


Cahier de maintenance
HORIBA

Venette Plasticomnium mini shed 7

Date de maintenance **18/09/2020**

<i>Rédacteur</i>	X.Métail
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<i>Intervenants</i>	X.Métail
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Rédacteur	Responsable Dpt Technique
	

Sommaire

I - Couverture

II - Données générales du système

1 - Système

2 - Remarques générales

III - Données analyseurs

IV - Tests

03 - Test de fuite et mesure du débit en bout de ligne

Sommaire

V - Consommables et pièces de maintenance

Consommables

Gamme de maintenance

VI - Certificats

Certificat de Calibration GDC-703 Utilisé

VII - Annexes

II - Données Générales du Système

1 - Système : Cahier de réception HORIBA

2 - Remarques Générales

Systeme

<i>Client</i>	Plasticomnium
<i>Banc</i>	mini shed 7
<i>Date Installation</i>	
<i>Date Maintenance</i>	18/09/2020
<i>Intervenants</i>	X.Métail
<i>Rédacteur</i>	X.Métail

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Remarques Générales

<i>Client</i>	Plasticomnium
<i>Banc</i>	mini shed 7
<i>Date Installation</i>	
<i>Date Maintenance</i>	18/09/2020
<i>Intervenants</i>	X.Métail

	C/NC
	C/NC
	C/NC
	C/NC
	C/NC
	C/NC
	C/NC
	C/NC
	C/NC

C : Conforme

NC : Non Conforme

III - Données Analyseurs

[illegible]

Données Analyseurs

18-sept

Ligne	1
Gaz	THC

Analyseur						
Type	N° Série	IFC IP #	Rack ANR #	Port #	Mode	Nb. Echelles
1170HFID	RSSRAVB8	0	0	x	1	

Linéarisation				
Diluteur	N° Série	Calibré le	Echelles	Gaz utilisé
GDC 703	4437654012	20/02/2020	50 ppmC	24.33 ppmC
Certif. Nb.	C13649			

Données Linéarisation

SYSTEME - Nom :	HORIBA
SYSTEME - Numéro de Série :	Shed 7
MCU - Nom :	
MCU - Version :	
LIGNE - Nom :	Direct
LIGNE - Numéro :	
IFC :	

ANALYSEUR - Composant :	THC
ANALYSEUR - Echelle :	50 ppmC
ANALYSEUR - Gaz Utilisé :	24.33 ppmC
ANALYSEUR - Gaz de Span :	24.33 ppmC
ANALYSEUR - Echelle Num. :	3
ANALYSEUR - Position :	
ANALYSEUR - ID :	
ANALYSEUR - Numéro de Série :	RSSRAVB8

DATE :	18/09/2020
Heure (traçabilité de la bouteille étalon) :	10:00:00
Pression de Référence (kPa) :	101.1
GDC - Type de Diluteur :	GDC 703
GDC - Gaz de Dilution :	AIR
GDC - Temps de Stabilisation (s) :	
GDC - Temps de Purge (s) :	
GDC - Nombre Total de Points :	11
Critère de Validation :	

Anciens Coefficients :	A0	A1	A2	A3	A4
	-7.0065E+00	1.5923E-03	0.0000E+00	0.0000E+00	0.0000E+00

Nouveaux Coefficients :	A0	A1	A2	A3	A4

Coefficients Retenus :	Ancien
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Points Générés :			Concentrations Lues								
Point :	Division (%)	Conc. Générée	Cons affichage	Cons pilotage	Ecart % du pt	Statut	Ecart % echelle	Ecart % bout	Statut	Press. Réf. (kPa)	Débit (cc/min)
1	100.00	24.33	24.33	24.33	0.00	C	0.00	0.00	C		4 000
2	90.00	21.92	21.88	21.88	-0.18	C	-0.08	-0.16	C		4 000
3	80.00	19.46	19.43	19.43	-0.15	C	-0.06	-0.12	C		4 002
4	70.00	17.03	16.94	16.94	-0.53	C	-0.18	-0.37	C		4 001
5	60.00	14.60	14.59	14.59	-0.07	C	-0.02	-0.04	C		4 001
6	50.00	12.16	12.21	12.21	0.41	C	0.10	0.21	C		4 001
7	40.00	9.73	9.79	9.79	0.61	C	0.12	0.25	C		4 002
8	30.00	7.30	7.35	7.35	0.68	C	0.10	0.21	C		4 001
9	20.00	4.87	4.90	4.90	0.61	C	0.06	0.12	C		4 001
10	10.00	2.43	2.45	2.45	0.82	C	0.04	0.08	C		4 001
11	0.00	0.00	0.00	0.00	0.00	C	0.00	0.00	C		4 001
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IV - Tests


