

CAMSIZER P4

General Information

The CAMSIZER P4 particle analyzer has been developed to comprehensively characterize dry, free flowing bulk materials. Whereas traditional sieve analysis, for example, can only determine the approximate particle size, the CAMSIZER P4 simultaneously measures both particle size and shape - with much more detail and at a higher resolution.

The particle analyzer is a time and cost-saving alternative whenever continuous quality control of the production process is required. It is also suitable for checking incoming and outgoing goods and generally for measurements of a wide range of different sample materials.

Smooth changeover from sieve analysis to CAMSIZER P4 is easily possible with algorithms for emulating sieve analysis.

The CAMSIZER P4 reliably analyzes all size and shape parameters of a great variety of bulk materials and granulates including spherical and irregularly shaped grains and crystals, spray-dried and fluid bed granular materials, pellets and extrudates.

Thanks to the robust construction and a measuring technique that is not sensitive to disturbances, the particle analyzer is also suitable for operation under challenging industrial conditions.

In combination with the optional AutoSampler efficiency can be increased by high sample throughput due to the automated sample measurement. The particle analyzer is available as an online version for the continuous monitoring of critical production processes.



Application Examples

abrasives, catalysts, ceramics, chemicals, coal, coffee, coke, construction materials, fertilizers, food granulates, glass, metal powders, pesticides, pharmaceutical pellets, plastic granulates, proppants, salt, sand, silicon granulates, sugar, washing powder, wood chips, ...

Product Advantages

- Hardware
- Wide size range from 20 µm to 30 mm
- Full size range measured simultaneously in each measurement
- Excellent comparability to sieve analysis, also for multimodal distributions
- Very short measuring time (2-3 min.)
- 2 CCD cameras with 30 fps and 1.3 Mpixel each
- Pulsed LED lightsource with high brightness and long lifetime
- Software
- Optimized, intuitive software
- Simultaneous analysis of particle size, shape, number, density and transparency

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- Particle Library function: database for images and characteristics of all particles
- 3D Cloud representation of size and morphology parameters in 3 dimensions
- Advanced shape parameters for roundness and sphericity (ISO13503-2 and API RP 56/58/60)
- Several language versions (English, French, Spanish, Chinese, Russian, German, and many other languages)
- General:
- Detailed particle size analysis - results are saved in more than 3,000 size classes
- Greatest possible accuracy and reproducibility
- No-contact, non-destructive measurement
- Calibration in seconds
- Simple handling prevents operating errors
- Password protected instrument settings
- Automatic measuring procedure
- Robust design, insensitive to dust and vibrations
- Self-cleaning, wear-free, maintenance-free
- Less time- and labor-intensive than sieve analysis

Features

Measuring principle	Dynamic Image Analysis (ISO 13322-2)
Measuring range	20 µm to 30 mm
Type of analysis	dry analysis of powders, granulates and bulk materials
Measuring time	~ 1 to 3 min (depending on the desired measuring statistics)
Measuring methods	60 images/s, each with more than 1.300,000 pixels (corresponds to more than 78 megapixels per second)
Dimensions (W x H x D)	~ 850 x 650 x 350 mm
Weight (Measuring unit)	~ 40 kg
Operating unit	PC including operating system, monitor, keyboard and mouse, network card, evaluation software

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Videolink

<http://www.retsch-technology.com/camsizerp4>

Function Principle

The particle analyzer CAMSIZER P4 uses the principle of dynamic image analysis (ISO 13322-2). The sample is transported to the measurement field via a vibratory feeder where the particles drop between a planar light source and two CCD cameras. The projected particle shadows are recorded at a rate of more than 60 images per second and analyzed. In this way almost every single particle in the bulk material flow is recorded and evaluated. Thus, it is possible to measure a wide range of particles from 20 µm to 30 mm extremely accurately, without having to switch measuring ranges or make adjustments. Thanks to its extremely short exposure times, the novel LED strobe light source allows very sharp images to be produced and distortion-free determination of the projection areas. The sharp contrast allows, at the same time, details of the surface structure of the particles to be seen almost like through a microscope. The frequency of the light flashes is so high that the strobing is not visible to the naked eye. With the unique, patented dual-camera system a great depth of sharpness, and therefore maximum precision across the entire measuring range, is obtained with the particle analyzer. The zoom camera provides maximum resolution down to the fine range, while the basic camera also records larger particles and guarantees a high statistical certainty in the results. This ensures the excellent reproducibility of the CAMSIZER measuring results, even if only a relatively small sample amount is available. The results are saved in at least 3,000 size classes.