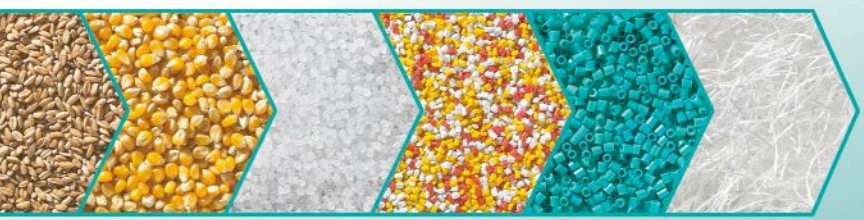
DYNAInstruments

Measuring & Monitoring of Solids Flow

- High-precision & safe
- Contact-free
- Maintenance-free



DYNA Instruments

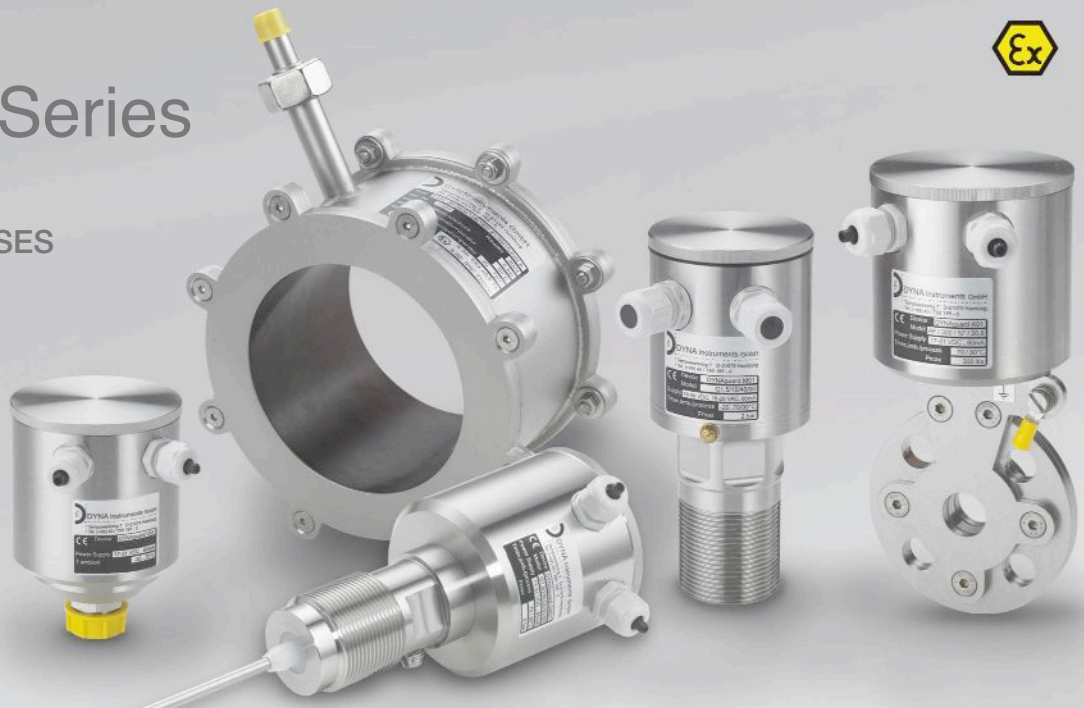
Instrumentation for Powder and Bulk Industries

DYNAguard Series

Flow Monitors for Bulk Solids Processes

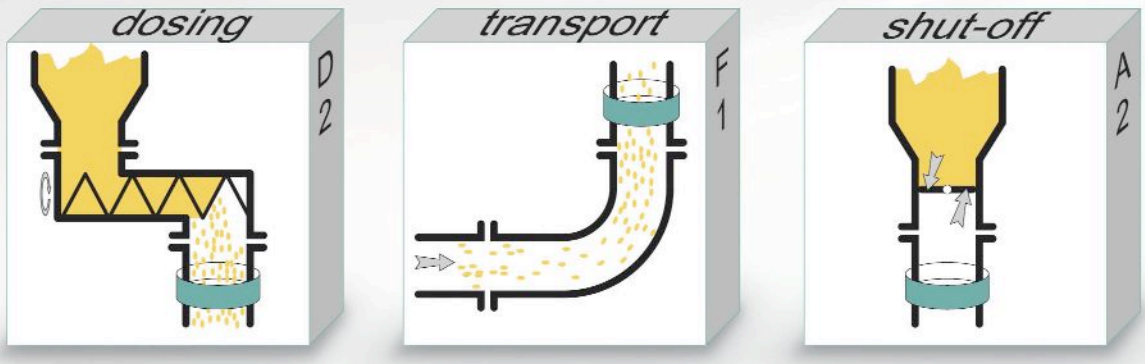
Easy monitoring
bulk solids processes

- Preventive & safe
- Compact
- Cost-effective
- Contact-free
- Maintenance-free



The monitoring device **DYNAguard** represents the most direct implementation of the electrostatic or microwave measuring principle. The function of these devices allows for simultaneous integral monitoring of solids flow and transport velocity (such as behind sieves, filters or directly in the conveying duct) for reliable processing. Adaptation to the conveying process and adjustment of the limits to be monitored is done through self-explanatory elements of operation in the electronic housing IP67.

