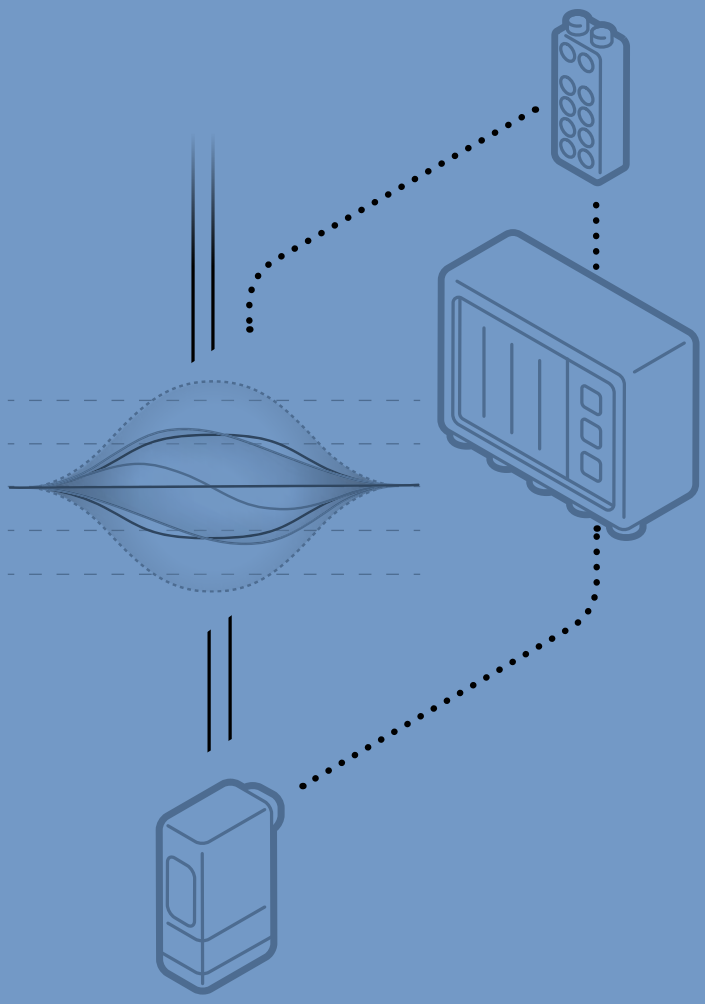
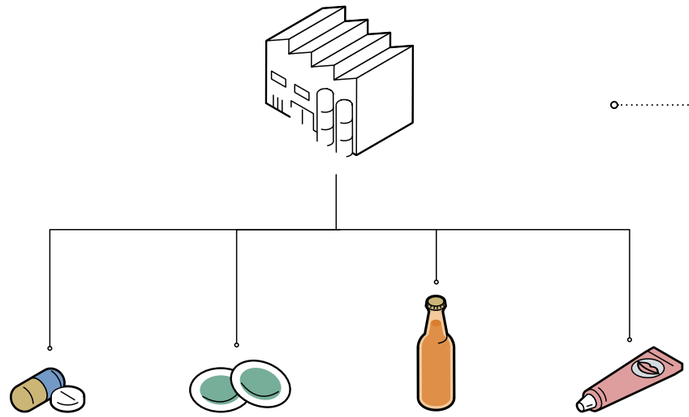
Measuring and controlling the smallest amounts of liquid continuously



