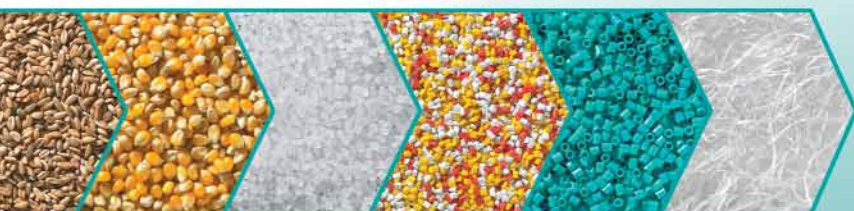


DYNA Instruments



INSTRUMENTATION FOR BULK MATERIAL PROCESSES

- Mass flow rate measurement
- Flow monitoring
- Dust measurement
- Particle size measurement
- Velocity measurement
- Level detection



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DYNA Instruments develops and produces measuring instruments for applications in bulk material processes since 1994. You will find our devices in almost all industries handling bulk solids.

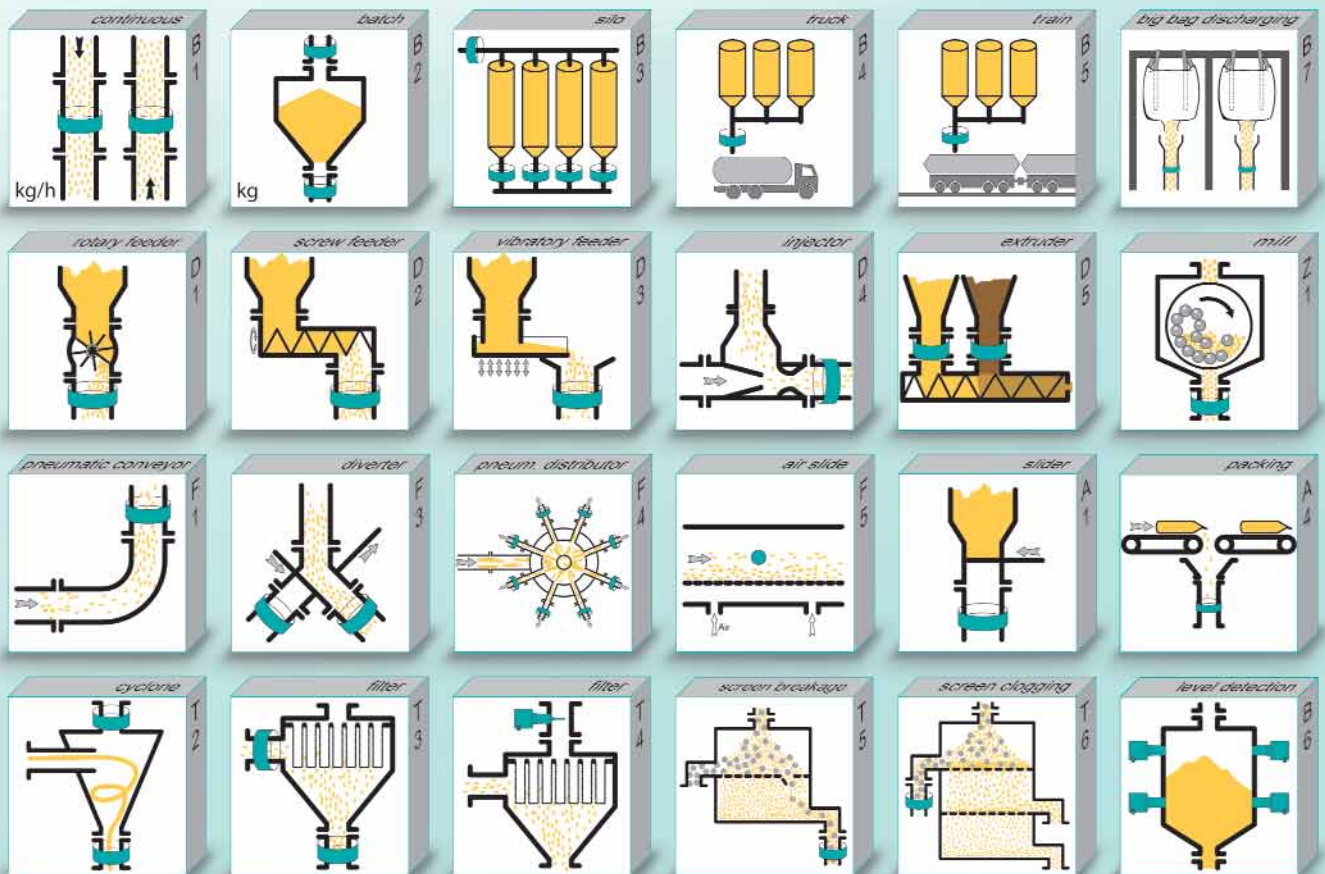
By using various measurement principles, we can offer solutions to our clients, which best match to the specific requirements of the measurement tasks.

