

TERRAMETER LUND Imaging System



Automatic System for Resistivity and IP Imaging

Terrameter LS is a world leading resistivity instrument that offers high quality data. The instrument can be used for several applications and is developed to be useful for universities, contractors/consultants, governments and aid organisations. As the Terrameter LS concept is modular it offers individually tailored solutions to meet each clients specific needs.

ABEM Terrameter LUND Imaging System - designed for optimum versatility in infrastructure projects and environmental studies.

Automated roll-along capability for 2D and 3D surveys

Built-in quality control and feedback to operator

High productivity rate thanks to speed-optimized software

Electrical Imaging

Electrical imaging has emerged as a prime method for infrastructure projects and environmental studies in recent years and the demand for better information is expected to continue. In such applications the following is essential:

- High resolution at shallow depths
- Automated data acquisition for cost effectiveness
- Superior area coverage through at least two-dimensional information
- Output presented in easily interpretable form

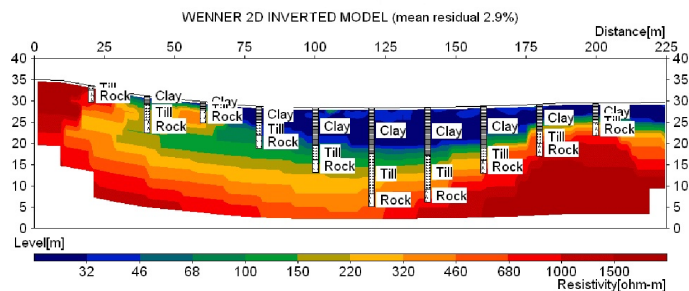
The ABEM Terrameter LUND Imaging System, developed in cooperation with the Dept. of Engineering Geology at Lund University, provides fast, accurate and automated resistivity and IP imaging in 2D and 3D. The entire data handling process is automated as far as possible, including data acquisition, processing, interpretation and presentation. This is made possible by utilising state of the art technology.

Key features of the LUND Imaging System

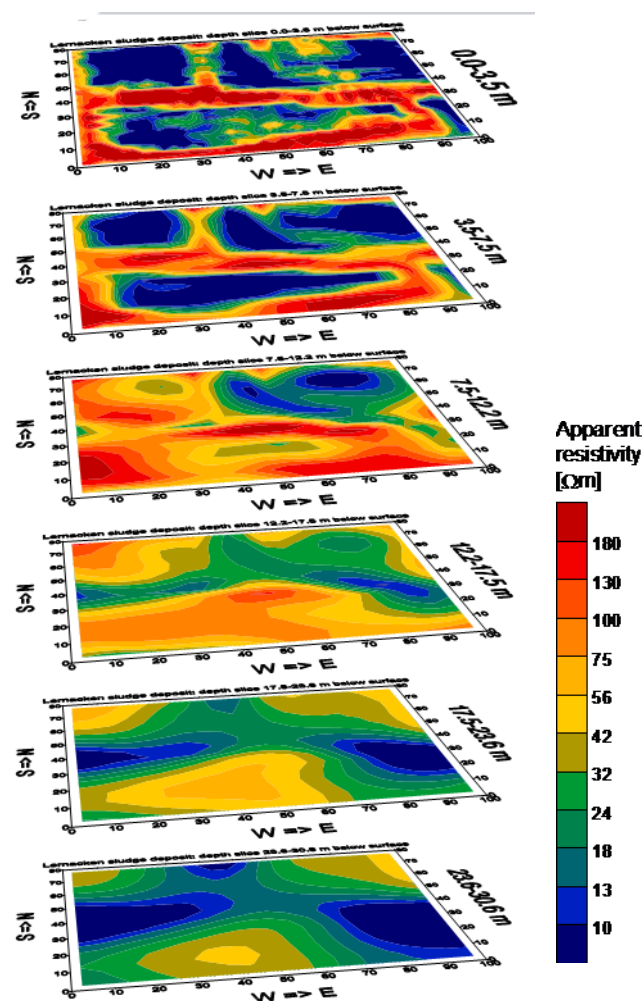
- Integrated roll-along function
- Automatic electrode contact test
- Possibility to measure IP

System Components

- Terrameter LS (4, 8 or 12 channel) resistivity and IP instrument, with integrated PC for full control of data acquisition process and storage of data. Built-in true constant current regulator with maximum ± 600 V (1200 V peak-to-peak) and 2500 mA output. 12 V DC power supply.
- Terrameter LS housed in rugged waterproof (IP66) casing for reliable performance during harsh field conditions.
- Field cable set with electrodes and cable jumpers. Highly durable multi-conductor cable terminated in both ends with military standard connectors. User friendly acquisition and presentation software for standard or user defined arrays.



2D resistivity image with geotechnical information. Note the good correlation between low resistivity areas and clay



3D resistivity model outlining a buried sludge deposit and migration of contaminants towards depth

Major advantages

A major advantage of the electrical imaging method is that it produces continuous images of the variation in properties in the subsurface. This method can serve as an excellent basis for planning detail investigations via for example a drilling and sampling programme with optimized sampling locations. The detail investigation results can then in turn be used as a base for a refined interpretation of the electrical imaging data, leading to a comprehensive and reliable model of the underground.