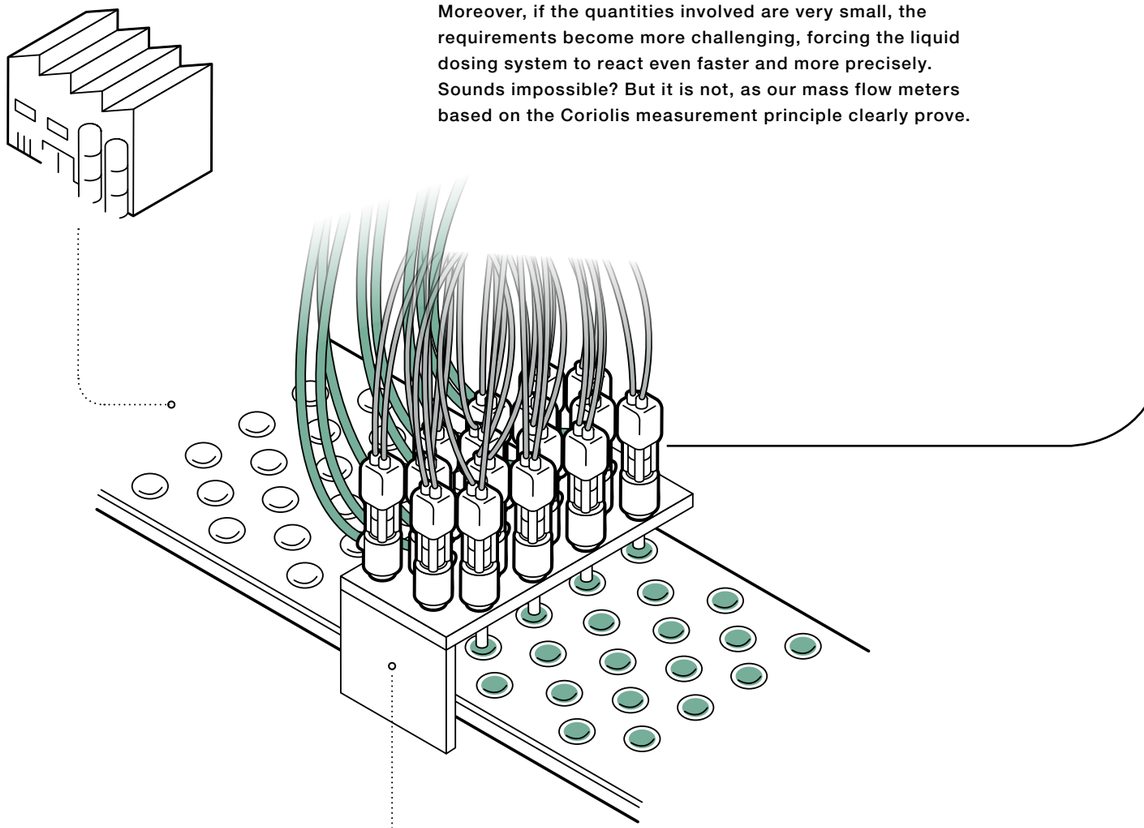
/ Precise and quick dosing / If ingredients, additives or flavourings are added, the right quantity is important. Therefore, accuracy and velocity are essential when dosing the smallest amounts of liquid in order to avoid additional costs. This is a challenge for the upstream dosing system, which must provide a constant level of precision throughout. The Bürkert solution: Mass flow meters based on the Coriolis measurement principle.



Discover on the following pages how you can benefit from mass flow controllers and meters: For example, how to ensure exact and quick dosing of your ingredients and additives. How to guarantee consistently high product quality. And also how you can save time during a product changeover thanks to reproducible processes.

/ Precisely dosed / The demands placed on a dosing system for the smallest amounts of liquid are very challenging. Neither pressure nor viscosity should influence the dosing process. Flow rates can vary greatly but must still be constant. Furthermore, low pulsation is required. Precision and accuracy are crucial for maximum output and consistent quality.

Moreover, if the quantities involved are very small, the requirements become more challenging, forcing the liquid dosing system to react even faster and more precisely. Sounds impossible? But it is not, as our mass flow meters based on the Coriolis measurement principle clearly prove.