DYNA Instruments – trust our experience.

INDUSTRIES IN WHICH YOU CAN FIND OUR INSTRUMENTS:

- Aerospace industry
- Animal feed industry
- Automotive industry
- Building materials industry
- Chemical industry
- Energy & environment industry
- Food industry
- Glass industry
- Mining industry
- Paint industry
- Pharmaceutical industry
- Plastic industry
- Recycling industry
- Shipbuilding industry
- Steel industry
- Tobacco industry
- Wood industry
- Pit and quarry industry

APPLICATIONS



DYNAguard Series

EASY MONITORING OF YOUR BULK SOLIDS PROCESS

- Blockage alarm
- Bridging
- Flow monitoring of additives
- Empty hopper alarm
- Leakage monitoring
- Sieve breakage alert
- Sieve overflow alert
- Cyclone monitoring
- Screen monitoring
- Level detection

- Easy Installation
- Non-contact measurement
- Relay or analog output (4...20 mA)
- ATEX EX zone 2/20



With the various flow switches of the **DYNAguard Series**, there is a solution for almost every task when monitoring of transport processes for bulk solids is needed.

Disturbances in transport systems for powder, granulates, pellets or other bulk material are detected early and severe subsequent damages can be avoided.

Because of the non-contact measurement, transport processes remain undisturbed. With the use of different measurement principles, the best possible choice for the individual application can be made. Almost any bulk material from lowest concentrations up to many t/h can reliably be detected. The instruments have proven themselves also in harsh environments e.g. at blast furnaces in steelworks.

