Bettersizer 2600 Plus

All-in-One Solution for Every Industry

Bettersize

BETTER PARTICLE SIZE SOLUTIONS

Particle Size and Shape Analysis for All Needs

Bettersizer 2600 Plus

BT-814 | BT-80N | BT-80N Pro | BT-812 | Bettersizer 2600 Plus | BT-912 | BT-903 | PIC-1

Bettersizer 2600 Plus combines **laser diffraction** and **dual-camera dynamic imaging** on one modular platform, delivering size and shape characterization across **0.02–3500 µm**.

Laser diffraction provides fast, repeatable particle size distributions(PSD) using a **92-detector** array and **Mie/Fraunhofer** models. Dynamic imaging captures high-speed particle images to quantify size and shape, with visual evidence for agglomerates, irregular particles, and oversized tails.

With a modular design, Bettersizer 2600 Plus supports a broad selection of wet and dry dispersion units. This enables flexible setups for different sample types, volumes, and solvents, so one instrument can meet diverse measurement needs.

- **Size and Shape in One Platform:**

  a combination of laser diffraction and dynamic imaging

- **Wide Range:**

  0.02–3500 µm for most materials and workflows

- **Modular Dispersion Units:**

  flexible wet & dry setups for different samples and solvents

Applications and Industries

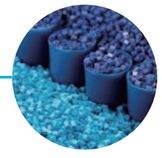
Particle characterization needs can vary widely across applications and industries—from solvent choice and dispersion method to the need for both particle size and shape analysis. Bettersizer 2600 Plus addresses this variability with advanced optical systems and a modular platform, supporting reliable workflows.

Mining & Minerals

Calcium carbonate, kaolin, talc, quartz powder, graphite, barite, wollastonite, hydromagnesite, diatomite, mica, zirconium silicate, etc.

Minerals are used in many industries, including construction, fracking and abrasives. The performance of these minerals strongly depends on the size and distribution of the particles, which can be accurately measured and characterized by the Bettersizer 2600 Plus.

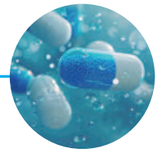
Paints, Inks & Coatings



Titanium dioxide, organic pigments, iron oxides, ceramic inks, etc.

The Bettersizer 2600 Plus characterizes particle size and size distribution of pigment-based inks. It is a crucial process in ensuring the ink remains stable over long periods of storage to prevent aggregation, color inconsistencies, and blockages in the channels or nozzles.

Pharmaceuticals



Lactose, powder inhalers, magnesium stearate, microcrystalline cellulose, etc.

The particle size and size distribution of pharmaceuticals could affect the dissolution, body absorption, efficacy, and safety of drugs. The Bettersizer 2600 Plus is capable of closely monitoring the particle sizes during the processes of pharmaceuticals development.

3D Printing Materials

Polylactic acid (PLA), acrylonitrile butadiene styrene (ABS), alloys, intermetallic compounds, ceramics, organic materials, etc.

The particle size distribution and particle shape of 3D-printing raw materials determine the degree of surface smoothness of the final printed product. Using the Bettersizer 2600 Plus with the PIC-1, the particle size distribution and particle shape could be optimized, thereby controlling the quality and spreadability of the powders for additive manufacturing.

Abrasives

Silicon carbide, diamond, corundum, garnet, boron nitride, etc.

Optimizing particle size and size distribution in abrasive materials maximizes final product performance while minimizing material waste. Monitoring particle size and identifying agglomerations in raw material could be achieved via the dynamic image analysis technology in Bettersizer 2600 Plus.

Ceramics

Aluminum oxide, zirconium oxide, iron oxide, etc.

Particle size analysis by the Bettersizer 2600 Plus can help the manufacturers to determine the optimum time and temperature required for the green body, as a ceramic powder with a proportion of smaller particles reduces the sintering time due to its larger surface area. The dual camera optical system in PIC-1 effectively captures the images of agglomerated oversized particles during the R&D process.

Batteries

Lithium iron phosphate, lithium cobalt oxide, lithium manganate, modified graphite powder, etc.

The Bettersizer 2600 Plus monitors the particle size distributions of the lithium-ion battery materials, which are critical in affecting the performances of a battery, including energy storage, stability, and safety. It is essential to strictly control the particle size distributions of lithium-ion battery materials.

Cosmetics

Lipstick, mascara, eye shadow, moisturizer, skin cream, etc.

For cosmetics, the Bettersizer 2600 Plus aids in monitoring subtle differences in color and shine controlled by differences in the particle size distribution. The smoothness or UV light-blocking properties of creams also vary depending on the particle size distribution.

Building Materials

Cement, rock, clay, sand, wood, gravel, synthetic polymers, etc.

The particle size distribution of cement directly affects the hardening rate, strength, and fluidity of the final set concrete, which is the primary application of cement. Accurate and repeatable measurements of the cement particle size provided by the Bettersizer 2600 Plus reduce costs and provide an optimized distribution in the concrete manufacturing process.

Food & Beverages

Sugar, milk, chocolate, coffee, mayonnaise, flour, etc.