03 - Test de fuite et mesure du débit en bout de ligne

[illegible]

- Constat de vérification -

Test de Fuite et Mesure du Débit en bout de ligne

Nom de l'opérateur	X.Métail
Référence du système	
Procédures utilisées	TI 10/01/102 HF
Matériel utilisé	nom
	Certificat
	date d'étalonnage

Date du test	18/09/2020
Périodicité	1A
Visa de l'opérateur	
	

Conditions ambiantes	Température	22 °C
	Pression	101.7 kPa

Ligne	1					
valeur bouteille	24.33					
valeur bout de ligne	24.39					
Résultat	.					
Action si NC						
Remarques						
Ligne						
Dépression lue (t=0)						
Dépression lue (t=30s)*						
Résultat						

* Tolérance (EMT) : < 100 mbar

Lecture O2 sur sacs N2**						
Résultat						
Action si NC						
Remarques						
Lecture O2 sur sacs N2**						
Résultat						

** Tolérance (EMT) : < 0.1 %

Débit en bout de ligne	1l/min					
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Ce document ne peut être utilisé en lieu et place d'un certificat d'étalonnage.

Ce document est réalisé suivant les recommandations du fascicule de documentation X 07-011 définissant le constat de vérification. Il peut être utilisé pour démontrer le raccordement du moyen de mesure aux étalons nationaux ou internationaux, sous réserve qu'il réponde aux recommandations du fascicule de documentation X 07-015.

V - Pièces de Maintenance

Gamme de maintenance

GAMME DE MAINTENANCE

MEXA-1170-HFID

Ver.3.0

Nom du client	PLASTICOMNIUM
Site	Venette
Banc	Mini shed 7
Date	18/04/2020
Système	MEXA 1170HFID n°s: RSSRAVB8
Rédacteur	X.Métail

• MEXA 1170 HFID

R : Remplacement ; N : Nettoyage ; V : Vérification

				Fait		
	Réf.	Nb	Période	Tr.	Sem.	An.
Prélèvement principal						
Joint entrée Echantillon O ring P26	3030053448	1	1 x an			R
Vérification des clapets/membranes de pompes						
Set de 2 membranes pour 1 pompe Diaphragm assy	1000065261	1	1 x an			R
Membranes clapets	1000064269	1	1 x 1200h			R
Remplacement des filtres						
Filtre papier sortie de pompe	3012331937	1	1 x an			R
net 14Dx400	3200082308	1	1x an			R
O ring Nok	3030049451	1	1x an			R

VI - Certificats

Certificat de Calibration GDC-703 Utilisé

CERTIFICATE OF CALIBRATION

ISSUED BY HORIBA UK LIMITED

DATE OF ISSUE 20 February 2020

CERTIFICATE NUMBER C13649



ISO 17025



0767

HORIBA UK LTD

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Moulton Park
Northampton
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Telefax: 01604 - 542699

Page 1 of 5 pages

Approved Signatory

Name T.Lowe

Signature

This is an electronically controlled document.

Customer : Horiba France SAS

Address : 16-18 rue du Canal, Longjumeau 91165
France

Customer Site: France

Customer ID : N 00505

Instrument : GDC 703

Serial No : 4437654012

Customer Ref: 4511065475

Customer CC: 5000565338

Calibration Date: 18 February 2020

Calibration Engineer: B. Bhola / A. Cernych

Method:

The Gas Divider acclimatised to the laboratory environment ($20 \pm 2^\circ\text{C}$) overnight. The Gas Divider was connected to a Molbloc system. An As Found accuracy check was carried out and the data recorded. The Gas Divider MFC's were then calibrated over their given flow range. The Gas Divider was then leak tested, where the system was pressurised to 18 psig, through each sample port. Any pressure drops were noted and the leaks were investigated, found and cured. The Gas Divider MFC's were then calibrated over their given flow range. A set of internal calibration coefficients are generated using the MFC Calibration data and as left resultant accuracy check is carried out. This check represents the gas divider standard operational accuracy when used to verify an analyser.

The results in this certificate only apply to the unit which was calibrated at HORIBA UK LTD, Northampton NN3 6FL, UK.