DYNAguard K • P • V



Solutions to practical problems:

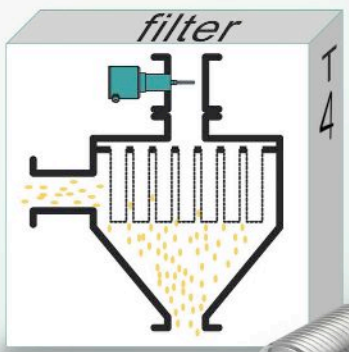
- shot-off & sealing
- dosing & feeding
- conveying & distribution

The three pictures show application examples of the DYNAguard. Of course we are pleased to discuss with you the possibilities of customised specific adaptions.

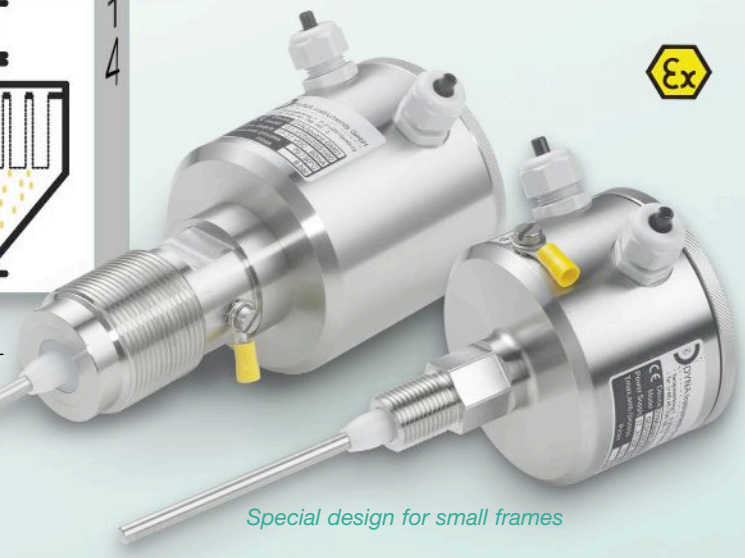
DYNAguard GM

Particulate Monitor for Filter Failure

- Broken bag
- Gross failure
- Assembly error



The dust monitor **DYNAguard GM** is used for the detection of filter malfunction e.g. broken bag or assembly error. The **DYNAguard** technology is based on a modified triboelectric principle detecting particles interacting with the sensing rod and such particles just passing the rod. Build up on the rod surface will not be detected, only moving particles generate a flow rate proportional signal which is monitored by the electronics.



Special design for small frames

DYNAguard M

Flow Indicator for Solids

- Microwave technique
- Relay output

The microwave-indicator **DYNAguard M** is used for monitoring the mass flow in open and closed transport processes also with big distances between sensor and conveyed material.
Independent of particles moving direction solid materials with velocity of at least 0.1 m/s will be detected by passing the microwave field.
Conveying or feeding problems of powders, pellets or granules are detected early and thus should be avoided. This helps to prevent plant failures like clogging, material loss, idle or other serious difficulties.

The measurement procedure of the DYNAguard is based on the physical principle of the Doppler effect. The sensor sends out a microwave field. If solids move through this field, the microwaves are reflected and received by the sensor again. The electronics unit converts this into a switching operation.

DYNAguard Technical Data



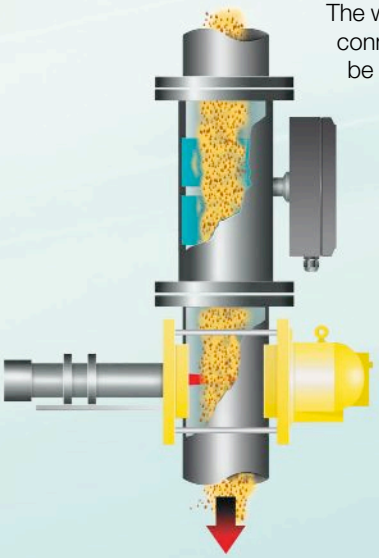

model	DYNAguard M	DYNAguard P	DYNAguard K	DYNAguard GM
detection area	1 m	30 mm	DN 10 - DN 100	250 mm - max. 800 mm *(sensor rod length)*
process temperature	max. +90°C	max. +90°C *(optional 200°C)*	max. +90°C *(optional 200°C)*	max. +90°C *(optional 230°C)*
process pressure	2 bar *(optional 25 bar)*	6 bar *(optional 40 bar)*	40 bar	6 bar
process coupling	G 1 ½ "	G 1 ½ "	DN 10 - DN 100	G 1 ½ "
output	relay	relay transistor 4 - 20 mA	relay transistor 4 - 20 mA	relay transistor 4 - 20 mA
ATEX	—	zone 2 zone 22	zone 2 zone 22	zone 2 zone 22

DYNAvel

For the Determination of Solids Velocity

- High-precision & safe
- Contact-free
- Maintenance-free

The DYNAvel measuring system provides a method that is just as reliable as it is accurate, which gives you the contactless determination of the actual solids velocity in pneumatic flow processes as well as in free fall applications, but also at filaments, films or sheets. For each case of application, there is a multitude of Sensor Mechanics Units for the connection of the velocity measuring system to the process stream. This can easily be changed due to the modular system architecture.
The whole measurement system consists of sensor and a communication unit which are connected to each other via CAN-Bus circuit. On the CAN-Bus up to 10 DYNAvel can be connected. Thanks to the non-contact measurement no maintenance costs arise.



