OCCHIO 500nanoP

Pharmaceutical powders analysis

Imaging solutions in particle analysis

→ By a team focused
on powder characterisation

Through the efforts of an international and multidisciplinary team of engineers, **OCCHIO** offers you a complete range of solutions, starting from 200 nanometers and ranging up to centimeters.

Whether it is for laboratory instrumentation, «at line» or even «on line» solutions, **OCCHIO** is prepared to be your partner in high-level powder characterization. **OCCHIO** and **OCCHIO 500nanoP** bring you accuracy, profit and innovation.

_ Accuracy

With its proprietary Blue Collimated Light and high quality telecentric lens, **OCCHIO 500nanoP** will change your own perception of image analysis, measuring particles which are invisible

_ Profit

OCCHIO 500nanoP is a fully automatic device dedicated to powder quality characterization. It is easy to use and carries out rapid analyses in less than 2 minutes. **OCCHIO 500nanoP** is able to accurately measure very small samples, below 1 milligram of pharmaceutical powders.

_ Innovation

Morphology measurement is more than shape description. To improve, you need robust and significant measurement. Based on decades of university research, the **OCCHIO 500nanoP** pro-vides your R&D department with dedicated parameters, specially engineered for your industrial purposes.

CLICK IMAGE FOR PRODUCT DEMONSTRATION

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OCCHIO 500nanoP

⋯▶ From samples to reports, your solution is ready for use

OCCHIO Pharma

More than a microscope, the system combines an integrated vacuum dispersion device, monochromatic collimated back-light for ideal contrast, telecentric lens for unrivalled image quality, new fast auto-focus, magnification calibration before each analysis and advanced software for size and morphometric analysis.

OCCHIO 500nanoP provides you with high quality images with a resolution of less than 400 nanometers. The entire system is engineered to remove diffraction so that a clear and
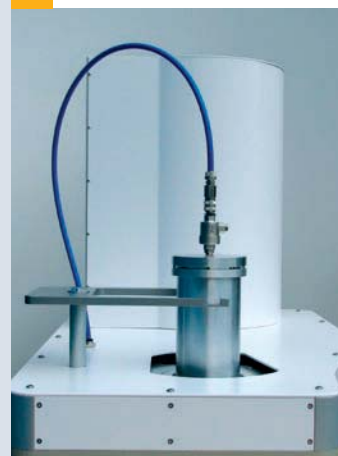
## ⋯▶ Be the best at every step of the measurement process

Image acquisition

- Use the best high-resolution camera on the market; 6.6 Mega Pixels.

- Eliminate diffraction with monochromatic Blue backlighting illumination.

- Increase the quality of the particle's outlines with collimated light and telecentric lens.

- Be perfectly focused on each particle thanks to an innovative light-lens combination.

- Use the entire range of pixel values to obtain a perfect threshold.

- Avoid vibration problems due to the high-speed camera.

- Reduce maintenance costs and increase robustness with a fixed camera and light.

imaging solutions in powder analysis   **Occhio**
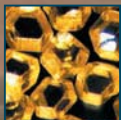
From samples to reports, your solution is ready for use

This **patented** disperser is placed automatically onto the glass plate allowing fully automated analyses. Without any sample contamination or damage, this Vacuum Disperser will gently deposit millions of individual grains of powder on a slide glass within a few seconds.

Be the best at every step of the measurement process

Dispersal

- Maintain the integrity of the powder. There is no impact. The Vacuum Disperser uses the vacuum strength to gently dissociate agglomerates.
- Good orientation of each individual particle with natural sedimentation on the sample glass.
- Avoid contamination with the dispersion done directly onto the glass plate already placed on the analysis instrument.
- Eliminate artifacts with perfectly cleaned sample glass.

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⇢ Size and morphometric measurements

_ Size

The **Inner Diameter** (also known as Sieve Diameter) is the maximum inscribed disc within a particle, known as, is computed with a true Euclidean Distance Transform. The fast and accurate algorithm developed is exclusive to **OCCHIO**, providing for computing real size distributions.

The **Area Diameter** is the diameter of the equivalent area circle.

The **Mean Diameter** is the mean of all radii joining the centre of mass and the outline's pixels.

Area and **Volume** are also computed on the particle projected area.

_ Shape

Inertia **Elongation** measurement is computed from one minus the ratio between inertial ellipse axes.

Feret Bounding Box is the bounding box parallel to the Inertia Ellipsoid.

**Width** and **Length** are computed directly on this Feret Bounding Box.

Max Distance is the maximum distance found within the particle.

Convexity is defined as one minus the ratio between convex area and particle area.
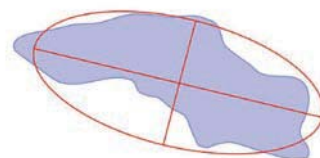The convex area is built with a virtual rubber band fitted on each particle.

Reactivity (also known as Circularity) is defined as the ratio between the equivalent area circle perimeter divided by the actual particle perimeter.

