

CALIBRATION CERTIFICATE**28779****Applicant**

Customer name CCSTEC GesmbH
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Austria

Order reference applicant CP0999
Order reference TPF Control 28778

Instrument information [DUT]

Instrument type Flow Calibrator
Manufacturer Mesa Laboratories
Serial no. 115673
Model Definer 220-H
Tag no. -

Calibration method

The device under test is connected in a parallel setup to the mentioned flow calibrator to compare flow readings. An appropriate warm up time is incorporated.
A flow source is connected to the inlet of the instrument to generate a flow.

Period of calibration

06 January 2015

Calibration result

The results of the calibration are presented on the following page(s). The reported uncertainty of measurement is based on the standard uncertainty multiplied by a coverage factor $k=2$ which provides a confidence level of approximately 95%.
The standard uncertainty of measurement has been determined in accordance with EA-4/02.

Calibration traceability

The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA and apply to ISO 17025.

Remarks**Certificate issue date**

Boven Leeuwen, 06 January 2015

Calibration technician

Bart Vissers

Technical Manager



Rik van de Bovenkamp

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Calibration conditions

Calibration gas : Nitrogen (grade 5.0)

Note:

1. Temperature and Pressure calibration are not performed under ISO 17025:2005
2. The reported flow values are standardized flows to 101325 Pa and 21.1 °C.

Calibration results

Lab temperature: 20.1 °C

Atmospheric pressure: 1030.9 mBar

INSTRUMENT			LAB STANDARD			DEVIATION (ERROR)			UNCERTAINTY	
[mls/min]			[mls/min]	Tool no.		[%] O.R.	[mls/min]	Limit [%]	CMC [%]	Flow [%]
305.63			307.63	B00101		-0.65	-2.00	1.00	0.47	0.55
4982.7			5010.4	B00104		-0.55	-27.70	1.00	0.52	0.63
29889			29950	B00104		-0.20	-61.00	1.00	0.52	0.61

INSTRUMENT			LAB STANDARD			DEVIATION (ERROR)			UNCERTAINTY	
[°C]			[°C]	Tool no.		[%] O.R.	[°C]	Limit [°C]	CMC [°C]	Temp [°C]
20.4			20.2	T00101		0.99	0.2	0.8	0.12	0.15

INSTRUMENT			LAB STANDARD			DEVIATION (ERROR)			UNCERTAINTY	
[mmHg]			[mmHg]	Tool no.		[%] O.R.	[mmHg]	Limit [mmHg]	CMC [mmHg]	Pres [mmHg]
773			774	P00107		-0.13	-1.0	3.5	0.68	0.68

Calibration results after adjustment

Lab temperature: 19.5 °C

Atmospheric pressure: 1021.5 mBar

INSTRUMENT			LAB STANDARD			DEVIATION (ERROR)			UNCERTAINTY	
[mls/min]			[mls/min]	Tool no.		[%] O.R.	[mls/min]	Limit [%]	CMC [%]	Flow [%]
304.27			303.62	B00101		0.21	0.65	1.00	0.47	0.56
4998.5			5009.6	B00104		-0.22	-11.10	1.00	0.52	0.60
29948			29935	B00104		0.04	13.00	1.00	0.52	0.60

INSTRUMENT			LAB STANDARD			DEVIATION (ERROR)			UNCERTAINTY	
[°C]			[°C]	Tool no.		[%] O.R.	[°C]	Limit [°C]	CMC [°C]	Temp [°C]
19.5			19.5	T00101		0.00	0.0	0.8	0.12	0.15

INSTRUMENT			LAB STANDARD			DEVIATION (ERROR)			UNCERTAINTY	
[mmHg]			[mmHg]	Tool no.		[%] O.R.	[mmHg]	Limit [mmHg]	CMC [mmHg]	Pres [mmHg]
766			766	P00107		0.00	0.0	3.5	0.68	0.68

The deviation is determined by:
$$\text{Deviation} = \frac{\text{Instrument reading} - \text{Lab standard reading}}{\text{Lab standard reading}} * 100 \%$$