



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.

Key Features:

Benefits to the User:

Fixed Core Sleeve:	The core sleeve can be left in place for multiple samples. Subsequent tests can be performed with minimum preparation and set-up time.
Top cap and pedestal drainage lines:	Samples can be saturated and permeability tests carried out.
Electrical Feedthroughs as standard:	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.
Hardened Stainless steel topcap:	Can be used with saturated samples, also reduces corrosion to the cell, especially with temperature upgrades.
Optional Acoustic Velocity System:	<ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Passive Mode: AE monitoring and event localisation • Active Mode: For Velocity Tomographic Surveys
Optional Environmental Control:	Temperature controlled testing to either: <ul style="list-style-type: none"> • 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

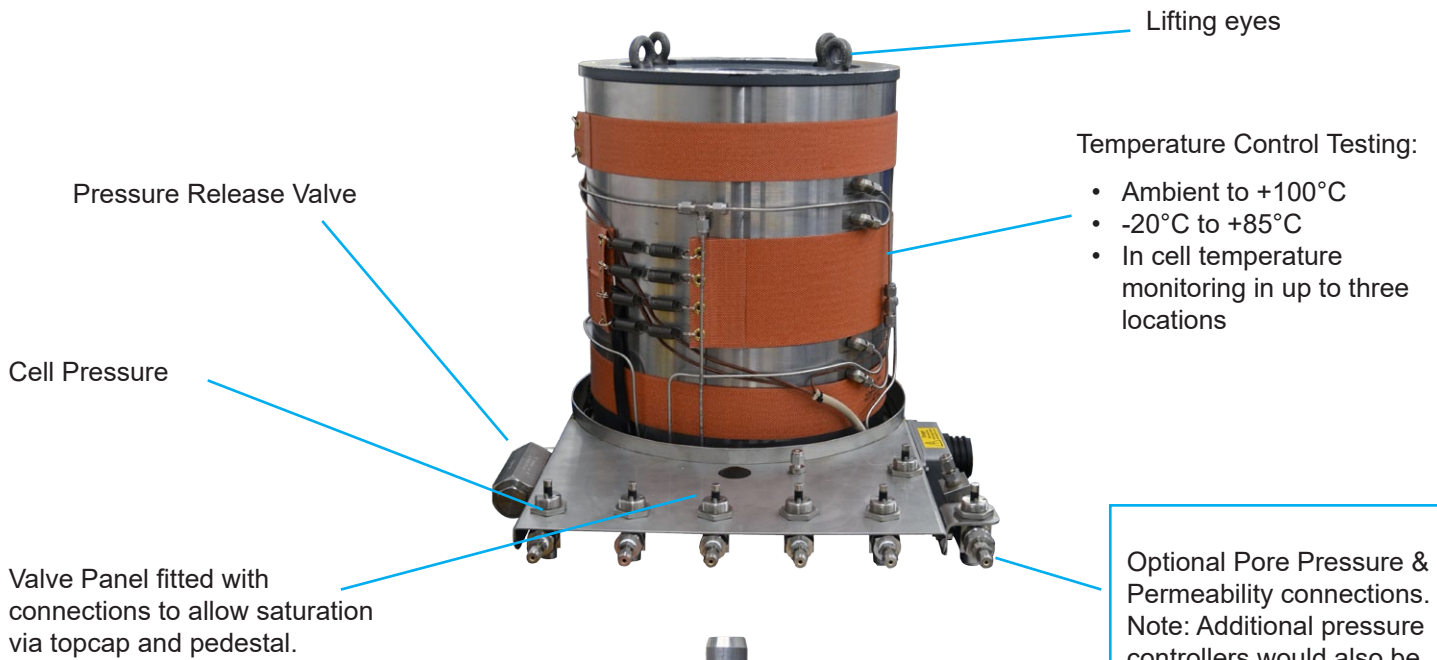
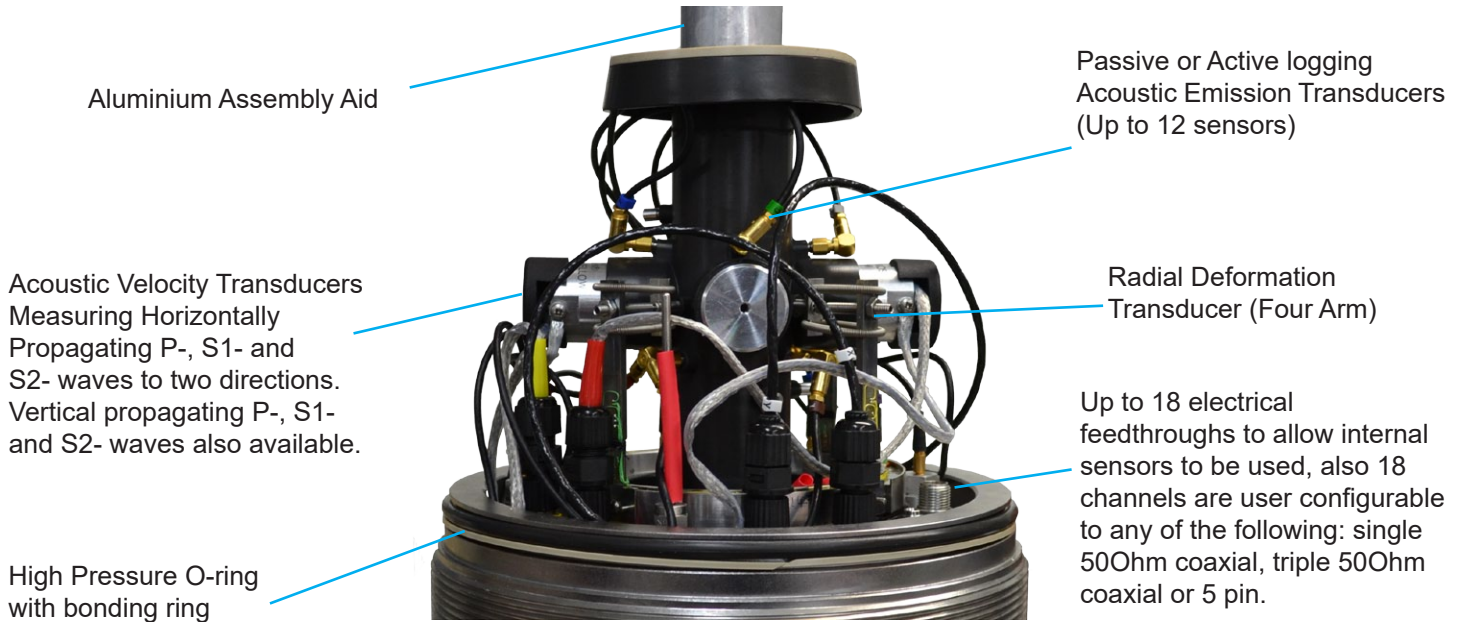
Tests that can be Performed: Triaxial compression & permeability

