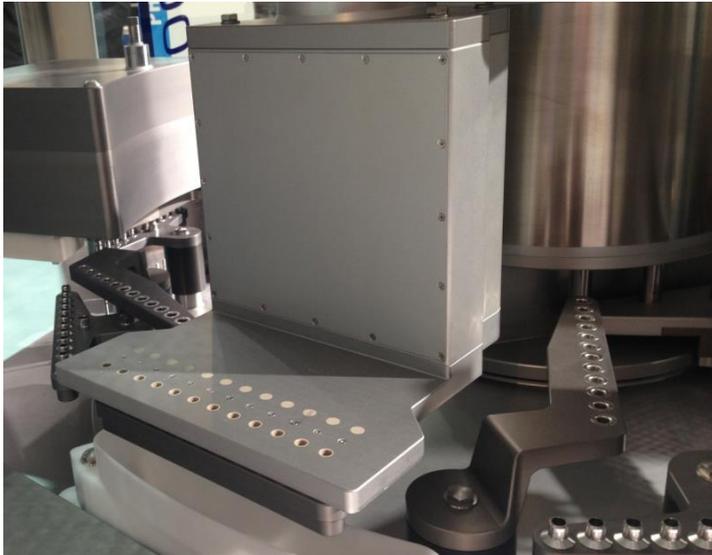


Product Information

Background

VisioAMV is an electro-capacitance system which was originally developed as a high-speed alternative to gravimetric weighing technology in pharmaceutical primary packaging operations. Driver for the development of the system was the demand for a 100% weight check measurement technology of so-called micro-doses of powders used in inhalation therapy.

Traditionally, determining the weight/mass of a product is made by using gravimetric scales. This method works well to certain speeds and in undisturbed conditions. However, with high-speed requirements to check 100% of the process, space constraints and machine environment influences, the traditional mechanical method reaches its limits.

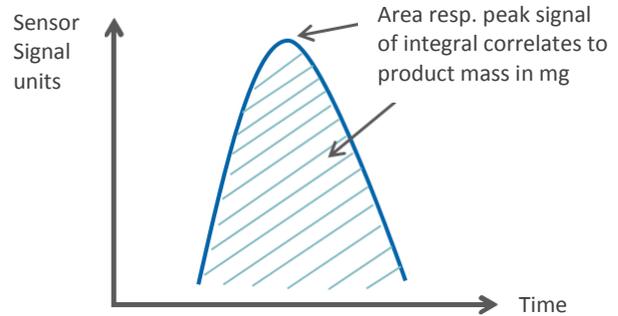


Close-up of VisioAMV system application in a Harro Hoefliger capsule filling machine measuring the powder stream in parallel over 12 positions (channels)

Today and in the future, manufacturing and packaging operations of different industries strive towards 100% product and process control. The goal is to monitor and control those high-speed processes with devices providing both, a high degree of accuracy of the measurement as well as high precision of the device.

What VisioAMV is about

The system is essentially a miniaturized high-end electro-capacitance sensor. Due to its small size and flexibility in design, VisioAMV can be used in a versatile range of applications and is applicable for high-speed measurements of powders, solid objects and liquids, or other tasks of product inspection.

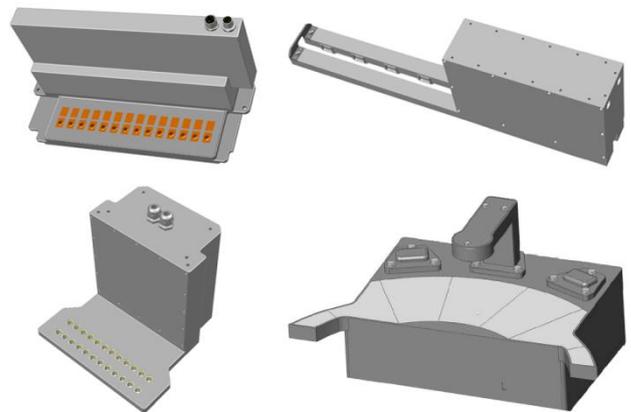


VisioAMV measurement graph: depending on the application the peak signal or the integral is used to calculate the product mass accordingly

This “capacitive” technology “observes” a product’s influence in an electrical field. Everything which passes this field produces a signal which correlates to its mass. I.e., a measurement takes place right in a dosing system (in free-fall) or in a different application in linear motion. Since its deployment, the system has been applied to a variety of different applications.

