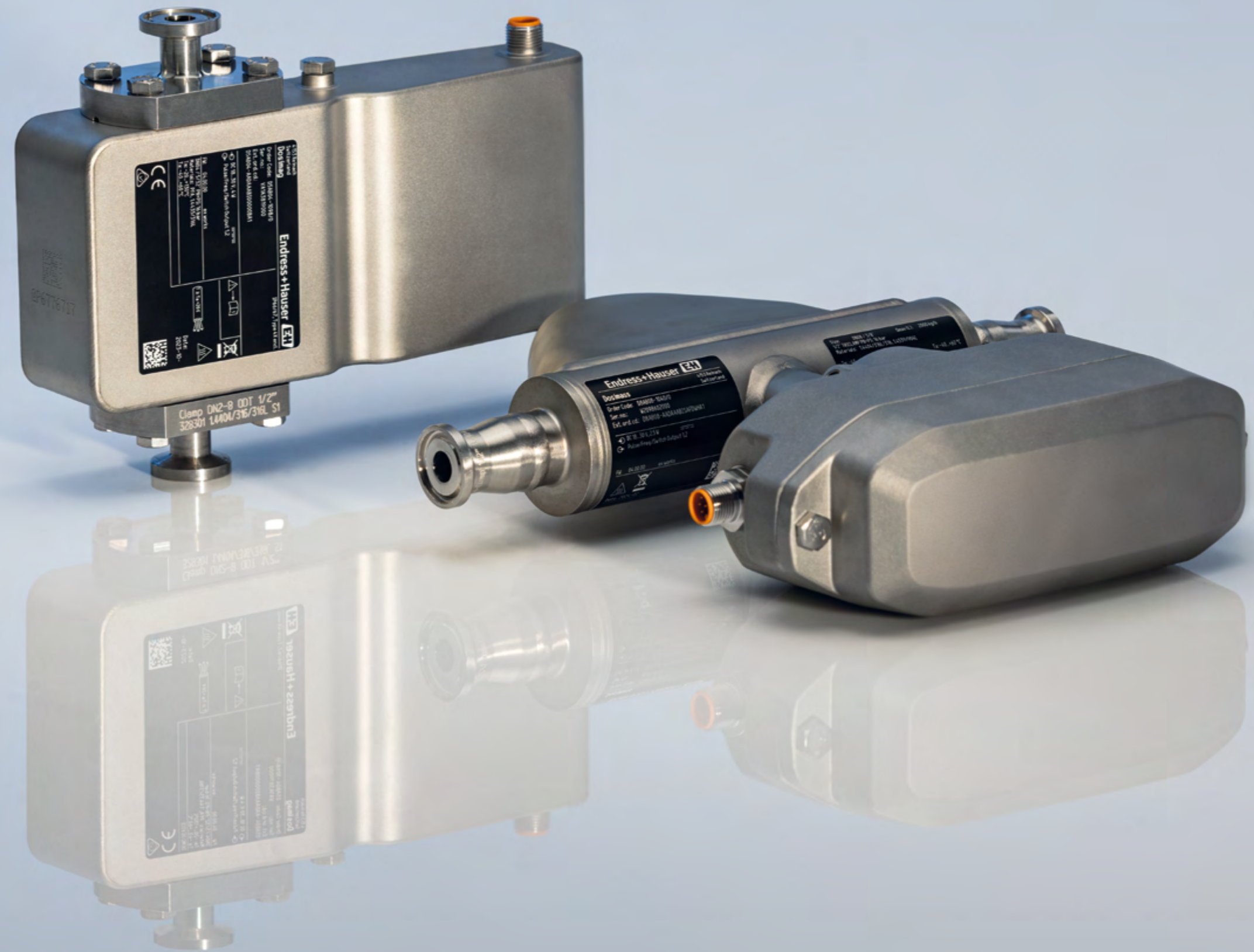


Not a drop to lose

Dosimag and Dosimass – precise filling and dosing with excellent measuring stability, cGMP compliance and IO-Link



Filling portfolio

Do you want to fill or dose liquids or liquid foodstuffs with highest accuracy and repeatability? Count on the Dosimag and Dosimass flowmeters from Endress+Hauser, tried and tested in a vast range of filling applications for three decades.

