Smart Lab

INNOVATIVE
SOFTWARE PLATFORM
FOR MATERIAL TESTING EQUIPMENT

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WHAT IS
SmartLab SOIL?

SmartLab Soil is the module of the software platform developed by Matest, dedicated to the soil sector.

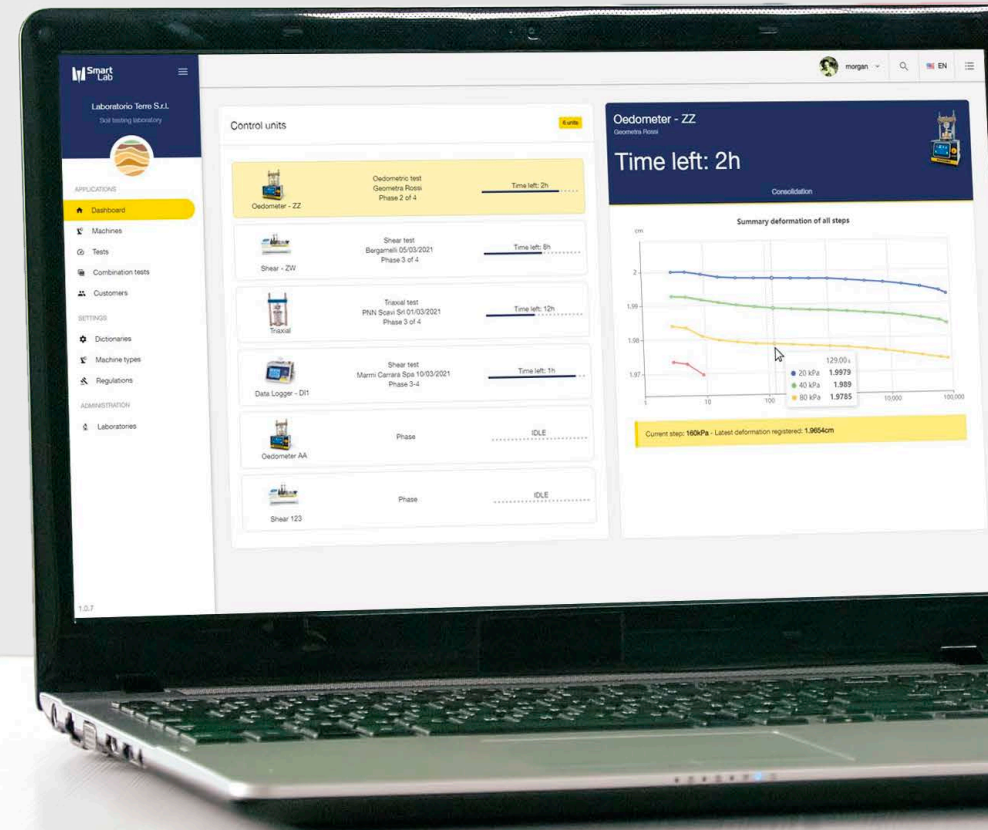It allows the management and control of machines for performing oedometric consolidation, shear and triaxial tests.
With a single computer it is possible to monitor an unlimited number of testing equipment in real time, even remotely and with any device.

