

Instrument calibration sheet

Certificate N°	000042/2021	Date of issue	13.12.21
Client	ENEL Produzione	Work order	8000000591

Instrument specification

Type	Flowmeter	Manufacturer	Siemens	Serial number	2554
Min capacity	0	Max capacity	300	Model	Siemens II
Readability At 0	1	Readability	1	Unit of measure	m3/h
Description	C1 Itar Flowmeter			Next Calibration	17.12.21

Test ambient conditions

Location	ENEL - C1 Itar			Date of test	13.12.21	00:00
Temperature	24,3°C	Humidity	78%	Pressure	1023hPa	

Standard certificates used

Name	Number	Issuer	Date of issue
Flowmeter PT878	56525	GE	01.09.20

Calibration summary

Test	Certificate name	Uncertainty	Temperature	Humidity	Pressure
Repeatability	Flowmeter PT878	2,518532m3/h	24,3°C	78%	1021hPa
Linearity	Flowmeter PT878	2,973719m3/h	24,3°C	78%	1020hPa

Expanded uncertainty **5,947438m3/h**

Notes

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Repeatability

Measure	Nominal value	Conventional value	Read value	Deviation	Standard reference		
					Serial	Uncertainty	OIML
1	1087,074	1075,656	1089,25	13,594	-7057E/01121267	1	
2	1087,074	1075,656	1090,015	14,359015	-7057E/01121267	1	
3	1087,074	1075,656	1085,35	9,693976	-7057E/01121267	1	

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Linearity

Measure	Nominal value	Conventional value	Read value	Error	Uncertainty of error	Standard reference	
						Uncertainty	OIML
1	1087,074	1075,656	1090,15	14,494024	2,973719	1	
2	2188,542	2166,276	2195,01	28,73401	2,973719	1	
3	2875	2846,25	2877,2	30,949951	2,973719	1	

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Formulas

Repeatability

The test consists in the repeated measure of the same reference value, under identical conditions of handling the reference and the instrument, and under constant test conditions, both as far as possible

Standard deviation is computed to allow an appraisal of the instrument's performance.

$$s(I) = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (I_i - \bar{I})^2} \quad \bar{I} = \frac{1}{n} \sum_{i=1}^n I_i$$

Repeatability standard uncertainty has been computed with the following formula, taking into account instrument's scale interval (d)

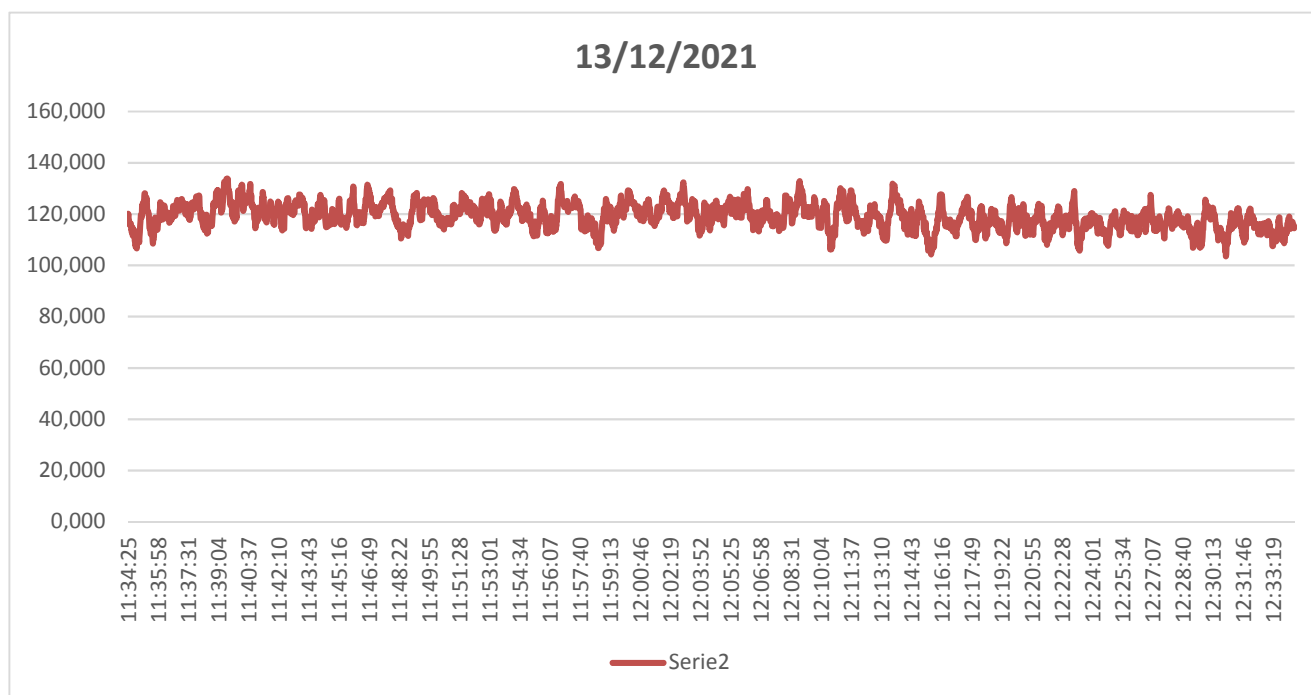
$$u_{rep} = \sqrt{s(I)^2 + \left(\frac{d_I^2}{12}\right)}$$