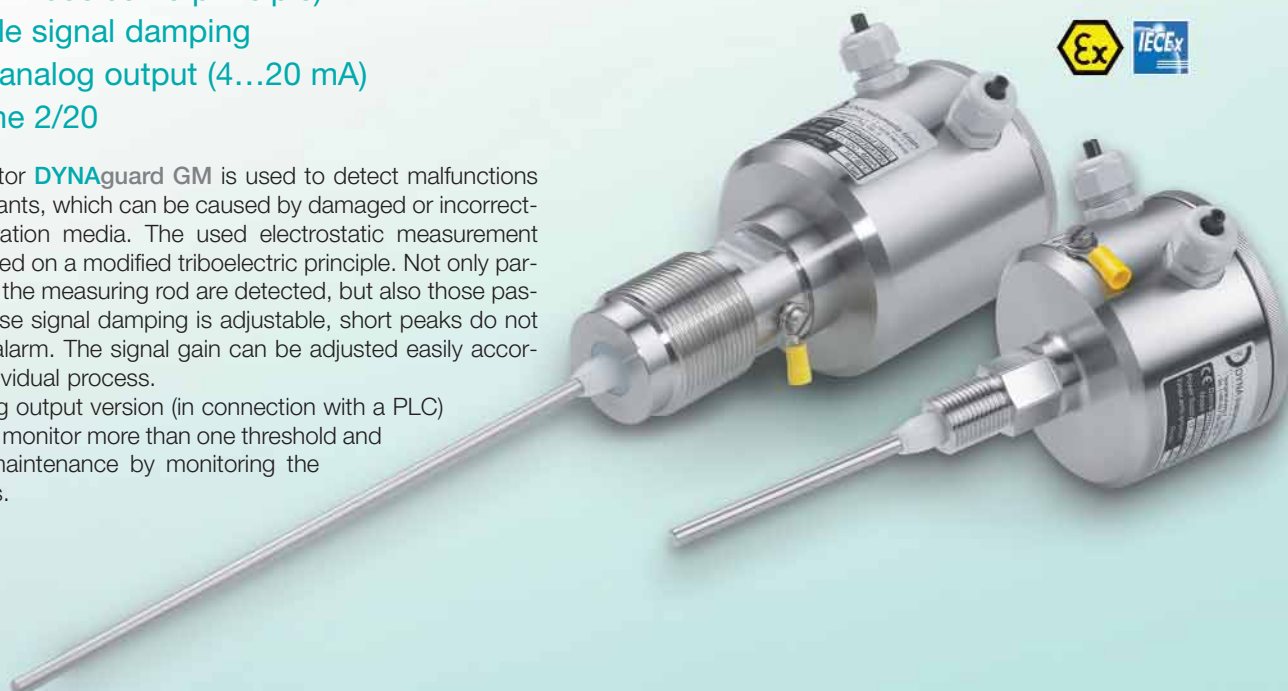
DYNAguard GM

FILTER LEAK MONITOR / DUST MONITOR

- Electrostatic measurement principle (modified triboelectric principle)
- Adjustable signal damping
- Relay or analog output (4...20 mA)
- ATEX zone 2/20

The dust monitor **DYNAguard GM** is used to detect malfunctions in dedusting plants, which can be caused by damaged or incorrectly installed filtration media. The used electrostatic measurement principle is based on a modified triboelectric principle. Not only particles which hit the measuring rod are detected, but also those passing by. Because signal damping is adjustable, short peaks do not cause a false alarm. The signal gain can be adjusted easily according to the individual process.

With the analog output version (in connection with a PLC) it is possible to monitor more than one threshold and to plan filter maintenance by monitoring the cleaning cycles.



DYNAsize

IN-LINE PARTICLE SIZE MEASUREMENT IN REAL TIME

- Continuous process recording — Industry 4.0
- Detect screen damage, overflow, overload
- Adjust & optimise screening & grinding processes
- Continuous incoming goods inspection

DYNAsize is a measuring device for the continuous determination of the particle size of free-flowing bulk materials of all kinds. It is not necessary to take samples for this, because the measurement takes place directly in the process and in real time. If the adjustable limit values are exceeded or undershot, an alarm can be triggered via two relays. The grain size distribution is displayed using the **DYNAsize** Visual software and can also optionally be output via an RS485 interface.



The bulk material falls through the sensor pipe for measurement. A representative partial flow is continuously fed to an optical measuring system and measured. The optics are protected by scratch-resistant borosilicate glass and contamination is prevented by purge air.

The **DYNAsize** is unique in its kind and was developed in cooperation with CeMOS respectively the Hochschule Mannheim — University of Applied Sciences.

DYNAmas

SOLIDS FLOWMETER

- Pneumatic conveying and free fall
- Non-contact measurement
- Easy to integrate

The **DYNAmas** (capacitive measurement) is used to determine the mass flow rate of all kinds of bulk solids online, either in pneumatic conveying systems or in free fall.

Separately from each other the transport velocity and the product concentration is measured and used to calculate the mass flow rate. Thus, the instrument is independent from changing transport velocities.

