



QICPIC/S | The new generation of dynamic image analysis

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Advanced camera technology combines high-resolution particle imaging with high particle detection rates and flexible measurement options

Pulverhaus | Clausthal | DE – At this year's POWTECH, Sympatec will introduce the QICPIC/S, the latest addition to the proven QICPIC family. The new S series represents a significant advancement in dynamic image analysis technology. With a new high-performance camera, increased frame rates, optimised precision lenses, and more accurate software and data processing, the QICPIC/S sets new standards in reliability, precision, and flexibility when characterising the particle size and shape of powders, granules, fibres, suspensions, and emulsions.

At the core of the new generation is a camera system with a resolution of up to 20 megapixels. The higher resolution enables more detailed imaging of particle contours and thus provides an improved data basis for particle size and shape analysis. At the same time, the usable measuring range extends further downward: dry measurements below 1 µm become achievable, and even the finest fractions, such as abrasion or trace contamination that that risk being lost in optical noise, are now be reliably quantified.

A larger camera sensor also provides an expanded field of view, allowing more particles to be captured within a single image.

High resolution and high measurement speed

In addition to the increased resolution, the image acquisition speed has also been significantly enhanced. At the full sensor resolution of 20 megapixels, QICPIC/S achieves frame rates of up to 80 frames per second. Depending on the acquisition mode, frame rates of up to 950 frames per second are possible at reduced resolution.

The combination of a larger field of view and high acquisition speed makes it possible to analyse large numbers of particles within short measurement times. At the same time, detailed information on individual particle contours is retained. Users can therefore combine differentiated particle size and shape information with a broad statistical basis.

Optimized precision lenses and a smaller pixel size further support detailed particle imaging. Different optical measurement ranges allow the system to be adapted to the respective particle size and measurement task. Particularly for applications with broad particle size distributions, the extended measurement ranges can reduce the number of measurement range changes required.

Advanced analysis of particle images

The processing of the acquired images has also been further developed. A new segmentation algorithm enables even more precise particle detection with the sharpest possible contour imaging – for both the finest and the coarsest particles. Particles that are closely adjacent or touching are separated from one another more reliably, which is particularly helpful



when analysing challenging samples where the clear identification of individual particles in the captured images is difficult.

In addition to particle size, dynamic image analysis provides information on numerous shape characteristics of the detected particles. This makes it possible, for example, to investigate differences in particle morphology and to compare different particle populations in detail.

Modular system for dry and wet applications

QICPIC/S continues the modular concept of previous QICPIC systems. Depending on the sample and measurement task, the sensor can be combined with different feeding and dispersion systems.

Various systems are available for dry powders, granules and fibres, including RODOS, GRADIS and FIBROS. Suspensions and emulsions can be analysed using corresponding wet dispersion systems.

A new system configuration combines the QICPIC/S with the QUIXEL/S. The fully automated wet dispersion system, familiar from laser diffraction, has been adapted for use with the QICPIC/S and expands the possibilities for the analysis of suspensions and emulsions. An impeller supports uniform sample circulation, while the larger reservoir also enables applications requiring corresponding sample volumes.

Thanks to its modular system concept, QICPIC/S can be adapted to a wide range of tasks in research, development and quality control. Typical applications can be found in the pharmaceutical and chemical industries, as well as in food products, metal powders, minerals and other industrial particulate materials.



Figure 1: QICPIC/S in combination with the QUIXEL/S wet disperser for dynamic image analysis of suspensions and emulsions.

Image-ID: QICPIC-S_QUIXEL-S.jpg; Source: Sympatec GmbH

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