

Acoustic Particle Sizing for Process Online Monitoring and Control

Industrial Process Control and Monitoring

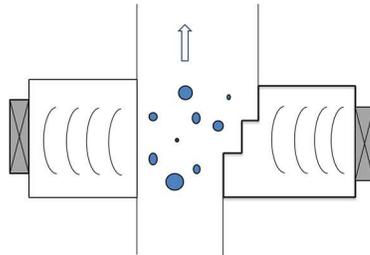
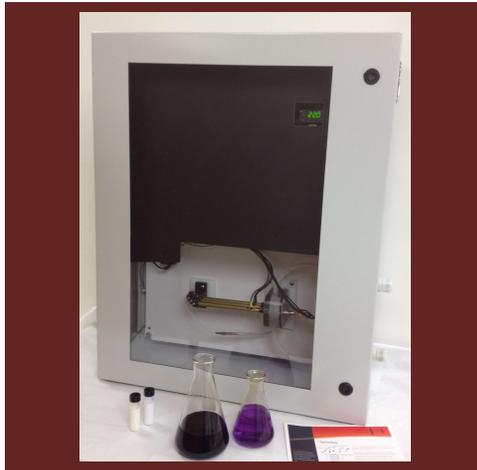
Particle Size Distributions measured at Process Conditions via Online Acoustic Attenuation Spectroscopy allow considerable economic benefits in various industrial scenarios.

Wide Application

Can be used in numerous industrial and academic settings such as Semiconductors, Paints, Pigments, Inks, Pharmaceuticals, Biotech, Catalysts, Petroleum, etc.

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Mass Applied Science (MAS) is pleased to unveil a new Acoustic Particle Sizing sensor for monitoring and control of wet slurry/colloidal products including Semiconductor Chemical Mechanical Polishing (CMP) slurries, inks, paints, pigments, ceramic slips, catalysts, emulsions (including Petroleum related), pharmaceuticals, and Food- and Bio-colloids. This Acoustic sensor does not use moving parts and measures slurries in their process state, i.e. without requiring dilution, a major need for these large industrial markets.

- Patent-Pending Process
- Online Particle Size Measurement.
- Industrial Process conditions, i.e. without the need for sample dilution.
- 24/7 operation through hardware design without moving parts.
- Fast measurement for Real-Time Control.
- Designed by Ultrasonic Measurement Experts.

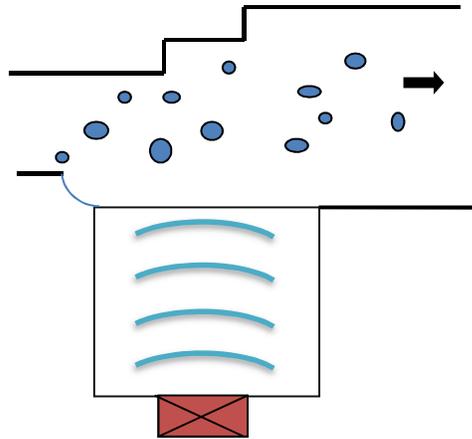
This new Acoustic Sensor can be installed on numerous industrial-production points such as process pipes, chemical reactors, ceramic-tile printing devices, semiconductor CMP polishing, Oil Production/Processing, Pharmaceutical delivery systems, etc. while providing significant economic benefits.

MAS' patented Lab-based Acoustic Particle Sizing instruments are currently in use in industry and academia.

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Technology



MAS' patent-pending acoustic sensor provides acoustic attenuation spectroscopy measurements without sample dilution and without the use of moving parts.

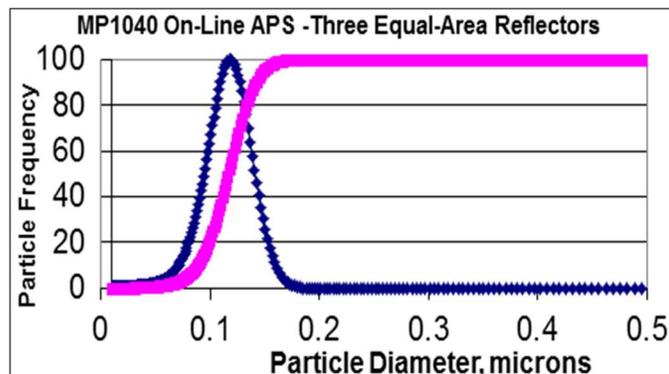
Typical lab-based acoustic-attenuation instruments use a high-resolution motion stage in order to measure undiluted attenuation at multiple gaps within the sample (this allows broadband acoustic measurements for enhanced particle size distribution data). However, the use of moving parts is not desirable for continuous operation.

MAS' acoustic sensor achieves successful continuous operation by splitting sound waves via multiple steps on acoustic reflectors and transducers. A patented algorithm produces Particle Size Distribution data from the acquired acoustic attenuation spectrum.

The figure above shows a patent-pending Acoustic Reflection Particle Analysis (AREPA) sensor. The blue dots represent flowing particles in a liquid.

Particle Size Data

The figure below presents data from a Process Online Acoustic sensor (AREPA). The sample in question is Nissan Chemical silicon dioxide in water with a nominal mean particle size of 110 nm. The data below agrees well with this nominal particle size.



Measurements Provided

- Particle Size Distribution
- Mean Particle Size
- Particle Size Percentiles
- Temperature
- Attenuation and Sound Speed Spectra
- Optional pH, and Conductivity

Implementation

This Acoustic sensor measures flowing samples such as those in industrial pipes, chemical reactor loops, ceramic tile printers, Semiconductor Polishing Tools, etc.

Data

Particle Size Distribution (PSD), Percentiles, Temperature, pH and Conductivity (optional), Attenuation and Sound Speed Spectra. Any of these are readily available as set points.

Technical Support

Mass Applied Science is pleased to provide free unlimited lifetime technical support on all of its products.

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