The device is easy to calibrate and because of the small dimensions also easy to integrate in existing plants. It can be used for smaller up to very high flow rates.

Parametrization and display of the measured values is done with the communication unit **DYNAcon** which has several interfaces for connection to a PLC.



DYNArad

FLOWMETER FOR HIGH MASS FLOW RATES

- Free product flow – non intrusive installation
- Independent from product properties and conveying conditions
- Gentle non-contact measurement method
- Low-wear

To determine the mass flow rate in pneumatic conveyors and free-fall applications the measurement system **DYNArad** combines the measured values of a velocity measurement (**DYNAvel**) and a radiometric concentration measurement (LB442). The simultaneous determination of these two values makes this flow measurement independent from variable product properties or process conditions.

Once the system is calibrated in the process (e.g. in a **truck or rail-car loading station**) it is not necessary to recalibrate it, while it guarantees a very good repeatability of the results.

DYNArad can be used also under extreme conditions, operates contact-less and does not have any moving parts. For the concentration measurement we are using instruments of our long-term partner Berthold Technologies in Bad Wildbad, Germany.





DYNAchute

HIGH-PRECISION SOLIDS FLOWMETER

- Very high accuracy, < 1% possible
- Calibration-free
- Independent from changing product properties and flow velocity
- Free product flow, no moving components
- Easy to integrate

The patented measuring system **DYNAchute** is a unique flow meter which combines proven weighing technology with non-contact velocity-measurement. By measuring the weight and the flow velocity at the same time — similar to the belt-weigher principle — the mass flow rate of pourable bulk solids is determined in free fall processes with very high accuracy.

Unlike with impact meters, changing product-properties or varying fall velocities have no influence on the measuring accuracy of this system. Hence a complex calibration in the process especially with several products is not required. Also regular recalibration is not necessary while a very high reproducibility of the measuring results is granted. Operational cost can be reduced to an absolute minimum and regular maintenance is normally not required, because the flowmeter does not have any moving components, the solids are flowing smoothly over the weighing chute and the sensor system is well protected.

DYNA M-flow

SOLIDS FLOWMETER WITH MICROWAVE TECHNOLOGY

- Non-Contact measurement
- Compact design & easy to install
- Cost-efficient measurement

Using state-of-the-art microwave technology the **DYNA M-flow** is designed for mass flow rate measurement in metallic pipelines from a few kg/h to many t/h.

Any bulk material like powders, dust, pellets or granulates can be measured online in pneumatic conveyors or free fall applications with high accuracy.



The measurement principle of the **DYNA M-flow** is based on the Doppler effect. The sensor generates a uniform microwave field inside the pipeline and particles passing by the sensor are reflecting the microwaves. The reflected waves are received by the device and by evaluating the frequency and amplitude changes the mass flow rate is determined. Parameters for up to 24 different products can be stored.

DYNAvel

FOR THE DETERMINATION OF SOLIDS VELOCITY

- High-precision and safe
- Contact-less
- Maintenance-free

The **DYNAvel** serves to measure the conveying velocity of bulk material, powder and dust in pneumatic conveyors or free fall processes — contact-less and without calibration. From lowest concentrations up to dense phase conveying the system provides high-precision measurement results.

The modular design of the **DYNAvel** allows an easy integration to all common transport ducts. Also for length measurement at conveyor belts or in production lines various process couplings are available.

Thanks to the approved CAN-bus technology that is used for communication between the system controller and the sensor, systems can be expanded up to 10 measurement points.





DYNA Instruments

Experts for bulk materials

- Tests with customer products possible in the DYNA test plant (*picture left*)
- In-house development & production
- Made in Germany

INNOVATIVE SOLUTIONS · PROVEN TECHNOLOGY

FOR MORE THAN 25 YEARS

- Mass flow rate measurement
- Flow monitoring
- Dust monitoring
- Particle size measurement
- Velocity measurement
- Level detection



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