Typical areas of application include:

- Groundwater resource management and vulnerability assessment
- Mapping and monitoring of contaminated ground/groundwater
- Geotechnical pre-investigation
- Geological mapping
- Mapping/prospecting of natural resources
- Geothermal prospecting
- Sub-bottom mapping at sea and in lakes
- Mapping of frozen ground/permafrost
- Archeology

Resistivity Imaging - a Robust Method

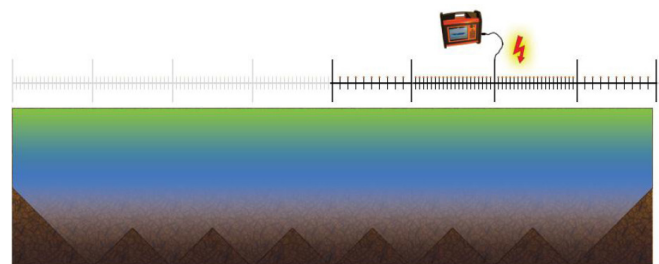
Resistivity imaging is a robust method, which often produces good results even close to for example power lines and railways, in contrast to EM methods that are mostly useless near such installations. It is, however, important to realise that disturbances can occur and that false anomalies can arise from for example metal pipes or other conductive objects in the ground.

The method is well suited for long term monitoring. A series of measurements taken at different times can provide information about variations in water content, movement of pollutants in the ground, seepage through embankment dams etc.

Automated data acquisition allows a field crew to carry out complementary investigations during measurement (e.g. levelling, GPS positioning). However, the Terrameter LS system offers outstanding field productivity; in standard electrical imaging it means that the major limiting factor is the pace of work of the field crew rather than the equipment.



On-screen pseudo section of imaging profile enables instant quality control during field operations



Principle of roll-along using the Terrameter LS and 4x21 LUND cable system



The Terrameter LS system can be expanded using optional relay switches (ES10-64), each adding up to 64 electrodes to the array.

The imaging system can be configured as 4, 8 or 12 channel system. Below are outlined examples of configurations:

ABEM Terrameter LS LUND Imaging System 4 channels

Part No.	Description	Qty
33 3000 13	Terrameter LS 4 channel	1
33 0019 26	Cable set for 5 m electrode spacing	1
33 0012 61	Steel electrode	75

ABEM Terrameter LS LUND Imaging System 8 channels

Part No.	Description	Qty
33 3000 08	Terrameter LS 8 channel	1
33 0019 26	Cable set for 5 m electrode spacing	1
33 0012 61	Steel electrode	75

ABEM Terrameter LS LUND Imaging System 12 channels

Part No.	Description	Qty
33 3000 12	Terrameter LS 12 channel	1
33 0019 26	Cable set for 5 m electrode spacing	1
33 0012 61	Steel electrode	75

Standard Field Cables

Lund cable set 2 m electrode spacing 33 0019 25

consisting of:

4	x	Electrode cable, with 21 take-outs at 2 m interval total length 50 m incl. lead-in, on reel
2	x	Cable joint
75	x	Cable-to-electrode jumper
2	x	Durable plywood box for 2 cables on reel

Lund cable set 5 m electrode spacing 33 0019 26

consisting of:

4	x	Electrode cable, with 21 take-outs at 5 m interval total length 110 m incl. lead-in, on reel
2	x	Cable joint
75	x	Cable-to-electrode jumper
2	x	Durable plywood box for 2 cables on reel

Lund cable set 10 m electrode spacing 33 0019 31

consisting of:

4	x	Electrode cable, with 21 take-outs at 10 m interval total length 210 m incl. lead-in, on reel
2	x	Cable joint
75	x	Cable-to-electrode jumper
2	x	Durable plywood box for 2 cables on reel

Lund cable set 20 m electrode spacing 33 0019 29

consisting of:

4	x	Electrode cable, with 21 take-outs at 20 m interval total length 410 m incl. lead-in. Each cable divided into two cable lengths, each on reel
2	x	Cable joint
75	x	Cable-to-electrode jumper
4	x	Durable plywood box for 2 cables on reel

Dual Purpose Sea & Land Cable

For investigations across rivers, in transition zones or wetlands ABEM has designed a dual-purpose cable that is ideal for work that needs a water-proofed cable without hampering the usability for investigations on land. The cable has waterproofed take-outs with 316SS sleeve that fits to jumper cables used on land and creates a good contact surface in the water. The cable is rated for use down to a maximum depth of 160 m

Custom designed field cables

Contact ABEM for a quote if you need cables with customized electrode spacing or configuration

Software for 2D and 3D interpretation

A wide selection of interpretation software is available from ABEM

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Field Equipment

Consult your local ABEM distributor for full details of the various configurations available for you. Turnkey packages for both 2D and 3D measurements are offered, including cables, electrodes and software. Also a VES configuration is available.