



Cone Penetration Testing Products



Our range of CPT equipment

We are a specialised developer and manufacturer of high quality Cone Penetration Testing (CPT) systems. We manufacture the widest range of CPT cones in the industry, provide specialised CPT software and carry a large stock of spare parts so we can respond immediately to requests from our customers. Apart from the cones we can also provide a wide range of equipment options to push the cone and various modules that can be used with the cones to obtain additional information. In short, we are proud to have, or be able to devise, a solution for every CPT challenge - regardless of its complexity.

All Royal Eijkelkamp and Eijkelkamp GeoPoint SoilSolutions CPT products are designed and manufactured according to the highest standards. Our CPT cones meet all the international standards, including ISO 22476-1 and ASTM D5778.

Cones and modules

Electrical analogue and digital CPT cones

Eijkelkamp GeoPoint SoilSolutions provides high-quality cones. The electrical cone contains temperature-compensated strain gauge transducers to measure the tip resistance and the sleeve friction. In case of a digital cone, built-in analogue to digital conversion (32-bit resolution) and built-in cone ID with calibration factors eliminates the effects of user and system errors on the measurements. The cones can be supplied as compression cones (with independent load cells for the cone tip resistance and the sleeve friction) or subtraction cones (a more robust design and therefore more durable).

Available options for the electrical cones include:

- Analogue cones, with or without built-in amplifier
- 32-bit digital cones
- Subtraction and compression type
- Pore water pressure in u_1 , u_2 or u_3 position
- 1, 2, 5, 10 or 15 cm² cross-sectional area
- 10 to 200 kN max load
- Ball- or T-bar cone

Expandable with modules to measure and capture:

- Temperature
- Magnetic field
- Video
- Fluorescence
- Electrical conductivity
- Thermal conductivity
- Seismic waves
- Water content/dielectric constant



Other than the seismic module, which can be combined with all electrical cone types, the modules must be used in combination with a 15 cm² cone or be applied on a stand-alone basis with a dummy tip.

Electrical SonicCPT cone

When a cone cannot be pushed any deeper due to the encountered friction, applying some vibration can help to reduce the friction along the CPT rods.

A standard electrical CPT cone may not be able to withstand such action, the SonicCPT cone can. Any electrical subtraction cone without pore water pressure measurement can be supplied as a SonicCPT cone.





Seismic module

Seismic cone penetration testing has demonstrated to be a very accurate and reliable method to determine low strain in situ compression (P) and shear (S) wave velocity profiles. These velocities are directly related to the various soil elastic constants, such as the Poisson's ratio, shear modulus, bulk modulus and Young's modulus. They can be used in both static and dynamic soil analysis, for example to assess the response to earthquakes or dynamic loads produced by wind turbines or rotating equipment. Another important use of estimated shear wave velocities in geotechnical design is in the liquefaction assessment of soils, since the shear wave velocity is influenced by many of the same variables that influence liquefaction.

The following options are available for this module:

- use of either geophones or accelerometers as seismic sensor
- use of either single or dual array of seismic sensors

Geomagnetic module

A magnetometer, such as is included in our Geomagnetic module, is a scientific instrument used to measure the strength and/or direction of the magnetic field. A mass of ferromagnetic material creates a detectable disturbance in this magnetic field. The magnetic anomaly produces a weak alternating magnetic field, which can be detected by the magnetometer.

The Geomagnetic module can detect objects within a radius of approximately 2 metres. It's very suitable for:

- Unexploded bomb/ordnance surveys
- Determination of the length of foundation/sheet piles
- Determination of the position of retaining or tieback anchors
- Determination of the position of power cables

Dielectric module

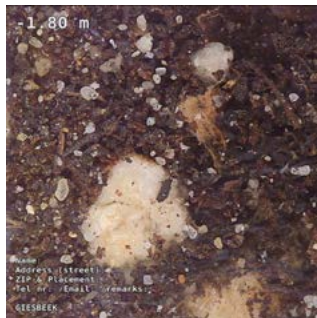
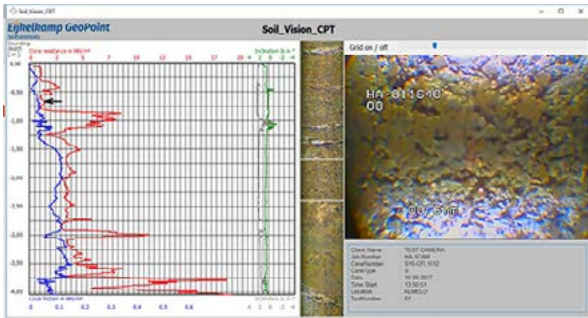
The dielectrical parameters of the soil, the electrical conductivity and electrical permittivity, vary predominantly with the soil's water content and the contamination with hydrocarbons. Furthermore, electrical conductivity is inversely proportional to particle size e.g., clays usually have higher conductivity than sands.