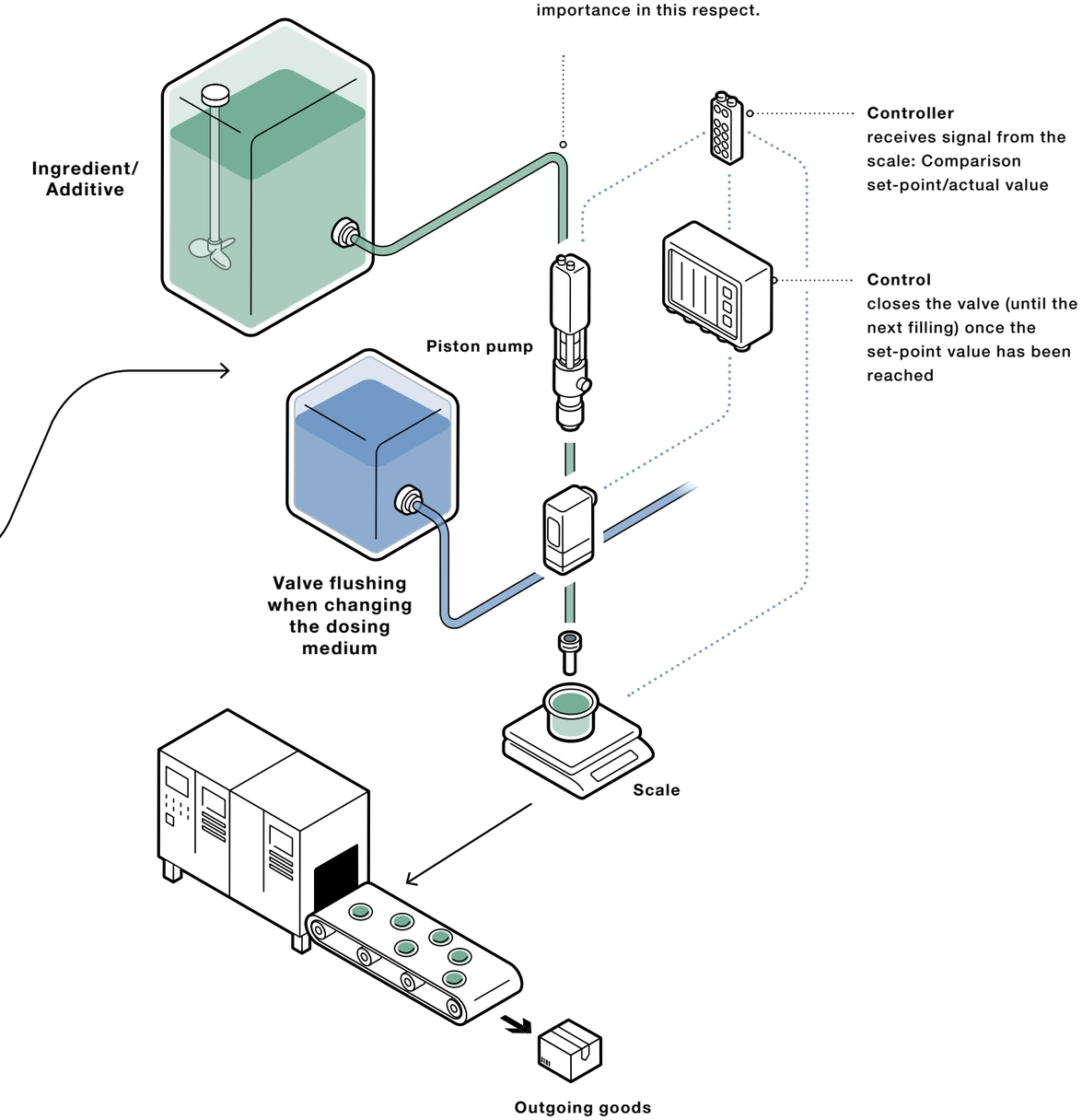


Accuracy and speed when dosing

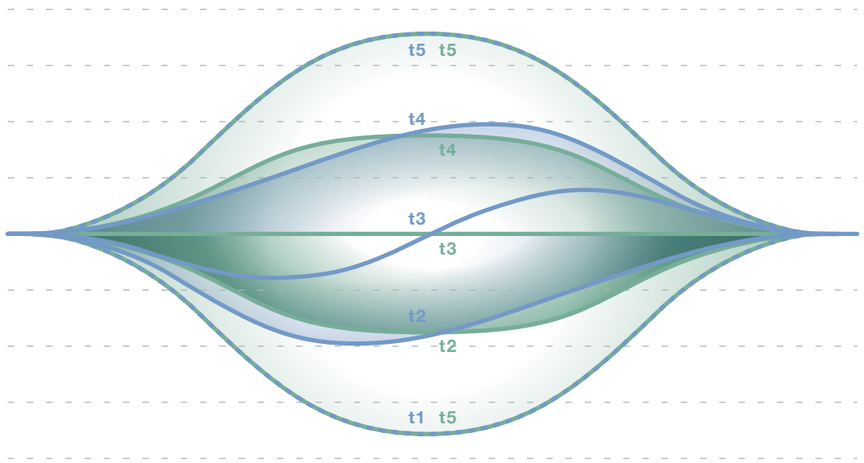
What counts in every industry:
Food & beverages: An exact measurement ensures reproducibility in appearance, consistency or taste.
Pharma: The most precise dosage of ingredients determines the composition and effectiveness of drugs and medicines.
Chemicals: With chemicals, high-precision dosing of the individual substances is essential.
Cosmetics: In the case of additives, e.g. fragrances in care products, exact dosing is necessary.

