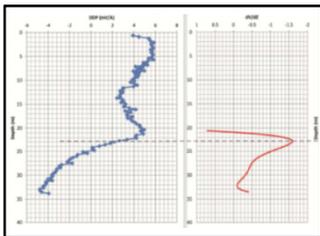
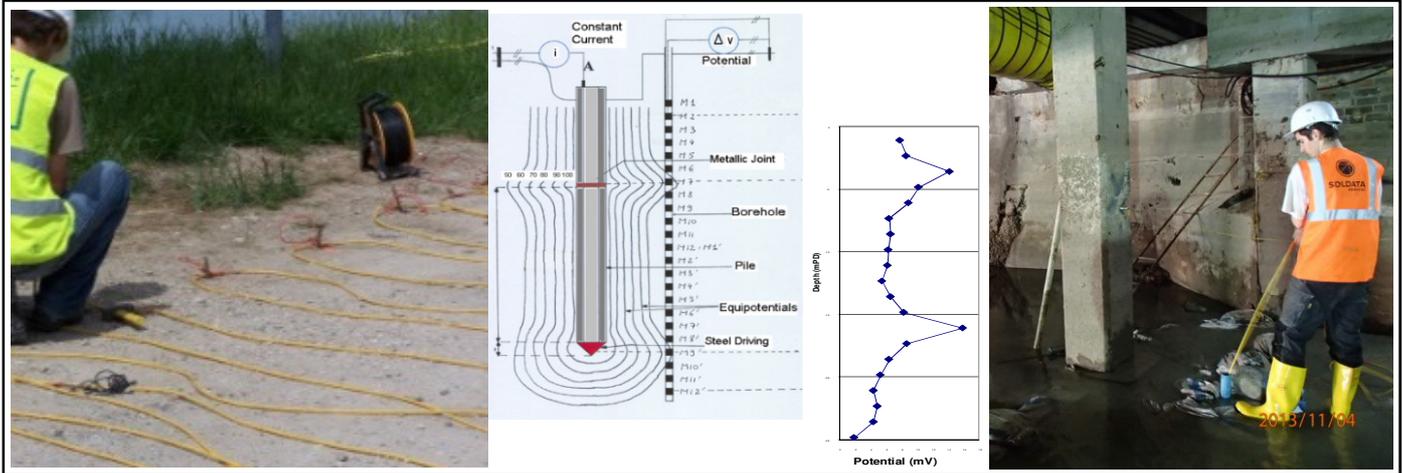




SOLDATA
GEOPHYSIC

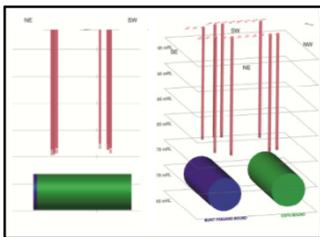
MISE-A-LA-MASSE



The 'Mise-a-la-Masse' method is derived from an ancient technique used in mining to detect mineral ores or water. In general, this simple and accurate method can be used to identify the path of a conductive body.

Applications

- Geology: detection for mining, hydrogeological tracing
- Environmental: detection and delineation of pollution zones
- Geotechnical: tracing metallic elements (from the surface for pipelines, from boreholes for the length of steel foundations - reinforced piles, sheet piles, rods, etc.)



The conductive body is brought to a certain potential using the injection of an electric current. It will thus generate equipotential lines measured using pairs of electrodes in the ground or in a borehole. Analysis of these variations provides information about the geometry of the object which is carrying the potential.

As an example in the field of geotechnics, this method allows the depth of the end of steel rebars in a pile to be determined. A rebar, exposed at the end, allows current to be injected, thus generating electric potential which is measured using electrodes arranged in a borehole parallel to this pile. The base of the reinforced part of the foundation corresponds to the inflection point on the graph of the potential difference (blue in Figure 2) or to the maximum of the derivative (red in Figure 2).

Where it is possible to connect an electrode to a rebar of the foundation element to be studied, this method is recommended because it is very accurate and focused on the particular element in question. Compared to other methods commonly implemented for this type of problem (parallel seismic, magnetic, borehole radar), it has the advantage of having a relatively large radius of action (approximately 3m in noiseless conditions) . This can help to measure several piles from a single drilling, when the foundations are located in the same area.

As a check, to complete the analysis, or to overcome the possible lack of continuity in the reinforcement cage, this method can be performed in conjunction with borehole magnetic measurements.



Legend

1. Principle and implementation of the method
2. Difference in potential and derivative
3. Example of results summary for a tunnel project

Key figures

- Spacing 30cm between electrodes
- Radius of investigation up to 3m distance
- Depth up to 500m in borehole
- Many piles can be measured from single borehole

SDG Equipment

- Resistivity meter
- Voltage generator
- Multi-electrode cable (to install on the ground or in a slotted PVC tube 52mm ID)
- Clips, fittings, electrodes