COFFEE LABORATORY

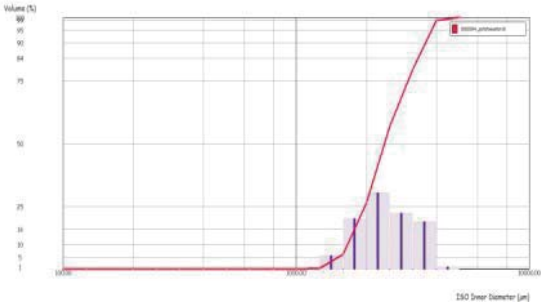
Occhio

COFFEE-TRAK

Change from laser diffraction to sieve analysis with one click

Particle Characteristic Analyzer
7 microns to 5 mm
Dynamic Digital Image Analysis

The smart alternative to laser diffraction systems



CLICK FOR
PRODUCT DEMONSTRATION

COFFEE-TRAK

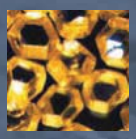
SIZE & SHAPE ANALYSIS FOR POWDERS & GRANULARS

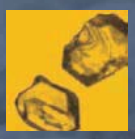
Developed especilly for the finest grinds

including Espresso & Turkish Coffees

SCHEDULE A LIVE WEBINAR DEMONSTRATION

COFFEE LABORATORY





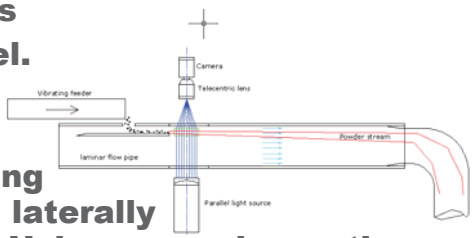
COFFEE-TRAK: New particle size analyzer

OCCHIO SA: Since 2001, your partner in particle characterization

In 2001, an international and multidisciplinary **team of engineers**, created **OCCHIO** SA, in order to manufacture a **complete range of particle characteristic analyzers**, for particle applications beginning at **200 nm.** 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 brings you accuracy, profit and innovation.

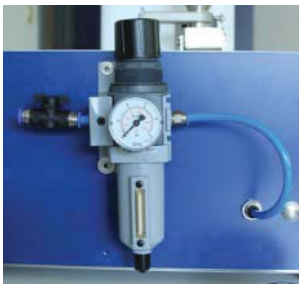
Based on a combination of mechnical and vacuum dispersion, Coffee-Trak provides for fast and accurate, size and shape analysis. Because particle shapes can be identified and measured, conversion from sieving is seamless. Tests take just seconds to complete

LEFT- About one teaspoon of ground coffee is fed in to the funnel.



RIGHT- Using vacuum dispersion, and a vibrating hopper, the sample flies laterally through the focal plane. Using monochromatic lighting, and special optics, precise images are captured for analysis.

Sieve analysis is labor intensive, messy, and subject to error, especially for non spherical particles.



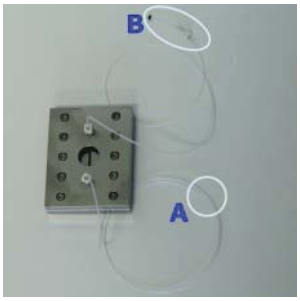
Glass cleaning

Compressed air provides automatic cleaning

of the glass surfaces.

No sticking particles during analysis

No need to clean optics after analysis



DRY & WET ANALYSIS

Full sieve distribution

Particle size and shape

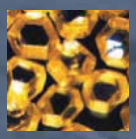
Particle counting with Flowcell (WET option)

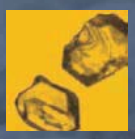
Kinetic mode

Applications: Sugar, Coffee, Chocolate, Fiber, Tobacco, Sand, Diamond, PTFE, Ceramics, Fertlizers...

Coffee Laboratory White Stone Va 22578 www.coffeelabequipment.com TEL (866) 244-1578

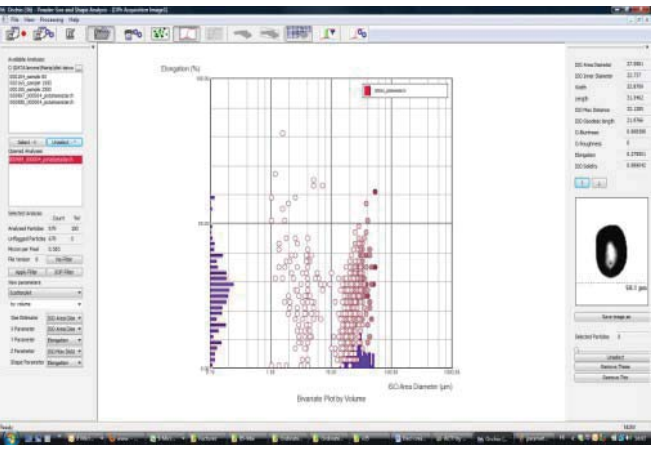
COFFEE LABORATORY





COFFEE-TRAK: CALLISTO™

CALLISTO™ : Software for particle analysis



Since 2001, OCCHIO has developed revolutionary image analysis systems compatible with all particles types (powders, suspensions, emulsions and foams). These new systems, using the **powerful software**

