Liquid Process Sizer

The proven technique of laser diffraction for wet processes

MALVERN INSTRUMENTS

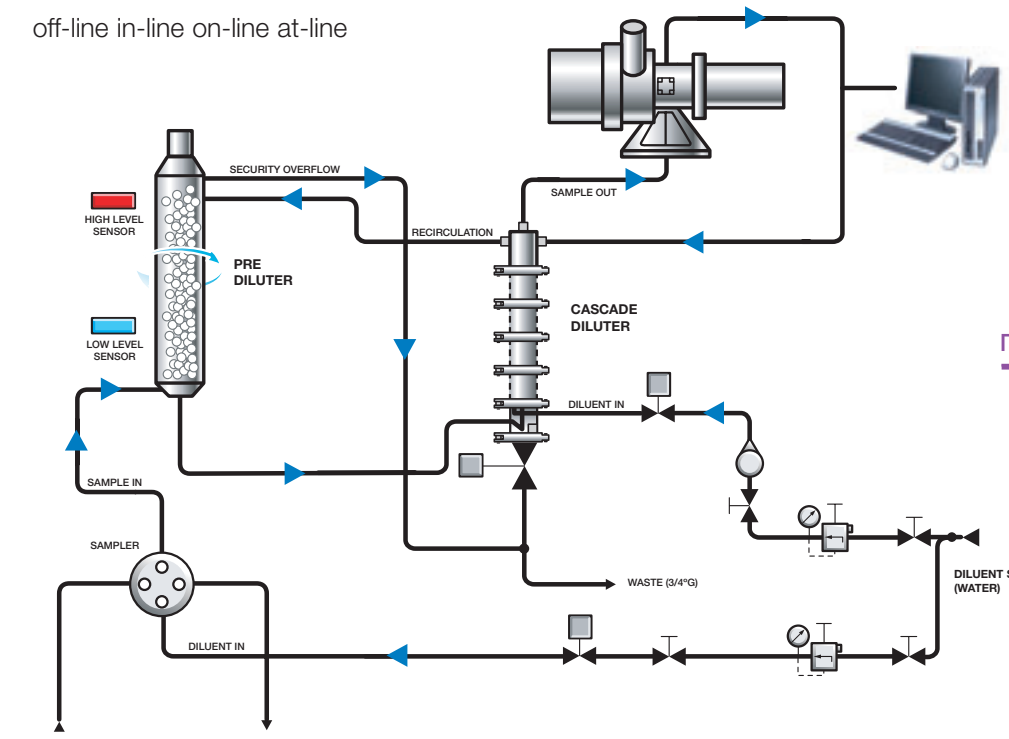
Proven technique, robust design, adapted for your needs

Laser diffraction is the main industry standard method for measuring the particle size of slurries and suspensions. Where process control optimization is vital to increase profitability, process stream analyzers must be reliable, robust and deliver results in a timely fashion. Across the range of throughput from human pharmaceutical production to industrial mineral supply, the Insitec LPS can bring all the benefits of real time particle size analysis and process feedback to the most physically demanding environments.

Malvern Instruments can engineer, deliver and support a system to suit your requirements. Every component from sampler, pre-diluter, cascade diluter and sensor through to the software can be specified according to your needs.

The analysis you want – where you want it.

off-line in-line on-line at-line



Data Processing

Measurement

Automated Sampling

Pre-dilution

Cascade dilution

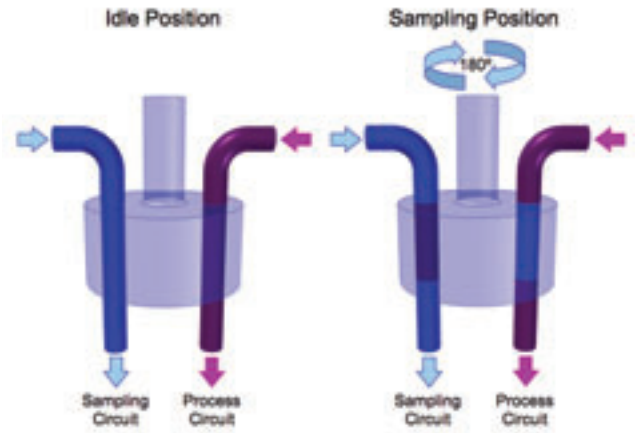
Sampling

A cross cut sampling valve (choice of sample cuts from 0.98, 1.4, 1.9 and 2.5cc) with pneumatic actuator and electrical control solenoid ensures flexible and reliable valve operation.

The process flow is always kept moving so that the sample is as fresh as possible.

The sampling system also incorporates a diluent control valve with pneumatic actuator, electrical control solenoid, diluent flow control components and position confirmation sensors for the actuator.

