

MADECO Gas Turbine Flow Meter



Gas Turbine Flow Meter

MDGQ-E series



Operating Principle

The operation of the International Gas Turbine Meter is based on the measurement of the velocity of gas. The flowing gas is accelerated and conditioned by the meters straightening section. The straightening vanes prepare the gas flow profile by removing undesired swirl, turbulence and asymmetry before the gas flows to the turbine wheel. The dynamic forces of the flowing fluid cause the rotor to rotate.

The turbine wheel is mounted on the main shaft, with special high precision, low friction ball bearings. The turbine wheel has helical blades that have a known angle relative to the gas flow. The conditioned and accelerated gas drives the turbine wheel with an angular velocity that is proportional with the gas velocity.

Technical Data

Output (Depending on Converter Model)	Pulse 4~20mA
Accuracy	±1.0% of Rate ±1.5% of Rate
Operating Temperature	-20...+60°C
Fluid Temperature	-20...+80°C
Body Material	SS 304 SS 316 Cast Aluminum Cast Steel(D4:DN50-DN200)
Rotor Material	Aluminum alloy Plastic ABS
Bearing Material	SS304

Description

The Gas turbine flow meter in the series MDGQ are specially designed for using natural gas, compressed, air and other fluid measurement. And the volume and mass flow rate are available.

- DN 25- DN400
- Temp.& Press. compensation
- Communication: RS485
- Connection: Thread / Flange
- Ten units are optional