CALLISTO™, allow particle size measurements, shape analysis & particle counting. Now , more than 50 parameters are available …

PARTICLE SIZE PARAMETERS

Area diameter

Inner diameter - Length

Width - Geodesic length - Mean diameter

PARTICLE SHAPE PARAMETERS

O. Aspect Ratio and Elongation: The Elongation is defined as *1-AspectRatio with AspectRatio* being the ratio between the width and the length of the particle

ISO Straightness: For very elongated particles, the straightness is ratio between the maximal distance and the Feret Length

ISO Compactness and ISO Roundness : Compactness and roundness are related to the degree to which the particle is similar to a disc. Roundness is less robust than compactness

ISO Circularity: Degree to which the particle (or its projection area) is similar to a circle

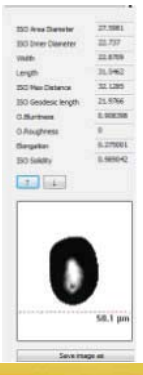
ISO Solidity: Solidity is the object area divided by the area enclosed by the convex hull (perfect to detect aggregates)

O. Bluntness : The Bluntness Index is the expression of a "maturity in the abrasion process"

O- Roughness: Amount of material to be removed from the shape before getting a smooth surface

Luminance: The luminance is the mean greyscale level of the particle

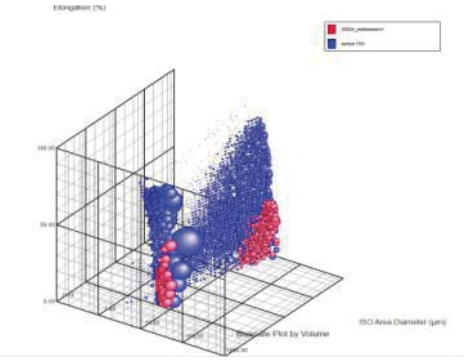
O-Porosity; Porosity estimator



SCATTERPLOT: Possibility of **having a representation** of the **particle size parameters** versus morphologic estimators. According to the particle size classes chosen by the operator, all plots are corresponding to particles. Operator can visualize each particle in clicking on each plot.

MICROSCOPE MODE: Display of each parameters and picture for selected particle on Scatterplot or live pictures. Operator can save picture for individual particle in Bitmap format.

(Particle size & shape distribution, trends, Excel export, sieves correlation…)



Coffee-Trak Options

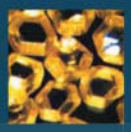
Liquid Analysis

Autosampler

Do not hesitate to contact us for other idea...

Occhio SA, 4 rue des chasseurs ardennais BE4031 Angleur (Belgium) Tel:+32 (0) 42 43 00 14

