- The reported uncertainties are based on 95% confidence intervals. The coverage factor is  $k = 2$
- Usages of CMC**        The Calibration Measurement Capability is only valid if the following criteria are fulfilled:
- the testing time is at least 30 seconds,
  - the minimum amount of generated pulses by the flowmeter during the test is 10000,
  - the minimum batch for weighing scale 1 is 500 kg,
  - the minimum batch for weighing scale 2 is:
    - 2000 kg when scale is used from gross loads of 6000 kg and higher or
    - 4000 kg for any gross loads,
- Traceability**        All instrument used in the test installation were verified to be traceable to primary and/or (inter)nationally accepted measurement standards.  
Netherlands Meetinstituut (NMI - Netherlands Measurements Institute) is the National institute of metrology in the Netherlands. NMI Van Swinden Laboratorium B.V. (NMI VSL) is part of NMI and appointed by Dutch Law and Royal Decision as the National Standards institute.
- The calibration services of NMI Van Swinden Laboratorium B.V. provide a direct link to international accepted physical standards to achieve comparability and reliability of measurement data by proven traceability.
- NMI Van Swinden Laboratorium B.V. has an accreditation certificate from The Dutch Accreditation Council RvA as being in compliance with ISO/IEC 17025:1999. NMI VSL accreditation number is K999.
- Remarks**            - The Calibration Measurement Capability is defined according ISO 5168 as the uncertainty that is achieved when calibrating an ideal flowmeter under normal conditions; the uncertainty contribution from variations of the meter under test (type A contributions) and the uncertainty coming from start stop effects are not included in the CMC. The contribution in the uncertainty for standing start stop method for Micro Motion mass flowmeters is quantified in the mentioned addendum, clause D.8.
- When an initial verification of a custody transfer flowmeter is performed on this test installation, the applied legal regulations require that the testing time is increased to at least 60 seconds.
  - This certificate is not valid anymore if the weighing scales are modified or replaced. The temperature and pressure measurements may be replaced as long as the uncertainties as mentioned in the addendum are granted.

