What is it?

The GDS Enterprise level Dynamic triaxial testing system has been designed to fulfill the demand within the geotechnical laboratory testing industry for a lower cost, more basic dynamic triaxial testing system. ELDYN provides a simple route to allow cyclic loading of triaxial samples under either load or strain control while monitoring the effects on the specimen pore pressure.

Features

The ELDYN triaxial testing system builds on over 15 years of GDS experience in designing, manufacturing, controlling and supporting electro-mechanical dynamic systems.

Based on an axially-stiff load frame with a beam mounted electro-mechanical actuator which has a full stroke capability of 100 mm and a maximum axial load capability of +/- 5 kN at 5Hz (upgradeable to +/-10 kN).

The ELDYN system supersedes most systems using pneumatic actuators in terms of life costs and overall useable performance.

Technical Specifications

- **Maximum Operating Frequency**: 5Hz
- **Minimum Operating Frequency**: Static tests, i.e. < 0.001Hz
- **Displacement Resolution**: 0.5 micron (0.0005mm)
- Highly accurate dynamic, electro-mechanical actuator
- Standard Triaxial cells can be used (upgraded to dynamic seals and bearings)
- Available sample sizes (depending on cell selection):
  - Φ38 x 76mm (or Φ39.1 x 78.2mm)
  - Φ50 x 100mm
  - Φ70 x 140mm (or Φ61.8 x 123.6mm)
  - Φ100 x 200mm (or Φ101 x 202)mm
  - Φ150 x 300mm
- 16-Bit dynamic data logging
- 16 Bit dynamic actuator control channel
- Cell pressure range to 2MPa (dependent of cell choice)
- No hydraulic power pack required
  (ELDYN complies to ASTM D3999 and ASTM D5311)
Why buy ELDYN?
- GDS ELDCS – no requirement for manual tuning
- As well as extremely good control of axial displacement and axial load for dynamic testing, the ELDCS system is excellent for performing static and small strain triaxial tests
- With GDS software and hardware, there are unlimited possibilities for upgrading the system in the future (i.e. bender elements, unsaturated testing, mid plane PWP, local strain and so on)
- Optional on-site training by experienced geotechnical engineers
- Reputation for world class technical support – check the website for testimonials
- 24 hour technical support by e-mail

GDSLAB dynamic test module
- Dynamic cyclic loading tests at frequencies up to 5Hz.
- Provides sinusoidal cyclic control of axial displacement or axial force.
- Plotting saved results gives cyclic stress paths based on average cross-sectional area i.e. the area of the volumetrically equivalent right cylinder
- A complete cycle of data can be saved every N cycles where the value of N is defined by the user
- Controlled data displayed in real-time, as in Fig. 3.

Fig. 3 Test display showing a dynamic test in progress

Typical system performance, showing frequency and amplitude
Upgrade to unsaturated testing

Any ELDYN system may be upgraded to perform unsaturated triaxial testing with the addition of the following items:

- Unsaturated pedestal with high air entry porous stone.
- 1000cc digital air pressure/volume controller (ADVDPC) for the application of pore air pressure and measurement of air volume change (see Fig. 5).
- Optional HKUST double cell (for more information on this please see the data sheet ‘Unsaturated Triaxial Testing of Soil (UNSAT).’)
- Optional double walled cell.

For further information on unsaturated testing, please refer to the dedicated Unsaturated testing datasheet.

Note: Due to continued development, specifications may change without notice.