COFFEE LABORATORY

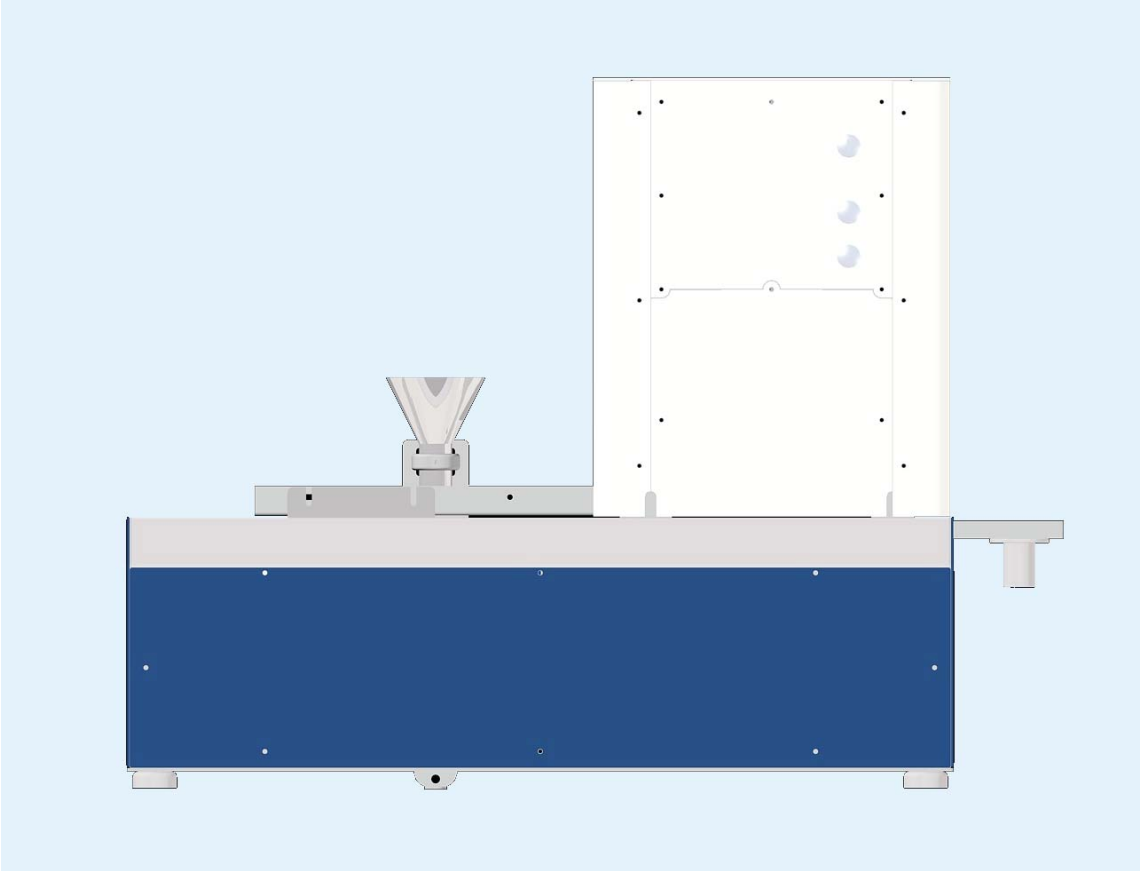


Data sheet

Model	COFFEE-TRAK
Particle size range	7 microns — 5000 microns
Measurement time	30 seconds to 10 minutes (sample depending)
Parameters	**ISO 9276-6; 7; 8 norms + OCCHIO parameters** **SIZE**: ISO Area diameter; ISO Inner diameter; Mean diameter; Perimeter diameter;Crofton diameter; Half Crofton diameter; Width; Length; Ellipse Width; Ellipse Length; ISO Max Distance; ISO Geodesic Length; **SHAPE**: Occhio Bluntness; Occhio Roughness; Elongation; ISO Aspect Ratio; Ellipsoid Elongation; Ellipsoid Roundness; Ellipse Ratio; ISO Eccentricity ISO Straightness; ISO Roundness; ISO Compactness; ISO Extent; ISO Solidity; Convexity; ISO Circularity, Luminance mean Luminance var.
Dimensions and weight	89.5(L) x 47 (l) x (H)38cm, 28 kg
Disperser	Vibrating feeder + vacuum principle
Optics and imaging device	Camera 5Mpixels Gigabit Ethernet
Validation	IQ,OQ,PQ in option
Option	Wet module, autosampler
Computer specifications	Windows 7, Intel Core i5-650 @3.2GHz, 4MB cache ; 4 GB @ 1156MHz , HD 500GB Thanks to contact OCCHIO to check computer specifications
Power supply	110-240 V 50/60 Hz
Working conditions	Temperature 5°C – 45°C, HR 35-80 %
Images format	Bitmap
Data storage	'.oph' binary Occhio files format contains:Full size distribution values Shape and size percentiles Outline and greyscale levels of each particle
Statistics tools (distribution in number & volume)	Acquisition info (short overview of the used SOP) ; Size distribution; Size percentiles; Shape percentiles; Shape distribution; Mean shape by size; 2D scatter-plot (fully selectable particles map); 3D scatter-plot (include animation); Percentiles sample images; Sample images (BMP exportable format); Id card for each particle (BMP exportable format); Morphological and size filtering procedure ; Raw data export (text format); Table distribution export (text format); Table distribution and percentile export (Excel format); Automatic or custom reporting; Full image export (bmp format); Single particle image export (bmp format); Figure and graph export(bmp format)

Occhio Imaging solution in powder analysis

Reference code: OCC164 Coffee-Trak



Technical specifications

Working conditions

	Description
Working temperature	Temperature 5°C – 45°C Humidity 35% - 80% non condensing
Power Supply	110 or 220 Vac 50-60Hz (auto-switching is not available please ask to Occhio to set power supply)

