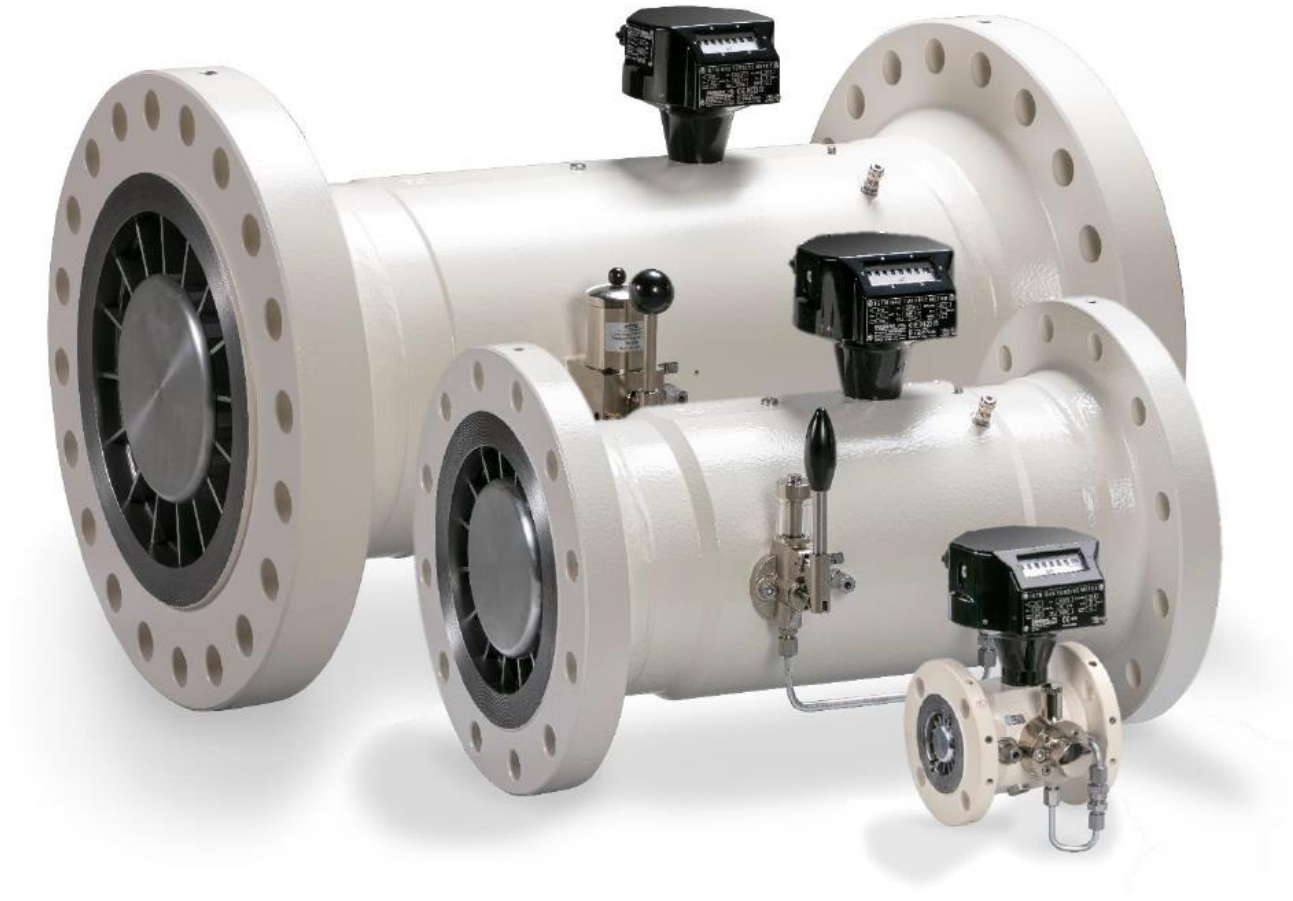




IGTM - Series

Turbine Gas Meter optimised for custody transfer with electronic Outputs and mechanical Counter

Turbine Gas Meter made by vemm tec



IGTM Series short facts



- ✓ High measuring accuracy according Class 1.0 and better
- ✓ Meter sizes G40 up to G10000
- ✓ Nominal sizes DN 50 (2") up to DN 500 (20")
- ✓ Flange designs PN 10 – 100 and ANSI 150# – 600#
- ✓ IGTM Meter Type is approved by **PTB** according to **MID** Directive 2014/32/EU
- ✓ Meter Body is approved by **TÜV** and **DVGW** according to **PED** Directive 2014/68/EU
- ✓ vemm tec Quality System is approved by **DNV** according to **ISO 9001:2015**

