Terraloc Pro

PRODUCT PRESENTATION

THE LATEST SEISMIC MULTI-TALENT FROM ABEM

With well-known reputation for ease of use and reliability under the toughest field conditions, the ABEM Terraloc line continues that long line with the latest edition; the Terraloc Pro. With stretched specifications and added new features, the list of Terraloc manageable tasks is as long as it's heritage.

Rugged and stand-alone
- Self-contained and tough

Versatile and future-proof
- Will take on a wide range of tasks

Field efficiency is money saved
- Guaranteed by built-in diagnostics and remote management

Stunning dynamic range
- Superior data quality performance

Secure investment
- Terraloc Pro allows for add-on of new functionality and seamless expansion

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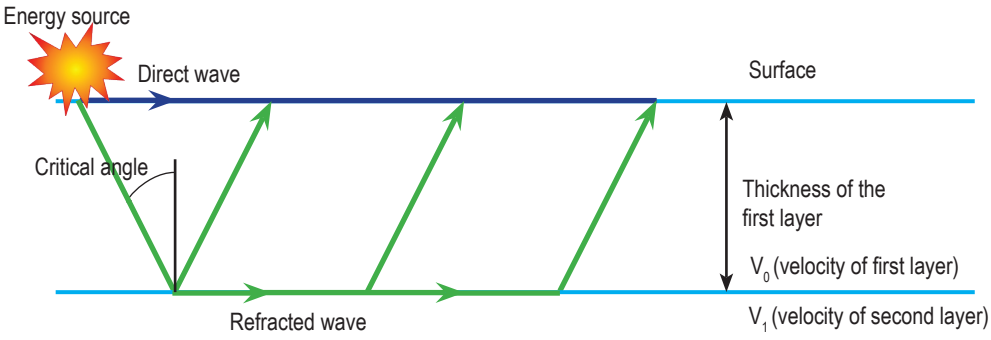
Seismic methods

Seismic techniques generally involve measuring the travel time of a surficial seismic energy pulse through the ground to arrays of ground motion sensors, a.k.a. geophones.

There are numerous varieties of seismic measuring methods, of which Reflection and Refraction Seismics are the most common for near surface geophysics.

The seismic refraction method utilizes the refraction of seismic waves on geologic layers in order to characterize the subsurface geologic conditions and structure. The fact that seismic waves have differing velocities in different types of soil (or rock), boundaries between different types of soil or rock are determined when the waves are refracted when crossing them. The method enable the general soil types and the approximate depth to strata boundaries, or to bedrock, to be determined.

Other seismic survey methods are e.g. Borehole tomography, VSP (Vertical Seismic Profiling), MASW (Multichannel Analysis of Surface Waves) and marine applications.



Refraction seismology:
The method utilize the fact that seismic waves have differing velocities in different types of soil (or rock).
The waves are refracted when they cross the boundary between different types (or conditions) of soil or rock.
The methods enable the general soil types and the approximate depth to strata boundaries, or to bedrock, to be determined.

The Terraloc Pro system

The Terraloc Pro system offers a very high level of integration as it incorporates measuring up to 48 channels, windows PC, high contrast color LCD screen, GPS receiver as well as all the modern interfaces that would be required, such as Ethernet, USB and WiFi. Built-in battery and charger is also implemented.
The system is fitted with all the desired connectivity in terms of measuring channels, trig inputs, chaining of multiple instruments as well as trig and alarm outputs.

The Terraloc Pro offers superior dynamic range of 144 dB, galvanically isolated inputs and very low distortion of data, making it the second-to-none portable seismograph in terms of data quality and versatility.

Furthermore; built-in self tests as well as the possibility of remote diagnostics by ABEM technical support team via VPN, Terraloc Pro offers security and peace-of-mind.

The Terraloc Pro system comes with 12, 24 or 48 measuring channels, and the 12 and 24 channel models are upgradable whenever the customer desires.