The electromagnetic (Dosimag) together with the Coriolis measuring principle (Dosimass) make up two complementary technologies that are perfectly matched. They convince with exceptional measuring stability and repeatability for both conductive and non-conductive liquids, not to mention a large number of industry approvals and with compact designs.

In their newest generations, Dosimag and Dosimass offer even more advantages: In addition to a pulse version and a variant with an integrated batching function, the portfolio has been expanded to include an intelligent pulse version with IO-Link for both measuring principles (see the IO-Link page). This not only increases ease of use, but also creates options for digitalization all the way through to the filling unit.





Dosimag

Dosimag is the top choice for quick volume measurement of conductive liquids and liquid foodstuffs in filling applications. The latest version of the tried-and-tested electromagnetic flowmeter has a compact and robust stainless steel housing and an integrated transmitter for all nominal diameters from DN 04 to 25 ($5/32$ to 1"). Other benefits include the built-in temperature sensor (from DN 15 ($1/2$ ")) and a reduced weight, resulting in less energy required for operation in rotary-filling machines.

And compact dimensions, of course, make it possible to design smaller systems. In addition, the housing is fully welded, offering improved protection from moisture. Dosimag also complies with current industry regulations (see the industry compliance page) in the food and beverage sector as well as the life sciences industry.





Dosimass

Dosimass is the top choice for the fast measurement of mass flow in filling applications. The compact and robust Coriolis flowmeter, made for all non-conductive and conductive liquids as well as liquid foods, additionally provides temperature and density measurement. This makes it possible to control the process with greater precision.

In its latest version, Dosimass has been given a revised transmitter and a lighter sensor, and is now also available in nominal diameter DN 40 (1½") for demanding applications such as keg filling. The flowmeter complies with current regulations in the food and beverage industry and enables cGMP-compliant production in the life sciences industry (see the industry compliance page).



Benefits at a glance

For filling and dosing, Endress+Hauser offers Dosimag and Dosimass, two well matched flowmeters with complementary technologies to cover a wide range of applications.

This filling portfolio results in some special advantages.

Precise filling for even the smallest of quantities and exceptionally short filling cycles with high repeatability



Excellent measuring stability for conductive and non-conductive fluids, regardless of density and viscosity



Optimum system integration (pulse/frequency and digital) using pulse, IO-Link or Modbus RTU



Global acceptance thanks to various approvals (EHEDG, 3-A, FCM), and cGMP compliance to meet industry standards



Compact design, and thus easily integrated into high-performance filling systems



Bacteriological safety achieved with measuring tubes lacking gaps or dead spaces, and CIP and SIP temperatures up to +150 °C (+302 °F)

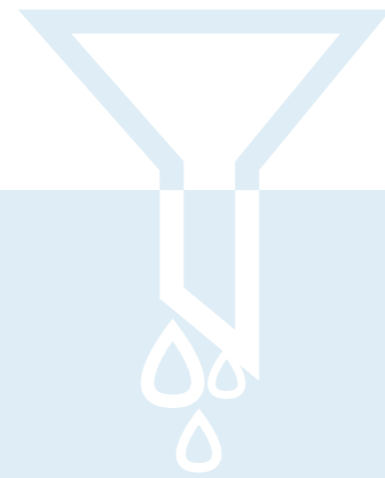


IO-Link

As a bidirectional, fieldbus-independent communication system, IO-Link has become widely recognized. For example, it allows easy commissioning, provides output of additional process parameters, and supplies diagnostic data, all thanks to improved digitalization.

With the IO-Link versions of Dosimag and Dosi-mass, system operators benefit from significantly more flexibility and intelligent devices. IO-Link also improves standardization because the new pulse devices with IO-Link are compatible with existing pulse devices, thus allowing migration to take place in stages.

This unique feature on the market offers enormous practical and economic advantages during commissioning, operation and maintenance.