Computer (supplied by Occhio)

	Description
Processor	Intel Core i7-2600 @3.4GHz, 4MB cache
Ram	4 GB @ 1600MHz
Hard Disk	500MB
Display	LCD, FullHD, 22”
Mouse, keyboard	USB (English)
Operating system	Windows Seven professional

Optics and imaging device

	Description
Standard camera type	Camera 5Mpixels Gigabit Ethernet 2/3” interline progressive scan CCD
Camera resolution	5.0 Millions of pixels 2448 x 2050 pixels
Pixel size	3.45 µm

Lens type	Telecentric lens
Lens resolution (standard lens) (lens code 164-120-R1)	Calibration : 10 µm/Pixel
Field of view (standard lens) (lens code 164-120-R1)	24480 x 20500µm @10µm/pixel
Lens resolution (Optional lens) (lens code 164-121-R1)	Calibration : 7 µm/Pixel
Field of view (Optional lens) (lens code 164-121-R1)	17136 x 14350µm @7µm/pixel
Light source	Back light collimated monochromatic light source (wavelength 440nm)
Light wavelength	440 nm (blue light)

Dimensions and weight

	Description
Dimensions	85 x 64 x 47 cm (Width x Height x Deep)
Weight	52 kg

Starting kit parts (these parts are included in the packing box at the delivery)

Part number	Description	Quantity
164-081-R1 	Glass plate	2
999-0014-R1*	Vacuum cleaning (220VAC-240VAC)	1
999-0015-R1*	Vacuum cleaning (110VAC)	1
999-0015-R1	Vacuum cleaning filter	1
164-500-R1	Communication cable A	1
164-501-R1	Communication cable B	1
999-0003-R1	Power supply cable North America	3
999-0004-R1	Power supply cable Europe	3
999-0013-R1**	Computer + LCD, FullHD, 21.5" + Mouse + Keyboard US	1
999-0010-R1	Keyboard USB (FR)	1
999-1016-R1	Calibrated quartz sand (Fr B 600µm 1180µm) Net weight 500g	1 bottle

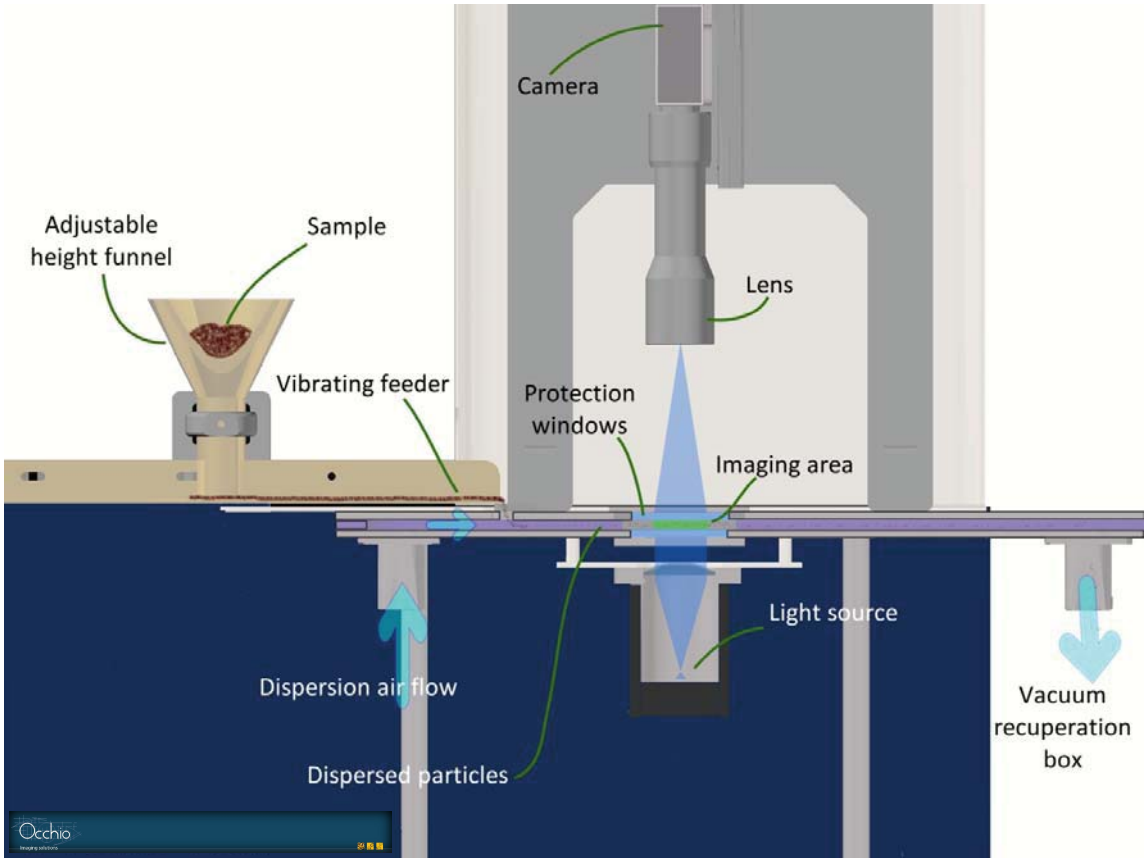
Option 164108 external wet dispersion module