Shape factor is computed with the formula $SF = P^2/A$ where P is the **Perimeter** and A the Area.
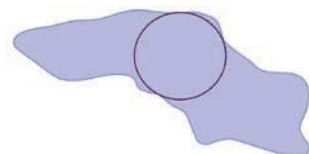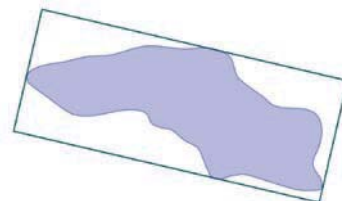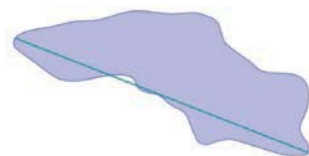
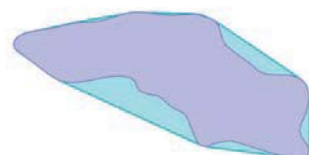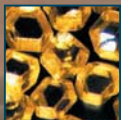## ⇢ From samples to reports, your solution is ready for use
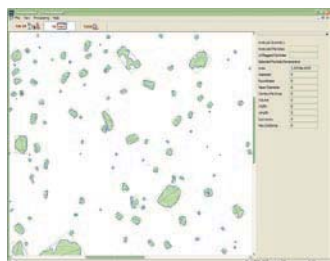
OCCHIO 500nanoP

Callisto Pharma Software is 21 CFR part 11 compliant, ensuring accurate powder characterization. Complete automated procedure including powder dispersion, analysis and report generation. All the analysis steps follow the customer defined standard operating procedure (SOP) in order to guarantee repeatability between operators.

⇢ Achieve the best results at every step of the measurement process

Measure

- Standard Operating Procedure groups software and analysis variables in a protected file in such way that Supervisors can define for each powder type a suitable Set Of Parameters. Operators can then run defined SOPs with a single click.
- Automatic calibration of the device before each analysis optimizes accuracy and allows changing the magnification depending on the sample to be analyzed.
- Auto-focus is operational continuously during the analysis.
- Use the best in image analysis, employing accurate and robust parameters based on the latest developments in mathematical morphology.
- Enhance security with software security based upon Windows operator level.

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## ⇢ From samples to reports, your solution is ready for use

Callisto

Just as **OCCHIO 500nanoP** could become part of your process, **Callisto**, and its dedicated statis- tical software package, can make unlimited sample comparison, real time statistics, interactive plots and customizable reports available to everyone on your network, no matter where they are located.

⇢ Achieve the best results at every step of the measurement process

Result presentation

- Compare unlimited number of measurements.
- Share complete results with colleagues or clients who are connected to your network.
- Understand your product perfectly with individual ID CARD and photographs of every grain.
- Summarize measured parameters of hundred-thousands of particles with a mouse click.
- Visualize your products in innovative morphological space.
- Print the report you have designed to fulfill your quality policy requirements.
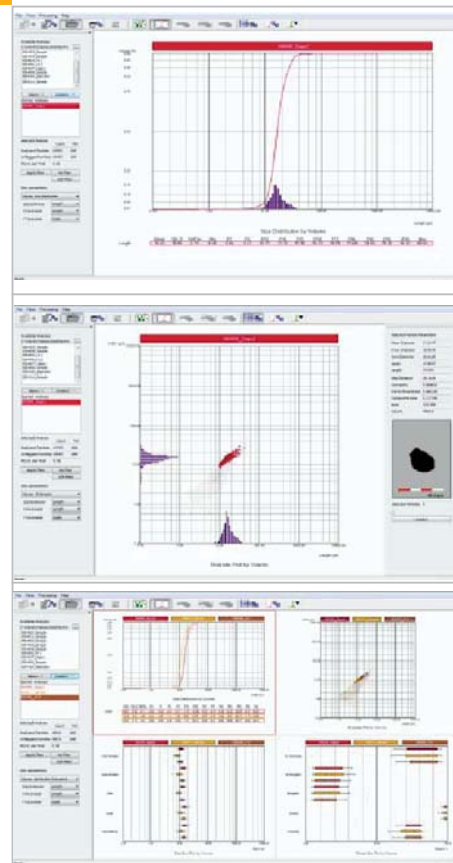
OCCHIO 500nanoP SPECIFICATIONS

- Particle range : from 0.4 μm up to 2000 μm.
- Representative measurements in less than 2 minutes.
- Number of particles analyzed defined by the user (from one to millions).
- Storage and computing of individual particle characteristics.
- Real-time storage of full resolution particle outlines.
- Parameters : Sieve Diameter, Equivalent Diameter, Mean Diameter, Volume, Area, Width, Length, Elongation, Convexity, Hole Detection, Perimeter.

OCCHIOPHARMA TECHNICAL SPECIFICATIONS

Dimensions	80 x 50 x 81 cm or 31.5 x 19.7 x 31.9 inches
Total weight	50 kg or 110 lbs
Power	110-240 V 50/60 Hz
Operating Environment	Temperature 5ºC - 45ºC Humidity 35% - 80% non-condensing

IMAGING DEVICE

CMOS integrating active pixel sensor
Pixel Pitch 3.5 x 3.5 microns.
6.6 Mega Pixel - digital output
Telecentric lens
Collimated Blue back-lighting

COMPUTER (included inside OCCHIO500nanoP

Windows 7 operating system
PC Core 2 Duo 3 GHz, 2Gb-800MHz RAM, 160 Gb SATA HDD, Ethernet
Ergonomic Flat Panel Display
Mouse and keyboard

*Specifications subject to change without notice.