The very flexible solution that Terraloc Pro is, means that it supports all seismic survey methods mentioned above, such as Refraction, Reflection, Borehole tomography, VSP and MASW.

The whole system is IP66 class and shock resistant, allowing it to be used wherever, whenever.

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Field setup

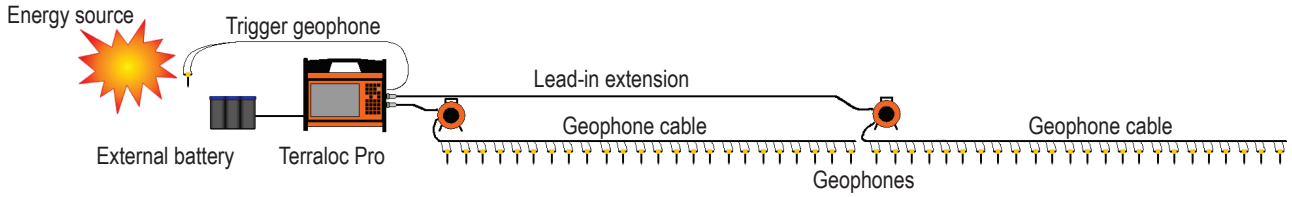
This example shows a common field setup, using 48 geophones placed on a straight line. 24 geophones are connected to each cable, which are connected to the two input connectors on the Terraloc Pro.

In this example, the Terraloc Pro is placed at the end of the array, thus connecting the second 24 geophones using a lead-in extension cable.

A separate geophone is used as trigger geophone and is connected to it's dedicated input on the Terraloc Pro. The trigger geophone is placed near the energy pulse; a sledge hammer plate, a dynamite charge or any other sort of energy source creating the necessary shock.

An external power source, a car battery or similar, can be connected with the supplied external power cable to complement the internal battery. This will provide more power and thus enables more hours of survey.

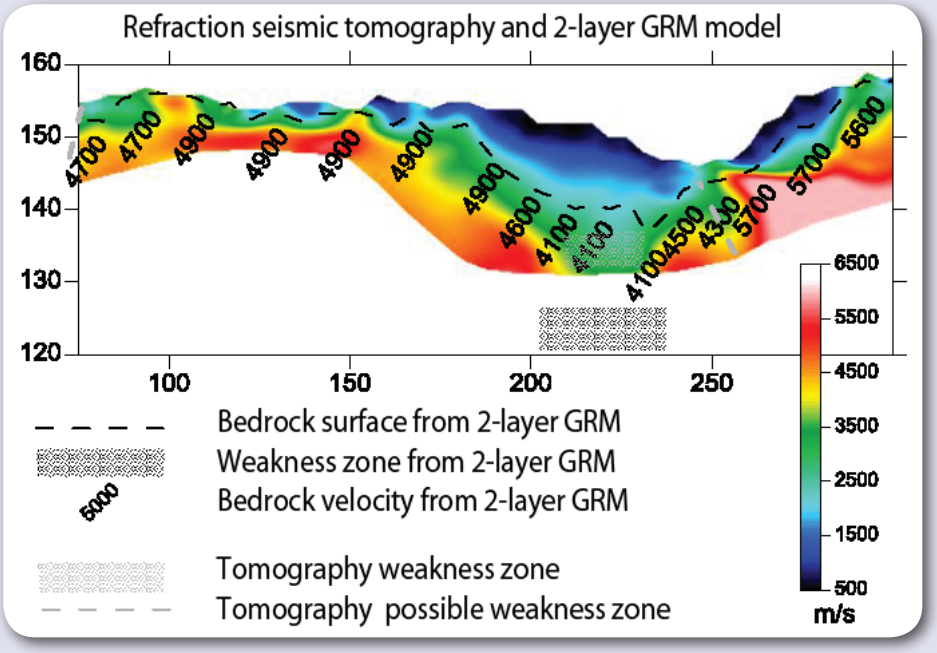
After a short power on, the measuring project is quickly set up and executed using the on board user interface. For each measurement and stacking, the recorded waves can be monitored and analysed directly in the instrument.