Commissioning

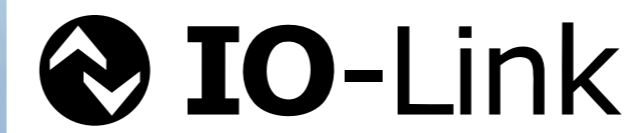
- Time savings due to quick and easy system commissioning
- Faster, simpler and more reliable machine start-up
- Improved standardization

Operating phase

- Accelerated parameterization change without special tools
- Remote zero-point adjustment
- Diagnostic data readout for improved maintenance planning
- Optimized filling through real-time flow rate adjustment

Maintenance phase

- Plug and play: Spare devices automatically take on the machine-specific parameters of the local operating system
- Less unplanned downtime
- Increased plant reliability and the ability to perform on-site diagnostics



Industry compliance

In the food and beverage sector and in the life sciences industry as well, quality control, hygiene regulations, and especially traceable conformity all play important roles. To this effect, Dosimag and Dosimass have a variety of approvals:

	Food & Beverages	Life Sciences
Dosimag	EHEDG, 3-A, FCM in all regions (EU/US/CN)	cGMP compliance (with traceability of liner, seal, electrode and process connection, TSE/BSE-free)
Dosimass	EHEDG (from DN 08 (3/8")), 3-A, FCM in all regions (EU/US/CN)	cGMP compliance (traceability of surfaces of wetted parts, design, FDA 21 CFR material compliance, USP class VI tests and TSE/BSE conformity. A declaration of a specific serial number is generated.)



Industry focus

The need to fill a wide variety of products in containers such as bottles, pouches and other package types is increasing worldwide, in part due to a growing range of consumer products on the beverage market. In response, an increasing number of manufacturers are turning to volumetric and bulk filling methods. A core component of such filling systems are modern flowmeters that meet the

high demands of the industry in terms of reliability, speed, efficiency and cleanability. In many situations, filling happens every second and around the clock—high-tech plants can fill up to 120.000 containers per hour. As such, production downtimes due to defective devices or lengthy maintenance work have to be avoided at all costs.

In addition, the pharmaceutical industry is currently undergoing a paradigm shift, from chemical ingredients to biotech pharmaceuticals. Many manufacturers are focusing on smaller batches and personalized medicine instead of traditional, large-scale biotech production.

The following pages provide some examples of applications in various industries.





Beverages

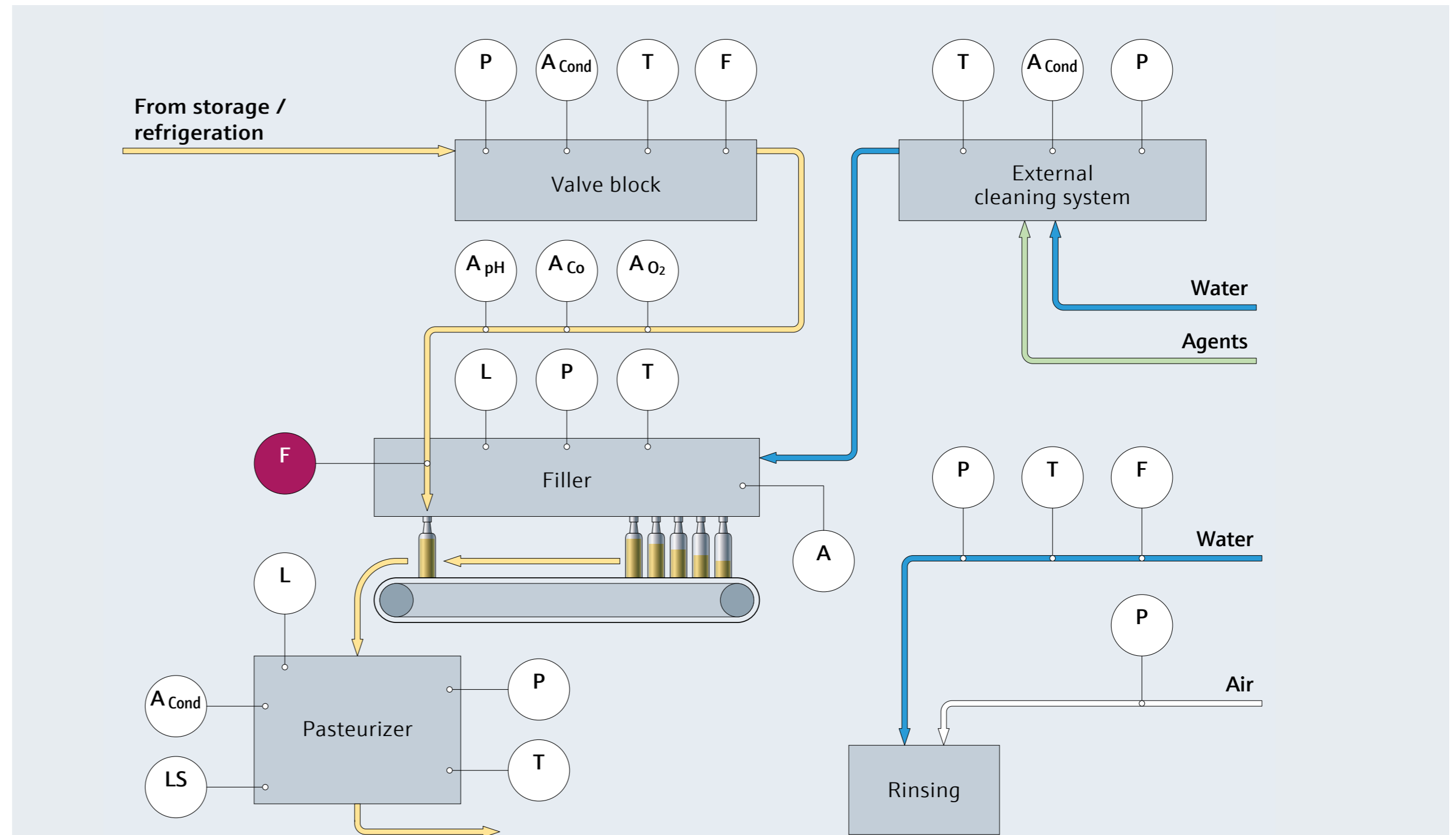
In the beverage industry, millions of bottles, beverage cartons, aluminum cans or bags are filled each day with highly diverse liquids. The required daily output can often only be achieved using enormous filling plants and multiple measuring points. This makes compact flowmeters even more important as they allow for a space-saving and narrow arrangement, particularly in rotary filling systems. Since the filling process can occur hot as well as cold, the flow measuring technology being used