<u>Equipment Used</u>	<u>Serial Number</u>	<u>Cert. Number</u>	<u>Calibration Date</u>
Molbox	2185	N026263	01-April-2019
Molbloc (5slm)	6542	N026260	02-April-2019
Molbloc (500sccm)	6543	N026261	04-April-2019
Molbloc (100sccm)	6544	N026262	04-April-2019
Nitrogen	S137089W	345075-L-C	02-September-2019

Ambient Conditions

Temperature 20 °C \pm 3.0 °C

Nitrogen Pressure

120 kPa

Software Version

GDC-703-H Ver 5.102

Condition Of Equipment

POOR

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0767

Certificate Number C13649

Page 2 of 5 pages

The results on this page are the corrected measured flow rates from the output of the GDC

MFC Flow Calibration As found

		Expected Flow Rate	Measured Flow Rate	Error	Error	Uncertainty
		(ml/min)	(ml/min)	(ml/min)	%	(%)
		0.00	0.00	0.00		0.50
		800.00	795.40	4.60	0.58	0.50
		1600.00	1588.06	11.94	0.75	0.50
		2400.00	2386.19	13.81	0.58	0.50
		3200.00	3185.19	14.81	0.46	0.50
		3600.00	3586.29	13.71	0.38	0.50
		3680.00	3666.58	13.42	0.36	0.50
MFC 1		3760.00	3746.31	13.69	0.36	0.50
		3840.00	3826.47	13.53	0.35	0.50
		3920.00	3906.37	13.63	0.35	0.50
		3960.00	3946.22	13.78	0.35	0.50
		3968.00	3954.28	13.72	0.35	0.50
		3976.00	3961.60	14.40	0.36	0.50
		3984.00	3969.14	14.86	0.37	0.50
		3992.00	3977.18	14.82	0.37	0.50
		4000.00	3984.93	15.07	0.38	0.50

		Expected Flow Rate	Measured Flow Rate	Error	Error	Uncertainty
		(ml/min)	(ml/min)	(ml/min)	%	(%)
		4000.00	3988.55	11.45	0.29	0.50
MFC 4		3200.00	3185.42	14.58	0.46	0.50
		2400.00	2387.62	12.38	0.52	0.50
		1600.00	1590.94	9.06	0.57	0.50
		800.00	796.79	3.21	0.40	0.50
		400.00	398.06	1.94	0.48	0.50
		320.00	318.33	1.67	0.52	0.50
MFC 3		240.00	238.63	1.37	0.57	0.50
		160.00	158.93	1.07	0.67	0.50
		80.00	79.34	0.66	0.82	0.50
		40.00	39.73	0.27	0.68	0.50
		32.00	31.80	0.20	0.64	0.50
MFC 2		24.00	23.86	0.14	0.60	0.50
		16.00	15.93	0.07	0.44	0.50
		8.00	7.95	0.05	0.62	0.50
		0.00	0.00	0.00		0.50

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Page 3 of 5 pages

The results on this page are the raw uncorrected measured flow rates from the output of the GDC

MFC Flow Calibration

As found

MFC2 Flow error

	Cut Point (% FS)	Expected Flow Rate (ml/min)	Measured Flow Rate (ml/min)	Error (ml/min)	Uncertainty (%)
	100.00	4000.00	3989.05	10.95	0.50
	90.00	3600.00	3553.74	46.26	0.50
	80.00	3200.00	3131.92	68.08	0.50
	70.00	2800.00	2721.66	78.34	0.50
	60.00	2400.00	2320.20	79.80	0.50
MFC1	50.00	2000.00	1925.16	74.84	0.50
	40.00	1600.00	1534.94	65.06	0.50
	30.00	1200.00	1148.13	51.87	0.50
	20.00	800.00	763.62	36.38	0.50
	10.00	400.00	379.82	20.18	0.50
	0.00	0.00	0.03	-0.03	0.50
	100.00	60.00	N / A	N / A	0.50
	90.00	54.00	N / A	N / A	0.50
	80.00	48.00	N / A	N / A	0.50
	70.00	42.00	N / A	N / A	0.50
	60.00	36.00	N / A	N / A	0.50
MFC2	50.00	30.00	N / A	N / A	0.50
	40.00	24.00	N / A	N / A	0.50
	30.00	18.00	N / A	N / A	0.50
	20.00	12.00	N / A	N / A	0.50
	10.00	6.00	N / A	N / A	0.50
	0.00	0.00	N / A	N / A	0.50
	100.00	500.00	502.65	-2.65	0.50
	90.00	450.00	450.16	-0.16	0.50
	80.00	400.00	398.58	1.42	0.50
	70.00	350.00	347.77	2.23	0.50
	60.00	300.00	297.44	2.56	0.50
MFC3	50.00	250.00	247.53	2.47	0.50
	40.00	200.00	197.91	2.09	0.50
	30.00	150.00	148.41	1.59	0.50
	20.00	100.00	99.00	1.00	0.50
	10.00	50.00	49.52	0.48	0.50
	0.00	0.00	0.01	-0.01	0.50
	100.00	4000.00	3969.65	30.35	0.50
	90.00	3600.00	3533.41	66.59	0.50
	80.00	3200.00	3112.67	87.33	0.50
	70.00	2800.00	2703.32	96.68	0.50
	60.00	2400.00	2303.38	96.62	0.50
MFC4	50.00	2000.00	1910.38	89.62	0.50
	40.00	1600.00	1522.56	77.44	0.50
	30.00	1200.00	1138.65	61.35	0.50
	20.00	800.00	756.98	43.02	0.50
	10.00	400.00	375.99	24.01	0.50
	0.00	0.00	0.04	-0.04	0.50