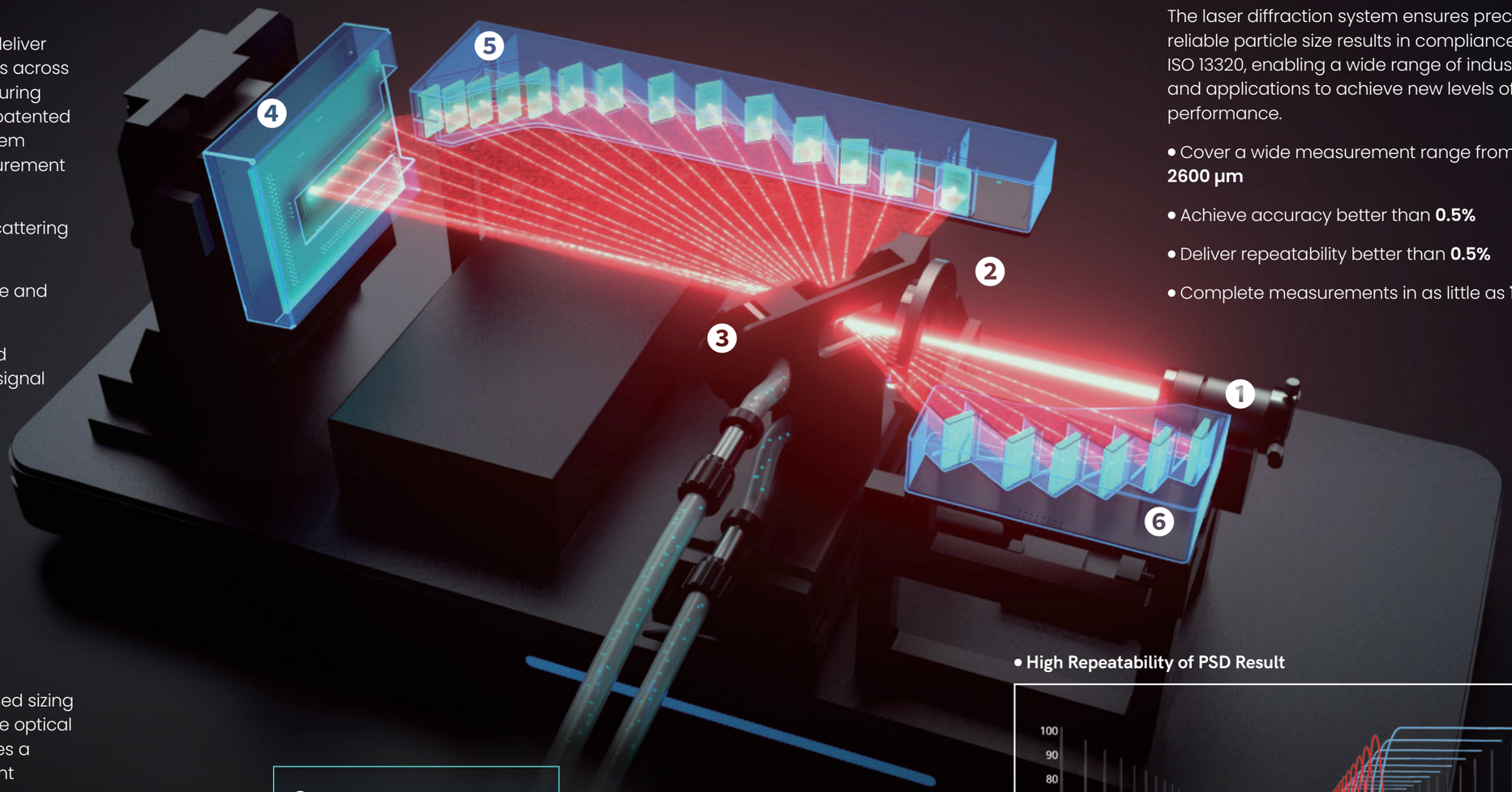
Many important characteristics of food products, such as taste, dissolution, and extraction behavior, are affected by the particle size and shape of particulate ingredients. Equipped with dynamic image analysis technology, the Bettersizer 2600 Plus is an ideal particle analyzer for the food and beverage industry.

Advanced Laser Diffraction System

Wide-Angle Signal Collection for Reliable PSD

Bettersizer 2600 Plus is engineered to deliver stable, reliable particle size distributions across the wide measurement range by capturing comprehensive scattering signals. Its patented Fourier and inverse Fourier optical system enhances signal collection and measurement robustness.

- **92-detector array** for high-quality scattering detection
- **0.016°–165° angular coverage** for fine and coarse particles
- **Tilted sample cell design** for reduced total internal reflection and improved signal utilization



1. Laser
2. Fourier Lens
3. Sample Cell
4. Forward Detectors
5. Spherical Lateral Detectors
6. Backward Detectors

Confidence for Optically Challenging Samples

For many real-world samples, Mie-based sizing can be sensitive to unknown or variable optical properties. Bettersizer 2600 Plus features a patented refractive index measurement capability to improve measurement confidence when optics are challenging.

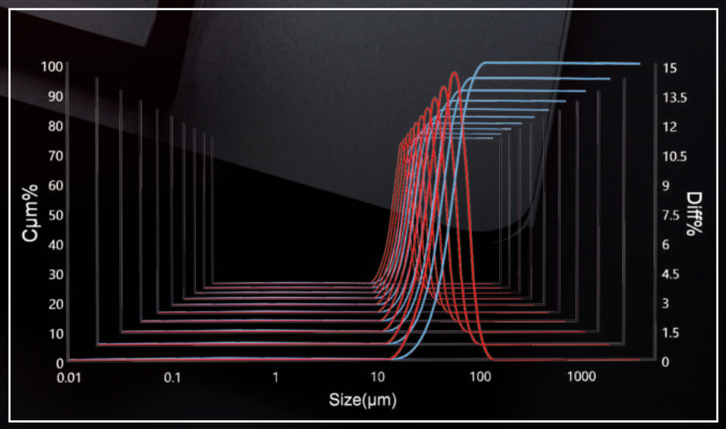
- **Handle unknown materials** with greater confidence
- **Validate optical data** at the working wavelength
- **Increase result confidence** for optically complex samples

Superior Performance

The laser diffraction system ensures precise and reliable particle size results in compliance with ISO 13320, enabling a wide range of industries and applications to achieve new levels of performance.