must meet high demands with regard to robustness and material compatibility.

Requirements for the measuring technology itself are equally stringent since, for example, carbonated beverages are filled under pressure or beverages may contain fruit pieces or fibers. Compliance with hygiene regulations is of the upmost importance to ensure the highest possible level of antibacteriological safety.

What you can measure:

- water
- soft drinks
- milk
- fruit juices
- beer
- wine
- Champagne
- syrup
- ...



Your challenge

Measuring task: Highest filling speed and accuracy for maximum output and availability

Filling time: 0.5 to 3 seconds

Medium: Various beverages that are mixed with CO₂ or contain solids (pulp, etc.)

Our answer

The wide spectrum of nominal diameters covered by Dosimag and Dosimass enables highest filling speeds without compromising pressure loss or repeatability. Furthermore, the high speeds achieved make it possible to reduce the number of filling heads. Combined with the compact design, this, too, benefits the system size. Last but not least, this filling portfolio convinces with its durability and long-term stability ensured by the use of high-quality materials.



Liquid food

In the food industry, absolute cleanliness and hygiene are paramount. Filling systems must therefore be easy to clean and meet strict hygienic requirements. Precise dosing is crucial for consistently high product quality.

In addition, different products with a wide variety of properties and packaging are often filled with one system, which requires modular systems that can be flexibly configured to meet the respective product requirements.



What you can measure:

- cooking oil
- sauces
- dairy products
- ketchup
- mustard
- jam
- liquid cheese
- honey
- ...

Your challenge

Measuring task: Filling of a vast range of container sizes and types, as well as rapid availability after cleaning intervals

Medium: Foods with a wide range of physical properties and liquids with solids

Our answer

Dosimag and Dosimass fulfill the high demands on bacteriological safety and enable measurement immediately after the cleaning process with neither a recovery delay nor loss of performance. The full-bore design with no moving parts ensures perfect cleaning and maximum product protection. Nominal diameters up to DN 40 (1½") in the latest product generation offer an excellent solution for the greatest variety of containers. And thanks to differing measuring principles, the filling portfolio is suitable for a wide range of fluids.



Pharmaceutical products

In the pharmaceutical industry, often tiny amounts of expensive active ingredients must be filled with the highest accuracy and repeatability. Moreover, strict regulations for filling in a sterile area must be complied with. All components that come in contact with the medium must therefore be FDA-compliant and meet the stringent demands on surface roughness (Ra max = 0.38 µm). This also means that all product-guiding components must be CIP

or SIP cleanable, between batch or product changes.

