Options available for HPETAS

Axial Load ranges:

50kN	✓	100kN	✓
250kN	✓	400kN	✓
500kN	✓	1000kN	✓
		2000kN	✓

Cell or back pressure ranges:

4MPa	✓	8Mpa	✓
14MPa	✓	16MPa	✓
32MPa	✓	64MPa	✓
100MPa	✓		

***Triaxial cells* from:**

4Mpa* ✓ to 100MPa* ✓

for sizes:

38mm ✓ to 300mm ✓

*See triaxial Cell Datasheet for all cell

High Pressure Environmental Triaxial System (HPETAS)

What is it?

GDS have been working with many leading research and commercial industries around the world using the High pressure triaxial system. Now the high pressure environmental triaxial system (HPETAS) opens up an even bigger range of testing possibilities. The High pressure triaxial cell can be fitted with a heating or cooling system that is automatically controlled alongside the whole system via the computer based software.

Overview

The HPETAS is made up of several apparatus each of which have a number of options. The pressure & samples you will be testing determines the options available. The load frame itself ranges from 50kN to 1000kN and can hold cells from 38mm up to 300mm.

The system can be run with cell and back pressures for standard triaxial testing using GDS controllers. Or can be connected to high pressure gas lines (usually used for permeability testing). The controllers have pressure ranges of up to 150MPa.

When using high pressure gas lines additional flow meters can be fitted to the system which can also be logged using GDSLab.

The heating system works using thermal pads attached to the outside of the cell then enclosed within an environmental chamber to retain the heat. There are 4 temperature sensors relaying back to the control box for enhanced temperature accuracy.

The cooling system uses a coiled tube section inside the cell; this is connected through the standard ports within the cell base to a glycol cooling unit.

The computer directly controls the cell pressure, back pressure and testing rate. In addition to logging these parameters to the PC hard drive, the computer also logs axial displacement, axial load, pore pressure and of course, additional transducers may be easily configured and logged during the test.

Types of Tests it can perform

- High Pressure Triaxial Tests
- High Pressure Gas Permeability Tests
- Temperature Controlled Triaxial Testing

Product Features

- Temperature Controlled Triaxial Testing
- Fully Automated System

Technical specification

- Compatible with most load frames
- Automated Temperature control
- Sample Sizes: 38mm – 300mm
- Temperature Ranges: -20°C – 100°C
- Suitable for CO_2, Nitrogen, Helium and Methane

500kN VIS

GDS have recently developed a new virtual infinite stiffness (VIS) load frame that is built to withstand a 500kN load. The new four column frame can hold a cell with a 700mm outer diameter.

Hydraulic Column locks replace the standard torque wrench's tightened locks, allowing the user to exert better clamping force when adjusting the height of the frame.

For more information on the frame please contact us direct.

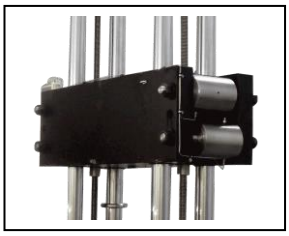

Fig 1. Close up of the hydraulic column locks.

Fig 2, 500kN load frame.

Upgrade Options for HPETAS

Upgrade to local strain measurement

Any GDSETAS system may be upgraded to perform Local Strain measurement using LVDT transducers (see Fig. 3). LVDT's enable axial and radial deformation to be measured directly on the test specimen via lightweight aluminum holders.

- high pressure (up to 200 MPa) version for use in non-conducting oil

Fig. 3 Hall Effect and LVDT local strain transducers

Upgrade to unsaturated testing

For the HPETAS the only products you will require are unsaturated pedestal with high air entry porous stone. When testing unsaturated soils it is necessary to separate the pore-air and the pore-water so that differential pressures (known as matric suctions) can be maintained. This separation is achieved by the use of high-air-entry porous discs (HAEPD).

Fig. 4 HAEPD bonded into a standard triaxial pedestal

Fig. 5 HAEPD bonded into a bender element triaxial pedestal

Upgrade to bender element testing

Any GDSTAS system may be upgraded to perform P and S wave bender element testing with the addition of the following items:

- bender element pedestal with bender element insert
- bender element top-cap with bender element insert
- high-speed data acquisition card
- Signal conditioning unit which includes amplification of source and received signals (P and S-wave) with user controlled gain levels (via software).

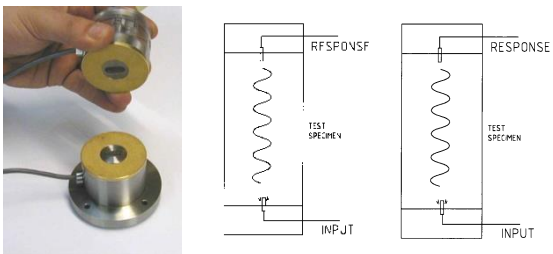

Fig. 6 P and S wave elements

Due to continued development, specifications may change without notice.