- Cover a wide measurement range from **0.02 to 2600 µm**
- Achieve accuracy better than **0.5%**
- Deliver repeatability better than **0.5%**
- Complete measurements in as little as **10 s**

- **High Repeatability of PSD Result**



Dual-Camera Dynamic Imaging System

PIC-1 is a dual-camera dynamic imaging module for real-time particle image analysis. It captures high-speed particle images during measurement and converts them into size and shape results, supporting both standalone imaging and combined analysis with laser diffraction.

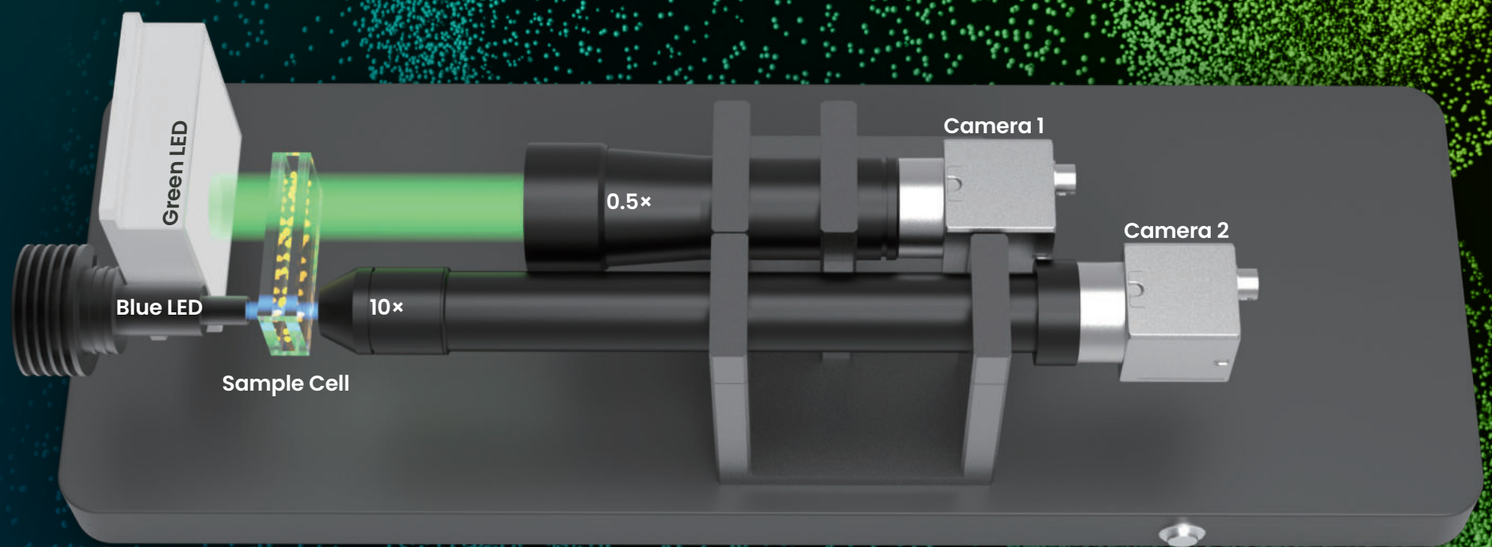
Size Range: **2–3500 µm**

Modes: **Imaging-only / Combined**

Magnification: **0.5×, 10×**

Camera Resolution: **5 MP**

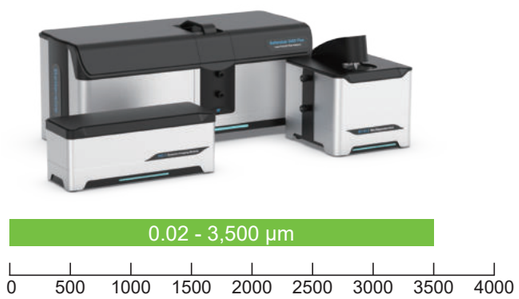
Frame Rate: **70 fps**



Broadened Insight with Modular Imaging Expertise

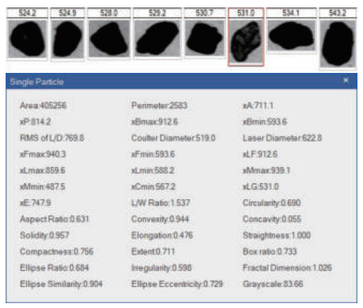
• Combined Size and Shape Characterization

With PIC-1, laser diffraction and dynamic imaging run in one wet-dispersion workflow, delivering both particle size and shape insight in a single measurement. This combined setup extends the platform capability up to 3,500 µm.



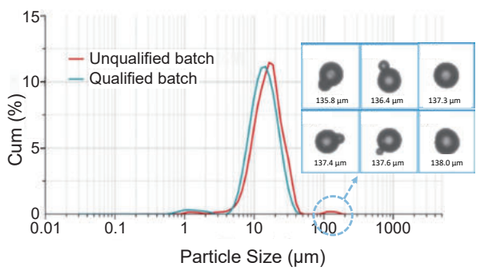
• Irregular Particle Characterization

PIC-1 captures real-time particle images to support detailed single-particle analysis. By reporting up to 32 size and shape parameters, it enables deeper understanding of particle shape and characteristics.