Verifica misure di portata del 13/12/2021

In data 13/12/2021 la Dipietro Group s.r.l. è stata incaricata di effettuare le verifiche di portata pozzetto “C1” ITAR presso la CENTRALE TERMOELETTRICA “ARCHIMEDE” U.B. SICILIA ORIENTALE - PRIOLO GARGALLO.

L’attività è stata svolta utilizzando strumentazione con sensori ad ultrasuoni, nello specifico la Dipietro Group s.r.l. ha utilizzato strumentazione General Electric modello TransPort® PT900 Portable Ultrasonic Flow Meter.

Si riporta il grafico relativo all’andamento della portata in esame e la tabella con i relativi valori registrati nello strumento utilizzato per la verifica:



Date	Time	Velocity	Volumetric
2021/12/13		m/s	m ³ /h
N°.			
13/12/2021	11:34:25	0,4775	118,974
13/12/2021	11:34:26	0,4821	120,117
13/12/2021	11:34:27	0,475	118,352
13/12/2021	11:34:28	0,4721	117,622
13/12/2021	11:34:29	0,4644	115,720
13/12/2021	11:34:30	0,4644	115,720
13/12/2021	11:34:31	0,4668	116,302
13/12/2021	11:34:32	0,4668	116,302
13/12/2021	11:34:33	0,4668	116,302
13/12/2021	11:34:34	0,4583	114,194
13/12/2021	11:34:35	0,4583	114,194
13/12/2021	11:34:36	0,4523	112,698
13/12/2021	11:34:37	0,4614	114,975
13/12/2021	11:34:38	0,4595	114,487
13/12/2021	11:34:39	0,448	111,624
13/12/2021	11:34:40	0,4528	112,827
13/12/2021	11:34:41	0,4578	114,059
13/12/2021	11:34:42	0,4518	112,562
13/12/2021	11:34:43	0,4554	113,478
13/12/2021	11:34:44	0,4554	113,478
13/12/2021	11:34:45	0,4406	109,792
13/12/2021	11:34:46	0,4381	109,153
13/12/2021	11:34:47	0,433	107,897
13/12/2021	11:34:48	0,4312	107,448
13/12/2021	11:34:49	0,4346	108,284
13/12/2021	11:34:50	0,4376	109,045
13/12/2021	11:34:51	0,4278	106,598
13/12/2021	11:34:52	0,4444	110,719
13/12/2021	11:34:53	0,4444	110,719
13/12/2021	11:34:54	0,4462	111,172
13/12/2021	11:34:55	0,4482	111,674
13/12/2021	11:34:56	0,4455	110,994
13/12/2021	11:34:57	0,4415	109,998
13/12/2021	11:34:58	0,4421	110,155
13/12/2021	11:34:59	0,4377	109,057
13/12/2021	11:35:00	0,4473	111,440
13/12/2021	11:35:01	0,4532	112,912
13/12/2021	11:35:02	0,4633	115,446

13/12/2021	11:35:03	0,4702	117,152
13/12/2021	11:35:04	0,4787	119,279
13/12/2021	11:35:05	0,4805	119,722
13/12/2021	11:35:06	0,4813	119,931
13/12/2021	11:35:07	0,4773	118,926
13/12/2021	11:35:08	0,4952	123,374
13/12/2021	11:35:09	0,4952	123,374
13/12/2021	11:35:10	0,4952	123,374
13/12/2021	11:35:11	0,4997	124,497
13/12/2021	11:35:12	0,4984	124,182
13/12/2021	11:35:13	0,4958	123,541
13/12/2021	11:35:14	0,4958	123,541
13/12/2021	11:35:15	0,5102	127,116
13/12/2021	11:35:16	0,5139	128,042
13/12/2021	11:35:17	0,5139	128,042
13/12/2021	11:35:18	0,5056	125,968
13/12/2021	11:35:19	0,5082	126,620
13/12/2021	11:35:20	0,5074	126,422
13/12/2021	11:35:21	0,5023	125,145
13/12/2021	11:35:22	0,5071	126,341
13/12/2021	11:35:23	0,5013	124,904
13/12/2021	11:35:24	0,4859	121,071
13/12/2021	11:35:25	0,4859	121,071
13/12/2021	11:35:26	0,4859	121,071
13/12/2021	11:35:27	0,485	120,841
13/12/2021	11:35:28	0,4816	119,994

Città Giardino, 13 Dicembre 2021

DipietroGroup S.r.l.
Luca Provenza