DYNArad

DYNArad combines the measurement values of density and velocity to determine the mass flow rate at pneumatic conveying processes and free fall applications. In particular for the flue ash humidification control at power plants (up to 450 t/h) DYNArad has proved its worth worldwide.

DYNA M-flow

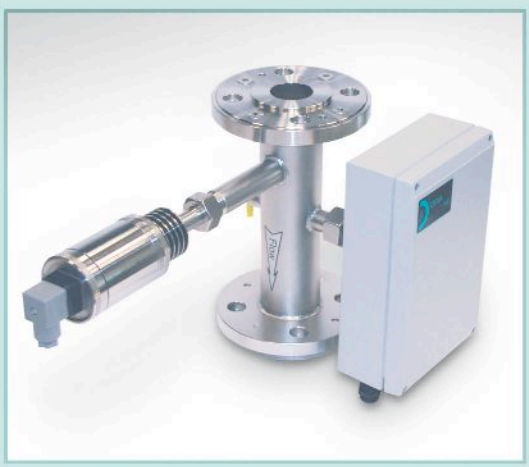
Flow Measurement of Bulk Solids with Microwave-Technology

- IN-LINE measuring without weighing
- Contact less and integral measuring
- Cost-efficient - Compact - Easy

Using state-of-the-art microwave technology the solid flow meter **DYNA M-flow** is designed for flow measurement at metallic pipes from a few kg/h to many t/h. The system is suitable for on-line measurements of powders, dust, pellets, and granular from 1 nm up to 2 cm in pneumatic or free fall applications.
The measurement principle of the **DYNA M-flow** is based on the physical Doppler-Effect, whereas the sensor generates a uniform field in the microwave frequency range inside the pipe. These microwaves are being reflected by particles passing through the pipe. Calculation of frequency and amplitude changes allows for accurate determination of solid flow. Nonmoving particles like dust accumulation are excluded from calculations.

DYNA M-flow + DYNAvel

Concentration & Speed



For the determination of the mass flow rate at transport processes with changing solids speed (e.g. pneumatic conveying) a combination of DYNA M-flow with the speed measurement DYNAvel is recommended.

DYNAchute

Mass Flow Rate of High Accuracy by Dynamic Weighing

- High accuracy
- Without calibration
- Unaffected by solids properties

DYNAchute is a chute weigher that combines proven and highly accurate velocity measurement and weighing technology to determine the mass flow rate of bulk solids.
In the robust controller PR1713, the two absolute values weight and velocity are calculated calibration-free to the flow and output in digital or analog form. An integrator and a dosing function allow batch weighing (kg) besides continuous dosing (kg/h). As a modification of the method used in belt weigher technology, the weight of the bulk solids is determined continuously on a chute segment using standard weighing technology. At the same time, the sliding speed rate is measured contact-free. From these two absolute, meaning calibration-free parameters, the system then determines the flow rate. The great advantage of these separate measuring operations is that the measuring result is not influenced by fluctuating product properties or by changing process conditions.

Technical Data of Measuring Systems

model	DYNAvel	DYNA M-flow	DYNA M-flow + DYNAvel	DYNArad	DYNAchute
measuring range	0.2 – 100 m/s	min. 1 kg/h	min. 1 kg/h	min. 100 kg/h	min. 100 kg/h
accuracy	0,5 %	3 %	2 %	1 %	1 %
process temperature	-20 / 130°C	max. +90°C *(optional 180°C)*	max. +90°C *(optional 130°C)*	-20 / 130°C	0 / 50°C
process pressure	64 bar	1 bar *(optional 40 bar)*	1 bar *(optional 40 bar)*	64 bar	± 0.1 bar
process coupling	up to DN 400 mm	up to DN 200 mm	up to DN 200 mm	up to DN 400 mm	100 - 400 mm
output	4 - 20 mA RS 485, ethernet relay	4 - 20 mA RS 485, pulse-output relay	4 - 20 mA RS 485, ethernet relay	4 - 20 mA RS 485, ethernet relay	4 - 20 mA
ATEX	zone 2 zone 22	zone 2 zone 22	zone 2 zone 22	zone 2 zone 22	—

DYNAInstruments

- Robust and proven technologies
- High application expertise
- In-house development
- In-house production
- Made in Germany

WE ARE DEVELOPING AND PRODUCING SOLUTIONS FOR MORE THAN 15 YEARS

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Instrumentation for Powder and Bulk Industries

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Technical data subject to change without notice