A field example - Hard rock tunnelling using refraction geophysics, Ramböll

Refraction seismic has been a standard tool in site investigations for tunnels in Norway since the fifties, and it is well known around the world. The method can be used to locate fracture zones in bedrock, give information of the thickness of sediments and position of the water table in sediments, and seismic velocity is an important parameter since it gives an indication on the mechanical strength of the rock.

The figure below shows results from refraction measurements from the *E6 - Dovrebanen* project. It presents detailed data about the bedrock surface as well as possible weakness zones using a 2 layer GRM model.



The Generalized Reciprocal Method (GRM) is an advanced interpretation method based on determining the critical distance, i.e., the point where head waves leave the refractor when shooting in opposite directions. The advantage is that depths are calculated across the entire profile. This gives a robust model which can also accommodate lateral variations in layer velocity.

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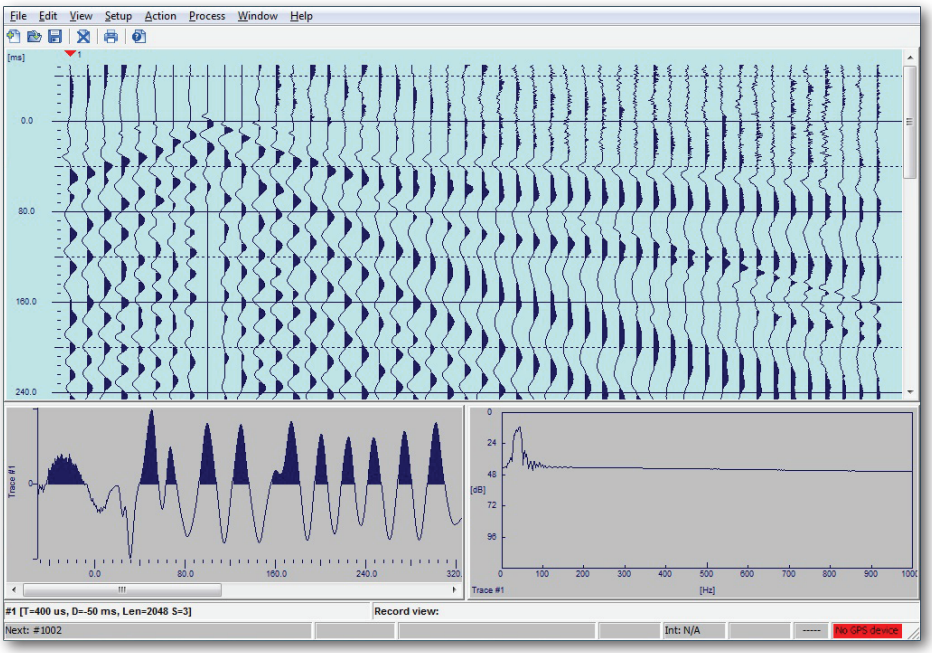
SeisTW - user interface and in-field analyser

SeisTW is the on board user interface of the Terraloc Pro. It lets the user setup and customize a survey with a broad variety of parameters and helpful tools.

Data can be analysed and post processed using built-in advanced processing and filtering tools.

Presented on the integrated 8.4 inch daylight visible color screen, SeisTW offers almost endless flexibility, assuring needed efficiency on every task.



Example of a typical SeisTW layout; displaying the record view, trace view and frequency view simultaneously.

Options and accessories

ABEM offers many accessories to equip the Terraloc Pro solution, such as a variety of geophones, hydrophones, energy sources, radio triggers, cables and much more. ABEM also supplies a range of interpretation software, such as IXRefraX, REFLEXW and the RadExPro suite.

Contact ABEM to get the solution that best fits your needs.

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