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0767

Certificate Number C13649

Page 4 of 5 pages

The results on this page are the raw uncorrected measured flow rates from the output of the GDC

MFC Flow Calibration

As Left

New MFC calibration data programmed.

	Cut Point (% FS)	Expected Flow Rate (ml/min)	Measured Flow Rate (ml/min)	Error (ml/min)	Uncertainty (%)
MFC1	100.00	4000.00	4024.08	-24.08	0.50
	90.00	3600.00	3586.08	13.92	0.50
	80.00	3200.00	3160.95	39.05	0.50
	70.00	2800.00	2747.07	52.93	0.50
	60.00	2400.00	2341.76	58.24	0.50
	50.00	2000.00	1942.85	57.15	0.50
	40.00	1600.00	1548.68	51.32	0.50
	30.00	1200.00	1157.94	42.06	0.50
	20.00	800.00	769.56	30.44	0.50
	10.00	400.00	382.31	17.69	0.50
	0.00	0.00	0.24	-0.24	0.50
MFC2	100.00	60.00	59.99	0.01	0.50
	90.00	54.00	53.36	0.64	0.50
	80.00	48.00	46.89	1.11	0.50
	70.00	42.00	40.66	1.34	0.50
	60.00	36.00	34.60	1.40	0.50
	50.00	30.00	28.70	1.30	0.50
	40.00	24.00	22.91	1.09	0.50
	30.00	18.00	17.16	0.84	0.50
	20.00	12.00	11.43	0.57	0.50
	10.00	6.00	5.70	0.30	0.50
	0.00	0.00	0.03	-0.03	0.50
MFC3	100.00	500.00	502.79	-2.79	0.50
	90.00	450.00	450.46	-0.46	0.50
	80.00	400.00	398.99	1.01	0.50
	70.00	350.00	348.22	1.78	0.50
	60.00	300.00	297.88	2.12	0.50
	50.00	250.00	247.97	2.03	0.50
	40.00	200.00	198.27	1.73	0.50
	30.00	150.00	148.79	1.21	0.50
	20.00	100.00	99.35	0.65	0.50
	10.00	50.00	49.74	0.26	0.50
	0.00	0.00	0.04	-0.04	0.50
MFC4	100.00	4000.00	3977.41	22.59	0.50
	90.00	3600.00	3542.80	57.20	0.50
	80.00	3200.00	3122.21	77.79	0.50
	70.00	2800.00	2712.57	87.43	0.50
	60.00	2400.00	2311.80	88.20	0.50
	50.00	2000.00	1917.45	82.55	0.50
	40.00	1600.00	1528.06	71.94	0.50
	30.00	1200.00	1142.15	57.85	0.50
	20.00	800.00	758.77	41.23	0.50
	10.00	400.00	376.15	23.85	0.50
	0.00	0.00	0.20	-0.20	0.50

CERTIFICATE OF CALIBRATION

UKAS Accredited Calibration Laboratory No. 0767

Certificate Number C13649

Page 5 of 5 pages

The results on this page are the corrected measured flow rates from the output of the GDC

