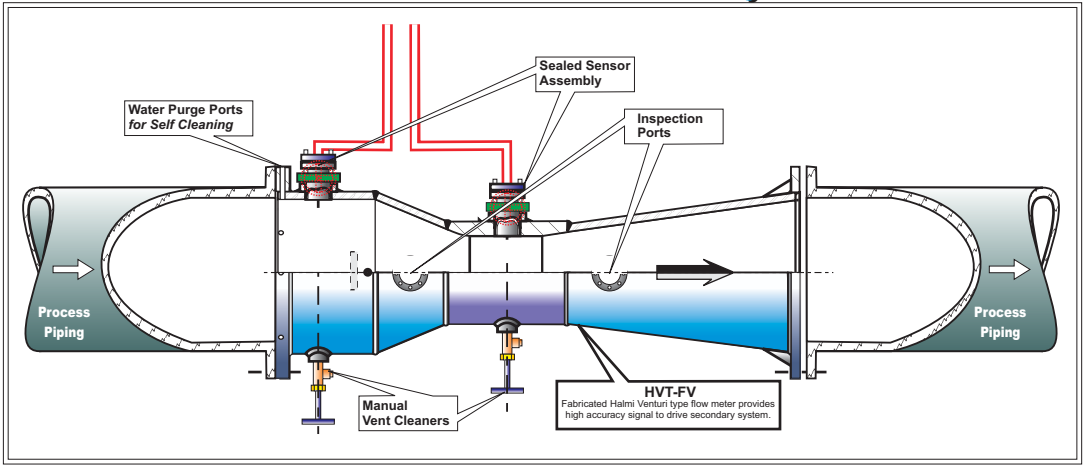
PFS
PRIMARY FLOW SIGNAL, INC.

TECHNICAL DATA BULLETIN

HVT-SM
RAS/WAS
HALMI Sealed System
Return Activated Sludge/ Waste Activated Sludge

SUITABLE FOR THESE USES:
- [ ] INDUSTRIAL APPLICATIONS
- [X] MUNICIPAL APPLICATIONS

HVT-SM-RAS/WAS — Halmi Sealed System for RAS/WAS



General Features:

- **High Accuracy, Reliability**
- **Low Permanent Pressure Loss**
- **Long Service Life(Up to 25 year warranty)**
- **All Internal surfaces are *Highly Polished* to prevent typical sludge build-up.**
- **"Self Cleaning" feature introduces High Pressure air or water jets radially through integral upstream flange ports to dislodge any possible build-up in critical hydraulic areas.**
- **Calibrator Assembly with Isolation Valve for In-Place calibration of the Transmitter without interrupting the process fluid.**
- **Upstream and Downstream Inspection Ports.**
- **Bi-Directional designs are available**

GENERAL DESCRIPTION:

The HVT-SM-RAS/WAS is a special case design based upon the highly successful patented ***HVT-SM Sealed Metering System*** design that enjoys wide acceptance and use world-wide for traditional contaminated flow metering applications. In this configuration, the equipment is ideally suited to provide long term, reliable and accurate flow metering of Return Activated Sludge or Waste Activated Sludge(RAS/WAS.)

For applications where the defendable accuracy of the flow metering installation is imperative, or the overall performance of *"Mag-Meters"* is questioned, or doubtful, The **HVT-SM-RAS/WAS,** equipped with state of the art PFS secondary instrumentation, coupled with the long-established reliability and life expectancy of the HVT-FV fabricated venturi meter, is unquestionably the best solution.

HOW THE SYSTEM WORKS:

The best way to explain the workings of this metering system is to simultaneously identify key elements of the system, and define their contribution to the function of the whole.

PRIMARY FLOW ELEMENT-

The primary element is, typically, a fully 304 stainless steel HVT-FV Halmi fabricated pressure vessel venturi with True Static high and low pressure sensing. The interior of the primary flow element is very highly polished to eliminated the likelihood of build-up or adhesion of the process fluid, particularly on critical hydraulic surfaces that would adversely affect the metering performance. ***Remember,*** every flow metering device that establishes throat velocity needs to have a known and preserved throat area in order to properly infer the rate of flow in the metering cross section.

SEALED PRESSURE SENSORS-

Any flow meter requiring piezometric pressure tap sensing is subject to the consequences of plugged taps. When a tap is fully or partially plugged, the differential is grossly affected, thereby reducing or eliminating any innate accuracy of the device. The HVT-SM - RAS/WAS solution is to utilize 76mm (3.0 inch) sealed high and low pressure sensors. (2.0inch seals are used on line sizes below 14.0 inches.) This completely eliminates any concern about taps being plugged or otherwise fouled.

PATENTED CALIBRATOR ASSEMBLY-

Primary Flow Signal, Inc. has pioneered and patented the unique calibrator assembly feature that is fundamental to the Sealed System design. This calibrator permits easy In-Place calibration of the secondary system transmitter under normal flow conditions without disconnecting any equipment or stopping or draining the process fluid. The typical testing device is a manometer that is permanently connected to the calibrator assembly. The pressure it reads is compared to the transmitter reading. If there is any difference, simply re-calibrate the transmitter to the manometer reading and return the system to normal operation.

PRODUCT SPECIFICATIONS:

Accuracy:
+/- 0.50% of actual reading *(2 Sigma)*
+/- 0.25% of actual reading or better based on hydraulic calibration.

Range Ability:
100:1 or more depending on secondary group capabilities and arrangement.

Operating Conditions:
Line Fluid Capability:
Contaminated, Particulate, high viscosity, gases, corrosives(depending on material of construction.).
Temperature Range:
-150°F to 400°F (as limited by capabilities of the associated secondary device(s) used.)
Line Pressure Capacity:
From full vacuum to limits of materials selection.

Line Size Capability/End Arrangement:
Between 6" through 14" line size is serviced by 2.0" sealed sensors.
16" and above line size is serviced by 3.0" sealed sensors.
Flange ends, mechanical joint, as required.

Beta Ratio Capability:
Custom sized and designed for Beta ratio range between 0.30 through 0.75.

Pipe Reynolds Number R_D Capability:
Discharge coefficient is constant above 75,000 R_D.
Discharge coefficient bias and random error between 12,000 R_D and 75,000 R_D is empirically established and highly repeatable.

Permanent Pressure Loss:
Varies from 3% of differential and up depending on application conditions, beta ratio, and exit cone truncation ratio, and can be engineered to meet your requirements

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THE LEADER IN RELIABLE FLOW MEASUREMENT
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