*inline*

# vortex

flowmeter

**The EMCO Vortex PhD™ inline vortex shedding flowmeter, with the industry's first fully welded construction, is accurate, reliable and safe. The Vortex PhD is capable of measuring liquids, gases or steam in pipe sizes from 1 to 12 inches, available in stainless steel, carbon steel, or Hastelloy materials.**


# Vortex PhD

## Accuracy

- ± 0.7% of rate accuracy for liquids
- ± 1.0% of rate accuracy for gas and steam
- ± 0.15% of rate repeatability
- Advanced digital filtering scheme used by the microprocessor ensures accurate and reliable flow measurement and control
- Calibration is traceable to NIST

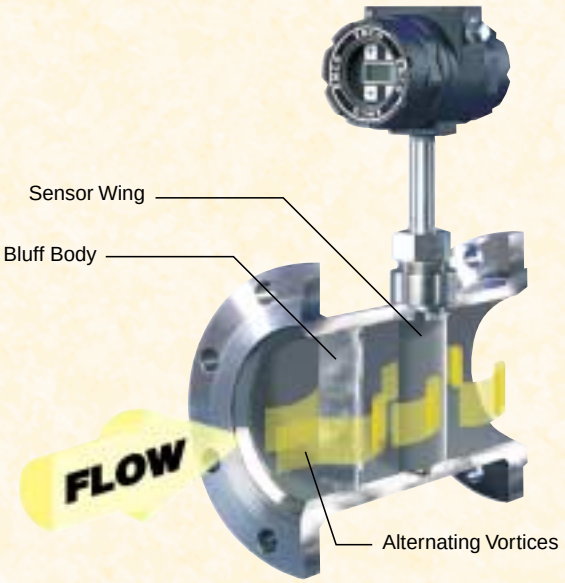
## Reliability & Safety

- No moving parts or holes that can clog
- No internal gaskets that could fail and cause hazardous leaks
- The industry's first fully welded sensor construction
- Sensor is removable under full flow conditions, without process shutdown or risk of exposure to hazardous fluids.
- No need for by-pass piping installation
- FM, CSA, and CENELEC approvals

## Ease of Operation

- Factory calibrated and programmed for specific applications
- Start-up without any additional calibration or programming
- The local display alternates between flow rate and totalized flow
- Menu-driven EZ-Logic™ user interface enables local programming
- HART® protocol communication

EMCO FLOWMETERS



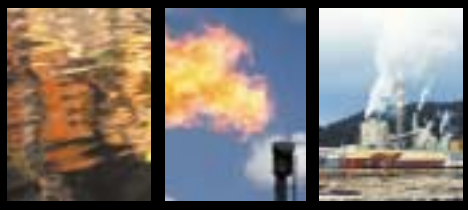

# How the Vortex PhD Measures Flow

Vortex shedding is a physical phenomenon occurring in nature. As flow passes a bluff body in the flow stream, vortices are alternately shed on either side of the bluff body. This effect can be observed in the fluttering of a flag. The flag pole acts as a bluff body to the wind. The flag waves in response to the vortices shed as the wind passes the flag pole. According to well proven physical laws, the frequency at which vortices are alternately shed is directly proportional to the flow velocity.

The vortices create low and high pressure zones behind the bluff body. The Vortex PhD uses a piezoelectric crystal sensor to detect the pressure exerted by the vortices on the sensing wing. The piezoelectric crystal converts these "vortex pulses" into electrical signals. The piezoelectric crystal is mounted outside the flow line to permit easy removal and replacement under full flow conditions, without process shutdown or risk of exposure to hazardous fluids.

The "Smart," microprocessor-based electronics translates the electrical signals (flow velocity) into a flow rate based on user-selected, engineering units. The 8-character, 2-line, local display alternates between flow rate and totalized flow. A 4-20 mA current output and a frequency/pulse output are standard.

P/N 990117 Rev. F (5/00)



## EMCO knows flow.

**With over 30 years of flow metering and applications experience, we also know that one flowmeter does not fit all flow measurement applications.**

**What is the best flowmeter for your application? The answer is easy with EMCO's "Family of Flowmeters." With a wide selection of flow metering technologies and world wide representation, EMCO offers you personalized service and support that ensures you receive the best flowmeter for your application.**

**For liquid, gas, and steam, for pipe sizes from 1/16 to 100 in.**

**Inline and Insertion Vortex**
**Inline and Insertion Turbine**
**Electromagnetic Clamp-on**
**Transit Time Ultrasonic**
**Positive Displacement Piston**
**Positive Displacement Helix**

## For more information

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