The requirements regarding traceability are particularly strict, such as the ones of material flow, product quality or the duration of cleaning for a new batch. Since modern flowmeters measure continuously, not only the duration of the cleaning cycle, but also the amount of cleaning agent used per filling head, can be verified at any point.

What you can measure:

- vaccines
- eye drops
- disinfectants
- nasal sprays
- ear drops
- cough syrup
- mouthwash
- ...



Your challenge

Measuring task: Filling a large range of container sizes and variants with highest filling accuracy, plus an obligation to provide proof of fill quantities

Material: Numerous requirements on the system (traceability, surface quality, etc.)

Our answer

The filling portfolio with Dosimag and Dosimass covers all specific material requirements in terms of safety and simplicity in pharmaceutical production, and fulfills all necessary industry requirements (cGMP, FDA). These two flowmeters also make their mark with their ability to record the smallest quantities with maximum repeatability, providing plant operators with the perfect solution when it comes to the obligation to provide evidence.



Body care products

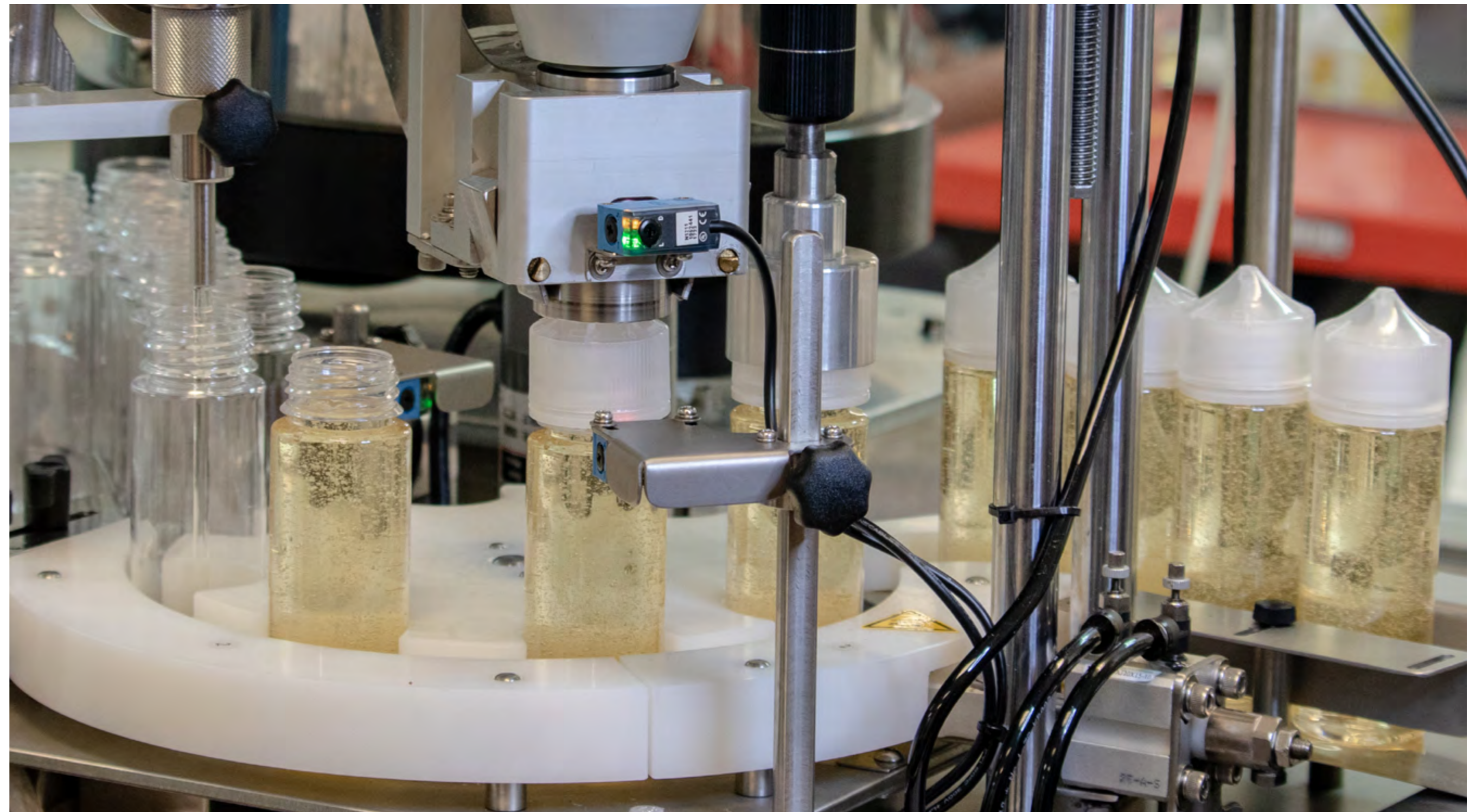
Personal care products are filled into a multitude of bags, bottles, ampoules, tubs or glass containers. Whether creams, liquid soaps, nail polish remover or facial toner: these products come in a variety of different consistencies and contain highly diverse ingredients. This means high demands for the flow measuring technology used in filling plants. The user expects the highest possible level of filling accuracy and re-