MFC Flow Calibration As Left

		Expected Flow Rate	Measured Flow Rate	Error	Error	Uncertainty
		(ml/min)	(ml/min)	(ml/min)	%	(%)
		0.00	0.00	0.00		0.50
		800.00	797.66	2.34	0.29	0.50
		1600.00	1594.09	5.91	0.37	0.50
		2400.00	2394.31	5.69	0.24	0.50
		3200.00	3193.57	6.43	0.20	0.50
		3600.00	3592.55	7.45	0.21	0.50
		3680.00	3671.01	8.99	0.24	0.50
MFC 1		3760.00	3749.92	10.08	0.27	0.50
		3840.00	3828.62	11.38	0.30	0.50
		3920.00	3908.35	11.65	0.30	0.50
		3960.00	3948.12	11.88	0.30	0.50
		3968.00	3956.23	11.77	0.30	0.50
		3976.00	3963.64	12.36	0.31	0.50
		3984.00	3971.68	12.32	0.31	0.50
		3992.00	3979.33	12.67	0.32	0.50
		4000.00	3987.42	12.58	0.31	0.50

		Expected Flow Rate	Measured Flow Rate	Error	Error	Uncertainty
		(ml/min)	(ml/min)	(ml/min)	%	(%)
		4000.00	3990.29	9.71	0.24	0.50
MFC 4		3200.00	3191.51	8.49	0.27	0.50
		2400.00	2394.61	5.39	0.22	0.50
		1600.00	1595.65	4.35	0.27	0.50
		800.00	798.69	1.31	0.16	0.50
		400.00	399.45	0.55	0.14	0.50
		320.00	319.49	0.51	0.16	0.50
MFC 3		240.00	239.62	0.38	0.16	0.50
		160.00	159.81	0.19	0.12	0.50
		80.00	79.90	0.10	0.12	0.50
		40.00	39.95	0.05	0.11	0.50
		32.00	31.97	0.03	0.10	0.50
MFC 2		24.00	23.98	0.02	0.08	0.50
		16.00	15.97	0.03	0.18	0.50
		8.00	7.94	0.06	0.73	0.50
		0.00	0.00	0.00		0.50

End of UKAS Certificate

Supplementary Information

All indicated flows are reported at a standard condition of 101.325kPa and 25°C.

MFC Check As Found

Cut Point (%)	Zero flow rate (ml/min)	±1.0% RS	Span Flow Rate (ml/min)	±1.0% RS	Accuracy (%)	Error ±1.0% RS
100.00	0.00	0.00	3988.55	-0.29	100.00	0.00
80.00	795.40	-0.58	3185.42	-0.46	80.02	0.02
60.00	1588.06	-0.75	2387.62	-0.52	60.06	0.09
40.00	2386.19	-0.58	1590.94	-0.57	40.00	0.01
20.00	3185.19	-0.46	796.79	-0.40	20.01	0.05
10.00	3586.29	-0.38	398.06	-0.48	9.99	-0.09
8.00	3666.58	-0.36	318.33	-0.52	7.99	-0.15
6.00	3746.31	-0.36	238.63	-0.57	5.99	-0.19
4.00	3826.47	-0.35	158.93	-0.67	3.99	-0.31
2.00	3906.37	-0.35	79.34	-0.82	1.99	-0.46
1.00	3946.22	-0.35	39.73	-0.68	1.00	-0.33
0.80	3954.28	-0.35	31.80	-0.64	0.80	-0.29
0.60	3961.60	-0.36	23.86	-0.60	0.60	-0.23
0.40	3969.14	-0.37	15.93	-0.44	0.40	-0.07
0.20	3977.18	-0.37	7.95	-0.62	0.20	-0.25
0.00	3984.93	0.00	0.00	0.00	0.00	0.00

MFC Check As Left

Cut Point (%)	Zero flow rate (ml/min)	±1.0% RS	Span Flow Rate (ml/min)	±1.0% RS	Accuracy (%)	Error ±1.0% RS
100.00	0.00	0.00	3990.29	-0.24	100.00	0.00
80.00	797.66	-0.29	3191.51	-0.27	80.00	0.01
60.00	1594.09	-0.37	2394.61	-0.22	60.03	0.06
40.00	2394.31	-0.24	1595.65	-0.27	39.99	-0.02
20.00	3193.57	-0.20	798.69	-0.16	20.01	0.03
10.00	3592.55	-0.21	399.45	-0.14	10.01	0.06
8.00	3671.01	-0.24	319.49	-0.16	8.01	0.08
6.00	3749.92	-0.27	239.62	-0.16	6.01	0.10
4.00	3828.62	-0.30	159.81	-0.12	4.01	0.17
2.00	3908.35	-0.30	79.90	-0.12	2.00	0.17
1.00	3948.12	-0.30	39.95	-0.11	1.00	0.19
0.80	3956.23	-0.30	31.97	-0.10	0.80	0.20
0.60	3963.64	-0.31	23.98	-0.08	0.60	0.23
0.40	3971.68	-0.31	15.97	-0.18	0.40	0.13
0.20	3979.33	-0.32	7.94	-0.73	0.20	-0.41
0.00	3987.42	0.00	0.00	0.00	0.00	0.00