Upgrade Options:

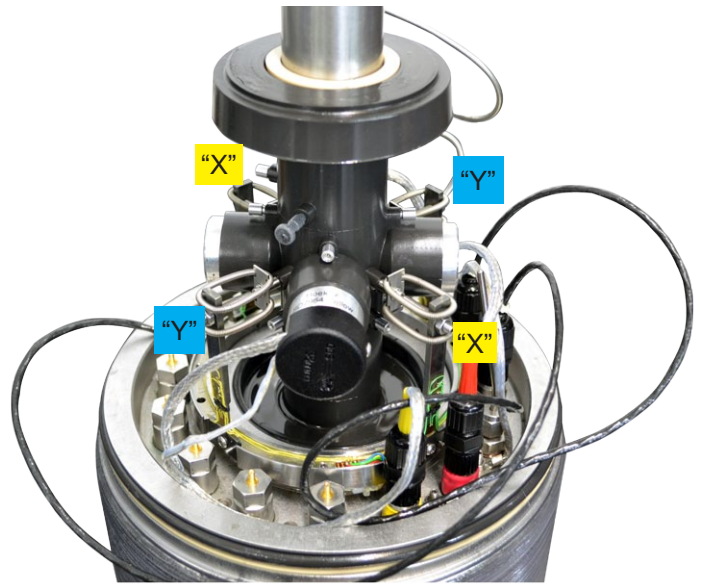
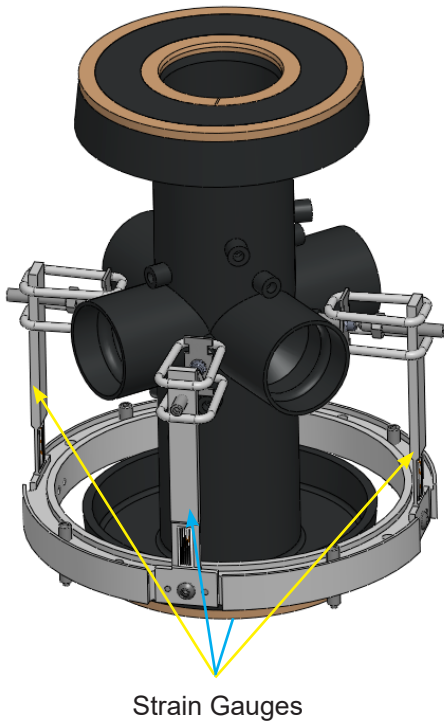
- GDS can offer the Instrumented Hoek Cell configured into a range of complete, automated turnkey systems that can include, load frames, pressure / volume controllers and transducers (load, pressure and displacement).
- Optional AE sensors up to 12 channels & optional AV Sensors Vertical and horizontally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

Technical Specification:

Axial Load:	<2MN
Pressure Range (MPa):	70
Specimen Size (mm):	38 x 76.2 and 50.8 x 101.6
Weight (kg):	180
Dimensions (mm):	381 diameter, 305 high



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 ($0^\circ - 180^\circ$ & $90^\circ - 270^\circ$) 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.