IGTM Parts Overview



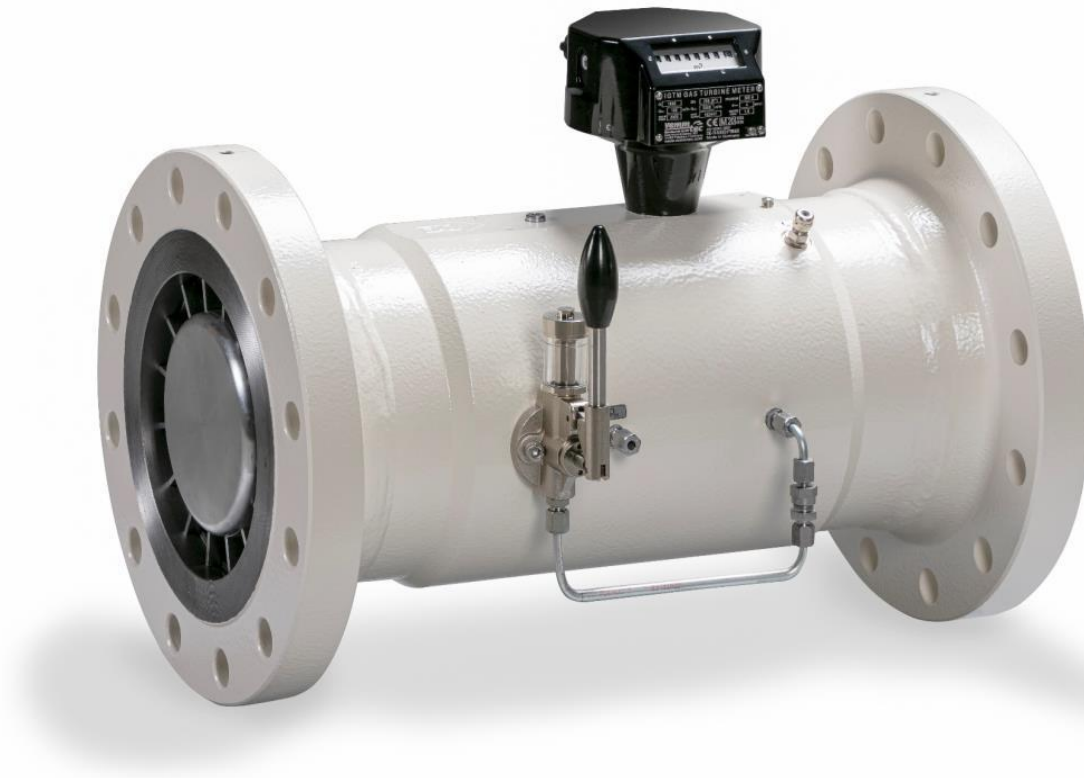
- 1 Flow Straightener
- 2 IGTM Housing
- 3 HF pulse generators
- 4 Counter head
- 5 Pressure measuring port
- 6 Lubrication System
- 7 Temperature measuring port
- 8 Turbine wheel
- 9 Measuring unit with reference wheel
- 10 Measuring housing

IGTM Housing / Choice of material

Material of Housing

- **Ductile Iron** for DN50 to DN200 Housing
 - Pressure Rating PN10/PN16/ANSI150
 - max. operation pressure: 20Bar
- **Carbon Steel** for DN50 to DN500 Housing
 - Pressure Rating: PN10-100 or ANSI150-600
 - max. operation pressure: 103Bar

