

SMARTPT

GA –GP Model v.1.02

Standard Penetration Test Hammer Energy
Efficiency Monitoring System



OVERVIEW

SMARTPT is a Standard Penetration Test hammer efficiency real time monitoring system. SMARTPT is designed to be easily utilized and portable for on-site hammer efficiency calibration and reporting.

With SMARTPT, in-situ measurements of energy transferred via drill rods to the SPT sampler can be completed reliably within minutes, independent of the field conditions. The measurements are compared with the theoretical energy input, revealing the hammer efficiency ratio with each blow.

Using a custom instrumented rod equipped with high quality sensors, a data acquisition unit, and an in-house developed software capable of near-real time processing; hammer efficiency ratios can be measured and reported on-site.

SMARTPT is a blend of product and services, developed as a result of in-house research and development efforts conducted at our laboratories.



FEATURES

- Compliance with ASTM D4633-10 and BS EN ISO 22476-3 standards.
- Options to provide full calibration service at your investigation site, or facilities at our headquarter office.
- Lightweight and portable, physically protected hardware components against severe environmental effects.
- In-depth and rapid data analysis, detailed data sheet generation for documenting the characteristics of each hammer blow.

Motivation for SPT Energy Measurements

- SPT blow-counts should be normalized with respect to a reference energy input level as in accordance with ASTM D1586.
- ASTM D6066 openly states that SPT based seismic soil liquefaction triggering assessments shall be made using energy corrected blow-counts, in which the correction is to be made based on actual field measurements of hammer energy efficiency.
- It has been demonstrated and documented that hammer mechanism, rod assembly details, uncertainties due to operator behavior affect the hammer efficiencies significantly. Solid data based on research proves that there exists a variability range extending to a factor of 2 (45% - 90%) from the measured energy efficiency values from automatic hammers produced by different manufacturers.

Technical Specifications

A/D Conversion Rate	18 bits
Sampling Rate	> 50 kHz / Channel
Accelerometer	10,000 g Capacity, Piezoresistive
Strain Gauges	Resistive Type
Drill Rod Diameter	54 mm*

*54 mm by default, other diameters available by request

Rapid and Reliable Results in 4 Easy Steps



Record



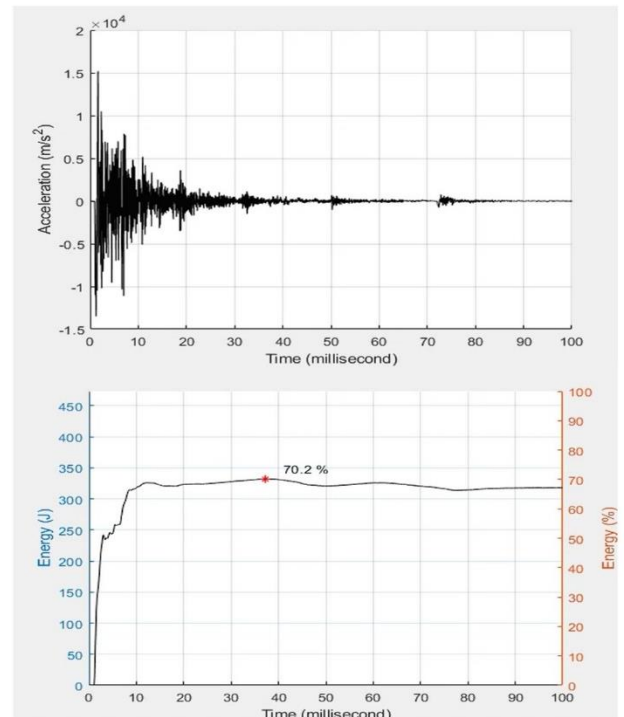
Visualize



Process



Report



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