Pundit®
Portable Ultrasonic Pulse Velocity Testing
Constantly Innovating
Inspection Objectives

As-built verification
Contractors and engineering offices

Integrity assessment
Engineering offices

Material characterization
Geologists and educational institutes
UPV Technology

<table>
<thead>
<tr>
<th>Good concrete quality</th>
<th>Poor concrete quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000 m/s</td>
<td>3000 m/s</td>
</tr>
<tr>
<td></td>
<td>Void - 3500 m/s</td>
</tr>
<tr>
<td></td>
<td>Crack - 3500 m/s</td>
</tr>
</tbody>
</table>

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Technology

54 kHz for concrete quality

Exponential for special surfaces (e.g. round, uneven, rough)
Industry Pain Points

- Incomplete offering
- Difficult to use
- Poor consistency
Pundit UPV Portfolio

Pundit Lab

Quality, crack depth, E-modulus, data logging

Pundit Lab+

Compressive strength

Pundit 200

On-site, waveforms, scanning
Pundit Probes
## Concrete Transducer Portfolio

### Transducer Specifications

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Application</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 kHz</td>
<td>Mass concrete</td>
<td>&lt; 15 m</td>
</tr>
<tr>
<td>54 kHz</td>
<td>Most applications</td>
<td>0.5 – 7 m</td>
</tr>
<tr>
<td>150 kHz</td>
<td>Small objects</td>
<td>0.5 – 1 m</td>
</tr>
</tbody>
</table>

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Specialist Transducer Portfolio

54 kHz
Exponential

250 kHz

500 kHz

40 kHz
Shear wave

<table>
<thead>
<tr>
<th>Rough surfaces</th>
<th>Cores</th>
<th>Small samples</th>
<th>E-modulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>Refractory bricks</td>
<td>Ceramics</td>
<td>Concrete Rock</td>
</tr>
<tr>
<td>Rock + Wood</td>
<td>Fine grained rock</td>
<td>Very fine grained rock</td>
<td></td>
</tr>
</tbody>
</table>

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Dry-Point Shear Wave Transducer for E-Modulus

Automatic triggering

No couplant required:
Why Measure E-Modulus?

Concrete

Resistance to deformation from loading

Rock

Classification of rock cores
ASTM + ISRM
E-Modulus Determination from UPV

Easy to measure:

P-Wave
m/s

Difficult to measure:

S-Wave
m/s

E-Modulus
GPa
Current Solutions

Messy

Two persons (manual trigger)
Dry-Point Shear Wave Transducer

Clean

One person (automatic trigger)
Superior Measurement Results

Proceq dry-point shear wave transducer

Automotive trigger
Consistent and repeatable results

Standard S-wave transducer

Subjective trigger, difficult interpretation
Inconsistent results
Pundit Platforms

Pundit Lab / Lab+
Optimized for laboratory

Pundit 200
Optimized for site
Pundit Lab

- Waveform on PC / oscilloscope
- USB-powered device
- Third party remote control e.g. for in-line inspection or supervisor control
Pundit Lab Icon-Based Screen

Parameter settings

Pulse velocity measurement
Crack depth measurement
Pundit 200 Touchscreen

- Rugged IP54
- High resolution
- UPV and Pulse Echo
Full Control of Test Parameters

Complete parameter overview

Live signal strength adjustment

Full triggering control
Spotlight: Compressive Strength

- Custom curves
- Correlate to UPV
- Combine UPV with rebound number (SONREB)
Spotlight: Area Scanning

- Thickness variations
- Quality variations
- Clear display of results
Spotlight: Strength Development

- Concrete curing
- Verification of mix design
- Programmable intervals
Spotlight: Concrete Cracking

- Crack depth
- Simple procedure
- Instant results
Report Generation in Link Software
Global Standards Conformity
## Product Pricing

<table>
<thead>
<tr>
<th>Feature</th>
<th>Pundit Lab</th>
<th>Pundit Lab+</th>
<th>Pundit 200</th>
</tr>
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<tbody>
<tr>
<td>Lab optimized</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site optimized</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressive strength + SONREB</td>
<td></td>
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<tr>
<td>Area and line scans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatibility with pulse echo and array transducers</td>
<td></td>
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</table>
## Probe Pricing

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<th>Frequency</th>
<th>P-wave</th>
<th>S-wave</th>
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<td>24 kHz</td>
<td><img src="24khz_p-wave.png" alt="Image" /></td>
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Pundit®
Portable Ultrasonic
Pulse Velocity Testing

Pricing is subject to change. Features are subject to change. Tablet or smartphone not included in offerings. Additional fee may apply. General terms and conditions of sale and rental apply, see: www.proceq.com/service