**Instrumented Hoek Cell (GDSIHC)**

A highly sophisticated, research focused, version of the traditional Hoek cell that can be fully instrumented. With 70MPa cell pressure and maximum loads up to 2MN.

The GDS Instrumented Hoek Cell uniquely combines the measurement versatility of a high pressure triaxial cell with the compact size, simplicity, ease of use and high testing throughput of a traditional Hoek-Franklin type cell.

<table>
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<th>Key Features:</th>
<th>Benefits to the User:</th>
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<td>Fixed Core Sleeve:</td>
<td>The core sleeve can be left in place for multiple samples. Subsequent tests can be performed with minimal preparation and set-up time.</td>
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<td>Top cap and pedestal drainage lines:</td>
<td>Samples can be saturated and permeability tests carried out.</td>
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<td>Electrical Feedthroughs as standard:</td>
<td>Up to 18 electrical feedthroughs to allow internal sensors to be used, also 18 channels are user configurable to any of the following: single 50Ohm coaxial, triple 50Ohm coaxial or 5 pin.</td>
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<td>Hardened Stainless steel topcap:</td>
<td>Can be used with saturated samples, also reduces corrosion to the cell, especially with temperature upgrades.</td>
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| Optional Acoustic Velocity System: | • Measure vertically propagating P-, S1- and S2- waves  
• Horizontally propagating P-, S1- and S2- waves to two directions |
| Optional Passive and Active Mode Acoustic Emission sensors: | Hit counter: logs the number of AE events only  
• Passive Mode: AE monitoring and event localisation  
• Active Mode: For Velocity Tomographic Surveys |
| Optional Environmental Control: | Temperature controlled testing to either:  
• Ambient to +100°C  
• -20°C to +85°C  
• In cell temperature monitoring in up to three locations |
| Local Strain Measurement: | Cantilever sensors for measuring radial displacement |

**Tests that can be Performed:** Triaxial compression & permeability

**Upgrade Options:**
- GDS can offer the Instrumented Hoek Cell configured into a range of complete, automated turnkey systems that can include, load frames, pressure / volume controllers and transducers (load, pressure and displacement).
- Optional AE sensors up to 12 channels & optional AV Sensors Vertical and horizontally propagating
- Permeability upgrades
- Temperature control upgrades
- Local Strain Measurement

**Technical Specification:**

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<tr>
<td>Axial Load:</td>
<td>&lt;2MN</td>
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<tr>
<td>Pressure Range (MPa):</td>
<td>70</td>
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<tr>
<td>Specimen Size (mm):</td>
<td>38 x 76.2 and 50.8 x 101.6</td>
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<td>Weight (kg):</td>
<td>180</td>
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<td>Dimensions (mm):</td>
<td>381 diameter, 305 high</td>
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www.gdsinstruments.com
Aluminium Assembly Aid

Acoustic Velocity Transducers
Measuring Horizontally
Propagating P-, S1- and S2- waves to two directions. Vertical propagating P-, S1- and S2- waves also available.

High Pressure O-ring
with bonding ring

Passive or Active logging
Acoustic Emission Transducers
(Up to 12 sensors)

Radial Deformation
Transducer (Four Arm)

Up to 18 electrical feedthroughs to allow internal sensors to be used, also 18 channels are user configurable to any of the following: single 50Ohm coaxial, triple 50Ohm coaxial or 5 pin.

Lifting eyes

Pressure Release Valve

Cell Pressure

Valve Panel fitted with connections to allow saturation via topcap and pedestal.

Temperature Control Testing:
• Ambient to +100°C
• -20°C to +85°C
• In cell temperature monitoring in up to three locations

Optional Pore Pressure & Permeability connections.
Note: Additional pressure controllers would also be required for back & base pressure.

Stainless steel cell body

Drainage lines
Upgrade Option: Local Strain Measurement

The Transducer (sensor) is a strain gauge system used for measuring local radial deformation, either expansion or regression, of a sample.

The transducer is a 2 channel device (See “X” & “Y” in images above) consisting of 2 full Wheatstone bridges made up from two sets of opposing (0° - 180° & 90° - 270°) cantilever beams to measure the sample deflection across X & Y axis. Thus reducing the effects of bending within the sample.

The complete assembly is supported only by the on-sample mounts to allow and compensate for any translation movement of the sample.

This system plugs directly in to a dc voltage data logger such as the GDS 8 Channel Pad. This is a ratiometric mV/V transducer. We recommend 10V which will give approximately +/- 20 to +/- 22mV output. A third party data logger can be used instead as long as it is compatible.

The advantage over the stick on strain gauges used on basic Hoek Cells is as following:

1. The GDS transducer remains in the cell between tests – no need to fit an on sample instrumentation with every test.
2. The GDS transducer allows the diameter to be measured directly, rather than inferred from changes in circumference reading in the strain gauges.
3. The GDS transducers can easily be calibrated.
4. The GDS transducers is reusable. The stick on strain gauges are usually thrown away after one of two uses.
Why Buy GDS?

GDS have supplied equipment to over 84% of the world’s top 50 Universities:

GDS have supplied equipment to over 84% of the world’s top 50 Universities who specialise in Civil & Structural Engineering, according to the “QS World University Ranking 2019” report.

GDS also work with many commercial laboratories including BGC Canada, Fugro, GEO, Geolabs, Geoteko, Golder Associates, Inpijn Blokpoel, Klonn Crippen, MEG Consulting, Multiconsult, Statens Vegvesen, NGI, Ramboll, Russell Geotechnical Innovations Ltd, SA Geolabs, SGS, Wiertsema and Partners to name a few.

Would you recommend GDS equipment to your colleague, friend or associate?

100% of our customers answered “YES”

Results from our post-delivery survey asked customers for feedback on their delivery, installation (if applicable), supporting documentation, apparatus and overall satisfaction with GDS. The survey ran for two years.

Made in the UK:

All GDS products are designed, manufactured and assembled in the UK at our offices in Hook. All products are quality assured before they are dispatched.

GDS are an ISO9001:2015 accredited company. The scope of this certificate applies to the approved quality administration systems relating to the “Manufacture of Laboratory and Field Testing Equipment”.

Extended Warranties:

All GDS apparatus are covered by a 12 month manufacturers warranty. In addition to the standard warranty, GDS offer comprehensive extended warranties for 12, 24 and 36 months, for peace of mind against any repairs in the future. The extended warranties can be purchased at any time during the first 12 months of ownership.

GDS Training & Installation:

All installations & training are carried out by qualified engineers. A GDS engineer is assigned to each order throughout the sales process. They will quality assure the apparatus prior to shipping, if installation has been purchased, install the apparatus on the customers site & provide the training.

Technical Support:

GDS understand the need for ongoing after sales support, so much so that they have their own dedicated customer support centre. Alongside their support centre GDS use a variety of additional support methods including remote PC support, product helpsheets, video tutorials, email and telephone support.