Supplementary Information

MFC Flow Calculation Data

Required Flow % F S	MFC 1 Flow % F S	Required Flow % F S	MFC 2 Flow % F S	Required Flow % F S	MFC 3 Flow % F S	Required Flow % F S	MFC 4 Flow % F S
0.17	0.00	0.10	0.00	-0.03	0.00	0.21	0.00
10.00	9.56	10.00	9.50	10.00	9.95	10.00	9.40
20.00	19.24	20.00	19.04	20.00	19.87	20.00	18.97
30.00	28.95	30.00	28.60	30.00	29.76	30.00	28.55
50.00	48.57	50.00	47.84	50.00	49.59	50.00	47.94
60.00	58.54	60.00	57.67	60.00	59.58	60.00	57.79
70.00	68.68	70.00	67.77	70.00	69.64	70.00	67.81
80.00	79.02	80.00	78.16	80.00	79.80	80.00	78.06
90.00	89.65	90.00	88.93	90.00	90.09	90.00	88.57
100.00	100.60	100.00	99.98	100.00	100.56	100.00	99.44

MFC Zero Voltage Offset (mV)

	As Found	As Left
MFC1	4.5	3.9
* MFC2	5.1	-1.4
MFC3	-4.9	-6.1
MFC4	9.0	8.4

* MFC2 replaced. New MFC2 serial number is DDL5 E039.

End of Certificate

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest uncertainty of measurement that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors. The CIPM-ILAC definition of the CMC is as follows:

A CMC is a calibration and measurement capability available to customers under normal conditions:

- (a) as published in the BIPM key comparison database (KCDB) of the CIPM MRA; or
- (b) as described in the laboratory's scope of accreditation granted by a signatory to the ILAC Arrangement.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The CMC is calculated according to the procedures given in M3003 and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published CMC in certificates issued under its accreditation.

The CMC may be described using various methods in the Schedule of Accreditation:

As a single value that is valid throughout the range.

As an explicit function of the measurand or of a parameter (see below).

As a range of values. The range is stated such that the customer can make a reasonable estimate of the likely uncertainty at any point within the range.

As a matrix or table where the CMCs depend on the values of the measurand and a further quantity.

In graphical form, providing there is sufficient resolution on each axis to obtain at least two significant figures for the CMC.

Expression of CMCs - symbols and units

In general, only units of the SI and those units recognised for use with the SI are used to express the values of quantities and of the associated CMCs. Nevertheless, other commonly used units may be used where considered appropriate for the intended audience. For example, the term "ppm" (part per million) is frequently used by manufacturers of test and measurement equipment to specify the performance of their products. Terms like this may be used in Schedules of Accreditation where they are in common use and understood by the users of such equipment, providing their use does not introduce any ambiguity in the capability that is being described.

When the CMC is expressed as an explicit function of the measurand or of a parameter, this often comprises a relative term (e.g., percentage) and an absolute term, i.e. one expressed in the same units as those of the measurand. This form of expression is used to describe the capability that can be achieved over a range of values. Some examples, and an indication of how they are to be interpreted, are shown below.

DC voltage, 100 mV to 1 V: $0.0025 \% + 5.0 \mu\text{V}$:

Over the range 100 mV to 1 V, the CMC is $0.0025 \% \cdot V + 5.0 \mu\text{V}$, where V is the measured voltage.

Hydraulic pressure, 0.5 MPa to 140 MPa: $0.0036 \% + 0.12 \text{ ppm/MPa} + 4.0 \text{ Pa}$

Over the range 0.5 MPa to 140 MPa, the CMC is $0.0036 \% \cdot p + (0.12 \cdot 10^{-6} \cdot p \cdot 10^{-6}) + 4.0 \text{ Pa}$, where p is the measured pressure in Pa.

It should be noted that the percentage symbol (%) simply represents the number 0.01. In cases where the CMC is stated only as a percentage, this is to be interpreted as meaning percentage of the measured value or indication.

Thus, for example, a CMC of 1.5 % means $1.5 \cdot 0.01 \cdot i$, where i is the instrument indication.