



ap
van den
berg

ICONE SEISMIC MODULE

For accurate insight into soil behaviour and stability



WHY THE ICONE SEISMIC MODULE?

- Triaxial measurement of S- and P-waves
- Plug & play connection
- Simultaneous measurement at multiple depths (with double set)
- Suitable for onshore and offshore use up to 1,000 m water depth

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ICONE SEISMIC MODULE

The Icone Seismic Module is a plug-and-play extension for the digital Icone system. It is used to determine the elastic and stability properties of the subsoil. By measuring the propagation speed of shear waves (S-waves) and compression waves (P-waves), key soil parameters such as G_{max} and V_s can be calculated. The Icone Seismic Module is designed for plug & play operation. Once connected, it is automatically recognized by the Ifield software, enabling fast, reliable and error-free measurements.

Applications

The Icone Seismic Module is ideally suited for:

- Analysis of subsoil behavior under vibrations or seismic loading.
- Design of foundations and offshore structures.
- Modeling soil deformation during infrastructure works.
- Determination of elastic soil properties based on seismic wave velocities.

For greater accuracy and time savings, multiple modules can be installed at fixed intervals of 0.5 m or 1 m, enabling simultaneous measurements at multiple depths. Measurements at a single depth can also be repeated and averaged within the software to improve signal quality and reliability.



Measuring principle

The seismic test is performed by positioning the module at fixed depth intervals in the soil, typically every 1 meter. A controlled vibration is generated at the surface using a hammer and the travel time of the seismic wave to the sensors at different depths is accurately recorded. The difference in arrival time between two depths is used to calculate the shear wave velocity (V_s). In combination with the soil density, the following soil parameters can be derived:

- G_{max} (small strain shear modulus)
- V_s (shear wave velocity)
- Constrained modulus
- Elasticity modulus
- Poisson's ratio

The system requires highly accurate timing. For this reason, the same sensitive seismic sensors are used to detect the trigger signal near the hammer. Careful selection of the sensors, combined with the use of an optimal number of sensors, ensures a high signal-to-noise ratio and results in reliable and repeatable measurements.

Technical specifications

Feature	Icone Seismic Module
Length module	500 mm (without Icone)
Seismic sensor	8-fold sensor (each sensor 3 directions)
Compatibility	Onshore and offshore CPT systems
Water depth	1000 m
Cone tip area	10 and 15 cm ² Icone

For more information

