



Application Guide Industrial

High Accuracy, High Value Metering for Industrial Applications

Primarily Flow Signal, Inc. is a pioneer and leader in the design, manufacture, and support of flow metering solutions. Factory, field, and calibration-proven differential metering ensures the most accurate and reliable flow measurement for a wide variety of industrial applications.

We offer our worldwide customers unparalleled expertise, on-site and field support service, and a broad product range that includes differential, pressure vessel type Venturi flow meters, insert-type Venturis, WedgeType™ flow meters, peripheral electronics, and monitors. R&D-driven innovation, vertically integrated manufacturing, deep inventory, and bankability translates to customized and off-the-shelf solutions that are optimized to meet our customers' specific requirements.



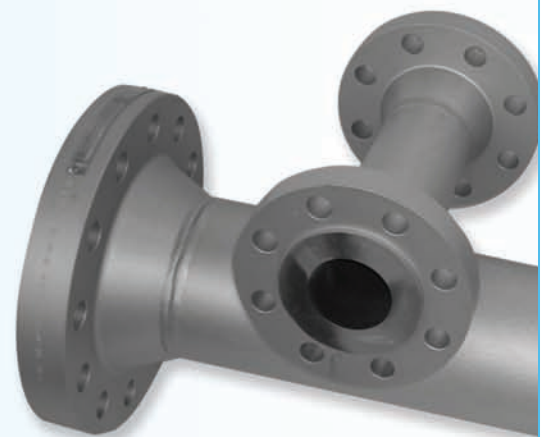
Venturi Flow Meter



Highly-Scalable
Measurement Solution



Thousands of
Installations Worldwide



WedgeType™ Flow Meter



All PFS products are proudly made in the U.S.A.

Unparalleled metering performance ...



HVT-FV Halmi

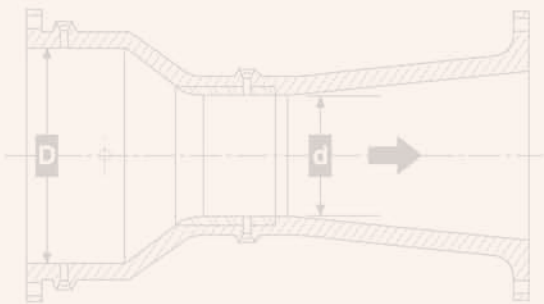


HVT-FV Halmi Fabricated Venturi

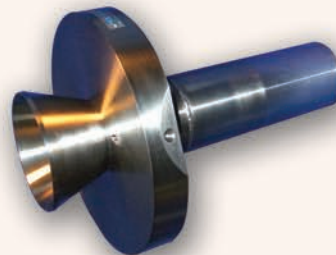
The **HVT-FV Halmi Fabricated Venturi meter** is a rugged flow meter with the most thoroughly substantiated accuracy and reliability on the market with **+/-0.25% accuracy** (lab calibrated) performance within the extreme temperatures, pressures, and irregular or abrasive line flows inherent in demanding industrial applications.

PFS can custom manufacture the HVT-FV in a wide variety of configurations and materials:

- Line sizes from 1" to 180" or any larger size
- Bi-directional designs
- Almost any machineable material, such as: 300-series stainless steel, Monel™, zirconium, Hastelloy™, aluminum, and titanium



HVT-FI Fabricated Insert-Type Flow Meter and HVT-PI Fiberglass Insert-Type Flow Meter



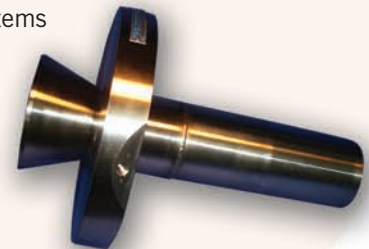
The **HVT-FI Fabricated Insert-Type flow meters** and the **HVT-PI Fiberglass Insert-Type Venturi meters** are specifically designed for water, aeration, and gas applications. The single, center-flanged-insert design reduces the meter's materials, weight, and

cost and allows for construction of some components from reinforced composites for further cost savings.

• **+/- 0.50% accuracy** (bench calibrated)

• **+/- 0.25% accuracy** (flow calibrated)

- Available in a range of line sizes and can be integrated with PFS secondary systems



... for industrial applications



Orifice Primary Flow Elements

PFS's orifice flow elements are ideal for measuring clean liquids, gases, and low-velocity steam flow in industrial applications. Our design offers:

- Optimum flexibility for diverse existing piping schemes
- Easy installation
- Low cost replacement

WedgeType™ Primary Flow Elements

The PFS-WM WedgeType flow meter is a breakthrough feat of engineering, bringing differential metering performance to harsh service, highly viscous or contaminated line fluids common within industrial applications.

- Ideal for highly viscous, rough, or solids-bearing fluids and slurries; gas or steam; and contaminated line fluids
- **+/- 0.50% accuracy** and **+/- 0.20% repeatability** while measuring thick abrasive slurries, gas-infused liquids, or steam
- Handles relatively low Reynolds numbers, and discharge coefficient stability throughout the range
- Most durable, accurate, and reliable metering solution for a huge range of media when coupled with PFS secondary instrumentation

PFS offers a variety of unparalleled flow nozzles:

ASME Flow Nozzle: PFS-FN

Available in line sizes from 2" through any required size, and manufactured in accordance with ASME MFC-3M-2004 in 300-series stainless steel for high velocities and hostile environments. Other materials are available for ultra-extreme temperatures and corrosive service.

ASME Flow Nozzle: PTC-6

Available in line sizes 4" through any required size, these nozzles meet the ASME PTC-6 1996, Performance Test Code for Steam Turbines requirements, and provide optimal primary flow measurement for steam turbine acceptance testing. Test sections consist of a low-Beta series ASME throat-tap flow nozzle that is installed in a section of pipe approximately 30 diameters long. The PTC-6 nozzles are available in flange or weld style.

PTC-6 rehabilitation, retesting, and inventory management programs are available for high volume customers. Hundreds of field-proven, lab-calibrated PTC-6 nozzles are in service. Coupling with other PFS secondary devices allows for comprehensive, best-in-class measurement solutions.

For more information, visit www.primaryflowsignal.com

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Primary Flow Signal, Inc. and its sister company, Turbines, Inc., offer comprehensive and specialized resources to meet the requirements of industrial applications.

Highly-skilled engineers, machinists, fabricators, and assemblers, with state-of-the-art CNC lathes and machining centers, produce the finest line of flow measuring equipment on the market today.

The PFS difference:

- Products that are highly accurate and reliable over a long service life
- Industry-leading engineering expertise to customize metering to application requirements
- Fast, 24-hour shipment of field-proven, industry-standard products, such as turbine meters
- All our products and services are competitively priced with best-in-class field support
- We engineer, manufacture, and calibrate our products in our own modern facilities in the U.S.A. using the highest quality materials and advanced equipment



Vertically-Integrated Manufacturing in Cranston, RI

- Vertically-integrated manufacturing for complete quality and cost control, meaning greater value for our rapidly growing customers throughout the world
- Expert engineering support for any differential products made by any manufacturer

PFS's quality management system is certified to ISO 9001, ASME S, U, R; European PED Module H; and other internationally recognized certifications, such as GOST, IBR, and CRN.



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Primary Flow Signal, Inc. products and operations are certified to industry standards for safety and performance. Visit our web site for details.



All PFS products are proudly made in the U.S.A.