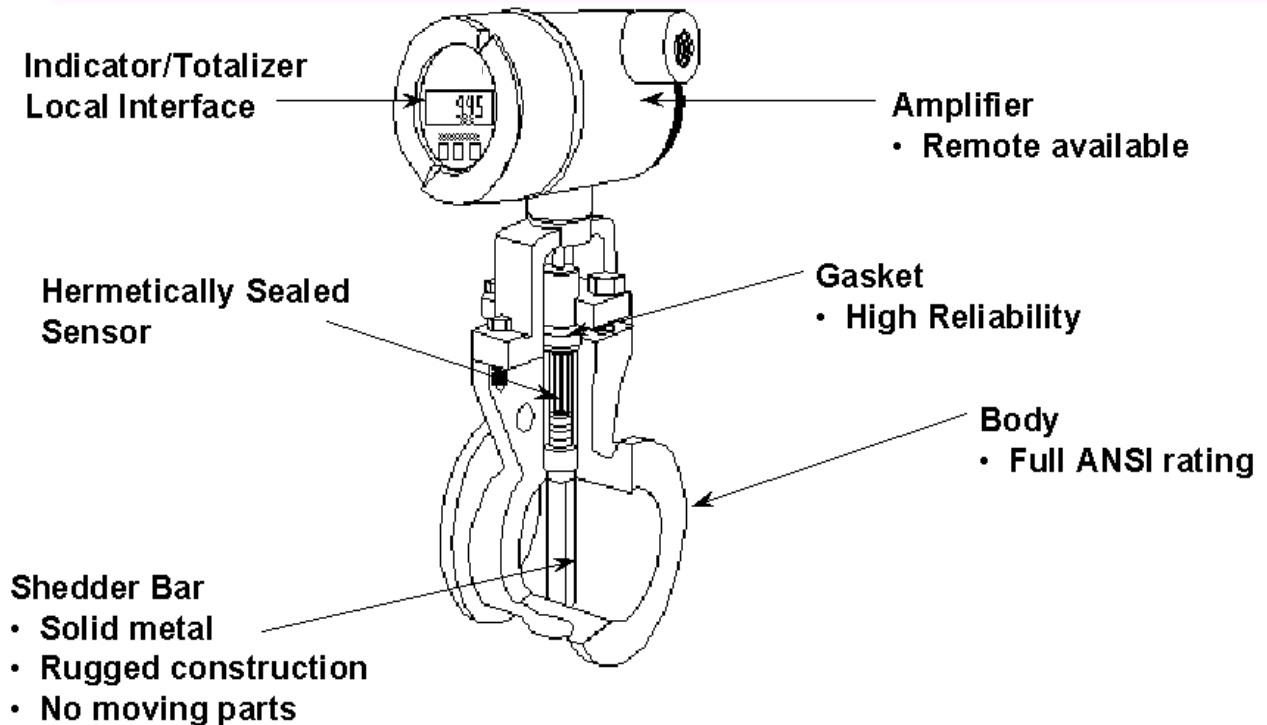


Cadillac[®] Vortex Meter

Central Station Steam Co.[®]

GENERAL INFORMATION



Central Station Steam Co.[®]

CADILLAC[®] METERS

15615 SW 74th Ave, #150
Tigard, OR 97224

www.cadillacmeter.com

Phone: 888-556-3913

Fax: 503-624-6131

THE STEAM METER OF CHOICE

The Cadillac® Vortex Meter is a rate and totalizing meter which is capable of measuring liquid, steam and gas. Due to its rugged design it is particularly suitable for direct steam measurement. In any steam system the Cadillac® Vortex Meter is the number one technology choice due to Cadillac®'s accuracy, linearity, reliability and rangeability.

Like many other flow meters, the Cadillac® Vortex Meter is a velocity measuring device which computes flow by multiplying the effective cross sectional area of the flow meter with the detected fluid velocity. The meter has no moving parts and consists of a meter & bluff body (shedder bar) and amplifier assembly. It detects velocity by measuring the frequency of the vortices, as they peel off the shedder bar of the flowmeter. The frequency of these "Karman" vortices is directly proportional to the velocity of the moving fluid, whether this is a gas or liquid.