All parts and seals in contact with the process flow are manufactured in SS316 and PTFE to maximize resistance to corrosion.

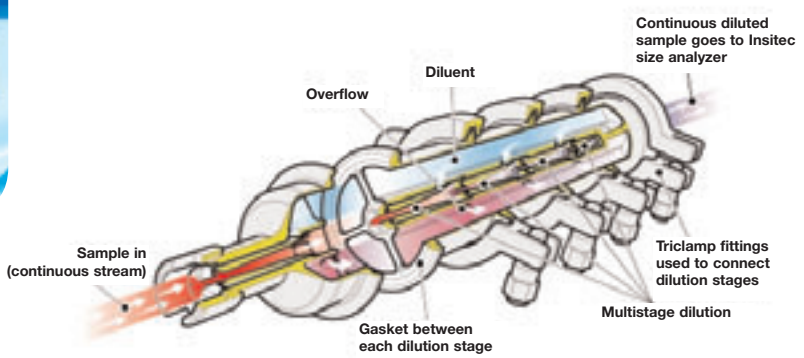


Pre-dilution/dispersion

The pre-diluter provides initial dilution and pre-dispersion of high concentration samples extracted from the process.
It comprises a 500 cc to 2000 cc glass dilution chamber, stirrer assembly with pneumatic motor and control components to ensure homogenization and adjustable high and low level sensors to control dilution volume.
The sample preparation reduces viscosity and process pressure to deliver a homogeneous mix, irrespective of the process conditions to the cascade diluter for final dispersion and dilution stages before analysis.

Cascade dilution

The pre-diluter and patented cascade diluter work together to bring the sample to an optimal concentration for analysis whilst avoiding dilution shock. These self-cleaning components have few moving parts and are designed to minimize diluent consumption. Consistent dilution is achieved efficiently without manual intervention.
The design is based on a coaxial venturi producing a pumping effect of about 0.5 bar at the input. The dilution ratio is determined by the number of stages and the size of the internal flow nozzles. The diluter is supplied with four stages and three sets of nozzles to allow configuration based on the maximum anticipated particle size, the dilution ratio required and the optimum consumption of diluent.



Insitec LPS

Advanced process analysis made easy

Minerals

By analyzing feed to high gradient magnetic separation circuits, cyclone under-performance can be quickly identified. This means less plant down time, increased efficiency and productivity.

Ceramics

Taking advantage of gradual dilution and an analyzer which operates reliably 24 hours every day without blocking means that every batch can be right first time to save time, energy and costs.

Toners

Whichever method of toner manufacture is used – pulverization, suspension and emulsion polymerization or other chemical process – accurate control of toner particle size is essential to guarantee product performance for the end user.

Emulsions

Across food, dairy, cosmetics and pharmaceuticals, the droplet size of finished product is a critical end point. Insitec can monitor homogenizer performance in real time. Any shift in particle size can be identified and the process control systems adjusted to correct the drift as soon as possible.

Features/Models Definition	In Line	On Line	At Line	Off Line
Process Interface kit	✓	✓	None	None
Prediluter	None	✓	Option	None
Cascade Diluter	None	✓	✓	✓
Insitec L - RTSizer Software	✓	✓	✓	✓
Insitec cell wiper kit	✓	✓	✓	✓
OPC server - RTSizer & Malvern Link	Option	Option	Option	Option
Malvern Link - User Interface	✓	✓	✓	None
Malvern Link - Plant Control Interface	✓	✓	✓	None
Equipment Frame	✓	✓	✓	✓
Automation & Controls	✓	✓	✓	None
Large Particle & Low Concentration kit	Option	Option	Option	Option

Overview — Insitec

Specification	
Particle size range:	0, 3 µm to 1000 µm
Materials	316L for all metallic parts, with high grade finish sapphire windows (flow cell)
Fittings	Triclamped for simplified cleaning
Transmission	30-98% (application dependent)
Accuracy	±2% on Dv(50) reported
Water requirements	Min 2 litres/min/cycle - Max 10 litres/min/cycle during measurement at 2 bars/bubble free if possible
Air requirements	2 bars oil/water/dust free
Industrial protection	Dust-tight and waterproof: Optical head IP66, cabinets IP65

Malvern Instruments Limited

Enigma Business Park • Grovewood Road • Malvern • Worcestershire • UK • WR14 1XZ

Tel: +44 (0)1684 892456 • **Fax:** +44 (0)1684 892789

Malvern Instruments Worldwide

Sales and service centres in over 50 countries for details visit www.malvern.co.uk/contact

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detailed specifications at www.malvern.co.uk