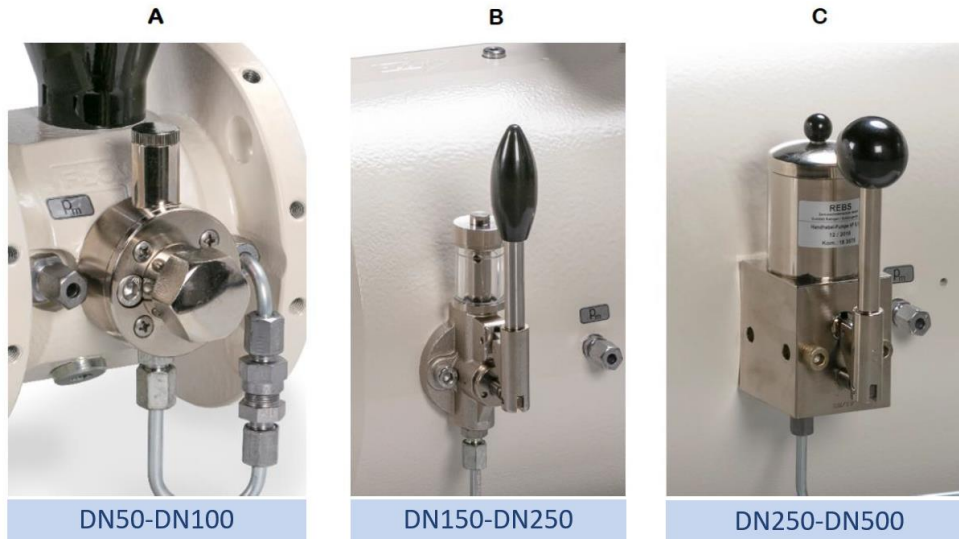
Housing Length is 3x of nominal size DN



Pulse Generators

pulse generator	max. frequency	type	measuring position	description
1R1, 2R1	$f_{\max} \leq 1 \text{ Hz}$	LF-REED-pulse generator	counter head	1 Contact per revolution last wheel of counter. Suitable for Battery operated and line powered EVC. 2R1 optional
1R10, 2R10	$f_{\max} \leq 10 \text{ Hz}$	LF-REED-pulse generator	counter head	10 Contacts per revolution last wheel of counter, if higher resolution is required Suitable for Battery operated and line powered EVC. 2R10 optional
HF3, HF4	$f_{\max} \leq 200 \text{ Hz}$	HF-NAMUR-pulse generator	counter head	Proximity Switch in the Counter Head with higher resolution than 2R10. not Suitable for Battery operated EVC. Power supply is required. HF4 optional
HF1, HF2	$f_{\max} \leq 4500 \text{ Hz}$	HF-NAMUR-pulse generator	turbine wheel or reference wheel	Proximity Switch at turbine wheel (HF1) or reference wheel (HF2). Best resolution. not Suitable for Battery operated EVC. Power supply is required. HF2 optional