The conductivity is measured between two insulated electrodes, using the soil mass as dielectric correlated material.



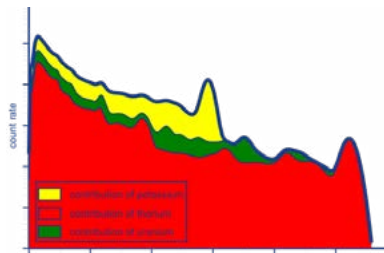
HD Video module

The video module records images that show soil texture, colour, grain size and other features of the soil passing the miniature colour camera. When using an ultraviolet (UV) light source, the module can also indicate the presence of hydrocarbon compounds as these generally fluoresce when excited by UV light. The video module is pushed into the soil on the back of an electrical CPT cone. The video material obtained can be represented as a boring log, to be viewed alongside the CPT data obtained.



Gamma-ray (spectrometer) module

The technique of measuring the natural radiation in the earth's surface is called "radiometry". During a radiometric survey the gamma radiation emitted by the surrounding soil is measured, either by simply recording the intensity of the gamma radiation ("counts") or by determining the spectrum of the intensity. The latter will allow quantification of the various naturally radioactive elements, such as potassium (K), uranium (U) and thorium (Th). The outcome can then be used for soil classifications as every type of soil and mineral has its own so-called fingerprint of these three elements.



Data acquisition system

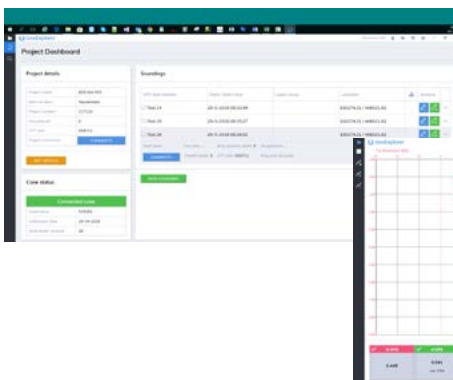
GeoLogger

The GeoLogger is the heart of the data acquisition. It is designed to be used in combination with a standard Windows computer and is controlled with the GeoExplorer software.

GeoExplorer data acquisition software

GeoExplorer is a state-of-the-art Windows based software package specially designed for the on-site registration of cone penetration testing data. It meets the latest national and international standards, and industry demands.

GeoExplorer is modern and versatile, and applies a database structure to store the recorded data. The latest version includes cloud technology, which allows remote monitoring of the CPT in real-time.



Equipment to push the cone

Compact Crawler

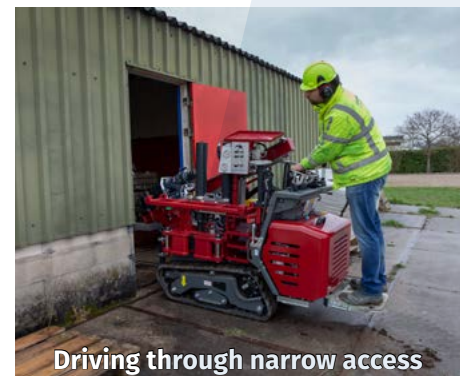
Our Compact Crawler series offers small, but powerful units to perform CPT even at places where only narrow access is available. In addition, the crawler is light enough to be transported in a small van or trailer which makes these units very suitable for use in urban areas.

The required reaction force is generated through four ground anchors that can be installed with the drill motor mounted on the crawler.

For use in basements, or places where it is not possible to use the complete unit due to accessibility, noise or exhaust gases, the CPT pusher can be removed from the unit and bolted to the floor. The Compact Crawler will then power the CPT pusher remotely as a hydraulic power pack.

The following options are available:

	Compact Crawler 130 kN		Compact Crawler 200 kN		Compact Crawler 200 kN XL	
Pushing force	130 kN	13 tf (long)	200 kN	20 tf (long)	200 kN	20 tf (long)
Stroke	550 mm	22 in	550 mm	22 in	1050 mm	41 in
Width	790 mm	31 in	840 mm	33 in	840 mm	33 in
Weight	1100 kg	2425 lbs	1360 kg	3000 lbs	1390 kg	3065 lbs



Stand-alone CPT pushers

For cases where only a CPT pusher is required, the CPT pushers that are part of our Compact Crawlers can be purchased separately as stand-alone pushers together with the hydraulic power packs. We also offer the SP 35, which is a good option when very small pushing forces are required, for instance in near-surface investigations or in soft soils, and/or when using smaller diameter cones.