In addition, the software offers the possibility to acquire and process data in accordance with international standards, guaranteeing accuracy and reliability.
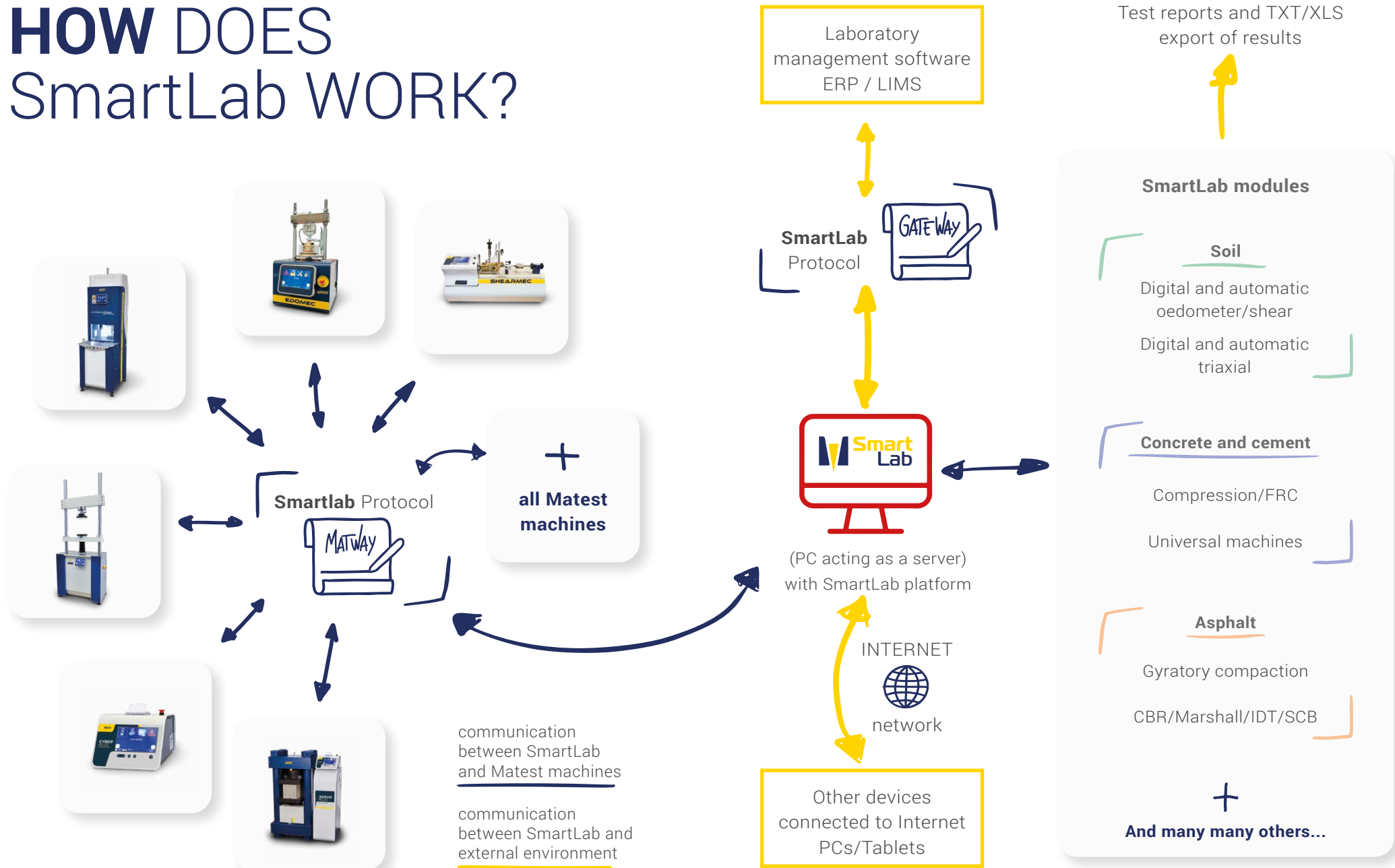
Happy SmartLab

An intuitive interface allows real-time control and viewing of status of test equipment via a simple click.

HOW DOES SmartLab WORK?