peatability – even for products with high air bubble content such as shower gels.

Accuracy is also a decisive factor when filling very small amounts in order to prevent unwanted product losses in the long term – especially when expensive active ingredients are involved. Explosion protection becomes important for cosmetic products containing solvents or alcohol-based substances.

What you can measure:

- shampoo
- shower gel
- hair tonic
- color medium
- deodorants
- sunscreens
- liquid soap
- body lotions
- ...



Your challenge

Medium: Care products with a wide range of physical properties

Measurement requirement: Filling a large range of container sizes and variants with highest filling accuracy, plus an obligation to provide proof of fill quantities

Our answer

Thanks to their large measuring ranges and optimized pressure loss, Dosimag and Dosimass are well suited for a large range of container sizes without the need to modify the plant. And due to their different measuring principles, this flexibility also extends to the fluid: Which method works best high-precision measurements, the Coriolis (Dosimass) or the electromagnetic version (Dosimag), depends on the physical properties of the medium.



Chemical agents

Chemicals used in household or recreational products generally have highly diverse characteristics. They can have high or low viscosity and be highly aggressive. Additionally, certain chemicals can develop flammable vapors which may only be filled in an explosion-protected area. Therefore, safety is top priority in these cases.

Whether solvents, acids or alcohol-based cleaning products: Dosimag and Dosimass are made from highly resistant materials and can be used at any point in a hazardous area (zone 2).

What you can measure:

- paints
- cleaning products
- disinfectants
- lubrication oils
- engine oils
- liquid fertilizers
- dishwasher detergents
- glue
- ...



Your challenge

Medium: Numerous fluids with different physical properties

Measuring range: A wide spectrum of containers and sizes

Material: Special requirements for corrosion resistance

Our answer


With their different measuring technologies, Dosimag and Dosimass enable precise flow measurement on a wide range of fluids. To ensure maximum safety, they are manufactured using corrosion-resistant materials, including the use of plastic process connections. The optimized pressure loss and the large measuring range also provide additional flexibility to system operators, as a wide range of container sizes can be handled without the need to modify the filling machine.

Technical data

Filling portfolio overview

The filling portfolio of Endress+Hauser is based on two proven flowmeters for filling and dosing: With their high accuracy, repeatability and reliability, Dosimag and Dosimass make a convincing mark.

Learn more about the technical data of these two devices on the following pages.

The Dosimag and Dosimass measuring system fulfills the EMC requirements according to IEC/EN 61326. It also conforms to the requirements of the EU and ACMA directives and thus carries the **CE** and the  mark.



Dosimag

Dosimag is recommended for volume flow measurement for all conductive liquids with a filling time of no less than 0.5 seconds.

More information on the technical data can be found on this page.



Dosimag (electromagnetic flow measurement)

Measured variable	Volume flow (independent of density, pressure, temperature and viscosity)
Nominal diameters	DN 04 (⁵ / ₃₂ "), DN 08 (⁵ / ₁₆ "), DN 12 (¹ / ₂ "), DN 15 (¹ / ₂ "), DN 25 (1")
Filling time	(recommended) ≥ 0.5 s
Fill quantity	(recommended) ≥ 10 ml (0.33 US oz) with DN 04 (⁵ / ₃₂ ")
Repeatability	Filling time ≥ 1.5 s: σ ≤ 0.4 % Filling time ≥ 3.0 s: σ ≤ 0.2 % Filling time ≥ 5.0 s: σ ≤ 0.1 %
Measuring accuracy	±0.25 % o.r. at v = 1 to 4 m/s
Ambient temperature	-20 to +60 °C (-4 to +140 °F)
Process temperature	-20 to +130 °C (-4 to +266 °F)
Cleaning temperature	(CIP/SIP) +150 °C (+302 °F) for 60 min.