THE NEW INDUSTRY STANDARD

Since the late 1970's, the Vortex direct steam flow meters have been acknowledged as the industry standard. Customers choose the Cadillac® Vortex Meter because of proven:

◇ **ACCURACY, DEPENDABILITY, CONSISTENCY, LOW MAINTENANCE, RANGEABILITY**

APPLICATIONS

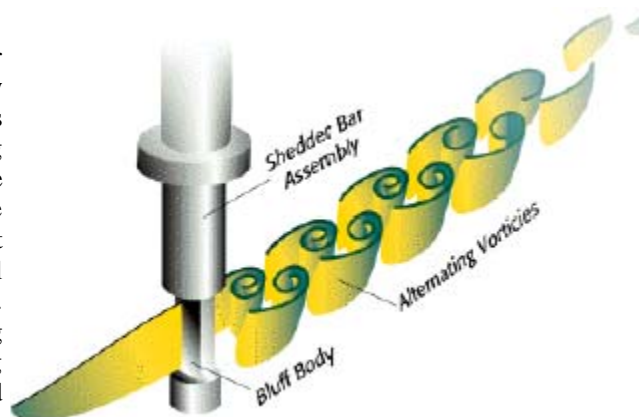
- Data Source for energy management system, DCS, district-wide systems.
- Energy-Customer Billing from accurately totalized flow measurements.
- Basis for internal cost distribution using campus-wide systems.
- Process monitoring from central control rooms.
- Direct Steam measurements at both Boiler and point of use locations.

FEATURES

- **ACCURACY:** +/- 0.6% of reading for liquids. +/-1.0% of the reading for gas and steam.
- **RANGEABILITY.:** Typically 15 to 1 turndown or better.
With seasonal steam load variation, the need for a large turndown is essential. Cadillac® Vortex Meters will accurately measure all load requirements with proper sizing.
- **LONGEVITY:** Mean time between failure (MTBF) of 50 years.
With no moving parts and through simple robust design the MTBF of the shedder bar is 50 years. With proper system maintenance Cadillac® Vortex Meters will provide reliable, accurate service beyond all flow technologies.
- **MODERN ELECTRONICS:** meeting the challenges of the next millennium
Meters are equipped with electronics capable of registering locally, remotely or interfacing with an energy management system. Built to withstand the toughest conditions.

PRINCIPLE OF OPERATION

The "Karman" vortex meter principle is clearly illustrated by a flag waving in the wind. As the air passes across the flag pole, vortices peel off and the flag is shaped by these pressure area's. You will notice that, at low wind velocity, the flag will move slowly from side to side. As the wind increases, the flag will start to flutter, representing the increased frequency and intensity of these flag pole generated vortices as they pass



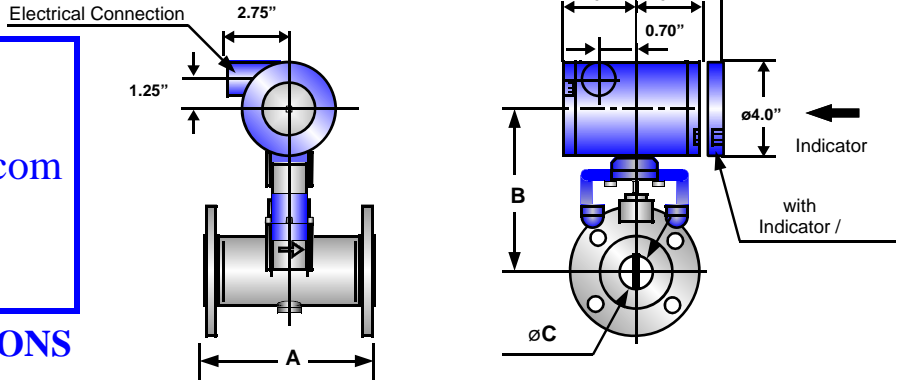
by. Wind velocity can thus be determined by measuring the frequency of that flutter.

