



June 2009 Newsletter – British Geotechnical Association Annual Meeting

June 2009



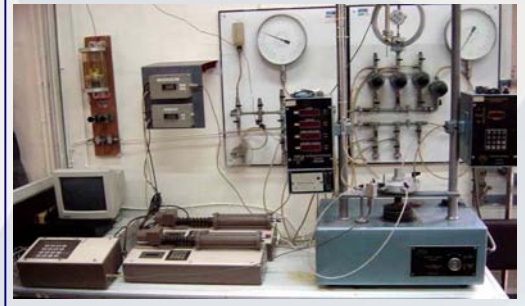
Upgrading the Capabilities of Geotechnical Laboratories

As modern foundation design methods become more complex and rigorous different parameters and greater accuracy is required from the Geotechnical Laboratory. Further more, greater commercial pressures are now brought to bear on commercial laboratories to achieve higher throughput of tested samples and lower overheads while still achieving accuracy in testing results, accountability and repeatability. Upgrading of existing laboratory facilities with GDS equipment can achieve all of the above at a fraction of the price of replacing all existing equipment.

One common apprehension regarding upgrading of laboratories is that all existing equipment must be discarded, this is wrong. At GDS we specialise in upgrading existing systems to be more modern, automated and State-of-the-art. For example, if a laboratory already has a functioning triaxial cell and loadframe, regardless of manufacturer, why replace it? GDS can add differing degrees of automation to this system, starting with data acquisition and transducers through to complete automation and report writing.

Automated systems can improve the throughput of a laboratory, this is achieved by the software being able to progress a test as soon as the sample is ready for the next testing stage. So, if a consolidation stage finished 5 minutes after the lab staff went

An Upgraded Triaxial System



home the sample would have to wait until the following morning to be moved to the next stage, in essence "losing" 16 hours. With GDSLAB controlling the system the test would have moved on to the following shearing stage.

The perceived complication of modern systems can sometimes be a barrier to laboratories upgrading and automating their equipment. This though is far from the truth. Modern software is now simpler and more visual than ever, with test details clearly displayed and test parameters easily entered. In fact it is easier to run a test in an automated system than a manual, traditional system. For example a consolidation stage can simply be set by typing the required cell pressure and back pressure and pressing start test. The test is then carried out automatically. Data is saved and displayed, pressures and loads are maintained with no further user actions.

Automation can be carried right through to the reporting stage by using GDSLAB Reports to generate industry standard reports.

With most general upgrade equipment being standard stock equipment, GDS could upgrade a lab typically within 2-4 weeks.

For further information on laboratory upgrades please do not hesitate to contact the GDS Sales team. To aid us in preparing for your upgrade Please send either the details of or a photograph of your existing equipment and we should be able to refine our suggestions to match your requirements.

Simple Test Definition

GDS Instruments has developed a wide range of equipment for static and dynamic testing of large samples including environmental control systems; please visit our website for further information.

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Future-Proof upgrades

Once GDS systems have been used to upgrade a laboratory the systems do have a high degree of future-proofing. GDS are seeing more commercial laboratories moving towards more complex testing. For example, in triaxial testing some of the largest labs in the UK are now routinely running triaxial systems with the following enhancements:

- Vertical Bender elements
- Horizontal Bender elements
- Mid-plane pore pressure measurements
- Local strain measurement

The above additions can be added to what started out as old, outdated, manual equipment to bring it up to the state of the art.

The New GDS Enterprise Range

Recently GDS has released a range of products designed to fit into commercial laboratories. They have been designed with price and ease of use, firmly in mind. The products are also compact in size and designed to be very low maintenance. These attributes make the Enterprise Level products or EL product range a huge benefit to the labs that use them.

Currently the EL range has the following products:

- 1MPa Digital Pressure controller (ELDPC) which has been made to specifically replace air driven systems.
- A 5Hz electro-mechanical, Dynamic Cyclic Triaxial system (ELDYN)
- Simple shear to ASTM standards

ELDYN Triaxial System



A typical Upgrade

While no upgrade is actually typical, the following is a system that GDS Instruments is often asked to upgrade. However, if your situation does not fit into the following category, it may still be possible to offer an upgrade so do not hesitate to contact us.

The Laboratory already has:

- A Load frame with RS232 capability
- Triaxial Cell

Where pressure is controlled via manual control and transducers are manually recorded.

In this case the system can be upgraded to complete automated control with the addition of the following items:-

- Transducers
- GDS Data Acquisition
- 2 x GDS Pressure/Volume controllers
- GDSLAB software

This upgrade results in a completely automated triaxial testing system. Even capable of some quite advanced testing such as stress paths or k-zero tests.

A Commercial Lab with GDS Automated Triaxial Systems



GDS Sudoku Boredom Buster (for the train home). Submit the numbers from the highlighted cells to enews@gdsinstruments.com.

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