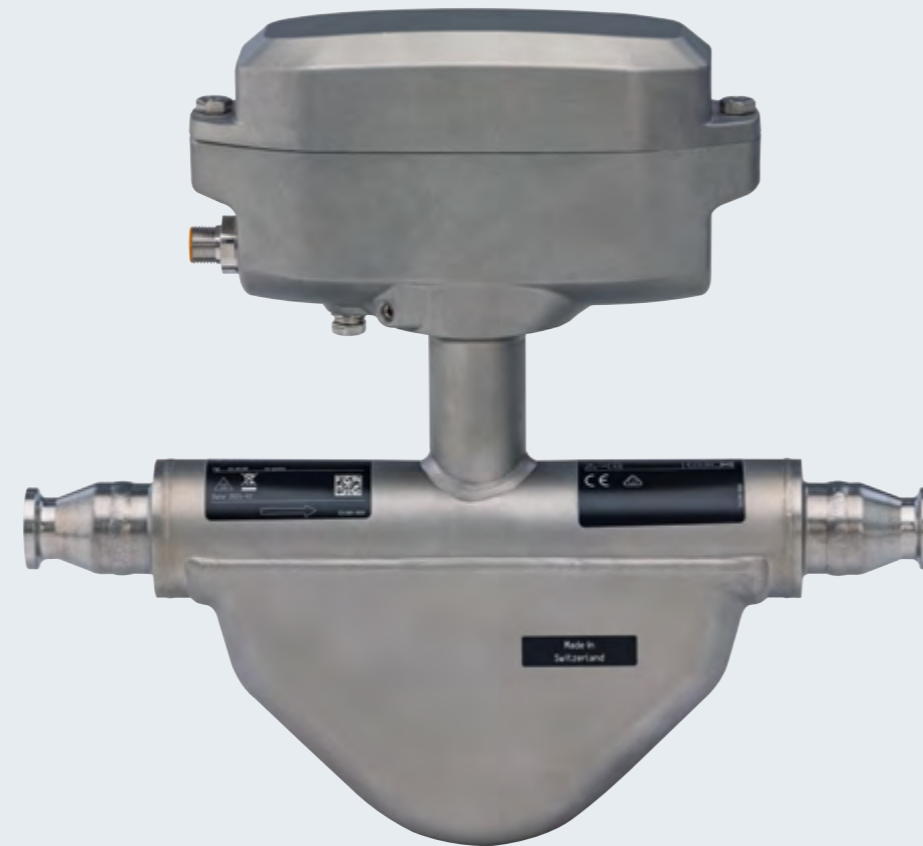
Subject to modifications and amendments



Dosimass

Dosimass is the best choice for direct mass flow measurement in filling applications independent of the conductivity of the liquid.

More information on the technical data can be found on this page.



Dosimass (Coriolis flow measurement)