Lubrication

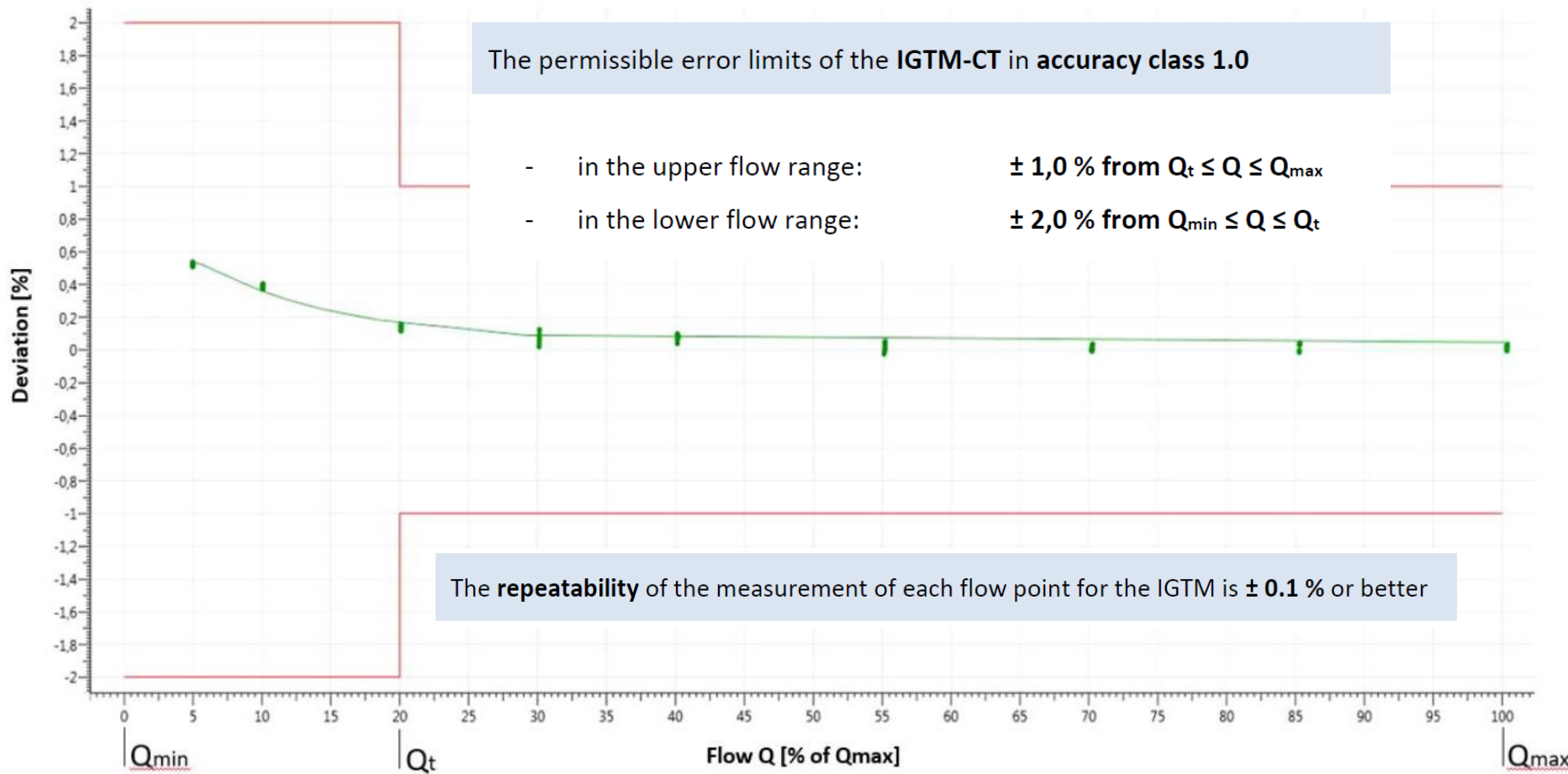


Lubrication Interval is every 3 Months, if gas is in clean without

Lubrication of too much oil harms the Accuracy of meter!

DN	Initial Operation	Interval Lubration
50	24 Strokes = 3,4 cm ³	7 Strokes = 1 cm ³
80	26 Strokes = 3,7cm ³	7 Strokes = 1 cm ³
100	26 Strokes = 3,7cm ³	10 Strokes = 1,4 cm ³
150	8 Strokes = 4 cm ³	6 Strokes = 3 cm ³
200	12 Strokes = 6 cm ³	6 Strokes = 3 cm ³
250	12 Strokes = 6 cm ³	6 Strokes = 3 cm ³
300	20 Strokes = 10 cm ³	6 Strokes = 3 cm ³
400	20 Strokes = 10 cm ³	6 Strokes = 3 cm ³
500	20 Strokes = 10 cm ³	6 Strokes = 3 cm ³