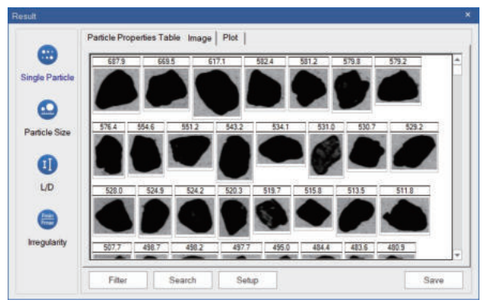
• Detection of Abnormal Particle

Imaging evidence helps identify rare events, including oversized particles, agglomerates, and bubbles, improving confidence in QC and troubleshooting.



• Traceability and Result Review

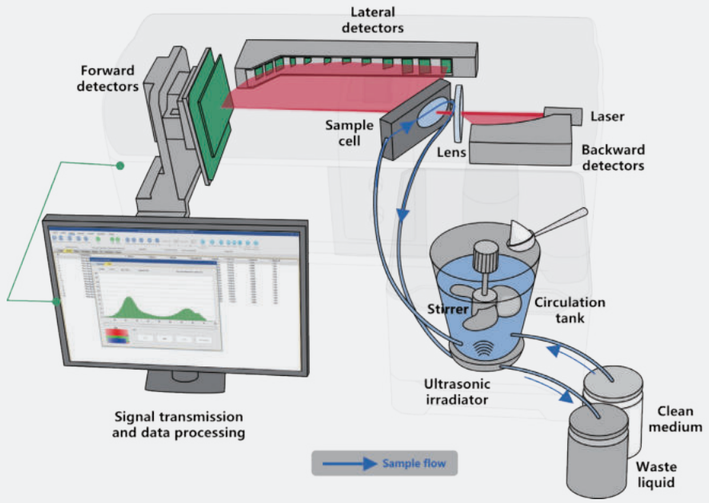
Particle images provide an auditable basis for review and verification, supporting QC, R&D, and high-reliability applications.



Wet Dispersion Units

Consistent Dispersion Workflow for Reliable Results

Wet dispersion introduces the sample into a selected liquid medium, such as water or a compatible organic solvent, to form a stable suspension. A controlled workflow, typically defined by automated SOPs, keeps dispersion conditions consistent. Continuous circulation and stirring maintain homogeneity, integrated ultrasonic breaks agglomerates and helps release entrapped air, and the suspension passes through the optical measurement zone and is recirculated for repeatable analysis. Automated surfactant addition further improves wetting and suspension stability, reducing re-agglomeration and supporting reliable, operator-independent results.



Core Functions Across Wet Dispersion Units

• Stirring and Circulation:

maintain uniformity and reduce settling

• Ultrasonic Energy:

deagglomerate particles and help remove trapped air

• Surfactant Addition:

improve wetting and stabilize the suspension

BT-812

Automatic Wet Dispersion Unit

Most routine samples can be dispersed in water, so water-based wet dispersion is the most common workflow. For these applications, BT-812 is the primary wet dispersion unit for Bettersizer 2600 Plus, combining controlled circulation, ultrasonics, and automated liquid handling to deliver repeatable measurements.

- High-capacity circulation tank, maximum volume is 500 mL
- Centrifugal circulation pump with adjustable speed
- 50 W adjustable ultrasonic dispersion with dry-run protection
- Fully automated liquid handling system, including level monitoring and automatic dispersant addition
- Full software control for dispersion, measurement, and cleaning workflows

Parameter	Specification
Measurement range*	0.02 - 2,600 µm
Stirring speed	300 - 2,500 rpm
Ultrasonic power	50 W max
Volume	500 mL max
Medium	Water
SOP	Yes
Dimensions (L × W × H)	257 × 275 × 308 mm
Weight	11.5 kg
Component	ABS housing 304 stainless steel tank Silicone tubing Centrifugal pump Peristaltic pump Ultrasonic disperser Quartz sample cell Pinch valve

* Sample and sample preparation dependent

• Automatic Surfactant Addition

- Automatic surfactant dosing during dispersion
- Volume-controlled addition for consistent preparation
- SOP settings for standardized workflows

• Easy-to-Remove Wet Sample Cell

- Toggle-lock mechanism for quick installation and removal
- Tool-free removal for everyday convenience

BT-80N Pro

Automatic Anti-Corrosive Wet Dispersion Unit

BT-80N Pro is designed for wet dispersion workflows that require organic solvents or corrosive media. To meet these applications, key components are built with corrosion-resistant materials, improving long-term compatibility and reliability.

- Low-volume circulation tank: 80–200 mL
- Broad organic solvent compatibility
- Centrifugal circulation pump with adjustable speed
- 50 W adjustable ultrasonic dispersion with dry-run protection
- Full software control for dispersion, measurement, and cleaning workflows
- Dual operation modes: local panel control or software control

Parameter	Specification
Measurement range*	0.02 - 2,600 μm
Stirring speed	300 - 2,500 rpm
Ultrasonic power	50 W max
Volume	80 - 200 mL
Medium**	Water, organic solvent
SOP	Yes
Dimensions (L × W × H)	240 × 220 × 290 mm
Weight	9 kg
Key Component	316L stainless-steel housing PTFE tubing 316 stainless-steel diaphragm pump 316L stainless-steel tank Quartz sample cell Ultrasonic disperser

* Sample and sample preparation dependent
** Compatibility depends on the wetted materials.
Please contact Bettersize to confirm compatibility with your solvent.

BT-80N

Anti-Corrosive Wet Dispersion Unit

The BT-80N is a cost-effective, entry-level solution that provides essential solvent compatibility for routine measurements.

