Subsoil geological analysis services

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PROFESSIONAL SERVICES OFFERED

Sismoelettrica Srl is a company born in Florence in 2020 with the aim of providing precise technical consultancy concerning traditional geognostic technologies through in situ tests (penetrometric tests CPT, CPTe, CPTu, DPSH and DL30) and geophysical and electromagnetic surveys (seismic refraction tomography, geoelectric and surveys using VLF instrumentation) and innovative (vertical electrical seismic investigations and tomographic reports on permeability and porosity derived from proprietary algorithm) dedicated to the research and analysis of water resources, at low and deep depths (geothermal low and medium enthalpy), environmental and archaeological analysis and the discovery of oil tanks. We provide a complete service, from the preliminary investigation, to the use of WELL logging instrumentation using a multiparametric and sonic probe in the drilling hole, up to the final analysis using video inspections with a high resolution camera, up to a depth of -1000 m.

Our activities:

Geognostic surveys in situ (penetrometric tests CPT/DPSH, CPTe, CPTu) Indirect geognostic surveys (geophysical, geoelectric, seismoelectric and electromagnetic) Geotechnical monitoring (inclinometer and vibrometric surveys) Surveys for aquifer, geothermal and petroleum reservoirs Geophysical borehole surveys and video inspections up to depths ranging from 0 to 1000 m.



Geophysical surveys:

Seismoelectric surveys:

Seismic prospecting is a geophysical investigation method based on the Electro seismic surveys are based on the principle that an study of the propagation of both natural and artificially generated seismic underground water flow creates a weak electric field waves. The main seismic prospecting methods make use of reflected which can be measured on the surface with suitable waves (reflection method), refracted waves (refraction method) or equipment following a strong acoustic impulse created by environmental noise (passive techniques).



Geoelectrical surveys:

Geoelectric prospecting represents a non-invasive geophysical investigation methodology and is based on the detection of the electrical 🚦 resistivity (electrical conductivity) of the various types of land investigated. Conductivity is mainly a function of the chemical (the various types of rocks and soils present in nature, the various materials and compounds) and electrolytic (presence or absence of water, Downhole logging:

humidity and dissolved salts) of the rocks and soils themselves . These

surveys allow, in the environmental field, the estimation of the thickness Geophysical logs (wireline logs) are used, in boreholes and of the body of the waste in the landfill or the identification of pockets or wells, to continuously determine the physical/chemical paths of leachate.



Electromagnetic surveys VLF:

The VLF method is based on the principle of electromagnetic induction and is particularly suitable for the investigation of rapidly submerging (pseudo-vertical) electrically conductive and elongated bodies. The primary field, in this case, is induced by military broadcasting stations

positioned at strategic points around the planet, which were used to transmit with submarines. These signals, being transmitted from far away

characteristics of geological formations, fluids present and completions. Investigations can therefore be performed in uncovered holes and in lined holes.

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Vell Video Inspection:

from the survey points, can be considered to have a predominantly video inspection allows you to check, by means of suitable horizontal component and, permeating the subsoil, induce electric cameras, the state of conservation of the well, allowing you currents inside the buried conductive bodies which in turn generate to identify any anomalies due to blockages or the presence of vertical secondary electromagnetic fields.



encrustations, breakages or deformations as well as the type of filters and positioning. Understanding the problem with direct verification and video restitution will allow defining the best methods of intervention for the functional restoration of the well.



a normal seismic source (a hammer and a plate, or seismic rifle). There are at least four causes of seismoelectric effects: piezoelectricity, resistivity modulation, radio pulsed effect (RPE), and electrokinetic effects.



Penetration tests:

Geotechnical monitoring:

Penetrometric tests are part of geotechnical in situ investigations. They We are able to find solutions dedicated to the nonmake it possible to indirectly characterize the subsoil by driving a point structural mitigation of hydrogeological risk, mainly used into the ground. We can distinguish:

- Static penetration tests (CPT)
- Static penetration tests with piezocone (CPTE and CPTU)
- Dynamic penetration tests (DPSH)
- Standard Penetration Test (SPT)
- Seismic cone
- Dilatometric tests.





Bathymetric surveys:

Bathymetry is a discipline of oceanography and geodesy that deals with the measurement of depths and the cartographic representation of the seabed. The bathymetric surveys are therefore carried out for the knowledge of the morphological trend of the sea and lake bed. The surveys are generally carried out from a vessel equipped with a precision echo sounder, Single beam or Multi beam. The location is provided by a GPS receiver.





for the surveillance of the most articulated and complex phenomena of instability or for ante and post-operam control of consolidation and defense works.

Inclinometer surveys:

Inclinometer measurements together with other geotechnical monitoring tests (such as borehole strain gauges) are carried out in order to be able to monitor over time the state of evolution of instability involving, for example, landslides. Monitoring carried out over the years allows the sliding surface of a landslide to be identified.



Vibrometric surveys:

The monitoring of vibrations induced on existing buildings by ordinary or extraordinary human actions, productive or constructive actions are fields of intervention in which general attention is increasingly growing.



..the water you touch from rivers is the last of what went and the first of what is to come. Thus the present tense.

(Leonardo da Vinci)



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