DFMC

PSI

Online Diameter-measuring Particle Size Analyzer

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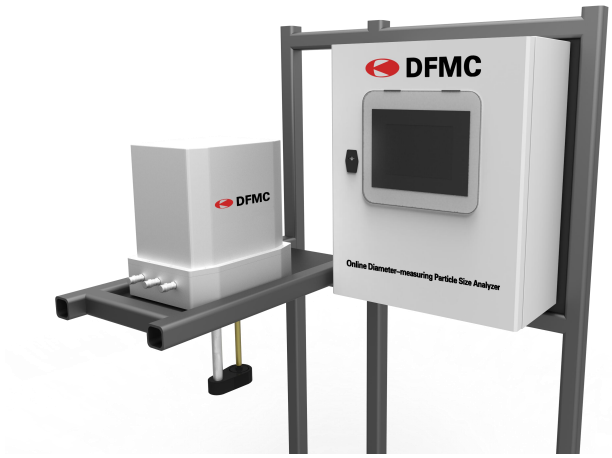
PSI Online Diameter-measuring Particle Size Analyzer

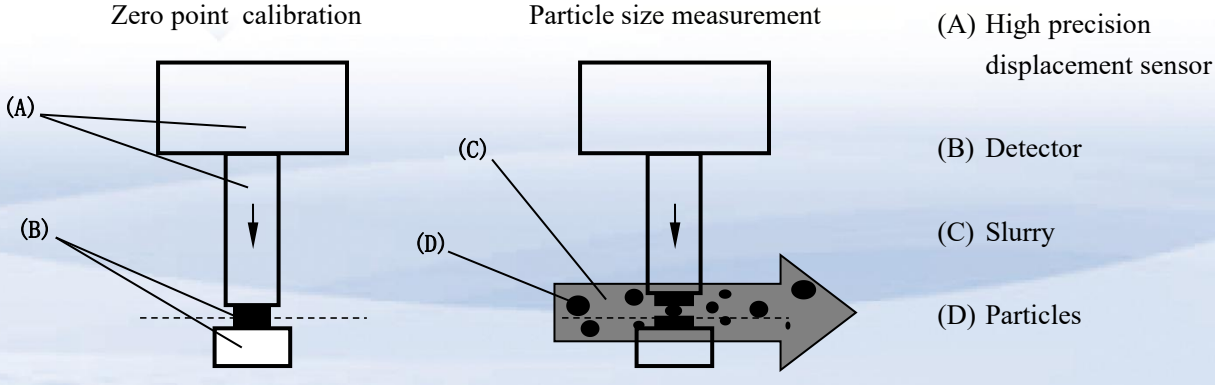
I. Product Overview

PSI Online Diameter-measuring Particle Size Analyzer (PSI) is an online smart industrial instrument to measure particle sizes in an automatic and real-time mode. It consists of three parts -- main control box, detector and installer. PSI directly measures microcosmic approximate diameter of particles by high precision displacement sensor, then, it makes statistical analysis on measurement results. It has strong adaptability in applications. The measurement result is intuitional, stable and reliable.



II. Operating Principle

PSI chooses certain amount of particles randomly from representative materials and measures microcosmic approximate diameter through a high precision displacement sensor. The diameter of particles clamped by the sensor will be transferred into electric signal, after CPU obtains enough amount of particle diameter information, the statistical characteristic value can be get through statistical analysis. Input the statistical characteristic value into calibrated particle size analytical model and calculate to get the final particle size value of samples.



III. Product Features

- Strong environment adaptability

The detector of PSI is made of heat-resistant material and corrosion-resistant material. It has low requirements on environment and can adapt to harsh industrial environments, for example, high-temperature environment (≤90°C) and highly corrosive environment (alkali).

- No special requirements on composition of measured materials

1. Not influenced by bubbles: PSI is not sensitive to bubbles in measured materials;
2. Less affected by large particles: PSI has low requirements on the content of large particles in measured materials. A few large particle impurities in the materials will not influence PSI obviously.
3. Not influenced by magnetic disturbance: PSI is not sensitive to magnetism of measured materials; the detector of PSI is made of weak-magnetism materials, measured materials need not be demagnetized in advance.

- Wide range of particle size measurement

After one single-model calibration is conducted on PSI, particle sizes can be measured within particle size span range of 20% (min) to 60 % (max).

- Wide size fraction span

PSI is able to measure particle sizes within the range of 20μm (min) to 1000μm (max).

IV. Technical parameters

Operating mode	
Operating principle	Directly measures the microcosmic approximate diameter of particles
Measurement function	
• Particle size	Microcosmic approximate diameter of particles
Measurement object	Particles
Performance	
Stream amount	Single stream

Measuring size fraction	2
Nominal measuring particle size interval for each size fraction (%)	μm：-75 ～ -850（目：200 ～ 20）：20 ～ 80 μm：-45 ～ -75（目：325 ～ 200）：30 ～ 70 μm：-25 ～ -45（目：500 ～ 325）：70 ～ 95
Absolute error (1σ)	1 ~2%
Particle size range	20 ~ 1000(μm)
Output	
Analog output	
• Signal	4 ~ 20mA
Nominal operating conditions	
Protection level	Detector：IP65　Main control box：IP54
Ambient environment	
• Ambient temperature	0 ~ +50℃
• Ambient humidity	0~95% relative humidity（non-condensing）
Medium condition	
• Temperature	1 ~ 90℃
• Pressure	86 ~ 106KPa
• Flow speed	1 ~ 8m/s
Display & Control	
Monitor	Industrial tablet PC
Display mode	Real-time data or curve mode
Programming	
• PC	Self developed PSUI provides functions such as real-time data curve display, storage, history inquiry and parameter setup, etc.
Power supply	
AC	220V AC ±15%, 50Hz, 50W

Note：Product technical parameters provided above are standard type, practical information shall subject to real conditions at site.

V. Applications

PSI is mainly used for particle size measurement. It is able to analyze particle sizes of hard particles in solid-liquid pulp with flow ability. PSI are mainly used for the following industries:

1. Ore dressing industry

Particle size is an important technical index in ore dressing industry, which has direct impact on energy consumption, efficiency, percent of pass and quality of finished products, etc. During ore dressing process, PSI can be used for ore grinding and dressing fields in the following industries: basic metal industry, ferrous metal industry, industrial mineral industry, gold industry, etc.

PSI at mill discharging in a gold processing plant

2. Chemical industry

PSI can be used for measuring the content of solid impurity in chemical materials or finished products. PSI is made of corrosion-resistant material and can be used in most highly-corrosive environments.

PSI at cyclone overflow

PSI at cyclone overflow in a bauxite processing plant

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