- Compact circulation tank: 50–80 mL
- Centrifugal circulation pump with adjustable flow
- 50 W adjustable ultrasonic dispersion with dry-run protection
- Broad organic solvent compatibility
- Operation modes support local panel control

Parameter	Specification
Measurement range	0.02 - 2,600 μm
Stirring speed	300 - 3,000 rpm
Ultrasonic power	50 W max
Volume	50 - 80 mL
Medium	Water, organic solvent
SOP	No
Dimensions (L × W × H)	290 × 210 × 375 mm
Weight	11 kg
Key Component	316L stainless-steel housing PTFE tubing 316L stainless-steel tank Quartz sample cell Ultrasonic disperser

BT-814

Small-Volume Wet Dispersion Unit

The BT-814 is specifically designed for measurements where sample availability is limited or material value is high. It supports dispersion in both water-based and organic solvents, providing maximum flexibility across a wide range of applications.

- Small-volume sample cell: 8 mL
- Broad dispersion media compatibility
- Controlled stirring for stable dispersion conditions

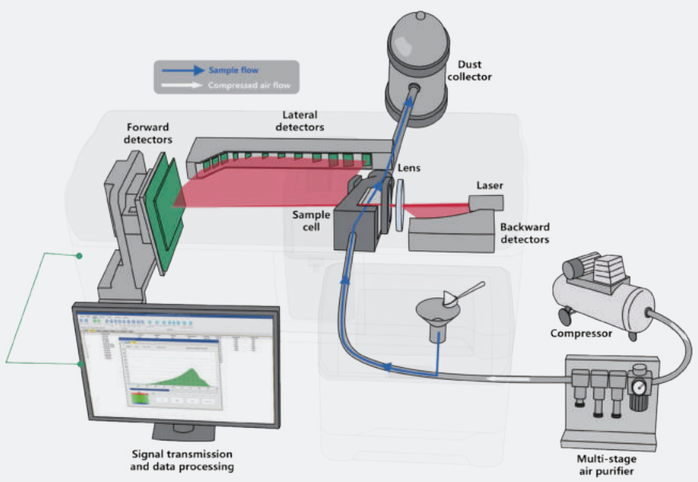
Parameter	Specification
Measurement range*	0.02 - 2,600 μm
Volume	8 mL
Medium	Water or organic solvent
SOP	No
Dimensions (L × W × H)	261 × 109 × 234 mm
Weight	3 kg
Key component	ABS housing Quartz sample cell 316L stainless-steel stirrer

* Sample and sample preparation dependent

Dry Dispersion Units

Controlled Deagglomeration for Repeatable Results

Dry dispersion introduces powder samples into the system with gases as media. The sample is delivered into the disperser by controlled vibration. Inside the disperser, particles are accelerated by a precisely controlled high-pressure gas stream through a Venturi device. Shear forces, inter-particle collisions, and particle–wall collisions break down agglomerates before measurement. The dispersed particle stream then passes through the laser diffraction measurement zone for analysis, and is safely evacuated and collected by a vacuum unit.

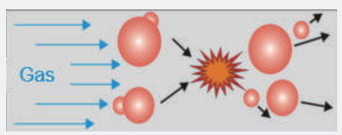


- **Shear Forces**

high-velocity airflow separates loosely bound agglomerates during acceleration and transport

- **Inter-particle Collisions:**

collisions under controlled flow promote deagglomeration and dispersion stability



- **Particle–wall Impacts:**

impacts with the inlet pathway enhance agglomerate breakup before measurement

BT-912

Automatic Dry Dispersion Unit

The BT-912 is the primary dry dispersion unit for routine powder dispersion using compressed gas. It supports a wide range of powders, including friable and cohesive powders.

- Representative sampling: 0.2–10 g for standard laboratory analysis and QC
- Controlled feeding: adjustable hopper position and vibration frequency to stabilize obscuration
- Flexible gas supply options: compatible dispersion for diverse dry powders
- Fully automated sample feeding and cleaning: improves efficiency and consistency

Parameter	Specification
Measurement range*	0.1 - 2,600 µm
Powder mass	0.2 - 10 g
Gas pressure	0.1 - 0.8 MPa
Funnel height	0.7 - 2.9 mm
Medium	Air, nitrogen or noble gases
SOP	Yes
Dimensions (L × W × H)	276 × 189 × 243 mm
Weight	8 kg
Key Component	304 stainless-steel funnel 304 stainless-steel feeder Venturi disperser Vacuum cleaner (optional) Air compressor (optional)

* Sample and sample preparation dependent

BT-903

Small-Volume Dry Dispersion Unit

BT-903 is the small-volume dry dispersion unit, designed for powder measurements when sample amount is limited.

- Negative-pressure sampling: stable small-quantity feeding with 0.02 – 1 g sample dosage
- Quick tube replacement: reduces carryover
- Fully automated feeding and cleaning: improves efficiency and consistency
- Flexible gas supply options: compatible dispersion for diverse dry powders

Parameter	Specification
Measurement range*	0.1 - 2,600 µm
Powder mass	0.02 - 1 g
Tube volume	5 mL max
Gas pressure	0.1 - 0.8 MPa
Medium	Air, nitrogen or noble gases
SOP	Yes
Dimensions (L × W × H)	195 × 260 × 245 mm
Weight	5 kg
Key Component	Glass sample tube 304 stainless-steel tubing Antistatic polyurethane tubing Venturi disperser Vacuum cleaner (optional) Air compressor (optional)

Easy Module Selection

The Bettersizer 2600 Plus features both wet and dry dispersion units for effective particle dispersion, along with a dynamic imaging module to expand the measurement range and perform particle shape analysis. Our decision tree* for module selection helps users choose the right dispersion unit and determine if the dynamic imaging module is necessary.

Decision Tree for Module Selection

* This decision tree outlines a basic workflow for module selection.
For more specialized requirements, please contact Bettersize for customized solutions.

