D-Cone

Digital CPT Cone and Geotechnical Sensor Network (GSN)

Geomil equipment

World's first manufacturer of CPT equipment

D-Cone - Key Features

- Digital cone and data acquisition system for onshore and offshore applications
- Large onboard memory for long operation
- High performance 24 bit system, 18 bits noise free
- Auto cone recognition, calibration data stored in the cone
- Favourable geometrics
- Excellent wearing characteristics

The digital D-Cone series represents Geomil Equipment's latest innovation in Cone Penetration Testing (CPT). Since the introduction of the CPT in 1932, our cones have evolved from mechanical to electrical and now to digital. For over 80 years our equipment has contributed to the successful completion of many challenging projects across the globe.

Drawing on our experience and proven technology the **all new, next generation, digital cones** are developed in-house. The D-Cone measures the cone resistance (q_c) and local sleeve friction (f_s) using strain gauged precision load cells. In addition, the dynamic pore water pressure (u) is measured by a piezo element and an accelerometer is used to monitor the inclination in X and Y directions.

The standard offered measuring range is 100 MPa for q_c and 1 MPa for f_s with additional ranges available on request.

The D-Cone is part of the newly developed Geotechnical Sensor Network (GSN).

D-Cone - Specifications

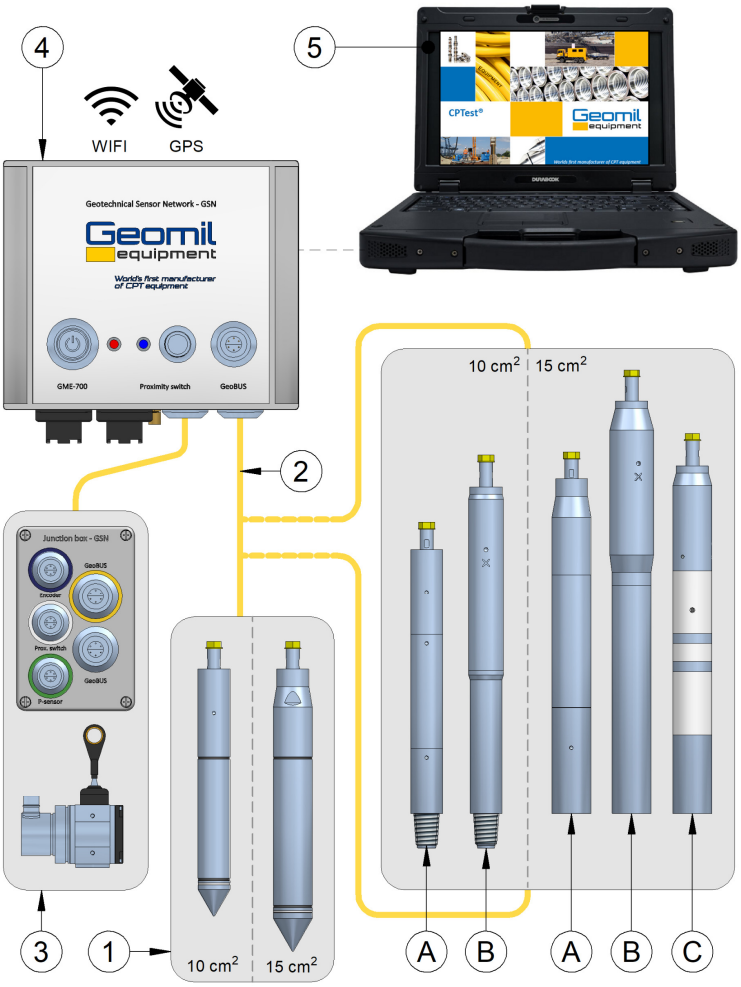
Cone area	5, 10, 15 or 25 cm^2
Load cell arrangement	Subtraction or compression
a-factor	Better than 0.8
b-factor	0
Filter position	u_1, u_2 or u_3
Standards compliance	ISO 22476-1:2012 ASTM D5778-12
Application class	Class 1 and class 2 standard * Class 1+ upon request * depending on configuration

D-Cone

Digital CPT Cone and Geotechnical Sensor Network (GSN)

Geomil equipment

World's first manufacturer of CPT equipment



A standard Geotechnical Sensor Network (GSN) for CPT consists of:

1. Digital subtraction or compression type D-Cone
2. High quality GSN CPT cables in standard or custom lengths
3. Digital depth encoder
4. Digital data acquisition system GME-700 with GPS as standard and optional WiFi
5. Data acquisition software package CPTest

Optional add-ons:

- Wireless system
- Battery add-on (A) (for memory or wireless* use of cone)
- Seismic module (B)
- SMP (Soil Moisture Probe) module (C)
- Magnetometer module
- Dipole module
- Temperature sensor module
- Client specific module

All listed add-ons or modules are provided with a custom connector to allow easy integration with any D-Cone.

