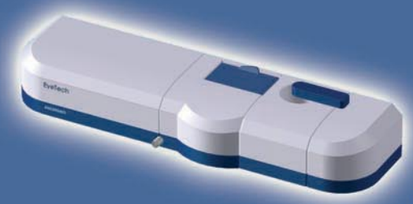

Sample Applications

Geology
Soil, clay, sand, kaolin.

Environmental
Ocean water, tap water, waste water, dust, membrane filtration, flocculation.

Pharma / Bio-tech
Powders, suspensions, syrups, emulsions, pastes, microcarriers, injectable solutions, collagen, microcapsules, drug powders.

Chemicals
Pesticides, dispersants, catalysts, resins, emulsions, preservatives.

Ceramics and Metals
Alumina, silica, magnetic powders, tungsten, sintered products, stainless steel, strontium, cobalt.

Energy
Coal, fuels, slurries, shale-oil emulsions, fly ash.

Food Products
Emulsions, fine powders, beer, coffee, chocolate, ground products, agglomerated crystals, flour, peanut butter, cornflakes.

Heavy Industry
Polymers, oil droplets, wear particles, chalk, fillers, toners, pulp & paper, coatings, pigments, PVC, paint.

Life Science
Bacteria, smears, yeast, inhalation toxicology, cell research, algae growth, blood analysis.

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Specifications

Measured parameters	Particle size, shape and concentration
Particle size range	0.1-3600 µm
Concentration range	Up to 10^9 particles/cc (for 1µ particles)
Particle presentation phases	Liquid borne, airborne, on a surface
System dimensions & weight	665L x 280W x 183H (mm); 14 Kg.
Electricity	100-130V, 205-240V, 50/60Hz, 100VA
Laser	2mW HeNe, 632.8 nm, Silicon PIN Photodiode Detector
Laser resolution	0.33% of full scale, up to 0.2 µm
Illumination	Synchronized strobe light, adjustable intensity & duration, flash rate up to 30 frames/ second
Video camera	High resolution B&W CCD camera, NTSC 640x840 pixels, PAL 768x572 pixels
Software	Windows XP operating system, automatic reporting, FDA 21 CFR 11 compliant
ISO Compliancy	Compliant to numerous ISO-methods
Modular measurement cells	Liquids, emulsions & opaque liquids, dry powders, fibers, magnetic particles, heated liquids, and aerosols
Accessories	Automatic liquid flow controller, powder disperser, powder feeder, temperature controller, aerosol controller

EyeTech Model:	Size Analysis	Concentration	Vision	DIA	Freedom of Algorithms
Laser	√	√			
Vision	√	√	√		
Comb	√	√	√	√	
Research	√	√	√	√	√
Microscopy			√	√	
Fiber			√	√	

Over 2000 installations worldwide!
Including world renowned clients such as Roche, Johnson & Johnson , Boehringer Ingelheim, NIST, TEVA, Procter & Gamble, GE, NEXIA, Shell, Texaco, Fraunhofer Institute, TU Delft, RU Gent, Queen Mary College, IIT Delhi

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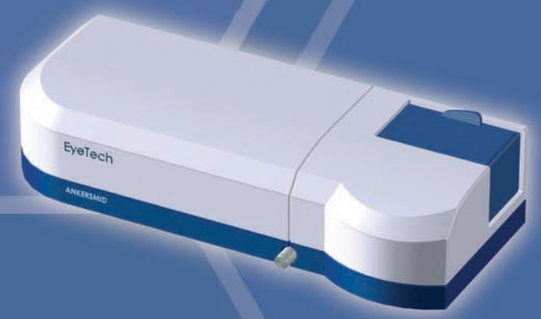
EyeTech

Particle Size Analysis
Dynamic Image Analysis
Concentration Measurement

BEYOND PARTICLE SIZE



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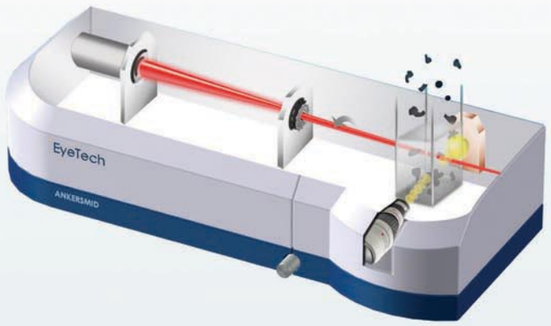
BEYOND PARTICLE SIZE

Seeing is Believing!

