

Cone Penetration Testing Products



Eijkelkamp GeoPoint SoilSolutions 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 Eijkelkamp GeoPoint SoilSolutions CPT products are designed and manufactured according the highest standards. Our CPT cones meet all the international standards, including ISO 22476-1 and ASTM D5778 (for electrical CPT) as well as ISO E22476-12 and ASTM D3441 (for mechanical CPT).

Cones and modules

Mechanical and electrical (both analogue and digital) CPT cones

Eijkelkamp GeoPoint SoilSolutions provides high-quality cones, both mechanical and electrical. 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 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 (class 1+)
- Subtraction and compression type (class 1)
- Pore water pressure in u1, u2 or u3 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, it may be possible to reduce the friction along the CPT rods by applying some vibration. While 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) and they are used in both static and dynamic soil analysis (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

Magnetometer module

A magnetometer is a scientific instrument used to measure the strength and/or direction of the magnetic field. A mass of ferromagnetic material creates though a detectable disturbance in this magnetic field. This magnetic anomaly produces a weak alternating magnetic field that is picked up by the magnetometer. The magnetometer module can detect objects within a radius of approx. 2 m and is 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

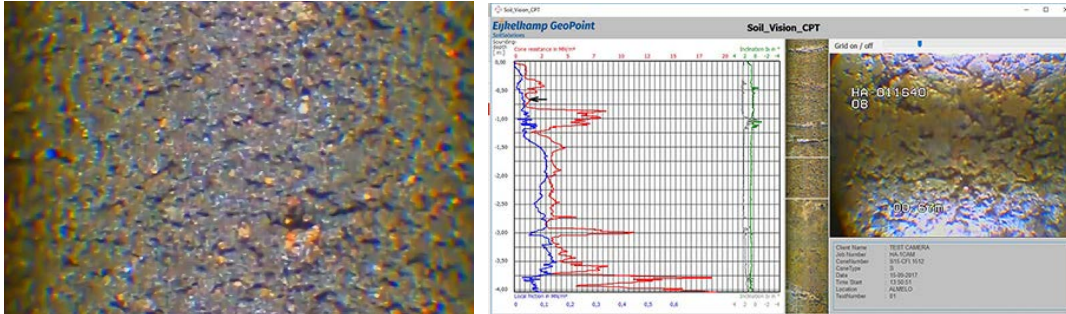
Conductivity module

The dielectrical parameters of the soil, the electrical conductivity and the 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.



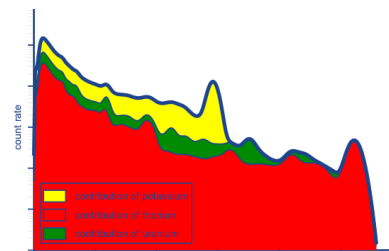
Video module

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 they generally fluoresce when excited by UV light). The material obtained can be represented as a boring log, which can be viewed together with the CPT data that were obtained as the video module was pushed into the soil on the back of an electrical CPT cone.



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 simply by 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

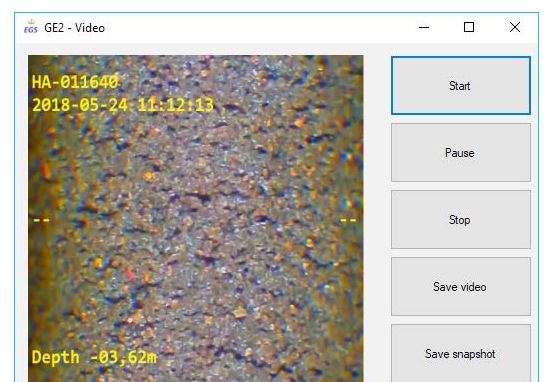
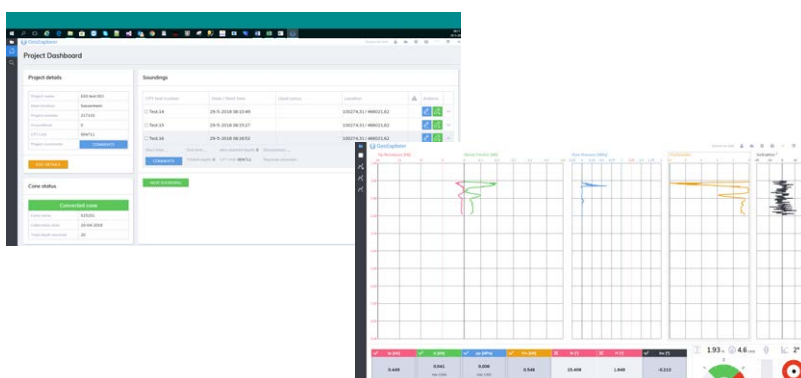
GeoLogger

The GeoLogger is the heart of the data acquisition system when pushing the cone with or without additional modules. 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. Years of experience in the CPT industry means this software will fulfil your requirements.

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 CPT

The Compact Crawler CPT series is a small, but powerful unit to perform CPT even at places where only narrow access is available. In addition it is light enough to be transported in a small van or trailer. This makes this unit perfectly 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.

