Pundit PL-200/PL-200PE

The Pundit PL-200 and PL200PE continue the illustrious Pundit tradition that began in the 1970s. The first to use a new generation touchscreen display unit. The Touchscreen unit can control conventional Ultrasonic Pulse Velocity Transducers as the PL-200 and the Pulse Echo Transducer as the PL200 PE.

The world known Pundit range offers users a reliable and accurate method for determining the sonic properties of materials.

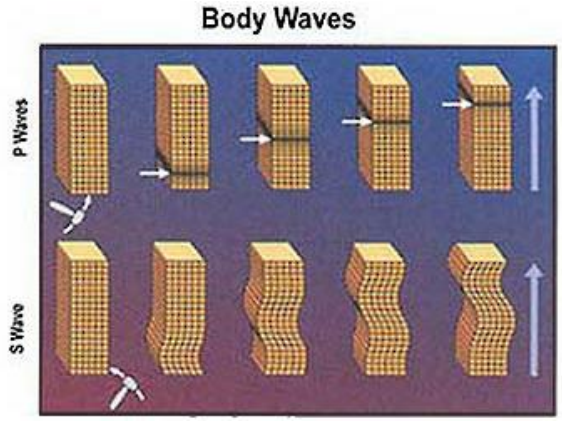
The pulse velocity in a material depends on its density and its elastic properties. These in turn are related to the quality and the strength of the material.

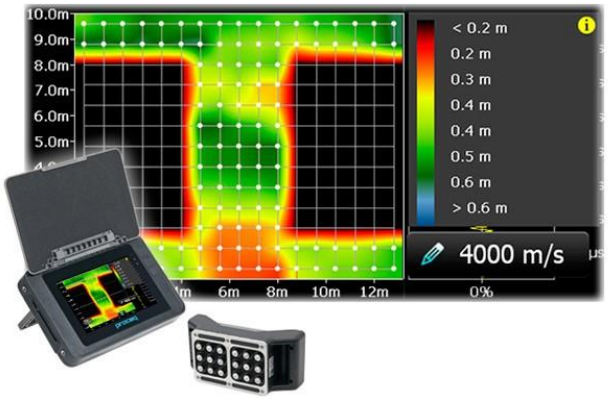
Materials

An essential tool for investigating a wide range of materials. Including Concrete, Ceramics and Refractories, Timber and many others.

Stress Waves

Ultrasonic testing is sub section of stress wave testing. The main characteristics of stress waves in a material are their frequency and the type of wave measured. The correct choice of frequency is based upon the material being tested. Coarse grained concrete responds better to a lower frequency. Fine grained mortars or rock works better with higher frequencies. The two test methods offered by the Pundit use of either compression waves [P waves] or shear waves. The particle motion associated with compression waves can be described as vibration parallel to the direction of wave travel, much as a sound wave. The particle motion associated with shear waves can be described as vibration perpendicular to the direction of wave travel.





Applications

Ultrasonic testing can be used for:

- The homogeneity of a material
- The presence of voids, cracks or other internal imperfections or defects
- Changes in the concrete which may occur with time (i.e. due to the cement hydration) or damage from fire, frost or chemical attack
- The strength or modulus of a material
- The quality of the concrete in relation to specified standard requirements
- Single sided thickness measurement
- Poisson's ratio and E modulus calculation

Features

- Housing specially designed to be used on-site in harsh environments
- Screen with highest resolution and sharpest image available in the market allowing best possible analysis of the measured waveforms
- Settings directly accessible on measuring screen
- On board storage and review of waveforms
- Automatic and manual triggering and user adjustable trigger threshold
- Gate function on UPE results to focus on critical testing regions.
- Modular concept: Expandable with all Proceq Pulse Velocity and Pulse Echo transducers, upcoming Pundit ultrasonic products will be directly compatible.
- Time based data logging for short term monitoring

Pundit PL-200/PL-200PE

Ultrasonic Pulse Echo Method

The Pulse Echo technology widely extends the application range of the Pundit Touchscreen Unit and offers a variety of special features:

- Single side determination of slab thickness
- Detection and localization of voids, pipes, cracks (parallel to surface) and honeycombing
- Advanced echo tracking technology helps identifying the main echo
- Control buttons and optical feedback directly on the probe increase measurement efficiency
- Easy B-Scan measuring through centre marker and rulers directly on the probe
- Dry-contact transducer: no couplant required, suited for measuring on rough surfaces
- Lightweight and ergonomic handling

Pulse Echo Transducer

The Pulse Echo transducer is a shear wave transducer designed for single-handed and two-handed operation. It is particularly suited to testing where access is limited to a single side.