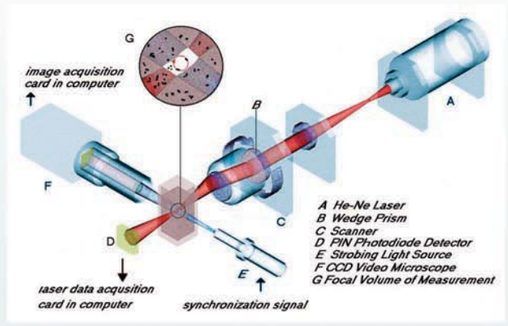
The Ultimate Particle Analyser!



EyeTech Concept:

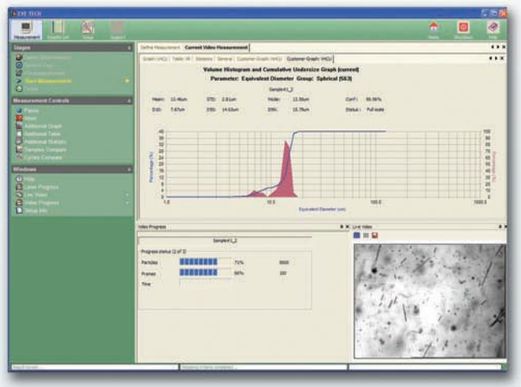
— Best of both worlds:
— Fast and accurate Particle Size Analysis with the unique Laser Obscuration Time technique.
— Accurate description of non spherical materials with sophisticated Dynamic Image Analysis.
— The measurement relates solely and directly to the particle size
— Results are independent of physical or optical properties of the particles or medium

Combined Laser and Video Channel



— Unique combination of technologies based on Laser Obscuration Time and sophisticated Dynamic Shape Analysis.
— Accurate analysis and characterisation of spherical, non-spherical and elongated particles.
— Simultaneous results of Particle Size, Concentration and Shape.
— Modular design for a range of dry and wet applications.
— Real-time visualisation of the sample during operation

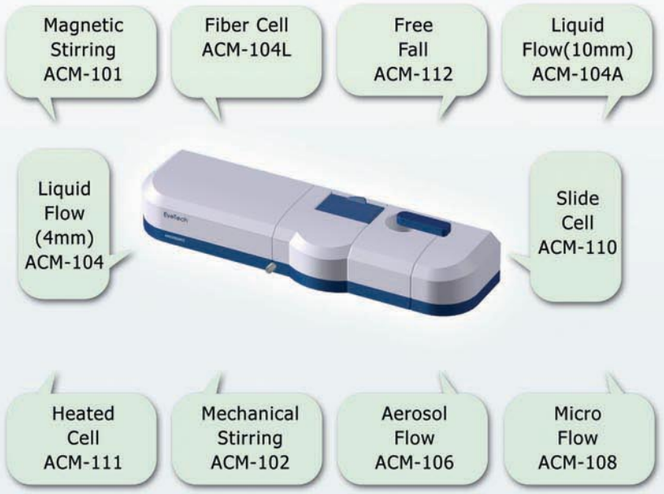
User Friendly InterFace



Advanced Data Output:

— Automated custom report generation
— Customized real-time graphs and tables
— Reprocessing of stored images
— Multiple user levels
— Setup Wizard for easy start-up
— 21 CFR Part 11 compliant

EyeTech Measurement Cells & Accessories



A range of accessories is available to adapt the EyeTech to any application. The materials are analysed closest to their original state,rather than adapting the nature of the sample to the instrument.
Sample Presentation:
— WET
— DRY
— SURFACE
— AIRBORN

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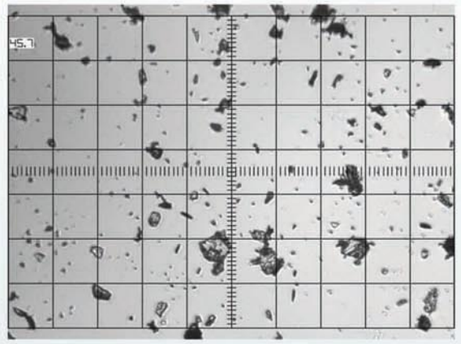
LASER OBSCURATION TIME

Seeing is Believing!

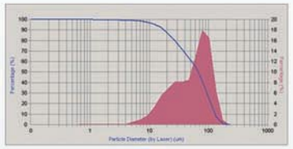
Measurement Principle

A unique time domain measurement called Laser Obscuration Time (LOT) is used by the EyeTech. A rotating laser beam scans individual particles in the sample zone. As the particles are encountered, the laser beam is obscured and interaction signals are generated. These interaction signals are detected by a photodiode. Since the laser beam rotates with a constant speed, the duration of the obscuration provides a direct size measurement of each particle.

