The Venturi Meter is a Popular Flow Meter for Wet Gas Flow
Wet Gas Induces a Positive Gas Flow Error on a Venturi Meter
Liquid Flow is Found By a Tracer Dilution Test
The Gas Flow Error Can be Corrected with a Suitable Correction Factor (e.g. de Leeuw)
The Pressure Loss Ratio (PLR) is the Ratio of Permanent Pressure Loss to Traditional Differential Pressure
The Venturi PLR is Sensitive to Liquid Loading
Changes in PLR Instigate Tracer Dilution Tests
Venturi Meter Based Wet Natural Gas Flow Metering

- **Size:** 3” to 24” for any pipe schedule.
- **Flanges:** #150 - #2500 (any specific connection on request).
- **Material:** All standard materials available.
- **Length:** Standard Wet Gas Venturi Meters are approximately 14D long and can be shorter.
- **DP Transmitter:** Any manufacturer’s transmitters may be used.
- **Calibration Requirements:** Supplied single phase calibrated. Venturi meters supplied with a wet gas tested on request.
- **Installation Requirements:** Typically > 5D straight length upstream. Typically only 1D straight length downstream.
- **Performance:** Wet gas flow correction factor uncertainty dependent.

Wet Gas Venturi under FAT. Liquid dispersion or “flow” patterns.

2-Phase Separated / 2-Phase Mist / Multiphase Transitional Flow
DP Diagnostics Supplies a **Unique**, Powerful, Industrially Proven, **Patent Pending** Diagnostics System

Venturi with Optional Extra DP Transmitters for Diagnostic Capabilities

Pressure Field through the Venturi Meter

- A Downstream Pressure Tap Allows 3 DP’s to be Read.
- The Pressure Field Through the Meter is Monitored.
- The Diagnostic System Multiplies the Meters Capability.
- 3 DP’s are Compared to Assure Correct Meter Operation.
- A Simple Live Diagnostics Plot is Shown in the Control Room.
- Wet gas flow creates a specific pattern on the diagnostic plot.
- The Diagnostic Plot Can be Zeroed to a Specific Wet Gas Flow. Thereby Indicating When the Liquid Loading Changes.
Gas flow, Venturi Meter

\[ \Delta P_i = \Delta P_r + \Delta P_{ppl} \]

Wet gas flow, Venturi Meter

\[ \Delta P_i = \Delta P_r + \Delta P_{ppl} \]

Wet Gas Flow Hydrate Formation.

\[ \Delta P_i \neq \Delta P_r + \Delta P_{ppl} \]

Signal of False DP Reading

- Wet Gas Flow Adversely Affects the DP Readings – Hydrates, Scale, Wax and Salts Can Block Taps, Transmitters Can be Easily Saturated etc. – the Diagnostics Continually Verifies the DP’s are True.


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