Laboratory management software ERP / LIMS

Test reports and TXT/XLS export of results

SmartLab Protocol — GATEWAY

SmartLab modules

Soil

Digital and automatic oedometer/shear

Digital and automatic triaxial

Smartlab Protocol — MATWAY

+ all Matest machines

M Smart Lab

(PC acting as a server) with SmartLab platform

Concrete and cement

Compression/FRC

Universal machines

Asphalt

Gyratory compaction

CBR/Marshall/IDT/SCB

INTERNET

network

communication between SmartLab and Matest machines

communication between SmartLab and external environment

Other devices connected to Internet PCs/Tablets

+

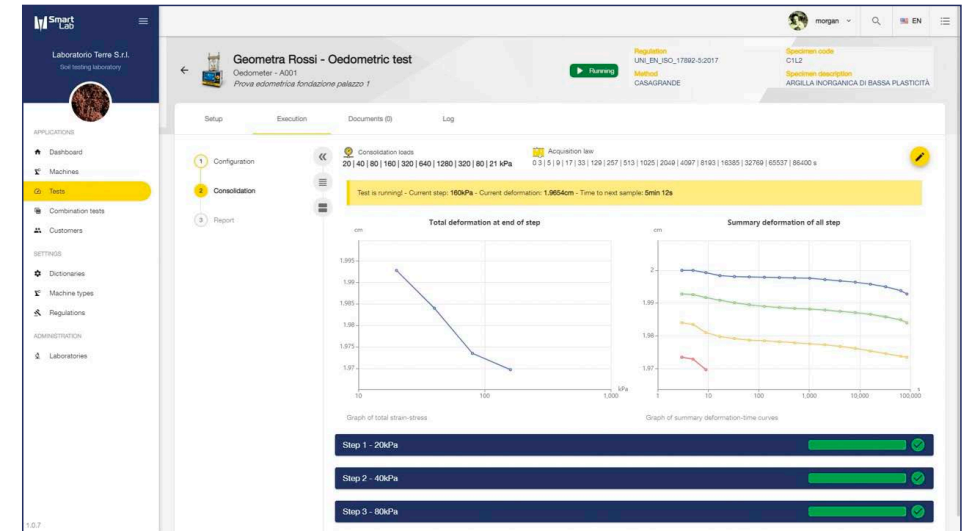**And many many others...**

OEDOMETRIC TEST

The oedometric consolidation test allows to determine the ==compressibility and swelling properties of a soil,== through changes in the effective tensional state under one-dimensional conditions.

For each load step, SmartLab allows you to ==process the failure-time curve== by choosing one of the two analysis methods provided by the standards, Casagrande or Taylor.

At the end, SmartLab allows the data of ==the various loading and unloading steps to be exported,== providing both a report of the data acquired, and a complete one with all the processed data and graphs required by the standards.

Tablet-friendly

With SmartLab is possible to start, monitor and manage tests remotely with any device.

Ongoing consolidation

Real-time test visualization of an oedometric consolidation

Guided graphical construction according to Casagrande and Taylor methods
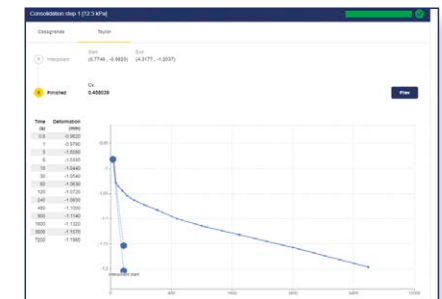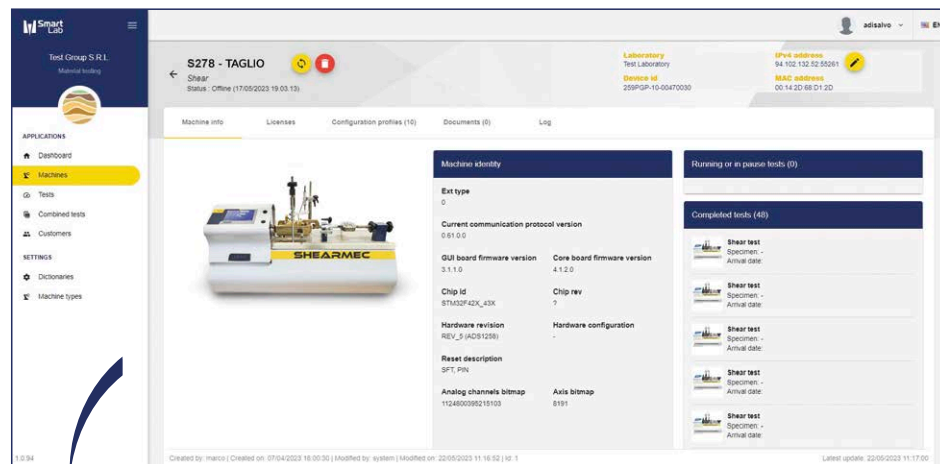
Casagrande Method

