

Thermal testing services

Soil Environment Services (SES) have been testing soil and backfill to the Energy Networks Association specifications for over 10 years. We test soils, rocks, and cable bedding materials such as *Cement Bound Sand* and in recent years have worked with some of the biggest cable laying companies on the longest cable routes in the UK. Our specialised laboratory is UKAS accredited. Testing is undertaken on site and in the laboratory and we can train on site staff to carry out in-situ backfill density testing.

Laboratory testing

Cable backfill testing (ENA TS 97-1 / NGTS 3.05.07)

Materials

- Cement Bound Sand (CBS)
- Selected Sand
- Gravel Sand
- Alternative Backfill

Tests

- Thermal Resistivity
- Dry Density
- Voids Ratio
- Cohesion
- Particle Size Distribution

Thermal Resistivity (TR) of soils and solid rock cores (ASTM D5334-14 / IEEE Std 442)

Materials

- Soils (Bulk or core samples)
- Rock Cores

Tests

- TR at received moisture
- TR fully dry (fully dried at 105C)
- TR at specified density and/or moisture
- TR dry out curve



In-Situ testing

Soil Environment Services can test the natural soils and rocks along a cable route before ground has been broken, CBS and backfill in trenches and ground within a substation. All on site testing is to National Grid and Energy Networks Association technical specifications. Training client's staff is undertaken for routine testing of trench backfill density.

Recent Project Examples



Moray East cable route

Crossaig Substation

Test Specifications (as applicable)

- ENA TS 97-1, Issue 2 2016: *Special backfill material for cable installations.*
- ASTM D5334 – 14: *Standard Test Method for Determination of Thermal Conductivity of Soil and Soft Rock by Thermal Needle Probe Procedure.*
- IEEE Std 442 – 2017: *IEEE Guide for Thermal Resistivity Measurements of Soils and Backfill Materials.*
- National Grid TS 3.05.07
- BS 1377
- BS 8990

Accreditations

- UKAS ISO 17025 (Testing laboratory number 10768)
- EUSR Person (Substation)
- CSCS
- SWQR (CAT SCAN)
- Red Cross Health and Safety at work

Contact

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