Ensuring product quality

24 hours a day, 7 days a week: Your product quality needs to be perfect. If the mixing ratio is not exactly as desired, you will not only lose income from the poor-quality batch – but also have to pay for its often expensive disposal. Exact, reproducible control of the processes and their continuous monitoring are of great importance in this respect.



/ Shows its true strengths especially when it comes to small quantities / Dose quickly, reliably and precisely – without splashes, drops, foam or bubbles. Consistent quality is the top priority. When using the mass flow meter (MFM) or mass flow controller (MFC) Type 8756, you can measure and optionally control flow values constantly and reliably over a long period of time. Measurement of the liquid mass is not dependent on the medium, temperature and pressure, which is why the device, once set, can be used for any kind of liquid.



Tube vibrations when liquid is flowing

Tube vibrations without medium

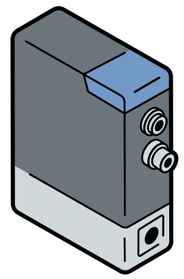
How the Coriolis principle works

Bürkert flowmeters use a measurement tube which is first made to vibrate, see deflection at time t1 in the illustration. Detectors at the start and end of the measurement tube pick up the timed deflection at the corresponding point. If a liquid flows through the tube, the tube is deflected differently at both ends at time t2. The difference of the deflection at varying points in time, for example at t2, t3 or t4, allows conclusions to be drawn about the mass flow.

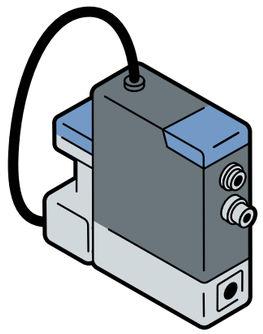
Advantages

Coriolis is a universal measuring system for mass and density. It operates independently of conductivity, inlet/outlet sections, flow profile, medium density, pressure and temperature.
Moreover, it delivers exact results and has no moving parts.