A GSN can also be equipped with other geotechnical instruments, such as: shear vanes, tilt meters, piezometers etc. to provide a complete geotechnical data package.

CPTest Data Acquisition Software

- New CPTest acquisition software specifically designed for use of a GSN (with D-cone)
- 64-bit application suitable for Microsoft Windows 7 or above
- Auto recognition of the connected GSN sensors
- Data real time visible
- Compliant to latest GEF data standard
- Specific features for offshore use

For more technical information or a quotation based on your specific requirements please contact sales@geomil.com or call us at +31 172 427 800.

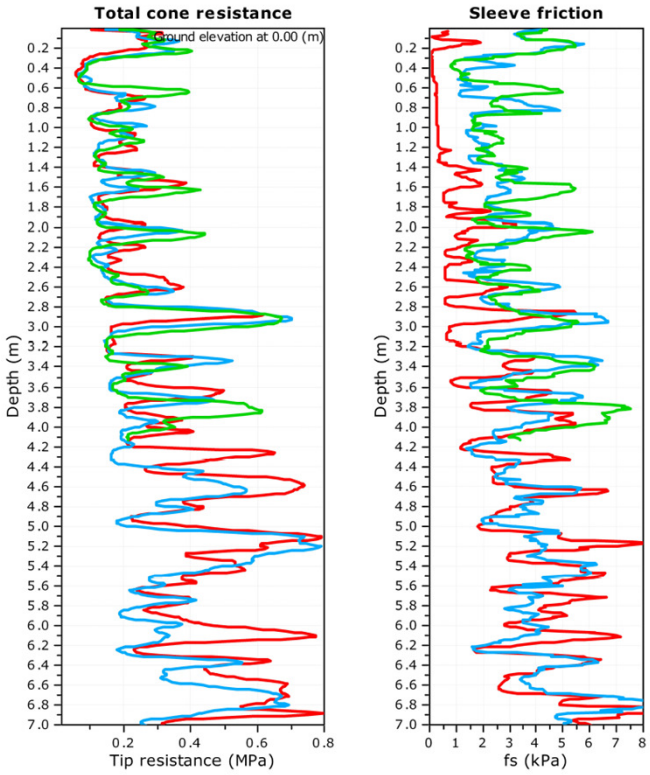
www.geomil.com

Ultra-sensitive cone

For extremely soft material testing

Geomil equipment

World's first manufacturer of CPT equipment



- *The red plots are from a very sensitive 10 MPa compression cone*
- *The blue and green plots are made with the ultra-sensitive 3 MPa cone*
- *Test results collected by IGS*

Accurately measuring cone resistance and in particular sleeve friction in very soft or underconsolidated soils, and deposits such as marine muds and mine tailings, has always been a challenge within the geotechnical industry. Conventional cones, even the most sensitive compression type cones, can struggle with the internal friction of seals and have proven to be prone to the effect of dirt ingress.

To counter this problem, Geomil Equipment together with Australian based specialist contractor IGS, developed a new ultra-sensitive cone to do exactly that: acquire accurate and reliable data in even the softest of materials.

Featuring an innovative load cell configuration with a range of as low as 3 MPa for q_c and a comparatively dimensioned f_s load cell, this 15 cm² cone can accurately measure the key parameters in material with shear strengths of just a few kPa – and does so without preloading the sleeve, the effect of which is up for debate.

Rigorous testing at mine sites all over Australia has shown that the readings are reliable and repeatable, with consistent sleeve friction measurements of < 1-2 kPa. Comparative testing with a downhole vane system confirmed the reliability of the data.

This ultra-sensitive cone is now available for any contractor wanting to achieve the same excellent data resolution. Two ranges are available, 3 and 10 MPa, both with the potential to comply with the strictest of cone penetrometer class (1+).

Characteristics:

- 15 cm² cone base area
- full range 3 or 10 MPa (q_c)
- available in analog or digital configuration
- fitted with temperature sensor as standard
- compatible with Geomil's standard systems

For more technical information or a quotation based on your specific requirements please contact sales@geomil.com or call us at +31 172 427 800.

