



PIQ Ultrasonic Density Meter

NON-NUCLEAR DENSITY AND FLOWRATE MEASUREMENT

OVERVIEW

The PIQ Ultrasonic Density Meter provides real-time slurry density measurements using ultrasonic (non-nuclear) technology.

Traditionally the mining industry have used expensive and dangerous nuclear density gauges containing radiative sources which are difficult to service and maintain.

The PIQ Ultrasonic Density Meter is non-nuclear and uses a Sintered Silicon-Carbide sensor (SSiC) which provides the best acoustical physical properties, and the highest degree of hardness, ensuring outstanding abrasion resistance for even the most demanding applications in minerals processing.

Ultrasonic Spectroscopy

Ultrasonic spectroscopy is the science of studying the behaviour of the propagation of ultrasonic waves due to changes in the environment. In most cases ultrasonic (high frequency sound) pulses are shot into a material and the returning echoes are evaluated in a computer.

The PIQ Ultrasonic Density Meter studies the behaviour of the ultrasonic wave for determining the properties of fluids, such as density, specific gravity and temperature etc.

The measurement principle involves introducing high energy pulses into a piezo element, creating ultrasonic waves which propagate through a ceramic element and into a slurry stream. The reflections from the interface between the element and the slurry are measured and used to calculate the density and temperature of the slurry.

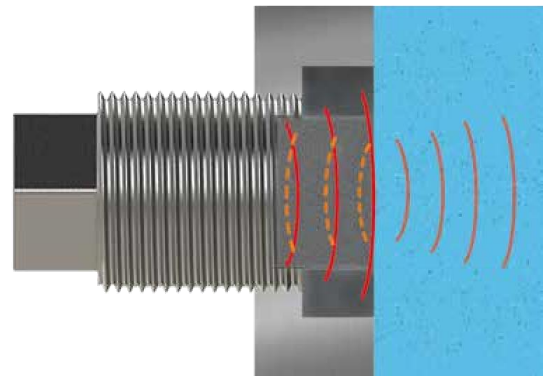
APPLICATIONS

Current applications for ultrasonic density measurement technology include:

- All pastes, slurries, and liquids – tanks, open channels and pipes
- Magnetic slurries
- 80% of particle PSD < 1 mm
- Dredging
- Tunnelling (bentonite)

BENEFITS

- Non-nuclear technology
- Easy installation and maintenance
- Fast and accurate measurement suited for Process Control and Optimisation
- Abrasion resistant sensors
- Inline pipe or submersible applications
- Expandable - add flow sensor to measure mass flow
- Can be used in high temperature streams
- Minimal calibration required
- Offers a small installation footprint area
- Consumes very little power



COMPONENTS



The PIQ Ultrasonic Density **Transmitter** consists of unsurpassed digital signal processing on board technology and is considered one of the industry's fastest and can measure up to 1000 complete cycles per minute.



For slurry line applications, an inline **sensor** can be fit into the pipe. The sensor is specially made to fit into a spool piece for this application



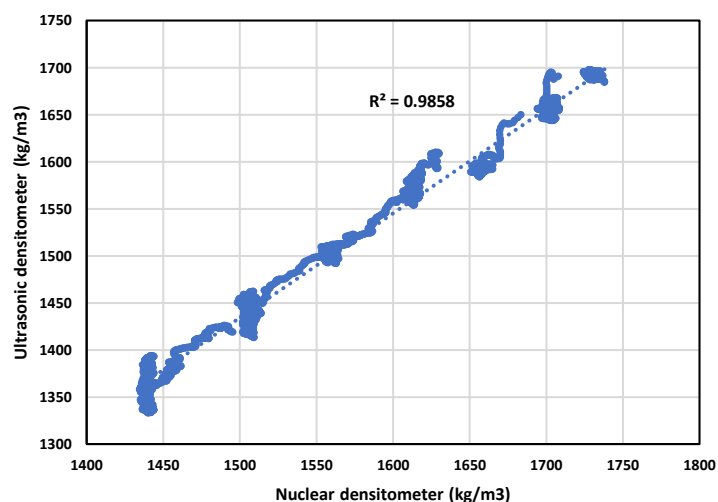
The PIQ Ultrasonic Density **Analyser** uses open calculations to compute the SG, density, suspended solids concentration, temperature, flow, mass flow and tonnage. These are all trended on an HMI interface.



The PIQ Ultrasonic Density **Probe** consists of a sintered silicon carbide ceramic tip, maximising abrasion resistance and acoustic sensitivity.

COMPARISON - Ultrasonic vs Nuclear

In a recent test trial, the PIQ Ultrasonic Density Measurement technology showed good comparison (right) with a nuclear density gauge. Further results and details of this trial are available upon request.



Process IQ Pty Ltd

Unit 1 / 23 Gibberd Road, Balcatta, WA6021 Western Australia
Tel: +61 (0)8 9240 4357 | +61 (0) 407 851 679 | Fax: +61 (0)8 6316 0486
Email: admin@processIQ.com.au

www.processIQ.com.au

Publication No: PIQ-DENSITY-BR001-EN May 2020



PROCESS IQ