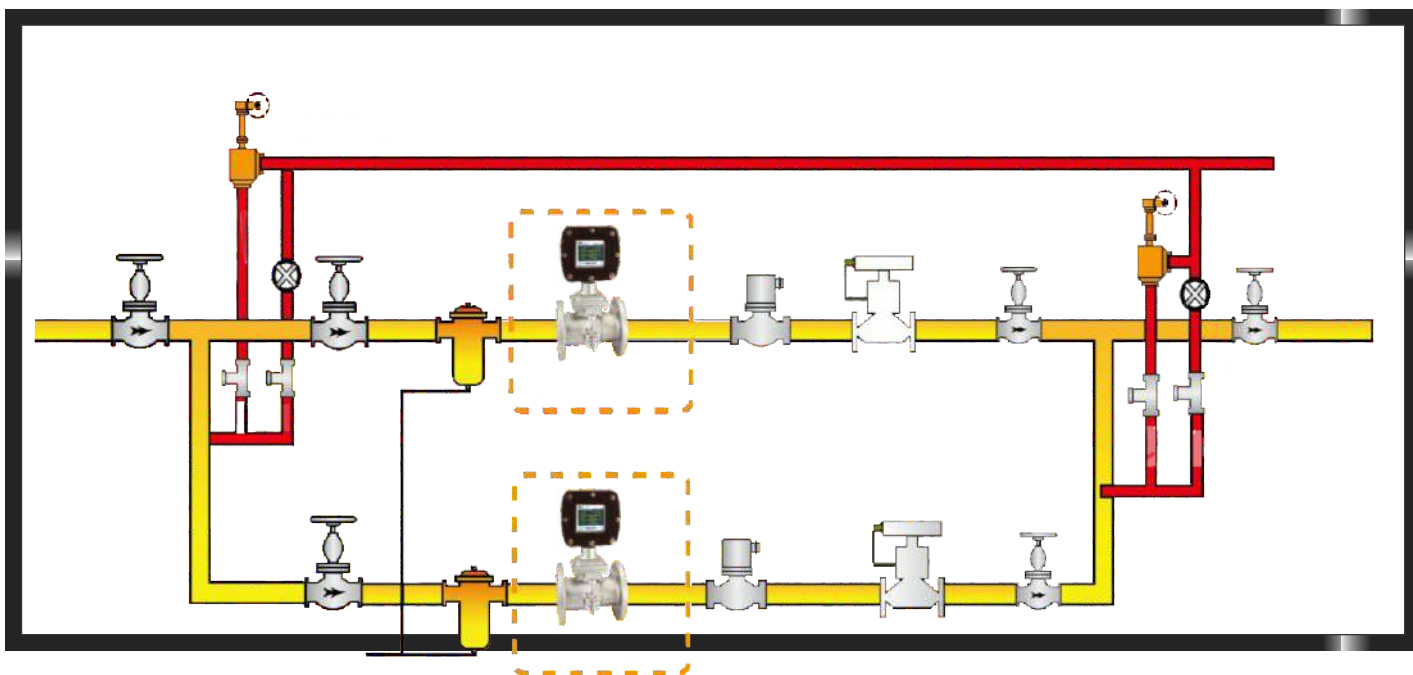
Flow Range

Diameter (mm)	Standard Flow Range		Extended Flow Range	
	Code	m ³ /h	Code	m ³ /h
25	S	2.5-25	W	4-40
40	S	5-50	W	6-60
50	S1	6-65	W1	5-70
	S2	10-100	W2	8-100
65	S	15-200	W	10-200
80	S1	15-300	W	10-160
	S2	20-400		
100	S1	20-400	W	13-250
	S2	32-650		
125	S	25-700	W	20-800
150	S1	32-650	W	80-1600
	S2	50-1000		
200	S1	80-1600	W	50-1000
	S2	130-2500		
250	S1	130-2500	W	80-1600
	S2	200-4000		
300	S	200-4000	W1	130-2500
			W2	320-6500
400	S	400-8000	W	260-8000

Model Selection

Model	Suffix Code								Description
MDGQ-	1	2	3	4	5	6	7	8	Gas Turbine Flowmeter
Diameter	XXX								Stand for diameter 020: DN20; 050: DN50 100: DN100; 400: DN400
Converter Type	N								24V DC; Pulse output; No display; Ex
	A								24V DC; 4-20mA output; No display; Ex
	E1								Battery power supply; No output; Ex; Digital display
	E2								24V DC; 2- wire 4-20mA output; Ex; Digital display
	E3								24V DC; Pulse output; Local display; Ex ; Digital display
	E4								24V DC; 0-20mA output; Local display; Ex; Digital display
	E5								24V DC; 3-wire 4-20mA / Pulse output; EX; Digital display
	FE								Fluidwell E series converter (Refer to page 23)
	FF								Fluidwell F series converter(Refer to page 24)
	D1								24V DC; 2-wire 4-20mA output; Digital display; Temperature & Pressure Compensation
	D2								24V DC; 3-wire 4-20mA output; Digital display; Temperature & Pressure Compensation
	D4								24V DC; 4-20mA output; Modbus RS485; Digital display Temperature & Pressure Compensation
	Notice:								1) Modbus RS485 is optional for E2, E3, E4, E5, D1, D4 2) Battery Power(24V DC + Battery) is optional for E2, E3, E4, E5, D1, D2, D4 3) D4 converter only configures with cast steel body sensor
Accuracy		10							±1.0% of rate
		15							±1.5% of rate
Flow Range			S						Standard Range
			E						Extended Range
Body Material				S4					SS304
				S6					SS316
				CA					Cast Aluminum
				CS					Cast Steel (Only for D4 type)
Rotor Material					AB				ABS Plastic
					AA				Aluminum Alloy
Explosion Proof						BT			Exd II BT6
						CT			Exia II CT4
						NA			None
Connection							THM		Male Thread; Available from DN4...DN50
							THF		Female Thread; Available from DN4...DN50
							DXX		DN16: DIN PN16 Flange; D25: DIN PN25 Flange...
							AXX		A15: ANSI 150# Flange; A30: ANSI 300# Flange...

Compare with others



Feature 1 : Rotor Difference.

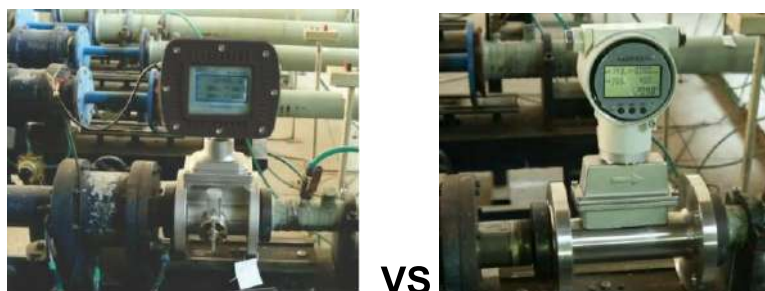
We use the new structure rotor (left picture) which have multi-points supporting. This structure makes the rotor more durable.



Feature2 : Difference in Pressure and temperature compensation method

Our company use absolute pressure (PABS) to do PT compensation, but other companies use gauge pressure(PG)

$PABS = PG + \text{local pressure.}$



Feature3 : EMC performance test matchational standard

Our flow meters performance in lightening, surging , EFT (electrical fast transient) , ESD(electrostatic discharge), PMFM(power frequency magnetic field) match or better than national standards.

Test medium	National standard	National standard and our company standard	Some other companies flow meter performance
lightening, surging	GB/T 17626.5-2008	Level B , 1KV	Level C , 0.5KV
EFT	GB/T 17626.4-2008	Level B , 1KV	Level C , 0.5KV
ESD	GB/T 17626.2-2006	Level B , 6KV	Level C , 4KV
PMFM	GB/T 17626.8-2006	Level B , 1A/m	Level C , 1A/m

The following are EMC test picture



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