Accuracy and Error limits



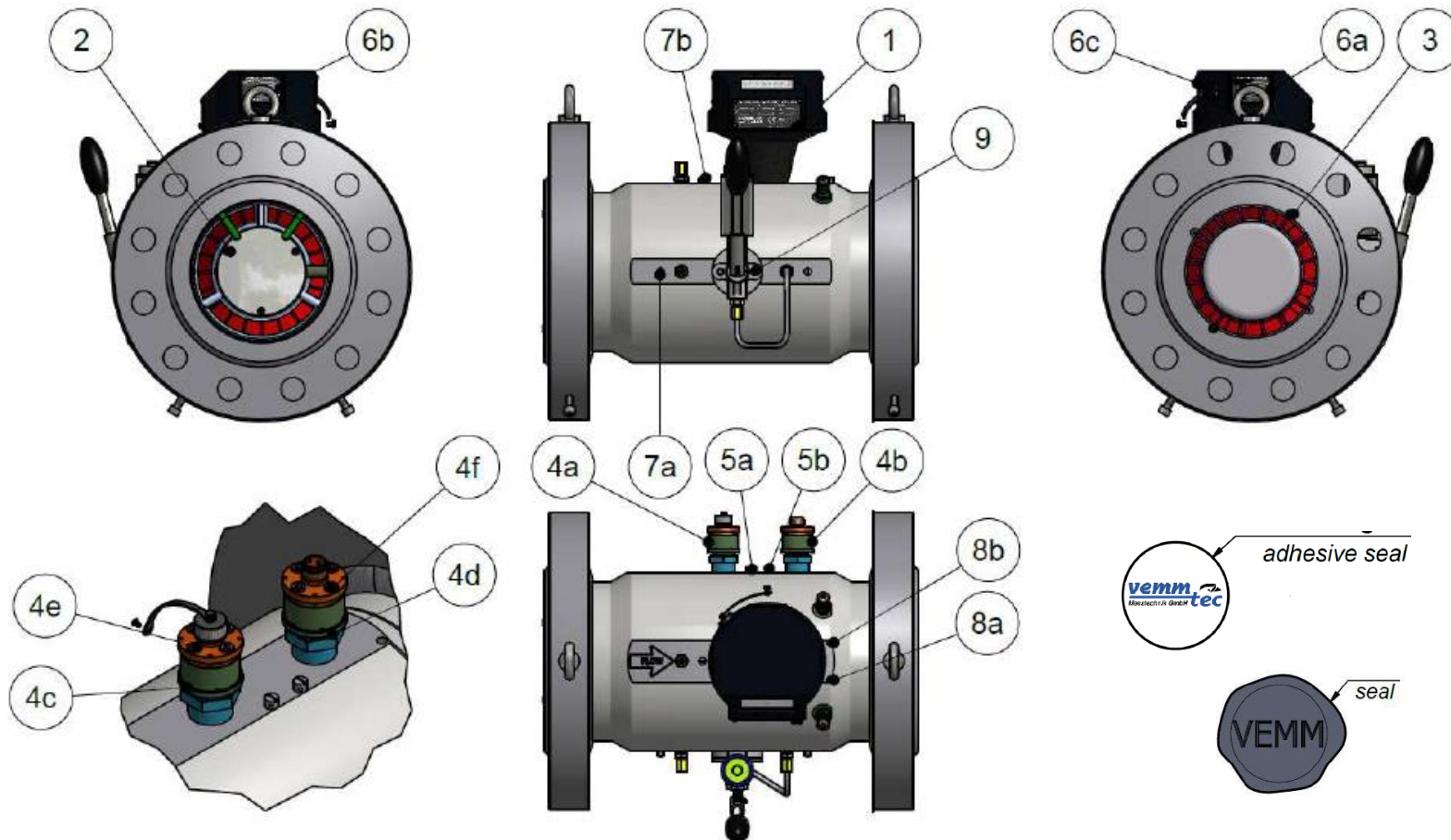
IGTM Portfolio

DN [mm] (inch)	G-rate	Q _{max} m ³ /h	Q _{min} m ³ /h	Pressure loss at Q _{max} 1 bar with natural gas [mbar]	Turbine wheel		Maximum frequency [Hz]			k-factor [Imp/m ³]		
					Angle	Pallets	HF1 / HF2	HF3 / HF4	1R1 Reed	HF1 / HF2	HF3 / HF4	1R1
50 (2")	40	65	5	5,5	45	18	2800	80	0,18	155000	4400	10
	65	100	5	11,7	45	18	4300	120	0,28	155000	4400	10
80 (3")	100	160	8	3,7	45	16	1900	50	0,04	42200	1200	1
	160	250	13	8,6	45	16	2900	80	0,07	42200	1200	1
	250	400	20	13,8	30	16	2600	70	0,11	23500	670	1
100 (4")	160	250	13	3,1	45	16	1200	60	0,07	17000	800	1
	250	400	20	6,8	45	16	1900	90	0,11	17000	800	1
	400	650	32	10,8	30	16	1700	80	0,18	9400	440	1
150 (6")	400	650	32	3,1	45	20	1100	70	0,18	6280	360	1
	650	1000	50	7,1	45	20	1700	100	0,28	6280	360	1
	1000	1600	80	11,3	30	12	1600	60	0,04	3570	135	0,1
200 (8")	650	1000	50	2,5	45	20	790	40	0,03	2840	150	0,1
	1000	1600	80	4,3	45	20	1300	70	0,04	2840	150	0,1
	1600	2500	130	10,2	30	20	1100	60	0,07	1510	80	0,1