Taylor Method

SHEAR TEST

The direct shear test allows to calculate the ==sample strength parameters== (peak and residual), in terms of friction angle and cohesion.
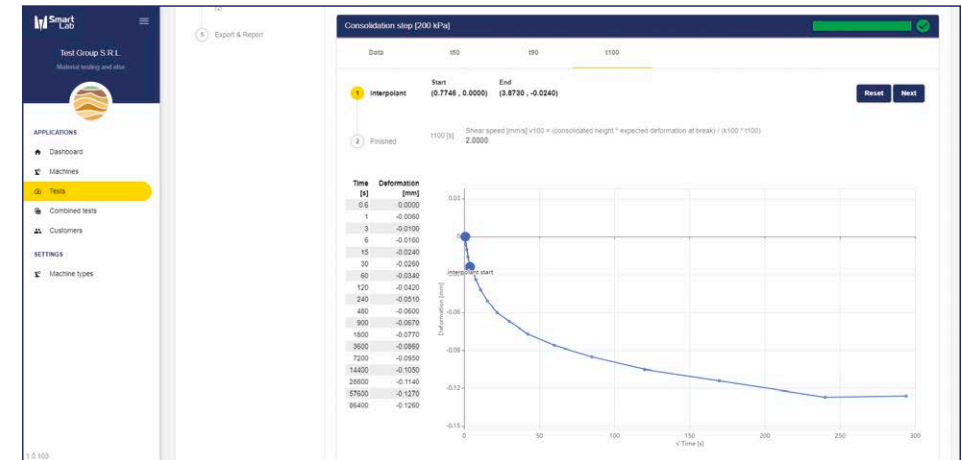SmartLab offers the advantage of ==automatically setting the acquisition parameters== during the test phases:
consolidation and shear.

SmartLab allows to perform three tests simultaneously, but especially to generate complete and customizable reports and to compare the results.
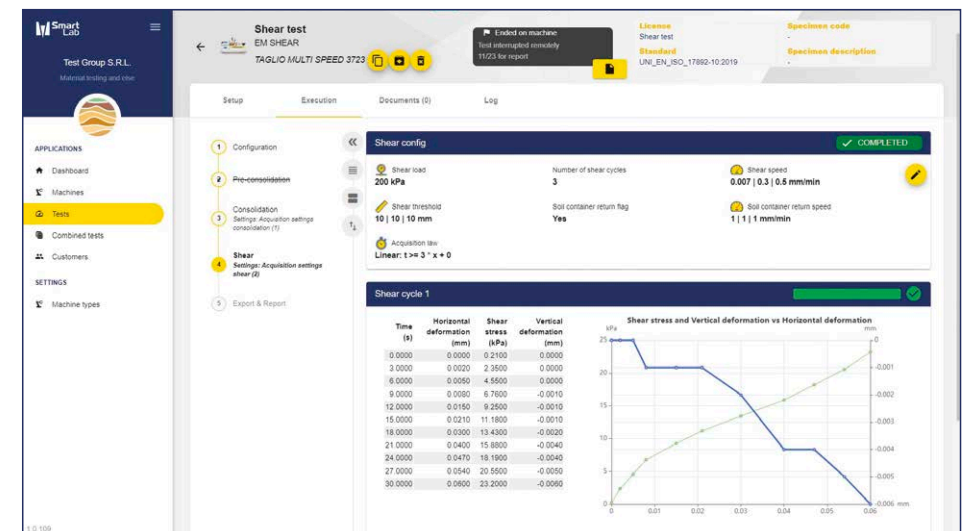
Consolidation step