	Description
Dispersion beaker volume	max 600 ml
Flow type	Circulation
Cell thickness	1mm; 3mm; 6mm

Coffee-Trak short instrument overview

Based upon a combination of mechanical and vacuum dispersion, the Coffee-Trak provides fast and accurate size and shape analysis of sieveable powders. The instrument combines a high quality imaging system with a robust mechanical design for at-line and on-line process control.

The powder is dispersed by means of a vacuum system, different layers of air flow inside the pipe are maintained in laminar conditions. The area of image capture is close to the powder entry point to avoid differential speed. The system uses a unique combination of telecentric lens and collimated monochromatic light; therefore all particles are within the focus region.



Sampling

The sample is fed directly onto the vibrating feeder. Using a standard operating procedure, the analysis duration and cleaning time are automatically set, and the measurement starts. Within a few seconds, results are displayed and a database is generated.

This instrument is able to analyze a large quantity of sample in just a few minutes due to the high-speed air flow.

Occhio Imaging solution in powder analysis

All Occhio instruments are based upon specific optical technology, using high quality lenses with low distortion and mounted on a precision, robust mechanical system suitable for industrial working conditions.

Sample analysis

Model	Occhio Coffee-Trak
Sample dispersion	Vibrating feeder combined with air flow
Sample particles size range	From 7 µm to 5 mm
Time measurement	1-3 minutes (sample et quantity dependent)
Sample analysis	Size distribution cumulate and proportional curve Number distribution or volume weighted distribution Sieves correlation (according with OCCHIO)
Standard Operating Procedure includes	Maximum number of particles Control on vibrating feeder (initial speed, acceleration, max) Particles per picture Light intensity calibration Background calibration Creation of a particle database Image storage Filtering procedure Automatic report generation

Software main features

Model	Callisto Software
Size parameters (Iso 9276-6; 7; 8) All the size parameters are displayable or not according with the customer setting preference	ISO Area diameter ISO Inner diameter Mean diameter Perimeter diameter Crofton diameter Half Crofton diameter Width Length Ellipse Width Ellipse Length ISO Max Distance ISO Geodesic Length
Shape parameters (Iso 9276-6; 7; 8) All the shape parameters are displayable or not according with the customer setting preference	Occhio Bluntness Occhio Roughness Elongation ISO Aspect Ratio Ellipsoid Elongation Ellipsoid Roundness Ellipse Ratio ISO Eccentricity ISO Straightness ISO Roundness

	ISO Compactness ISO Extent ISO Solidity Convexity ISO Circularity Luminance mean Luminance var. Porosity
Advanced shape parameters	Developed in function of customer specifications
Image format	Bitmap
Data storage	'.oph' binary Occhio files format contains: Full size distribution values Shape and size percentiles Outline and greyscale levels of each particle
Data comparisons	Open and compare more analysis on the same plots include 'trends graphic'
Plots and figure (By number or volume weighted values)	Acquisition info (short overview of the used SOP) Size distribution Size percentiles Shape percentiles Shape distribution Mean shape by size 2D scatter-plot (fully selectable particles map) 3D scatter-plot (include animation) Percentiles sample images Sample images (BMP exportable format) Id card for each particle (BMP exportable format)
Statistics tools	Morphological and size filtering procedure
Reporting and data export	Raw data export (text format) Table distribution export (text format) Table distribution and percentile export (Excel format) Automatic or custom reporting Full image export (bmp format) Single particle image export (bmp format) Figure and graph export(bmp format)
Microscope mode pane	Real time images acquisition without analyzing
External images analysis	Possibility to analyse images coming from others acquisition sources (bmp greyscale format)

OCCHIO SA
4 rue des chasseurs ardennais BELGIUM Tel :+32 43729330 Fax : +32 43652346 info@occhio.be
www.occhio.be