Mass flow meter MFM Type 8756



Mass flow controller MFC Type 8756 with micro annular gear pump



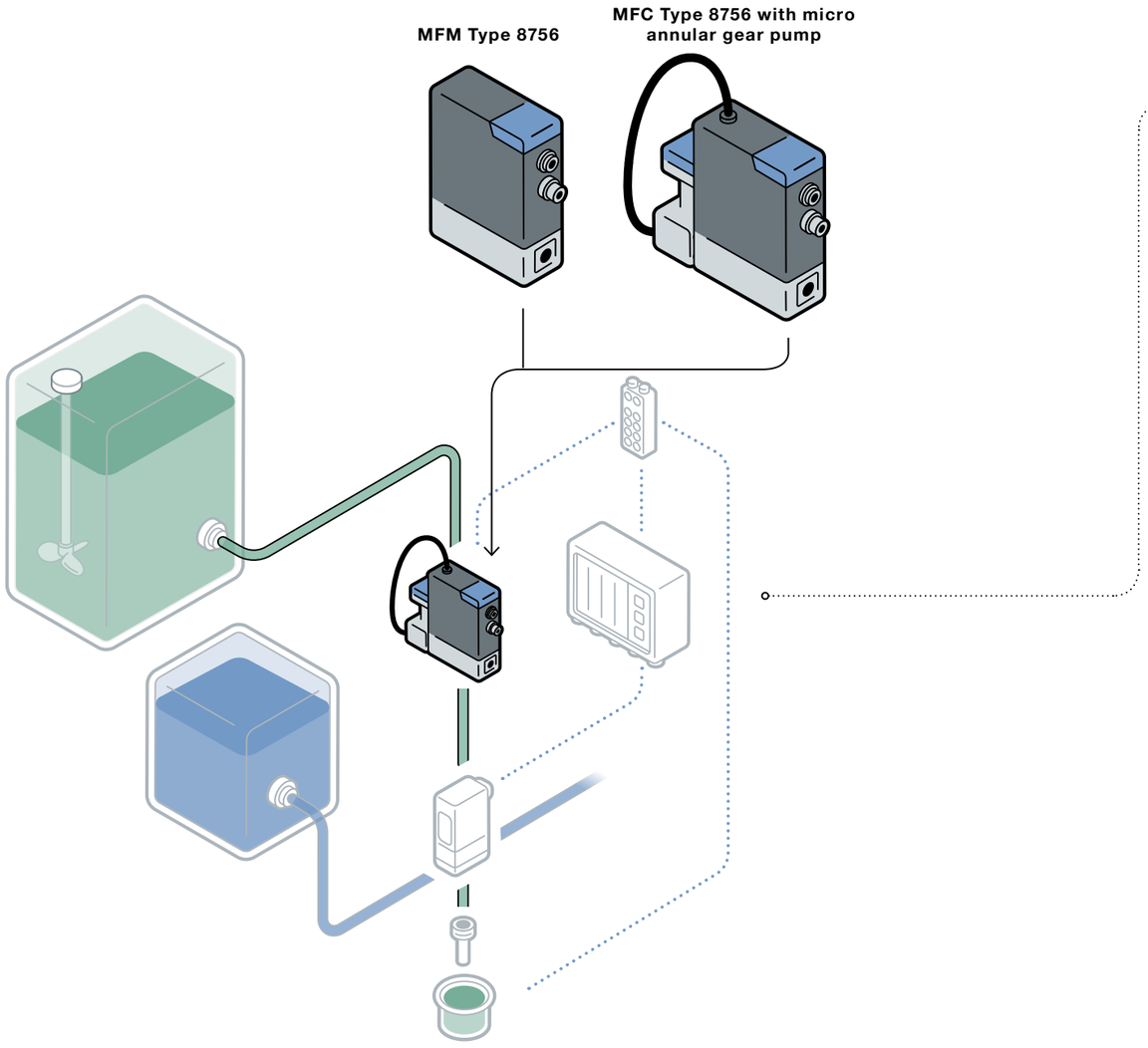
Mass flow meter MFM Type 8756

The mass flow meter measures liquid flow rates of up to 25 kg/h. It is designed for the smallest quantities and aggressive liquids. Its accuracy of 0.2% of the rate makes it one of the most accurate flowmeters for small liquid flow rates.

Mass flow controller MFC Type 8756 with micro annular gear pump

A mass flow controller with micro annular gear pump not only measures the flow rate but can also control it with a high degree of precision. A very high resolution and smooth operation of the pump guarantee the exact setting of a desired set-point flow rate. Due to the high-quality wetted materials, the pump can also be used with aggressive liquids.

/ Quick and precise / Thanks to the Coriolis measurement principle, you do not have to choose between speed and precision for your production processes. The MFC/MFM Type 8756 enables high-precision dosing processes due to its unrivalled measuring accuracy. Reliability and flexibility in your production process is guaranteed even when dosing the smallest amounts of liquid by pure mass measurements.



bürkert

Saving ingredients

Thanks to exact dosing with the new MFC Type 8756, you can save raw materials and ingredients. At the same time, costs are reduced and the quality of the products is ensured.

Exact measured values

Extremely precise measured values thanks to the applied Coriolis principle (+/- 0.2% o. r. +/- 0.0014 kg/h). The zero point stability of the flow sensor also contributes to the measuring accuracy of the device, e.g. temperature or pressure fluctuations.

Vibration resistant and stable

Due to the extremely robust design, vibrations have almost no influence on the measured values. These are the best preconditions for long-term stable and interference-free measurements.

One device type for various plants

Diverse plants can be built in which a range of media are dosed. Nevertheless, you only need one device type. The measurement is always exact. This results in much lower logistical demands, as only one type of product is needed.