Smart and Powerful Software

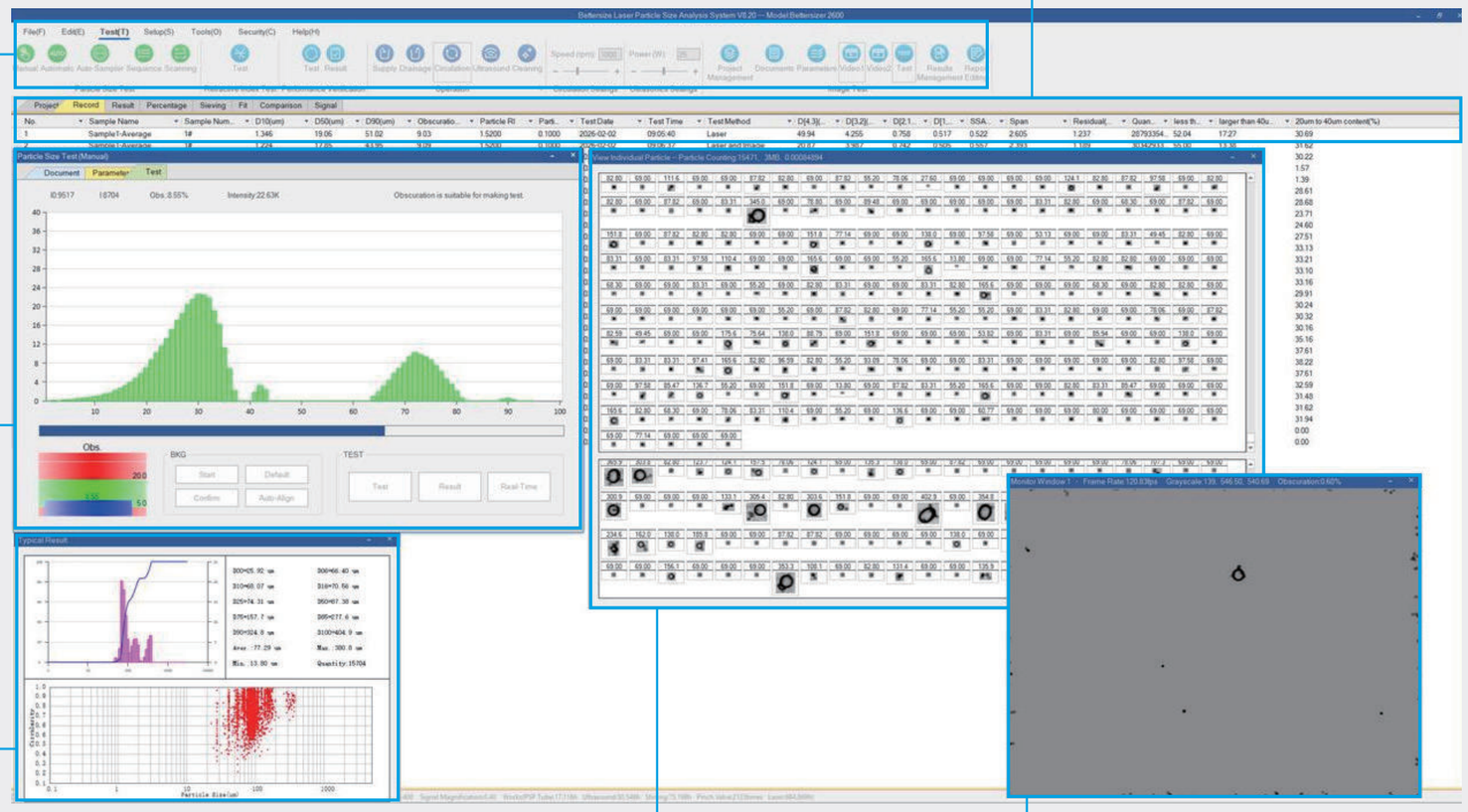
Bettersizer Software is designed to optimize the entire particle size measurement workflow, covering every stage from sample preparation and measurement control to data analysis and report generation. Seamlessly integrated with the Bettersizer 2600 Plus, it streamlines routine operations through a high level of automation, reducing manual intervention while improving efficiency and result consistency.

Compact Icon Toolbar:
provides one-click access to tests, measurements, and dispersion controls to streamline routine workflows.

Real-time Laser Diffraction View:
monitors obscuration and signal status while updating the particle size distribution during the run.

Imaging Size Results:
display image-derived particle size distributions for verification and extended size coverage, while shape scatter plots visualize size–shape relationships to distinguish particle populations and reveal overall shape trends.

Test Record Table:
organizes run history and key parameters for traceability, comparison, and reporting.



Individual Particle View:
provides image-level review of captured particles

Dynamic Imaging Window:
supports image-based testing to add particle shape information alongside size results.

Flexible Measurement Modes

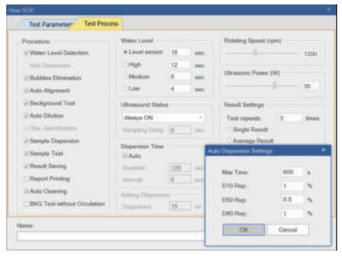
Users can select laser diffraction, dynamic imaging, or combined LD and imaging modes to match sample characteristics and reporting needs, enabling both particle size and shape characterization within a unified workflow.

SOP-Based Automation

SOPs standardize the full workflow beyond basic stirring, ultrasonics, and circulation. Automated functions can include auto dilution to maintain target obscuration, automatic dispersant addition, and report generation/printing, improving consistency across operators and laboratories.

