

insertion  
**turbine**  
flowmeter

The Turbo-Bar™ is designed with various enhancements not available on any other insertion flowmeters.

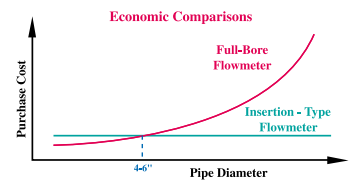
- Easy to use, field configurable, microprocessor based transmitter.
- A 2 line by 8 character alphanumeric display of measured values, settings and error codes.
- All measured values can be communicated on the 4-20 mA current output or the frequency/pulse output. HART® protocol communication is available.
- Built in loop calibration—no need for external equipment.
- Pressure, temperature, and flow rate measurements from one tap.



# Turbo-Bar™

## Economical

- When compared to an inline flowmeter, insertion flowmeters provide significant cost savings in purchase price, installation cost, and operating costs without compromising performance.
- The cost of full bore flowmeters increases exponentially with pipe size. Since one insertion flowmeter is compatible with all pipe sizes up to 80" the purchase price remains the same. For example, this can save up to 80% for 24" lines and 50% for 10" lines.
- Insertion flowmeters place only a very small sensor within the pipe reducing energy costs associated with pressure loss—typically 10 times less than an orifice plate.



## High Accuracy

- Insertion Turbine flowmeter offers a percentage of actual reading accuracy. This provides highly accurate measurement throughout the application turndown range.

## Complete Versatility

- EMCO's line of insertion flowmeters is capable of metering a wide range of industrial flow applications. In addition, the Turbo-Bar™ is able to handle extremely high turndown requirements, up to 30:1; enabling one flowmeter to be 100% accountable at all flow demand levels.



Zero  
Velocity

Average  
Velocity

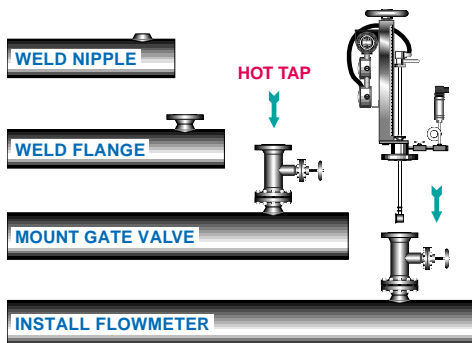
Stem Sensor

FLOW

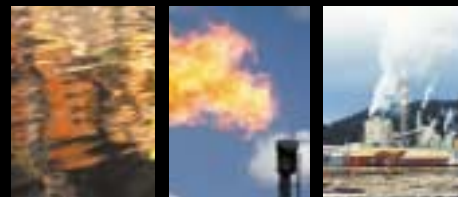
## How Insertion Meters Measure Flow

Insertion flowmeters measure liquid, gas, and steam by detecting the local velocity at a strategically located position within a pipe. The Turbo-Bar™ insertion turbine flowmeter detects the rotational frequency of the rotor blades using a magnetic, pick-up sensor. The local velocity is calculated by using a linear relationship between sensor input frequency and velocity, developed during calibration. The flowmeter uses the local velocity along with other parameters, such as, pipe size, fluid type and Reynolds number to calculate the average pipe velocity, and consequently, the flow rate. In order to guarantee accurate measurement and verifiable performance, these algorithms have been developed from many years of empirical research using independent test laboratories as well as NIST traceable flow standards.

## Reduced Installation Cost



Insertion flowmeters can be installed quickly and easily, reducing costs. The “hot tap capability” allows EMCO insertion flowmeters to be installed and serviced without process shutdown; a feature that not only saves on labor costs, but also avoids disruption of a critical process.



## 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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