Reduced total cost of ownership

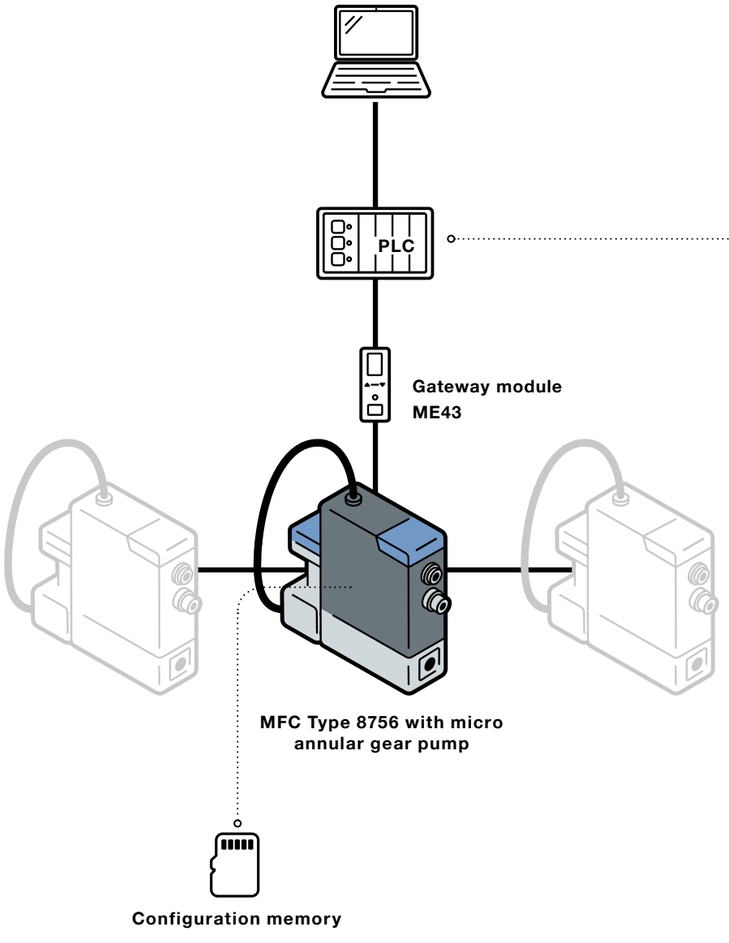
Thanks to a high measuring range of the devices and their constant accuracy, you need fewer measuring and control devices overall. At the same time, you achieve a very precise dosing process.

Reproducibility saves time

Thanks to the intelligent Coriolis MFC/ MFM, the dosing processes can be reproduced at any time. This results in enormous time savings, since extensive re-adjustments for subsequent processes are no longer necessary.

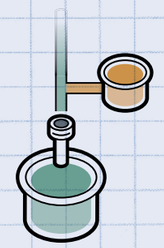
/ Simple integration / Experience safety and flexibility. Regardless of whether you integrate the MFC/MFM Type 8756 in a digital or analogue manner: The existing interfaces allow easy integration into your plant. The digital connection enables complete tracking of your process sequences. This facilitates consistent documentation for your customers.

All Bürkert mass flow meters and controllers additionally come with a configuration memory: This saves all the settings, which obviously facilitates device changeover.



Faster and more precise working processes: No upstream work steps are necessary for more reliable results of overall filling processes. Dosing can be done on the spot – and thus efficiently optimise your production.

Example calculation



10 mg of additive

1000 mg filling

Assumptions: The measurement based on the Coriolis principle is compared with the gravimetric method, since the two methods are equivalent in terms of precision. The same peripherals (valves, pumps) and differences in accuracy are assumed. In addition, the same costs are applied for dosing. The plant runs 24/7.

€0.05 profit per filling; assuming that 35,446 more units are produced per day, the profit is: **€0.05 per unit x 35,446 units = €1,772.30** per day extrapolated to one year – 365 days – that would be:

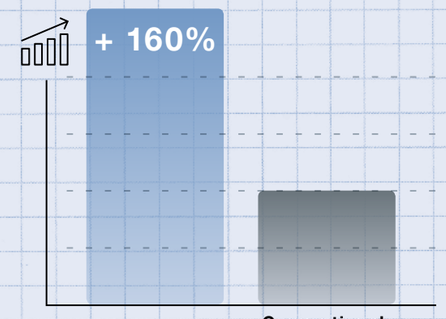
€646,889

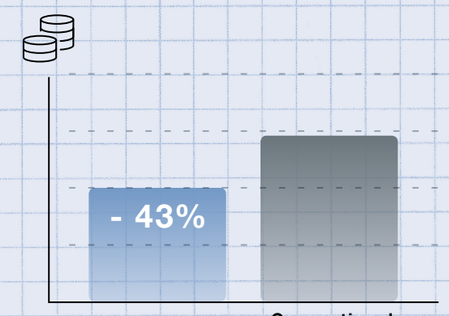
Fast

Savings of 500 mg of additive per day due to greater precision, 10 mg of additive cost **€1 = €864** savings per day extrapolated to one year – **365 days x €864** - that would be:

€315,360

Savings





+ 160%

Higher productivity through higher speed

- 43%

Higher additive savings due to greater precision

Your advantage

Faster and more precise working processes

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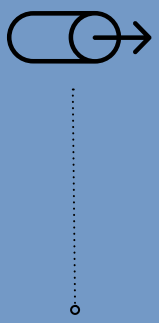

Flow measurement and control

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