Smart Dispersion Control

"Auto Dispersion Setting" automatically determines the optimal dispersion time based on real-time repeatability. It stops when the user-defined repeatability target is met, or selects the best-repeatability interval at the maximum time.

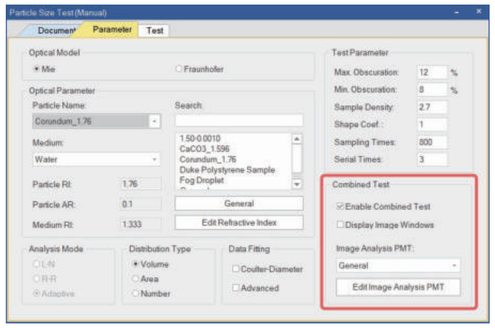


Software Features Across the Testing Workflow

Ⅰ . Pre-processing

Users can easily create new tests based on laser diffraction and dynamic image analysis methods. The software supports both automated and manual control, providing flexibility for various sample types and testing conditions. The SOP offers a streamlined solution for standardized and automatic testing, ensuring operator-independent results that are consistent and reliable.

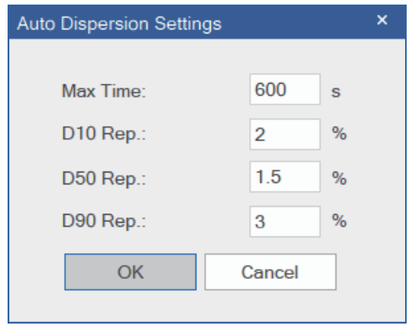
Combined Test



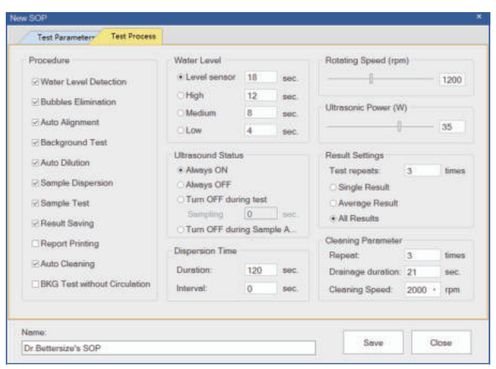
Ⅱ . Automated System Preparation

The Bettersizer software significantly enhances data quality by automating critical instrument functions like system cleaning, optical alignment, and sample dispersion. These automated processes ensure optimal instrument performance, leading to increased precision, accuracy, and reproducibility of results.

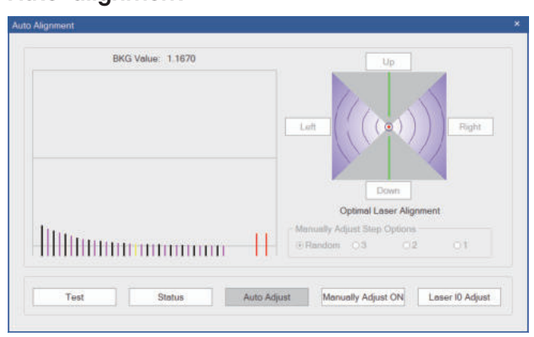
Automatic Dispersion Settings



New SOP Screen



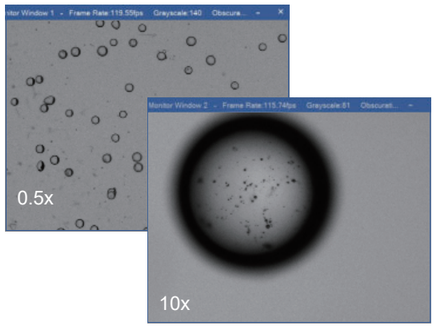
Auto-alignment



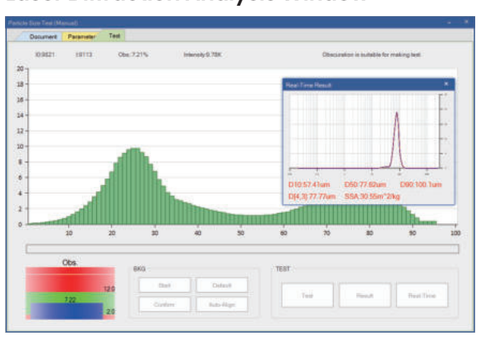
Ⅲ . Real-time Testing

During the testing process, Bettersizer software delivers real-time insights into particle size distribution and shape. These immediate results provide valuable information on test progress and outcomes, enabling precise adjustments to achieve optimal results.

Imaging Analysis Window



Laser Diffraction Analysis Window

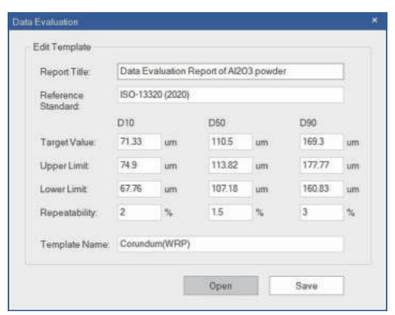


Ⅳ . Data Evaluation and Reporting

The Bettersizer software excels in delivering comprehensive data analysis and report generation capabilities. The software allows users to customize and edit reports to meet specific requirements, including various data points, charts, and graphical representations, to create clear and informative reports. The data evaluation tools can help in assessing the result quality.