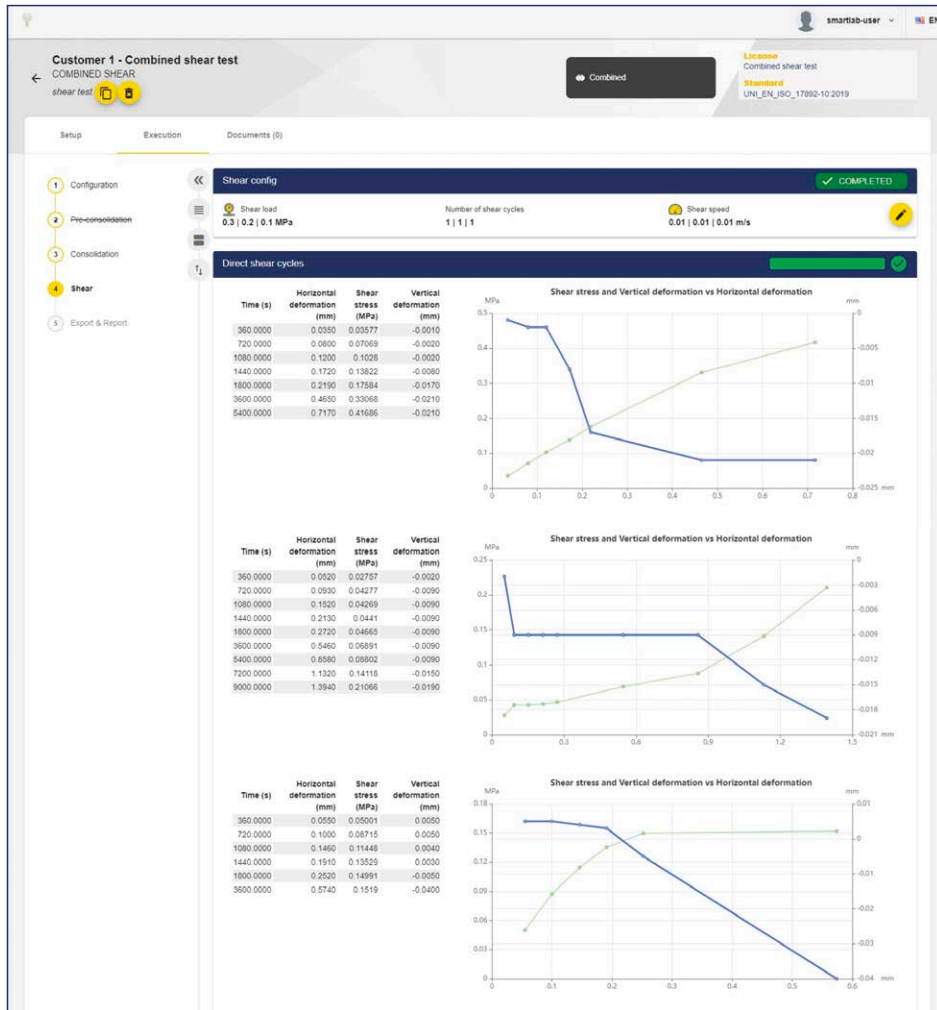Graphical processing to identify the shear speed.

Shear step

Display of "shear strength - horizontal deformation" and "vertical deformation - horizontal deformation" curves.

Comparison of three tests for faster and more accurate data analysis.

According to the reference standards, tests must be performed on at least three samples with increasing consolidation values.

TRIAXIAL TEST

The triaxial test is used for the characterisation of soils at different confining pressures. In particular, it allows the shear strength and deformability of samples at different stress levels to be assessed through three phases: saturation, consolidation and shear strength.
To comply with current regulations, it is necessary to conduct tests on three samples, having the same origin but subjected to different conditioning.