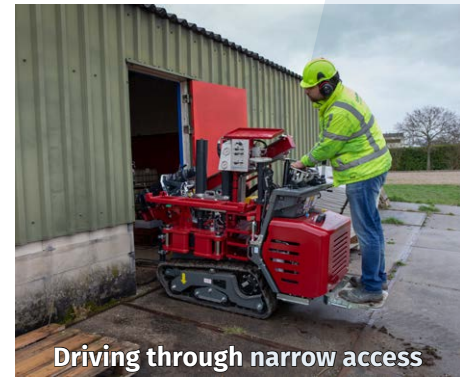
For use in basements or places where it is not possible to use the complete unit due to accessibility, noise or exhaust gases, the CPT pusher can be removed from the unit and bolted to a floor. The Compact Crawler CPT will then power the CPT pusher remotely as a hydraulic power pack.



Compact Crawler CPT130



Compact Crawler CPT200



Driving through narrow access

The following options are available:

	Compact Crawler CPT130		Compact Crawler CPT200		Compact Crawler CPT200XL	
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	1,050 mm	41 in
Width	790 mm	31 in	840 mm	33 in	840 mm	33 in
Weight	1,100 kg	2,425 lbs	1,360 kg	3,000 lbs	1,390 kg	3,065 lbs

Stand-alone CPT pushers

In case only CPT pushers are required, the CPT pushers that are part of the Compact Crawlers CPT can be purchased as stand-alone items together with the hydraulic power packs. Also available the Parvus CPT35 that can be used in case very small pushing forces are required (for near surface investigations or in soft soils, and/or when using smaller diameter cones).



Parvus CPT35 with hydraulic power pack



Stand-alone CPT200 pusher

The following options are available:

	Parvus CPT35		Pusher CPT130		Pusher CPT200		Pusher CPT200XL	
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	1,050 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 placed in the break out clamps of a drill rig, and it allows 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. If necessary the drill can be used to penetrate hard 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 (or any other system to create a reaction force) can or must be used.

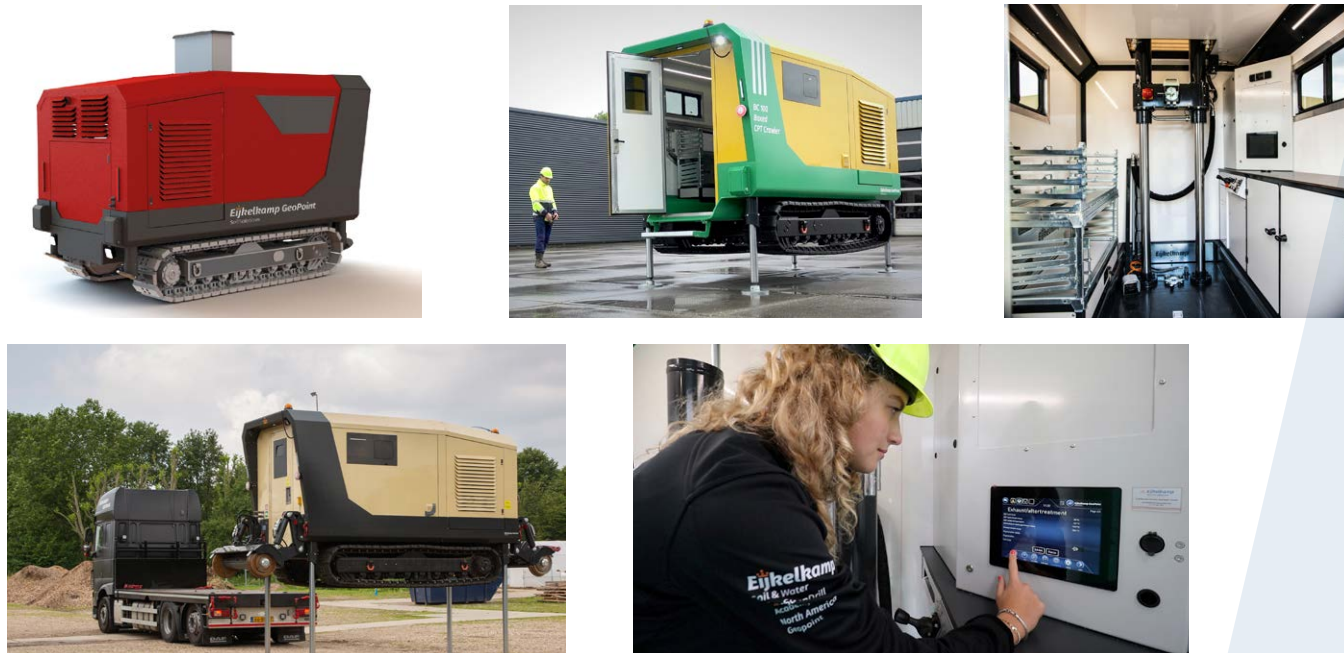
	Drill'n CPT200	
Pushing force	200 kN	20 tf (long)
Stroke	800 mm	32 in
Width	780 mm	31 in
Weight	280 kg	617 lbs



Boxed Crawler CPT100

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

All functions of the Boxed Crawler CPT100 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.



	Boxed Crawler CPT100	
Pushing force (depending on rig weight)	110 kN	11 tf (long)
Pulling force	250 kN	25 tf (long)
Stroke	1,250 mm	49 in
Length	4,760 mm	187 in
Width	2,500 mm	98 in
Height	2,800 mm	110 in
Weight	11,500 kg	25,350 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. This option will facilitate 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

Eijkelkamp GeoPoint SoilSolutions equipment is chosen for reliability, high production and best quality CPT data acquisition. To keep using our products we will back you up with outstanding service support.

When you buy genuine Eijkelkamp GeoPoint SoilSolutions parts you can be sure 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 years of high performance from the Eijkelkamp GeoPoint SoilSolutions equipment.

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

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