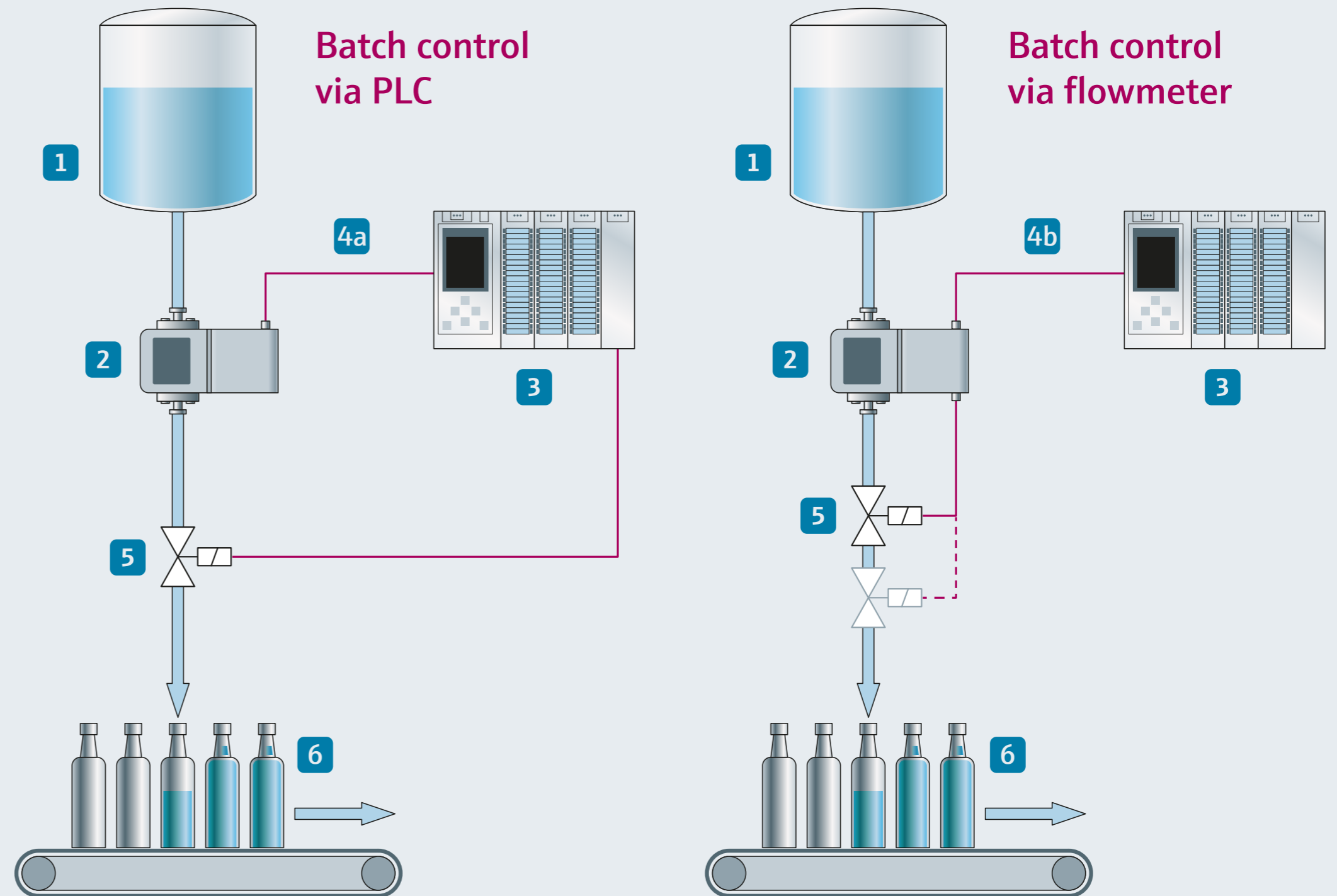
Measured variable	Direct mass flow measurement (independent of conductivity, density, pressure, temperature and viscosity)
Nominal diameters	DN 08 (3/8"), DN 15 (1/2"), DN 25 (1"), DN 40 (1 1/2")
Filling time	(recommended) ≥ 0.25 s
Fill quantity	(recommended) ≥ 20 g (0.7 US oz) with DN 08 (3/8")
Repeatability	Filling time ≥ 0.75 s: $\sigma \leq 0.2$ % Filling time ≥ 1.5 s: $\sigma \leq 0.1$ % Filling time ≥ 3.0 s: $\sigma \leq 0.05$ %
Measuring accuracy	± 0.15 % o.r. at $v = 1$ to 4 m/s
Ambient temperature	-20 to $+60$ °C (-4 to $+140$ °F)
Process temperature	-20 to $+130$ °C (-4 to $+266$ °F)
Cleaning temperature	(CIP/SIP) $+150$ °C ($+302$ °F) for 60 min.

Subject to modifications and amendments

System integration

Whether the system is large or small, Dosimag and Dosimass offer a variety of options for optimum integration into plant control systems (PLC) for filling plants. The flow signal is sent to the PLC via pulse/frequency, or newly via IO-Link, and all parameters (pulse value, pulse length) can be defined by the user.

With the integrated batching function, the flowmeter takes control of the filling process. In this case, Dosimag and Dosimass control the valves directly and correct the after-run quantity to achieve high and stable repeatability. Another advantage is the time-controlled batching function with superimposed quantity control for the shortest filling times with small quantities and safeguards against measuring errors.



1 Supply container
2 Flowmeter (Dosimag, Dosimass)

3 Plant control system (PLC)
4a Pulse/IO-Link connection with the PLC

4b Modbus RS485 and AUX input
5 Closing valve

6 Container

People for Process Automation



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