The shedder bar of the Cadillac® Vortex Meter is a solid piece of metal machined into a shape to maximize the strength of the vortex. As this vortex peels off, it temporarily causes a low-pressure area on one side, which puts sideways stress on the shedder bar. This stress is detected by embedded pressure sensitive piezoelectric crystals, which produce a voltage spike when compressed. By detecting and counting the frequency of these

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CADILLAC® VORTEX METER

Phone: 888-556-3913
or
e-mail: Cadillacmeter@aol.com
for
Engineering Support



FLANGED METER DIMENSIONS

Meter Size	0.5"	1.0"	1.5"	2.0"	3.0"	4.0"	6.0"	8.0"	10.0"	12.0"	16.0"
"A" (face to face)	5.12"	5.91"	5.91"	6.69"	7.87"	8.66"	10.63"	12.20"	14.57"	15.75"	TBA
"B" (center to center)	7.52"	7.60"	7.87"	8.74"	9.41"	10.00"	10.75"	12.00"	13.43"	14.61"	TBA
"C" (meter ID)	0.50"	1.00"	1.50"	2.00"	3/00"	4.00"	6.00"	8.00"	10.00"	12.00"	16.00"
Weight ANSI Class 150lb	10 lbs	15 lbs	19 lbs	27 lbs	45 lbs	61lbs	81lbs	125 lbs	200 lbs	310 lbs	TBA
Weight ANSI Class 300lb	10 lbs	17 lbs	21 lbs	30 lbs	53 lbs	80 lbs	121lbs	180 lbs	275 lbs	395 lbs	TBA

CADILLAC® VORTEX METER GENERAL SPECIFICATIONS

- Meter will consist of a full-bore body, vortex shedding bar and remote or integral electronics.
- Meter available with local or remote indication or blind housings.
- Meter available with pulse or analog (4-20 mA) outputs.
- Instantaneous and totalized flow available at local indicator or remotely through outputs.
- Meter measures flow using the Karman vortex shedding principle.
- Vortices induce pulses generated from two piezoelectric crystals hermetically sealed & imbedded in shedder bar.
- Meter electronics shall be capable of direct MASS flow computation for saturated steam without external inputs.
- Meter provides one button autotuning for setting noise immunity circuits.
- Operating pressure/temperature of meter shall be (Vacuum to 2100 psig)/(-40°F to 500°F)

CADILLAC® VORTEX METER MODEL NUMBER STRUCTURE

CV	Cadillac Vortex Flow Meter
P	Piezoelectric pickup technology
A	Size 0.5"
B	Size 1"
C	Size 1.5"
D	Size 2"
E	Size 3"
F	Size 4"
G	Size 6"
H	Size 8"
I	Size 10"
J	Size 12" (Sizes larger than 12" please call Factory)
S	Standard Electronics
M	Mass Electronics with integral RTD
II	Integral Converter with Indicator/Totalizer
RC	Remote Converter
W	Wafer Style Body Optional (1/2" thru 4" only)
F	Flanged Body
150	ANSI Class 150
300	ANSI Class 300
600	ANSI Class 600
900	ANSI Class 900
FM	FM Approvals

CVC	Cadillac Vortex Converter
P	Piezoelectric remote electronics
I	Indicator/Totalizer
U	Universal Mounting Bracket
XXFT	Interconnecting Cable
FM	FM Approvals

MASS COMPENSATION

For compressible fluids, such as gases or superheated steam, an external pressure compensation input will be required for the MASS electronics. Internally programmed Ideal Gas and Steam lookup tables will be referenced for online MASS computations. Integral RTD in shedder bar and lookup tables are provided through the MASS option. Terminations for pressure sensor are available for compressible fluids in electronics housing. For saturated steam no external inputs are required.