Data Interface

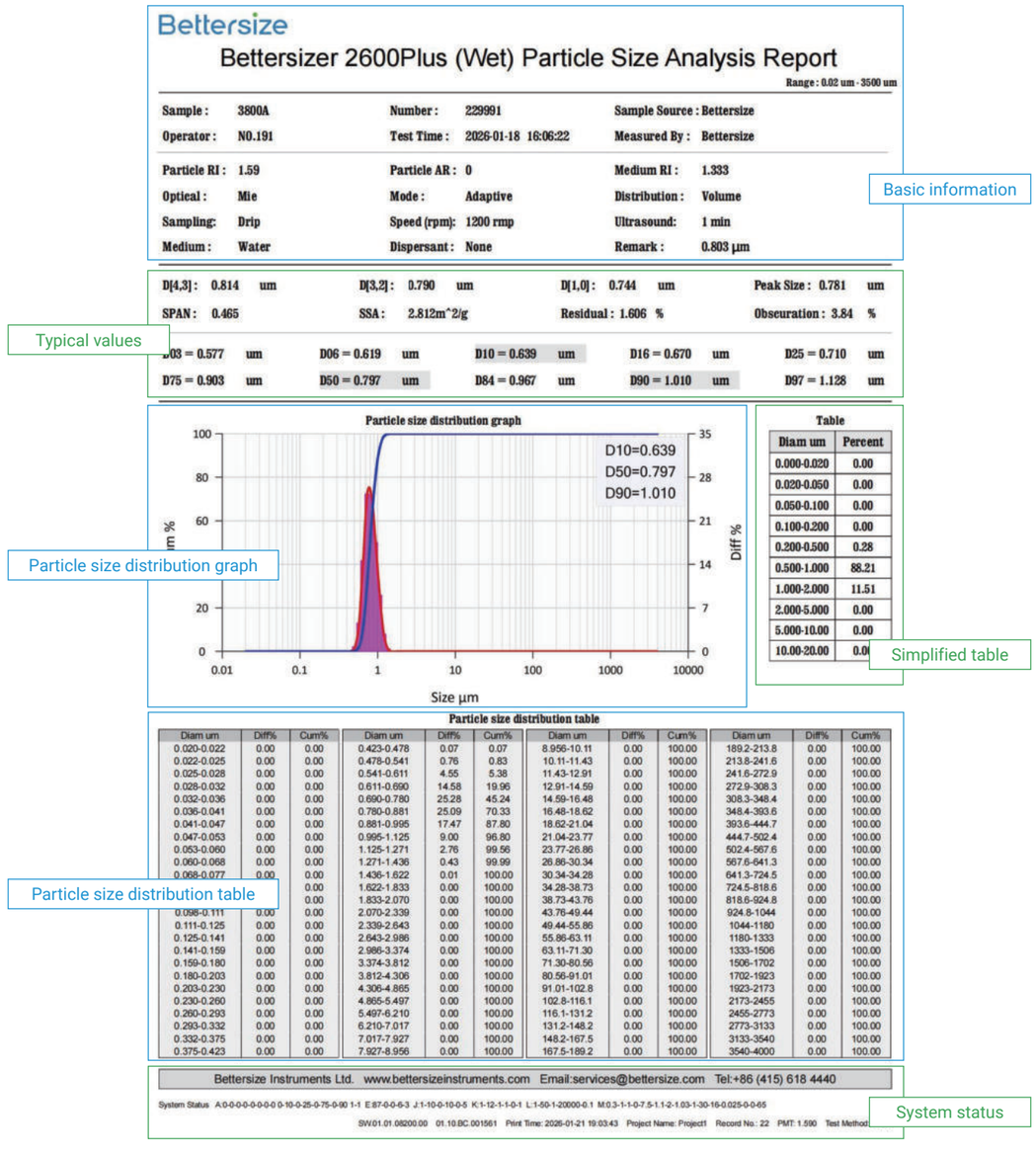
Data Evaluation



Reporting and Data Export

Highly Customizable Report

- **Complete and Detailed Data:** Frequency and cumulative distribution curves, simplified and complete distribution table, etc.
- **Editability:** Users can easily edit the reports and change the font, layout, format, etc.
- **Convertibility:** Users can switch the formats of reports freely among PDF, Excel, Text, etc.



Specifications

General	
Principle	Laser diffraction technology, Dynamic image analysis
Analysis	Mie scattering theory, Fraunhofer diffraction theory, Dynamic image analysis
Data acquisition rate	11 kHz
Typical measurement time	Less than 10 seconds
Special functions	Automatic surfactant addition, refractive index measurement, sample ratio calculation
Measurement performance	
Measuring range*	0.02 - 2,600 μm (wet); 0.1 - 2,600 μm (dry); 2 - 3,500 μm (dynamic image)
Accuracy*	≤ 0.5%
Repeatability*	≤ 0.5%
Number of size classes	100 (adjustable)
Main device	
Optical system	Laser diffraction system
Laser	10 mW, 635 nm
Detector	92 detectors
Measuring angle	0.016 - 165°
Alignment	Automatic
Dynamic imaging module	
Optical system	Dynamic imaging system
CMOS camera	0.5× and 10×
Measuring range	2 - 3,500 μm
Frame rate	70 fps at 5 MP
Compliance	
Laser	Class 1 (IEC 60825-1 and 21 CFR 040.10)
Regulatory	RoHS, CE
Standards	ISO 13320, ISO 13322-2, USP <429>
Software	21 CFR Part 11
System	
Supply voltage	100 - 240 VAC, 50/60 Hz
Dimensions (L × W × H)	745 × 305 × 305 mm
Weight	33 kg
Computer configuration (recommended)	
Computer interface	At least two high-speed USB 2.0 and two USB 3.0 port required
Operating system	Windows 10 or higher
Hardware specification (recommended)	Intel Core i5 Processor, 16 GB RAM, 512 GB SSD, 1920 x 1080 (Full HD)

* Sample and sample preparation dependent

Bettersize

BETTER PARTICLE SIZE SOLUTIONS

Bettersize Instruments Ltd.

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