Using SmartLab, the results of these tests can be processed automatically and combined using the "Combined Test" function.
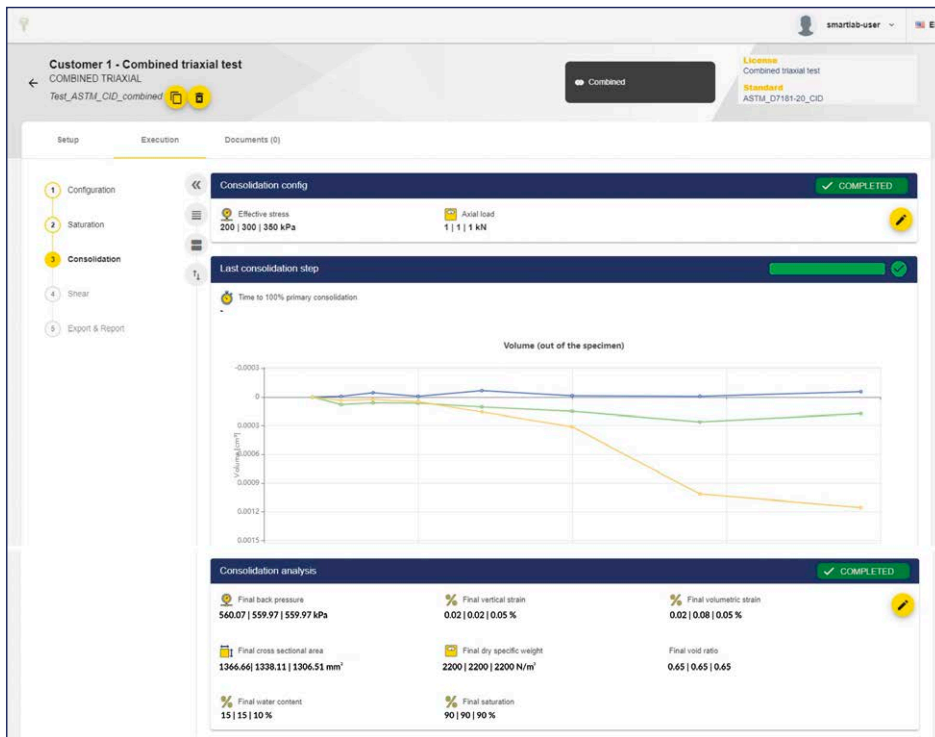

Reporting tools

Thanks to SmartLab, a complete and customizable report can be obtained without time-consuming manual calculations.
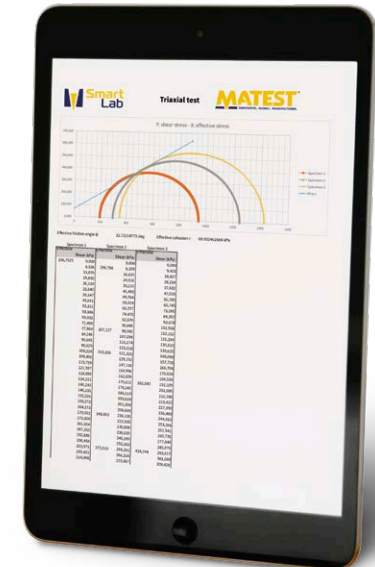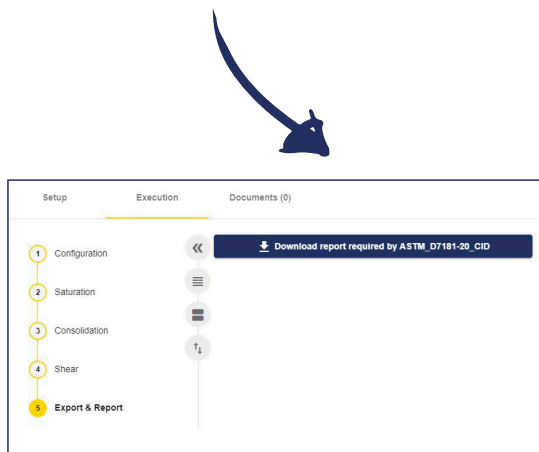
Combined triaxial test

Comparison of three tests for faster and more accurate data analysis.

Possibility to download the obtained results with a customizable report.

HOW TO ORDER SmartLab?

Consolidation test modules

Automatic configuration

S261 - EDOMEC Automatic electromechanical oedometer + accessories
SSW-EDOA - SmartLab for automatic oedometer
SSW-LINKA - Unlocking code for automatic machines

Manual configuration

S260 - Manual oedometer + accessories
S334N - Cyber-Plus Progress
SSW-EDOM - SmartLab for manual oedometer
SSW-LINKM - Unlocking code for manual machines

Shear test modules

configuration

S278 - SHEARMEC Automatic electromechanical shear machine + accessories
SSW-SHEARA - SmartLab for automatic shear machine
SSW-LINKA - Unlocking code for automatic machines

Manual **configuration**

S276-10M - Manual shear machine + accessories
S334N - Cyber-Plus Progress
SSW-SHEARM - SmartLab for manual shear machine
SSW-LINKM - Unlocking code for manual machines

Triaxial test module

Manual **configuration**

S301M - Triaxial load frame 50 kN + accessories
S334N - Cyber-Plus Progress
**S349A-01** - Pressurematic PVC
SSW-TRXM - SmartLab for triaxial system
SSW-LINKM - Unlocking code for manual machines

HOW TO UPDATE EXISTING MACHINES?

