

*The Volterra in use with our resistivity siting kit and mobile app in the field*

## A low-cost, high success borehole siting device Volterra

Geophysical siting is an important part of water point construction. It prevents money and labor being wasted into drilling failed boreholes. While traditional VES equipment supports siting at a limited scale, it is too expensive and sparsely available in the global rural South. Practica therefore developed the Volterra, a device which is ~8 times cheaper than traditional equipment, but with the same borehole success rate. We can deliver it including a resistivity siting kit and Practica's Drillers Toolbox: an app and web-dashboard for data collection and analysis.



Drilling new water points is often complex and costly. NGOs and drilling companies in the global South often struggle to select the right sites. Randomly drilling is therefore common, often resulting in dry boreholes due to hard rock formations. Drilling companies need to bear that risk themselves, which increases the costs of borehole construction.

Selecting the most promising areas with help of siting devices increases the efficiency of water programs, since it provides information on the preferred drilling method, the likely cost, the expected drilling depth and potential rock formations. Traditional Vertical Electrical Sounding (VES) equipment for siting is expensive (€10.000 - 30.000) and is sparsely available in the global South. The equipment has hardly changed in the last 50 years, with paper record keeping and computer analyses still part of today's VES measurements. Together with the high level of required skills, these are barriers for a larger group of users who could benefit from VES.

*Drilling company, trained by Practica, constructs borehole*

## Our innovation

To reduce complexity and costs, Practica has developed **The Volterra**, a portable VES/HEP device operated with a smartphone which is **easy-to-use**, **~8 times cheaper** than conventional VES equipment while giving identical results, and it provides data accessible in a **digital and shareable format**.

This revolutionary device in combination with a resistivity siting kit and Practica's Drillers Toolbox brings geophysics into the reach of a much broader audience such as local drillers and NGOs in the development and humanitarian sectors. With data interpretation by geohydrologists, rapid assessments with the Volterra can become a significant **cost and time saver**.



Team executing resistivity siting measurements

## Our design



The Volterra device

The Volterra measures ground resistance and can perform Vertical Electrical Soundings (VES) or Horizontal Electrical Profiling (HEP). The 10 watt, 600 Volts device is controlled through a smartphone app via Bluetooth. A complete measurement can be defined including method (Wenner or Schlumberger) and an array of electrode spacings. The **portable size** makes it easy to carry to the field or on the plane. Data capture (raw and calculated) is **made visual** in a graph and together with smart measuring, the device helps to **minimize errors**. After submission of data, the user receives an email with a pdf report and excel file, which includes both the raw data and modeling results.

The Volterra can be plugged onto your own **resistivity siting kit** or one provided by Practica, which includes four stainless steel electrodes, measurement cables, tapes, hammers, gloves, and all other items needed. Using **Practica's Drillers' Toolbox** smartphone application, which has a module for capturing and displaying resistivity data, will lead to **better quality data**. Because the data is immediately visible in the field, quality issues can be identified straight away and corrected.

## Our ambitions

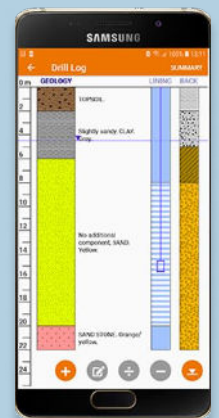
Our ambition is that all local drillers and NGOs supporting water programs in the global South can benefit from the ease of operation and low cost of the Volterra, and **generate quality groundwater data** which will benefit the sector as a whole. The Volterra has been validated through lithology (rock formation testing) and depth proofing in Mauretania, Mali, Chad, Mozambique, Madagascar and Liberia. It has been applied successfully in other countries, like Guinea and Zambia.

*Will you be our next partner in application or scaling?*

Practica can supply complete siting kits, including physical equipment, digital applications and **instruction videos**. Moreover, it can support with in-country staff capacity building programs and provide consultancy services to manage your groundwater development programs better.

### Practica's Drillers Toolbox

The Driller's Toolbox is an Android app and web-dashboard for professionals in the groundwater development sector, such as drillers, supervisors, geophysicists, and WASH project managers. It captures data on geophysics, drilling logs, and pumping tests, and creates professional reports.



*Check out our dedicated Drillers Toolbox website and download the app*



**Practica** - Innovative technologies managed by local entrepreneurs

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