The following options are available:

	SP 35		SP 130		SP 200		SP 200XL	
Pushing force	35 kN	3.5 tf (long)	130 kN	13 tf (long)	200 kN	20 tf (long)	200 kN	20 tf (long)
Stroke	600 mm	24 in	550 mm	22 in	550 mm	22 in	1050 mm	41 in
Weight	45 kg	100 lbs	100 kg	220 lbs	200 kg	440 lbs	230 kg	510 lbs



Drill'n CPT

The Drill'n CPT is a fully automatic CPT tool. When placed in the break-out clamps of a drill rig, it allows for the conversion of a drill rig into a CPT unit. It can deliver a continuous CPT sounding or provide CPT data in between sampling operations. Where necessary the drill can be used to penetrate hard soil layers, after which the CPT operation can be continued.

The Drill'n CPT is designed to be placed and clamped in the foot-clamping device of the drill rig. Depending on the weight of the machine an additional ground anchor can or must be used to provide the required reaction force.



Drill'n CPT 200 kN		
Pushing force	200 kN	20 tf (long)
Stroke	800 mm	32 in
Width	780 mm	31 in
Weight	280 kg	617 lbs

Drill'o CPT

Bridging the gap between drilling and CPT, the Drill'o CPT is a cost-effective way to transform your drill rig into a CPT rig capable of performing true continuous cone penetration tests. The Drill'o CPT tooling is mounted between the drill head and the drill pipe, so CPT can be performed with almost any drill rig.

The Drill'o CPT uses the vertical movement of the drill head to push the CPT cone into the ground. The maximum pushing force is therefore dependent on the rig's hydraulic system, as well as its weight to provide a reaction force.





Boxed Crawler 100 kN

The Boxed Crawler CPT100 series is a ballasted and tracked unit for efficient Cone Penetration Testing (CPT). This next generation CPT crawler can be characterised by a compact design combined with low fuel consumption, thanks to auto-idle and low engine speeds and low ground pressure.

All functions of the Boxed Crawler 100 kN are operated from a PLC touch screen with a manual override for several functions, while driving and levelling can be performed via a remote control system. The hydraulic system is load sense controlled and designed for minimal power requirements.



	BC 100	
Pushing force (depending on rig weight)	110 kN	11 tf (long)
Pulling force	250 kN	25 tf (long)
Stroke	1250 mm	49 in
Length	4760 mm	187 in
Width	2500 mm	98 in
Height	2800 mm	110 in
Weight	11500 kg	25350 lbs

Boxed Truck Crawler 180 kN

The Boxed Truck Crawler 180 kN is a ballasted, fully contained, truck-mounted CPT unit. It can drive to the project site without the need for a delivery vehicle; not only reducing mobilisation costs but also allowing for maximum project flexibility. Thanks to the deployable crawlers it is able to traverse wet or boggy ground, allowing it to test on sites that other trucks simply could not reach. The quick positioning between locations, efficient automatic levelling system and lack of a need to install any anchors let you achieve high production rates.



	BTC 180	
Pushing force (depending on rig weight)	180 kN	18 tf (long)
Stroke	1250 mm	49 in
Length	8150 mm	27 ft
Width	2500 mm	8 ft
Height	4000 mm	13 ft
Weight	17600 kg	38801 lbs

Training

Royal Eijkelkamp is proud of its in-house training facility. We have different training programmes to increase your knowledge, safety and productivity. This leads to better profitability and a better market position for your business.

Besides our in-house training programs we can also provide on-site training and support anywhere in the world. We aim to provide all potential operators of the CPT equipment the knowledge and confidence to use the equipment in the best way possible.

After sales, service and calibration

All Royal Eijkelkamp and Eijkelkamp GeoPoint SoilSolutions equipment is chosen for reliability, high production and best quality CPT data acquisition. We deliver outstanding service and support for continued quality.

When you buy genuine Eijkelkamp GeoPoint SoilSolutions spare parts you can rest assured that they are just as good as the original you're replacing; manufactured and selected by the same people who made your equipment. They fit correctly and work perfectly every time. There will be no risk or hassle, with guaranteed years of high performance.

To maintain cone accuracy, it is necessary to recalibrate them regularly. The calibration interval may vary depending on customer use and application, as well as the CPT standard that is applicable. Our staff is happy to advise you on the most appropriate interval, and when recalibration is required our service staff will perform this expeditiously to minimise the time that a particular cone is not available to you.

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