

Zero Friction Flow Measurement



Uniflow

The **Uniflow** provides an excellent accuracy for good flowable solids (density between 0.02 – 2.5 kg/l). Presently the system is available for flow ranges between 1 and 50m³/h.

the precise Solid Flow Meter

Accuracy:

Compared to other, conventional measuring systems based on volume, speed and weight, the C-Lever measures direct in the process. The final accuracy is +/- 0.25 % of volumetric range.

| Type | Nom. Pan Width | Max. peak Flow Rate * |
|-------------|----------------|-----------------------|
| C-Lever 150 | 150 (mm) | 12 m ³ /h |
| C-Lever 300 | 300 (mm) | 25 m ³ /h |
| C-Lever 600 | 600 (mm) | 50 m ³ /h |

* good flowing material add. 20%

The „turndown – ratio is better than 10 to 1.

Uniflow can be factory calibrated – the resulting accuracy with pre- calibration is better than 1 %.

The **Uniflow** has been proven in the plastics, food processing, tobacco processing and coal burning industries, incl. materials such as plastic pellets, tobacco, corn meal grain, rice, spices, soybeans, pet food, potato chips, and most any other flowable material.

The real time output allows very quick batching and flow controlling operations.

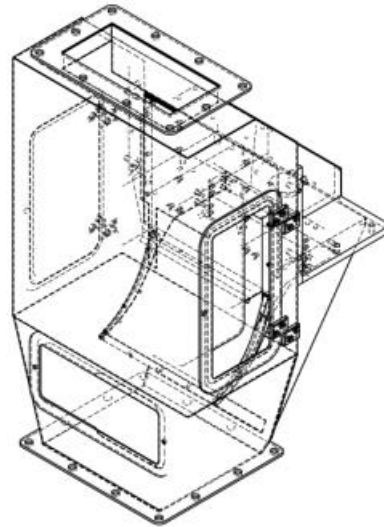
Typical applications:

- Master – slave control
- Constant Flow control
- Truck batching and bag filling

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Typical Specifications

- System accuracy is 0.25% of volumetric full scale
- Repeatability is $\pm 0.1\%$
- Turndown 1 : 10
- Standard product temperature is -17°C to $+65^{\circ}\text{C}$ - Higher ranges are optional
- IP-55 remote electronics packages standard with 15 m of signal cable
- Auto tare through electronics or remote contact, such as a conveyor or feeder stopping
- Overrange protection included
- Integral calibration chute



Why is the Uniflow so accurate?

The secret lies in its zero friction patented design which is based on the principle of centripetal force.

Centripetal force is the inward force required to keep an object moving in a circular path. It can be shown that an object moving in a circular path has an acceleration toward the center of the circle along a radius.

This radial acceleration, called the centripetal acceleration, is such that, if an object has a linear or tangential velocity when moving in a circular path or radius R, the centripetal acceleration is v^2/R .

If the object undergoing the centripetal acceleration has a mass M, then by Newton's second law of motion the centripetal force F_c is in the direction of the acceleration. This is expressed by the formula:

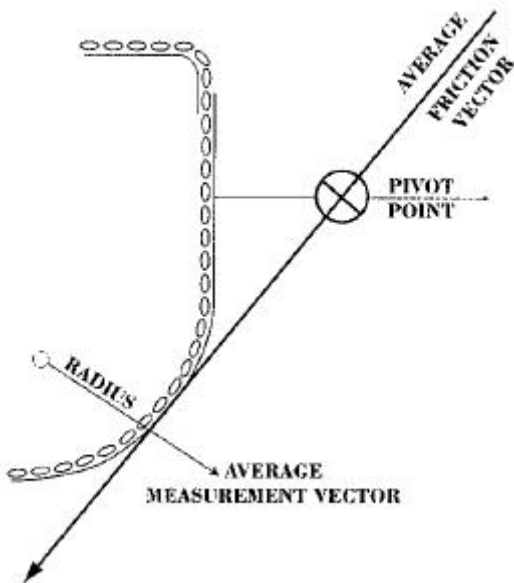
$$\text{Force (F)} = \frac{\text{Mass (m)} \times \text{Velocity (v)}^2}{\text{Radius (r)}}$$

From Newton's first law of motion, it follows that the natural motion of an object is one with constant speed in a straight line, and that a force is necessary if the object is to depart from this type of motion. Whenever an object moves in a curve, a centripetal force is present.

The Uniflow measures the centripetal force exerted on the sensing element as the particles travel over it. It is not measuring the impact of the particles because they do not impact the element. They travel across the element for a longer time period resulting in a significantly more accurate signal.

The Uniflow uniqueness is its ability to identify and cancel the friction component. Combined with a velocity that is constant and a radius that is unchanging, flow equals mass.

That is zero friction mass flow measurement. The remaining signal is actual mass flow and it is linear



Zero friction flow measurement means linear real-time registration of mass flow!