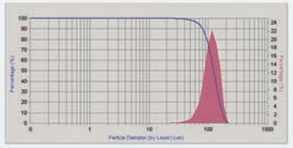
Multiple Dimensions Data Display



Sample Image



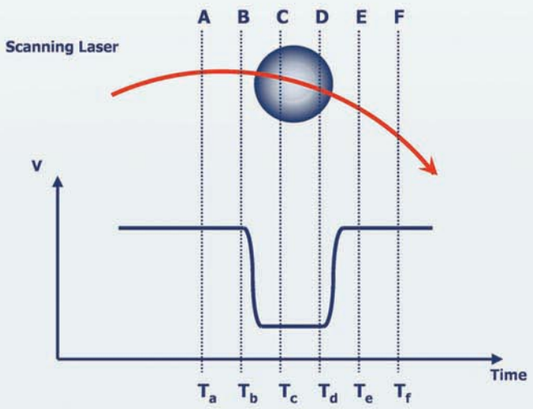
Number Size Distribution



Volume Size Distribution

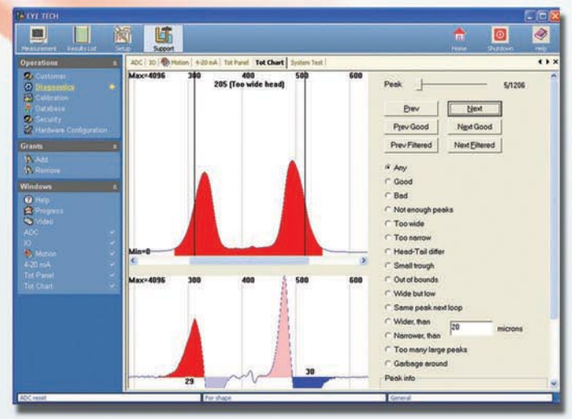
Measurement of Single Particles

Sophisticated Analysis Algorithms



To measure particle size distribution accurately, the EyeTech records on-center and in-focus interactions only. This is achieved by filtering the shape of the Pulse Profile via sophisticated algorithms. When a particle is hit by the laser beam straight on, the slope of the Pulse Profile approaches an angle of 90 degrees, resulting in short pulse transitions. In off-centre or out-of-focus hits, the angle between the laser path and the particle boundary is significantly less than 90 degrees. Consequently, the rise and fall times of these interactions are longer and the derivative signals of the pulse transition are wider have smaller amplitude and can therefore be easily discarded. One benefit of the Laser Obscuration Time principle is that there is no assumption of particle' s sphericity. Furthermore, the particle size measurement is solely based on the length of the cord crossed by the laser, regardless the shape of the particle, thus guaranteeing a true measurement of particle diameter without assumptions.

Obscuration by Laser-Particle Interaction



- Data is collected on single particles
- Direct measurement of true particle size
- Wide range with high resolution
- Independent of optical or other properties
- Particle size and concentration measurement
- No need for alignment or calibration
- Broad concentration range. Higher but also lower concentrations than laser diffraction and electrical zone sensing technologies.

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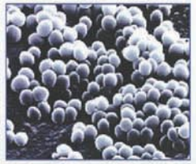
DYNAMIC IMAGE ANALYSIS

Seeing is Believing!