Scan Modes

B-Scan

- A cross-sectional view perpendicular to the scanning surface is provided. It facilitates the search for pipes, cracks, voids, etc.
- State-of-the-art image processing for improved image quality.
- Cursor placement allows a direct readout of the slab thickness and the location of hidden objects or defects.
- In this example a B-Scan of a concrete object containing steel pipes.

A-Scan

- A-Scan allows direct analysis of the raw signal. Digital filters for better echo visibility and noise suppression.
  Automatic readout of slab thickness (Echo tracker).

Area Scan

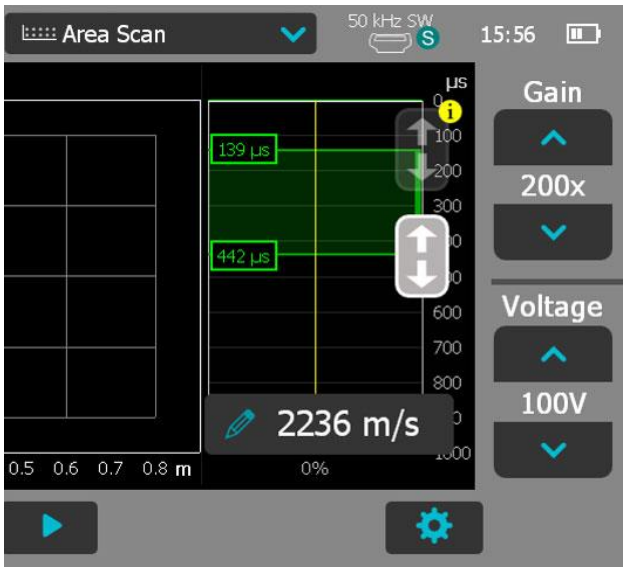
- Contour map of results over a concrete surface, either Velocity or thickness values can be mapped.
- A gate function can focus the results in the region of most concern such as reflections from the back of a tunnel grout layer.

Transducer Specifications

Bandwidth	50 kHz
Aperture Size	2 x 25 cm^2

Test Subject Limitations

Wavelength	50 mm
Maximum Grain Size	50 mm
Minimum Lateral Depth	2 x Thickness
Penetration Depth	500 mm (up to 1 m ideal)
Minimum object detectable	30 mm cylindrical air pocket



Pundit PL-200/PL-200PE

Ultrasonic Pulse Velocity Testing

The Pundit PL-200 system is also fully compatible will all Proceq Ultrasonic Pulse Velocity Transducers.

Form Supplied

Pundit PL200 comes standard with:

- Pundit Touchscreen
- 2 Transducers 54 kHz
- 2 BNC cables 1.5m, BNC Adapter Cable
- Couplant
- Calibration Rod
- Battery Charger, USB cable
- DVD w. Software, Documentation, Carrying Strap, Case

Pundit PL200PE comes standard with:

- Pundit Touchscreen
- Pundit Pulse Echo Transducer incl. cable
- Contact tester
- Battery charger, USB cable
- DVD w. software, Documentation, Carrying Straps, Case

Technical Specifications

Range	0.1-7930 µs
Resolution	0.1 µs (< 793 µs), 1 µs (>793 µs)
Display	7” Colour, 800 x 480
Pulse Voltage	100 – 450 Vpp
Bandwidth	20 – 500 kHz
Receiver Gain	1X – 10,000X (0-80dB) 11 steps
Memory	8 GB Flash memory, storage of up to 100,000 A-Scans
Battery	Lithium Polymer, 3.6 V. 14.0 Ah
Battery Lifetime	>8h (in standard mode)
Operating Temperature	0^{o} > 30^{o} (Charging, operating) 0^{o} > 40^{o} (Charging, Off) -10^{o} > 40^{o} (Not Charging)
Humidity	< 95% RH, non-condensing
IP Classification	IP 54

About PCTE

PCTE have over 30 years’ experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclinometers, Extensometers, Tiltmeters, Load Cells and Dataloggers