The SmartLab platform and Matest dataloggers can be connected to existing machines, even non-Matest systems. Edometers, shear and triaxial machines will thus be able to join the Smartlab Universe! To evaluate the compatibility of your machines and identify the best configuration, we invite you to contact our product specialists.
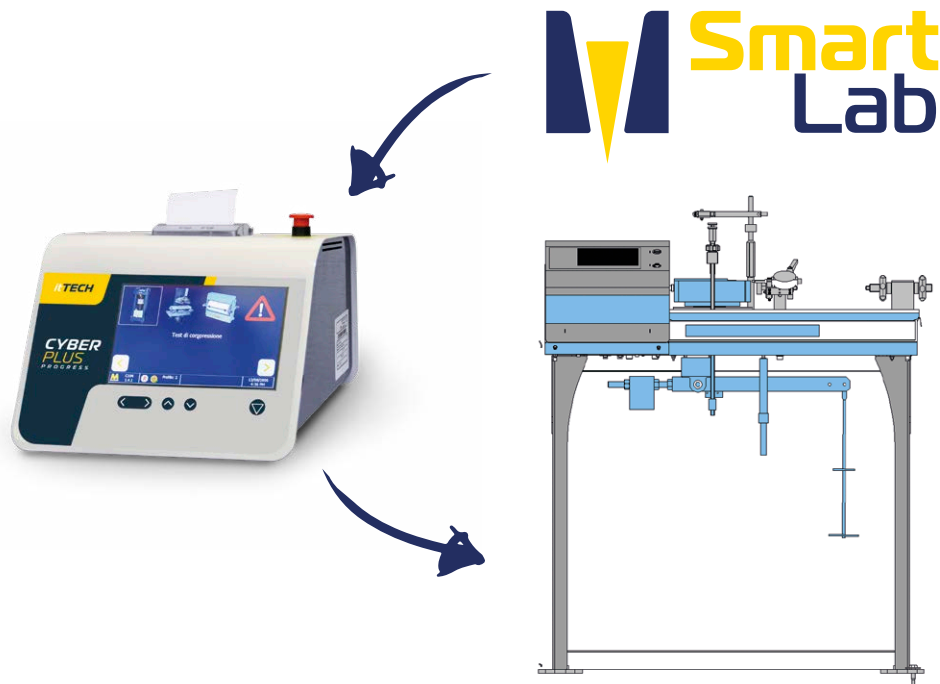
ANY QUESTIONS ABOUT SmartLab?

1. How is SmartLab installed?
Simple and immediate download via a link.

2. Does SmartLab require an internet connection?
It does not require an internet connection, because it works locally, but, if connected to the internet, it allows you to take advantage of all the extensive networkability functions it is equipped with.

3. Does SmartLab need a very high-performance PC?
No, the minimum requirements are as follows:
Processor (CPU): Intel Core i5 or AMD Ryzen 5
RAM memory: 16 GB
Mass memory: 100 GB reserved for SmartLab
Windows 11 64-bit: Home or Pro version 21H2 or higher, or Enterprise or Education version 21H2 or higher.
Windows 10 64-bit: Home or Pro 21H1 (build 19043) or higher, or Enterprise or Education 20H2 (build 19042) or higher.
On request, it is possible to order the PC that fulfils all requirements (SSW-SMARTLABPC).

4. Can SmartLab be updated over time?
Yes, Matest periodically releases updates and it is also possible to add test modules that were not initially foreseen.

5. What is the Gateway protocol?
It is a communication protocol that allows SmartLab to interface bidirectionally with external software (LIMS and ERP).

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