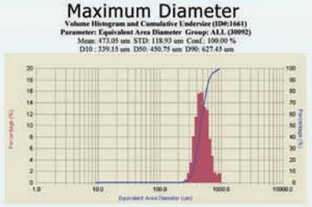
Advantages of Dymamic Image Analysis

Non-Spherical Particles

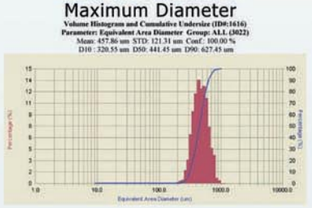
Spherical Particles



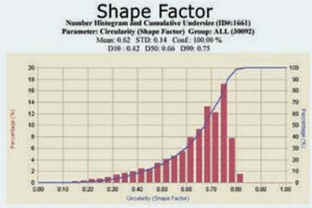
Maximum Diameter



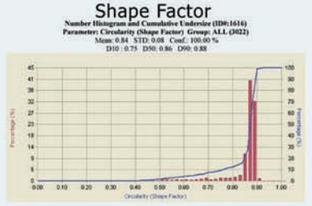
Maximum Diameter



Shape Factor

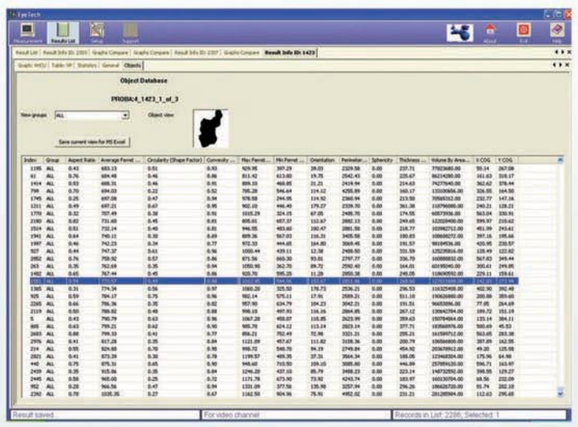


Shape Factor



For accurate characterisation of non-spherical particles, two-dimensional shape information is essential. Differences in shape may not be reflected in the particle size distribution. Dynamic Image Analysis uses digital video microscopy to capture optimal particle images for processing. Acquired images are processed using sophisticated image analysis procedures and/or are stored for later processing.

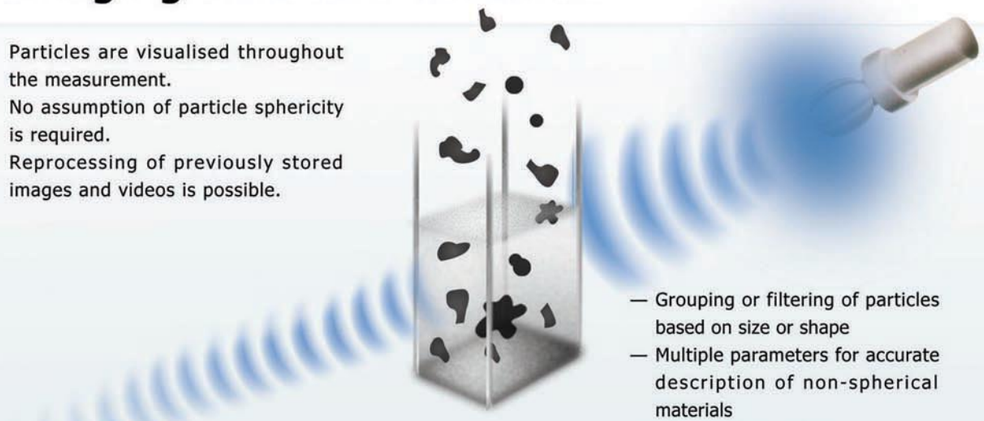
Object Database



— Detailed Object Information is available for each and every measured particle including its image by a mouse click.
— No limitation for the number of particles.
— Easy export of the information to Excel for further processing of the data.

Imaging Software Features

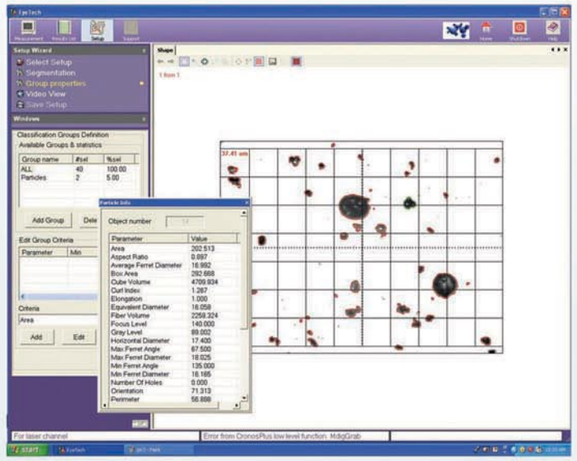
— Particles are visualised throughout the measurement.
— No assumption of particle sphericity is required.
— Reprocessing of previously stored images and videos is possible.



— Grouping or filtering of particles based on size or shape
— Multiple parameters for accurate description of non-spherical materials
— Fibre analysis module
— Validation tool – minimizes uncertainty related to sample preparation

The Next Generation in Particle Sizing

Validate your results



— Microscopic precision in a dynamic system
— Storage of real raw data
— Powerfull pre-processing tools for high quality image analysis
— Accuracy for non-spherical particles
— Over 40 ISO compliant shape parameters offered

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