ON-LINE SOLIDS MASS FLOW METERING SYSTEM

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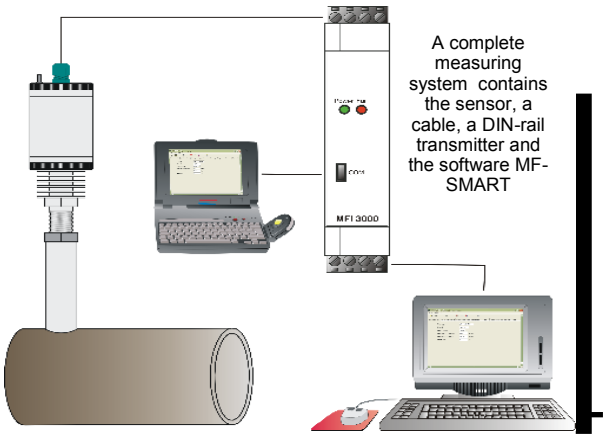
GREENBANK ENERGY SOLUTIONS
GESI PULVERIZED SOLIDS FLOW METER

It is well known in the power industry that poor PF distribution between the fuel pipes feeding the furnace have resulted in a range of operational problems. These include burners operating off design specification either fuel rich or lean, heavily loaded PF pipes surging or even plugging, uneven and accelerated wear on PF equipment, and flame impingement on furnace walls causing wall corrosion. The mass flow rate of PF in each feed pipe is known to be crucial parameters influencing the operation of pneumatic conveyors, combustion efficiency and atmospheric emissions of the plant. These parameters should ideally be measured and subsequently controlled to achieve fully balanced and optimal PF supply to the furnace.

Features of On-Line Mass flow measurement

- For pneumatic conveyed feed systems and free falling processes
- Solids flow from a few lbs/h to many t/h including adjustable sensitivity
- Non-intrusive with the Sensor fitting flush to the inside of the pipe
- Optional: ATEX for Zone 20 and Zone 2
- Very fast and contactless measurement with easy and quick calibration
- Easy, quick and cost effective installation and start-up
- Galvanic separated DIN-Rail Transmitter with RS232- and RS485-Interface
- Robust stainless steel version, abrasion and maintenance free
- Sensor-transmitter distance up to 2.000 m
- Latest microwave Doppler effect technology accuracy typical 1 to 3%
- Very fast continuous and contactless measurement



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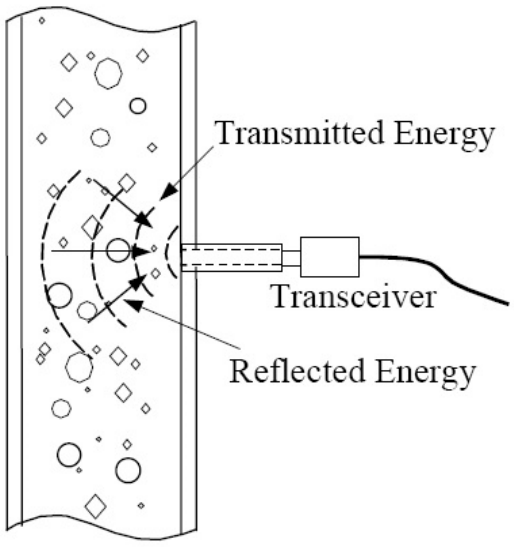

Greenbank's mass flow measurement technology uses a small microwave transmitter / receiver device, or *transceiver*, which injects low-power microwave energy into the flow field via a non-intrusive probe and detects the signal back-scattered or Doppler effect from the moving particles within the sensing field. This return signal is then used to analyze and determine the concentration of solids. Since only moving particles are detected, the system is insensitive to stationary particles. The main advantage of this design is its straight forward and efficient installation. To ensure the highest quality measurement and full coverage of the entire pipe cross section, Greenbank offers multiple transceivers axially separated for 12 inch ID and Larger applications. The Greenbank mass flow measurement technology is based on technology that has been developed and proven by Mütec over several years of industrial service.

Other applications

Limestone injection

Iron Sulfate

Process Data	
Pipe diameter:	1" to 12" ID for a single probe +12" ID multiple probes
Particle size:	.001 micron to 0.75"
Moisture:	Depending on the product
Pressure:	Up to 6 bar (Option up to 30 bar)
Temperature:	-4 to +194°F (Higher temperatures on request)
Sensor Data	
Probe Shaft: Housing material:	304 SS (1.4307) or 316 SS (1.4571) and polyamide 6.6 304 SS (1.4307) or 316 SS (1.4571)
Protection class:	IP 65
Sensor Dimensions:	11.06"L x 2.36"W x 2.36"H
Accuracy:	1 to 3% typical
Power:	Via transmitter
Interconnection:	4 wires, shielded, RS-485, 3280 ft (1000m) max
Transmitter Data	
Construction:	DIN-Rail, 22.5 mm
Input power:	24 V AC/DC (Power supply ordered separately)
Power consumption:	Max. 2W (+0.3 – 8.5W for thermo-couple)
Ambient temperature:	-4 to +140°F
Protection class:	IP 30
Output signal:	0/4-20 mA (max. 750 Ohm); 0/2-10 Volt
Interfaces:	RS-232, RS-485

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