



# ASK THE EXPERT

Wedge-Shaped Design Enhances Fluid Flow, Controls Solids, Ensures Sustainability, and Reduces Costs



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In many industrial scenarios, accurately gauging volumetric flow presents a formidable challenge, particularly when dealing with highly viscous or corrosive liquids, susceptibility to clogging, elevated temperatures, or a blend of these factors. Furthermore, environments featuring low ambient temperatures, high-temperature process fluids, or a mix of both often demand heat tracing, entailing the provision of electrical power and introducing a maintenance-heavy solitary vulnerability point.

David Wright, global product manager at Emerson, explains how using a wedge-shaped design can be a solution for any or all of these potential problems.

## **What is the advantage of the wedge-shaped primary element as opposed to other differently shaped products?**

A key advantage of the wedge shape is that it prevents entrained solids in a fluid from collecting in front of the restriction. Vortices that result from the wedge shape also serve to pull solid content further downstream of the measurement point. In other primary element types, such as orifice plates, solid build-up on the upstream side can impede the flow, which incurs erroneous readings. The unique shape also enables the ability to measure a wider range of Reynolds Numbers (Re) than other primary elements, allowing for a flexible flow measurement device.

Another benefit of the wedge is that it has no critical sharp edge that will introduce additional uncertainty under normal wear. Normal orifice plates contain sharp edges, which can erode and degrade the overall accuracy over time. This positions the wedge as a viable differential pressure (DP) flow solution for abrasive applications.

## **What sets Emerson's wedge flow meter apart from its competitors with a similar product?**

The wedge flow meter is built to drive an industry-leading uncalibrated option that is perfect for applications where a drop-in repeatable solution is needed. Honed, welded, and

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tested in our factory, customers can be confident in a robust device built per the official ISO 5167-6 standard.

A prime differentiator for the Rosemount™ 9195 Wedge Flow Meter is that it can be combined with Emerson's industry-leading pressure transmitters or our DP Level remote seals to offer a complete flow meter solution. We offer a flexible connection platform, allowing customers to choose either normal NPT connections or remote seal connections, removing the need to specify all these items separately. Sites can receive a tested and certified flow meter that is ready to be installed directly into the line, saving time and money.



### What efficiency or cost-saving benefits does the Rosemount 9195 Wedge Flow Meter offer?

Reducing system downtime is critical for maintaining productivity in a facility. In difficult applications such as high-viscosity oil, technicians may be forced to shut down a process to perform in-line maintenance to clear impulse lines or clean the line — a pain point for sites looking to consistently hit their metrics.

To address this issue, the Rosemount 9195 Wedge Flow Meter has an option for remote seals and/or flushing rings to reduce plugging and clear diaphragms without the need to remove the seal from the line. Ball or gate valves can be included to isolate the transmitter and seals from the process fluid to allow work to be done without disturbing the flow.

### What types of application-specific packages are offered?

There are many different options that have been proven and tested in a variety of applications, providing our customers with confidence that their measurement points will be fast and reliable. Options driven through these packages can include diaphragm thickness, material of construction, fill fluid type, capillary length, and more.

Five application packages are available, while still allowing customers the flexibility to choose their own options. These include:

- **Standard**, built for general-purpose applications found in water and wastewater or pulp and paper.
- **Abrasive**, designed to handle entrained solids in slurries that can erode normal impulse piping. This package would be effective in mining and metal recycling applications.
- **Ultra-High Temperature**, utilizing a remote seal design constructed for temperatures up to 770 °F (410 °C). Ideal for industries such as refining or asphalt production, where viscous and abrasive fluids run at high temperatures.
- **Cold Environment**, suitable for applications where ambient or process temperatures fall below 0 °F (-18 °C). Outdoor pipelines in colder regions can benefit from the response time provided in this package.
- **Remote Mount**, manufactured for applications where spacing is a limited commodity. This package provides flexible mounting configurations in plants while maintaining an acceptable time response.

### How does the wedge flow meter help optimize productivity in industries such as refining, metals and mining, and oil and gas?

**Refining:** Refineries typically have hundreds of measurement points, including custody transfer, monitoring, and safety systems. Areas like delayed coker heaters, tower bottoms, and VRC feeds output very viscous and high-temperature

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fluids, which are difficult to measure but normally required for reporting purposes. The Rosemount 9195 Wedge Flow Meter can provide repeatable measurements while also handling the temperature through the Rosemount Thermal Range Expander seal system, eliminating the need for heat tracing.

**Metals and Mining:** The abrasive seal package helps limit the erosion damage typically seen with particles found in metals and mining applications, decreasing the need to perform maintenance or replace the measurement device. The Rosemount 9195 Wedge Flow Meter is also available with a Rosemount Wireless DP Flow Transmitter,

eliminating the need for wiring, which is limited in outside mining locations.

**Oil and Gas:** Within the oil and gas field, there are a multitude of measurement opportunities. Upstream applications, such as produced water or CO<sub>2</sub> injection, contain a variety of different fluid types within the flow stream that other flow technologies may not be able to handle. Typically, the wedge will be able to produce a reliable volumetric flow measurement over a larger range due to its design and transmitter rangeability, giving customers confidence in their process.

For more information on how Emerson's revolutionary wedge design can enhance your bottom line, please visit [www.emerson.com/Rosemount-Wedge](http://www.emerson.com/Rosemount-Wedge)

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