0094_10

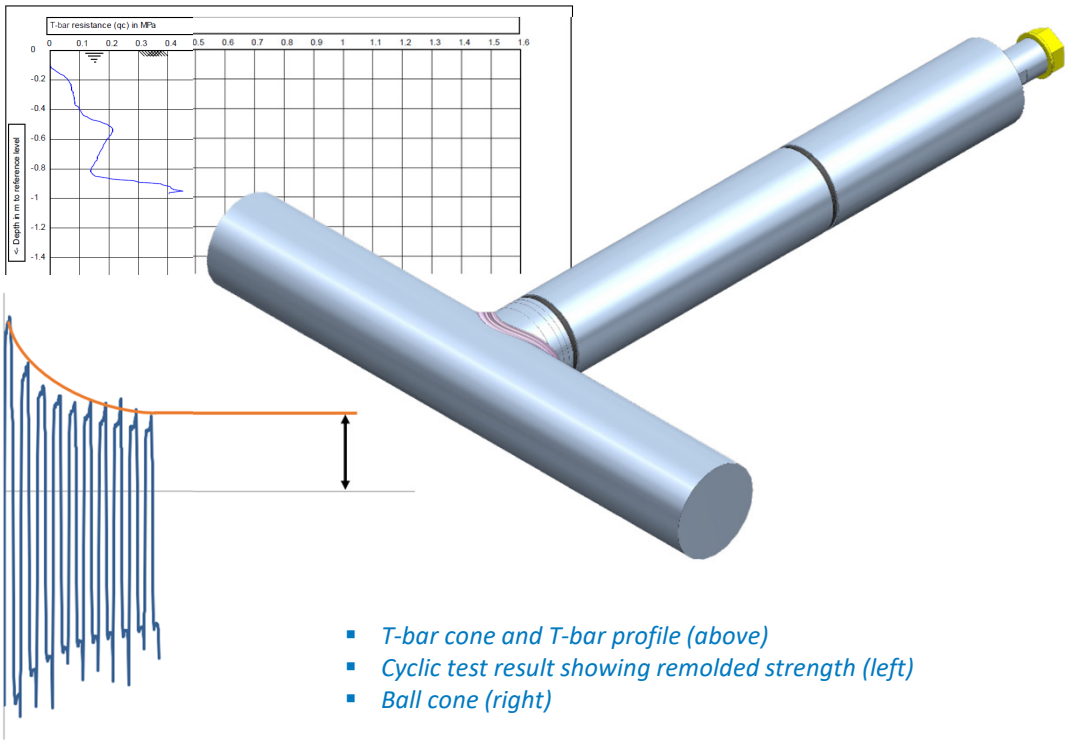
www.geomil.com

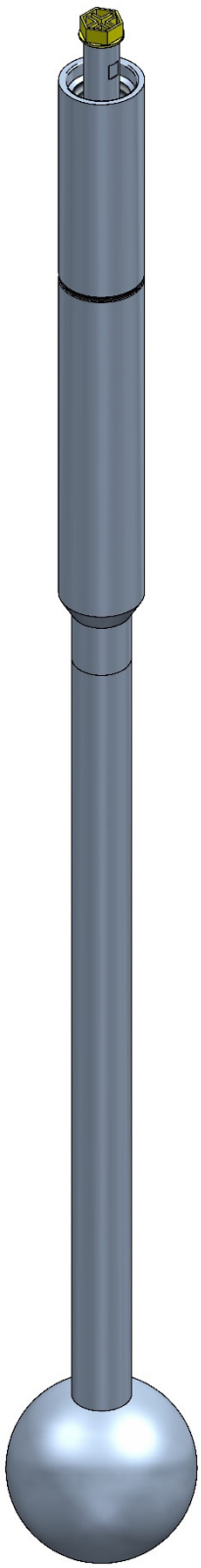
Full flow penetrometers

For extremely soft material testing

Geomil equipment

World's first manufacturer of CPT equipment





- *T-bar cone and T-bar profile (above)*
- *Cyclic test result showing remolded strength (left)*
- *Ball cone (right)*

Full flow penetrometers are used to accurately determine strength characteristics of soft and very soft soils, sediments or mine tailings. Originally designed as lab instrument, the test found its way to offshore geotechnical investigations and finally to other areas of use.

The full flow penetrometers provide the additional advantage of obtaining the remolded shear strength by cycling the T-bar or Ball upwards and downwards over a predefined and fixed distance.

Corrections for overburden stress are minimized by taking advantage of the symmetrical loading mechanism, whereby the soil flows around the sensing instrument, unlike a normal cone which is asymmetrically loaded. The larger surface area increases the sensitivity compared to the smaller area of the conventional cone. All this combined results in more accurate S_u data.

Geomil Equipment supplies a range of components that allow for full flow testing with regular CPT cones, whereby the cone tip is replaced by a T-bar or Ball. Testing is then conducted in the same fashion as regular CPT.

Characteristics T-bar:

- fits any current Geomil 10 cm² cone
- 100 cm² surface area

Characteristics Ball:

- fits any current Geomil 10 cm² subtraction cone
- 50 cm² surface area

Both T-bar and Ball are compatible with Geomil's standard systems and accessories.

For more technical information or a quotation based on your specific requirements please contact sales@geomil.com or call us at +31 172 427 800.