IGTM Portfolio

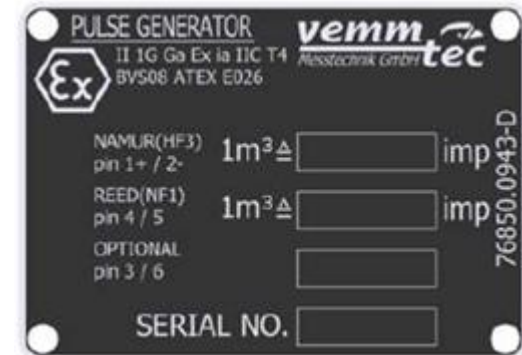
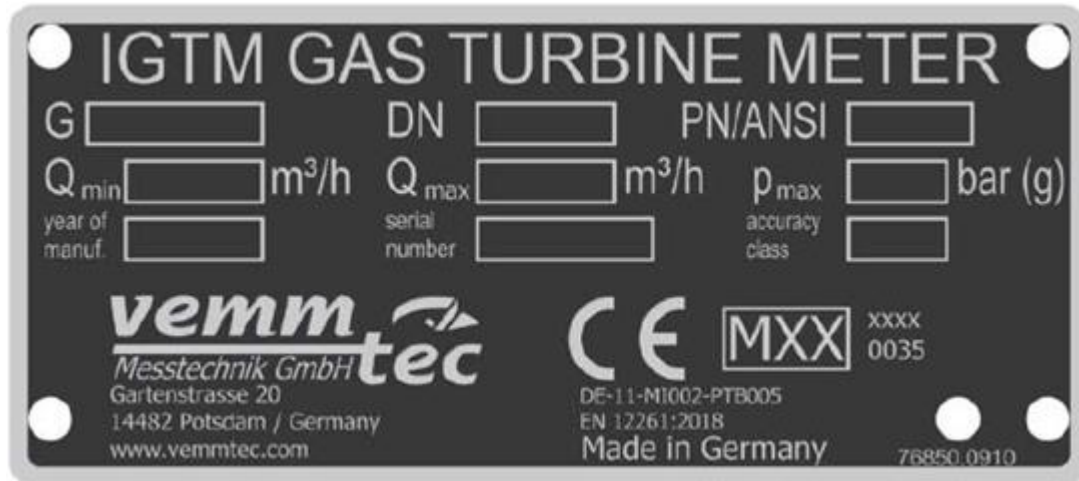
DN [mm] (inch)	G-rate	Q _{max} m ³ /h	Q _{min} m ³ /h	Pressure loss at Q _{max} 1 bar with natural gas [mbar]	Turbine wheel		Maximum frequency [Hz]			k-factor [Imp/m ³]		
					Angle	Pallets	HF1 / HF2	HF3 / HF4	1R1 Reed	HF1 / HF2	HF3 / HF4	1R1
250 (10")	1000	1600	80	2,5	45	20	830	60	0,04	1870	135	0,1
	1600	2500	130	4,9	45	20	1300	90	0,07	1870	135	0,1
	2500	4000	200	7,9	30	20	1200	90	0,11	1110	80	0,1
300 (12")	1600	2500	130	2,5	45	20	780	60	0,07	1120	80	0,1
	2500	4000	200	4,9	45	20	1300	90	0,11	1120	80	0,1
	4000	6500	320	7,9	30	24	1200	130	0,18	660	75	0,1
400 (16")	2500	4000	200	2,5	45	24	610	60	0,11	550	55	0,1
	4000	6500	320	4,9	45	24	990	100	0,18	550	55	0,1
	6500	10000	500	8,6	30	24	1300	130	0,28	470	50	0,1
500 (20")	4000	6500	320	2,5	45	24	540	60	0,17	310	40	0,1
	6500	10000	500	5,0	45	24	860	100	0,28	310	40	0,1
	10000	16000	800	8,8	30	24	750	30	0,04	170	8	0,01

Sealing



Nr.	Position	Execution
1	Main plate	wire + seal
2	Internal Cartridge	impact seal
3	Straightener	impact seal
4a	HF 1	adhesive seal
4b	HF 2	adhesive seal
4c	HF 1	wire + seal
4d	HF 2	wire + seal
5a	HF1 connector	wire + seal
5b	HF2 connector	wire + seal
6a	IP Plate 1	adhesive seal
6b	IP Plate 2	adhesive seal
6c	Additional Plate	adhesive seal
7a	Pm 1	wire + seal
7b	Pm 2	wire + seal
8a	thermowell 1	wire + seal
8b	thermowell 2	wire + seal
9	Oilpump	adhesive seal

Nameplates



Many thanks for your attention



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