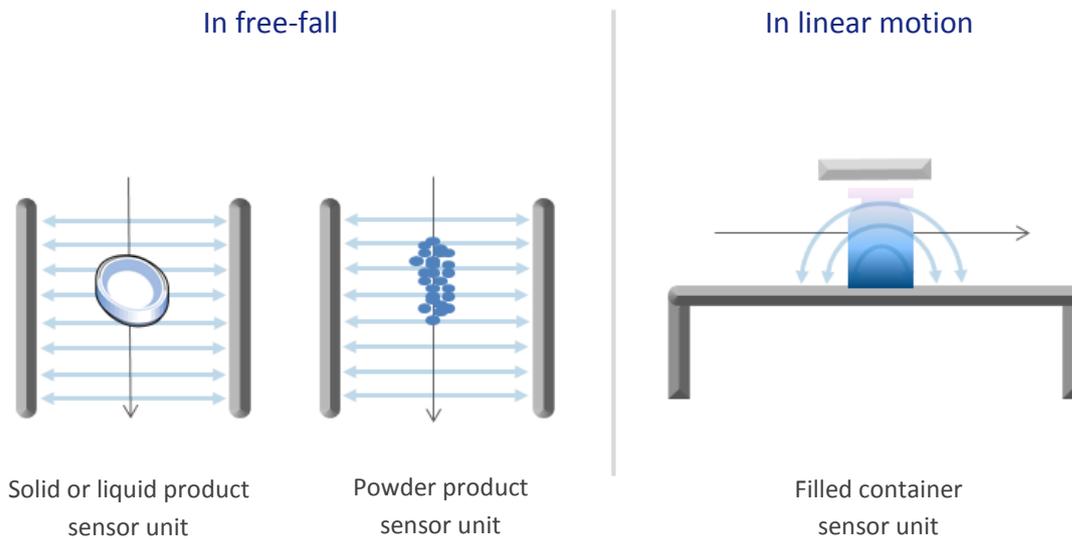
Application examples:

- Filling/dosing measurement of micro- & bulk-doses
= How much mass was dosed
- Feeding process in packaging (e.g. tablets or ‘carrier’ products such as capsules into blisters, objects into cavities/trays or other type of containers)
= What is the product mass of or inside a ‘carrier’
- Closed container measurements (e.g. liquid in glass vial)
= How much is the fill level
- Other applications can be checked for feasibility and system can be custom designed to fit other processes



Examples of some typical application-specific VisioAMV sensor designs

Functional Principle



Highlights

VisioAMV is an electro-capacitance measurement system and uses digital measuring technology for determining the mass of falling (i.e. free-fall) or passing (i.e. linear motion) objects.

The measurement is related to the capacity change across the system's electrodes. This is caused by an object to be measured passing the sensor plates. The signal strength is depending on the relation between the permittivity of the object to the permittivity of the environment. The object to be measured creates a change in the alternating electrical field. This change is proportional to the object's mass and is calibrated against it. Depending on the pre-setting values, the system will signal non-conforming products to the host machine for rejection, or, when used in a closed-loop setup, the system controls the process accordingly by re-adjusting the relevant host machine parameters.

- High accuracy and high precision measurement and process control system
- System settings via the machine control (PLC) or using VisioAMV Service-Tool
- Power supply 24 VDC
- Multiple measurements can be performed in parallel (i.e. multiple sensor channels)
- Flexible and customizable design allows fitting system into most machines and processes
- Contact-free measurement (in free-fall)
- No format parts required (only electronic change-over)
- Sample frequency 4 kHz (application dependent)
- Small footprint and tight pitch (i.e. the distance between channels) applications possible
- GMP compliant