ap van den berg

ICONE VANE

For reliable CPTs in soft soils

WHY THE ICONE VANE?

- Plug-and-play extension for the standard Icone system
- Integrated torque transducer for high measurement accuracy
- Electronically protected drive motor (100 Nm)
- Adjustable rotation speed for different applications
- Optional robust protective tube
- Suitable for use at water depths up to 4,000 meter

PROBE THE FUTURE

ICONE VANE

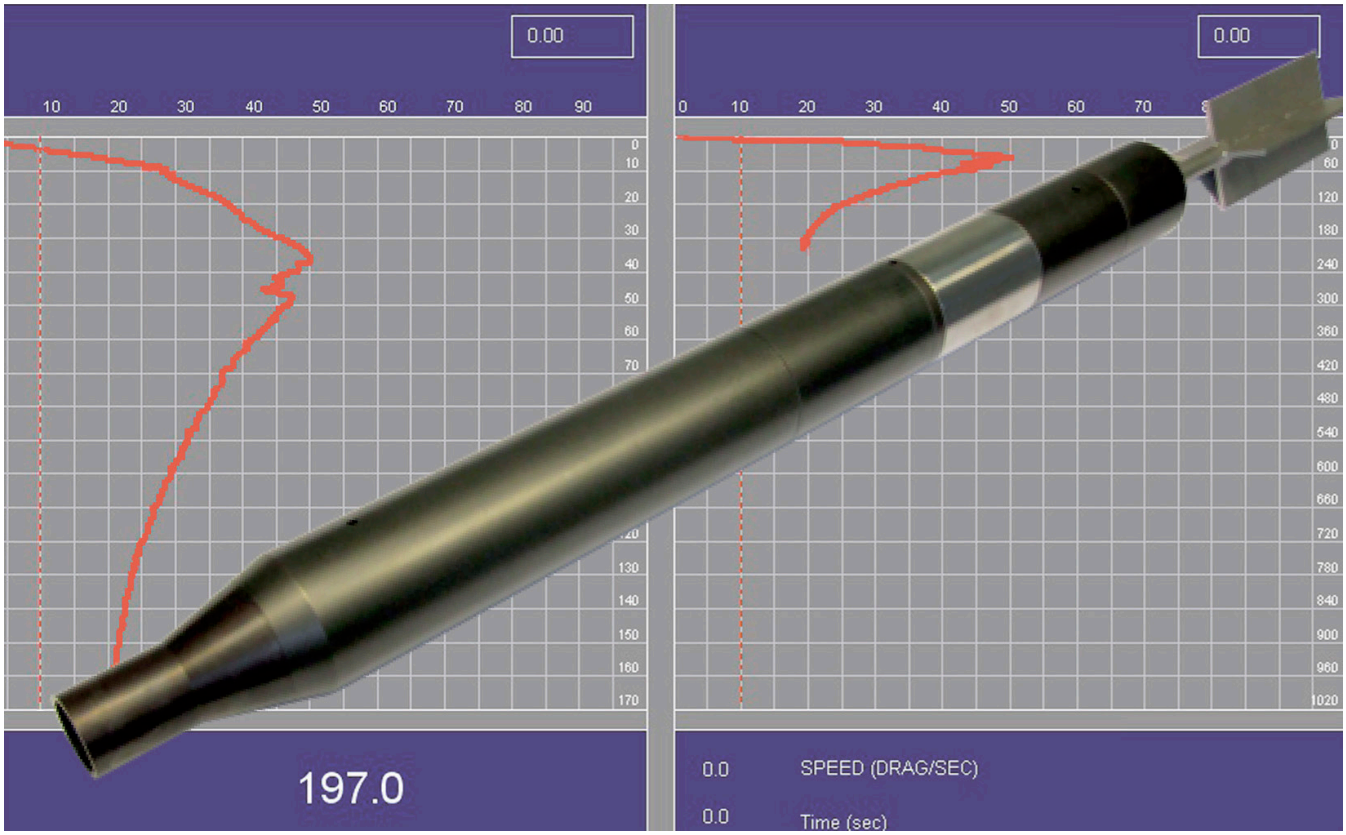
The Icone Vane enables in-situ measurement of the peak, residual, and remoulded undrained shear strength of soft, fine-grained soils such as clay, silt, and mine tailings. These measurements are essential for stability analyses in civil and infrastructure projects, both onshore and offshore.

Reliable measurement of shear strength of soft soils

De Icone Vane consists of four vane blades positioned at right angles to each other, which are pushed into the soil to the required depth. The vanes are then rotated at a constant rate while the applied torque is measured continuously.

- The peak torque when the soil shears indicates the undrained shear strength (Su).
- The soil is subsequently fully remoulded by rapid rotation.
- A second test is performed to determine the remoulded shear strength.

All digital measurement data is displayed in real time in the Ifield software, enabling immediate interpretation and efficient reporting.



Accurate digital measurement

The Icone Vane is designed for maximum measurement accuracy:

- The torque transducer and drive motor are integrated into a single compact housing directly above the vane.
- This design enables true in-situ measurement without distortion caused by torsion or friction in drive components.
- The drive motor is electronically limited to 100 Nm to prevent overload and equipment damage.
- The vane is available with different blade sizes to suit varying soil strengths.
- The tool can be used in pre-drilled boreholes or pushedd directly into the soil.

Adjustable rotation speed

The Icone Vane is available in two versions with the following rotation speed ranges:

- **Slow version:** adjustable rotation speed from 0.1 to 6° per second, designed for highly accurate shear strength measurements.
- **Fast version:** adjustable rotation speed from 0.2 to 12° per second, suitable for rapid remoulding of soils with low shear strength, allowing faster yet reliable determination of shear strength.

The rotation rate can be selected within the specified range of each version. An optional protection sleeve enables multiple vane tests at different depths without the need for drill-outs or pulling the equipment assembly between tests, significantly increasing productivity.

Applications

The Icone Vane is suitable for:

- Determining undrained shear strength in soft soils such as clay, peat, silt, and tailings
- Stability analyses for dikes, ports, foundations, and mining sites
- Onshore and offshore projects
- Applications at depths of up to 4,000 meters

Plug & Play and digital integration

The Icone Vane is part of A. P. van den Berg's modular digital Icone data system. Once connected, the Icone Vane is automatically recognized by the Icontrol data logger and Ifield software, enabling real-time display, interpretation and analysis of measurement data.

Icone HS Vane

A.P. van den Berg was questioned about the posibility to perform vane testing in soft mine tailings with our digital Icone Vane system with rotation speeds higher than 12° per second. It was stated that this soil type is so soft that our standard Icone Vane at its normal rotation rates does not result in sufficient reactive force/torque to provide useful data. In response to this request, A.P. van den Berg has developed a high-speed version of the Icone Vane.

High Speed version for tailings research

The Icone Vane with its high speed drive unit has an adjustable rotation speed between 1° and 60° per second in combination with a power amplifier connected to the Icontrol. The newly developed high speed Icone Vane provides the opportunity of an improved determination of the undrained and drained shear strength, resulting in more reliable stability analyses of mine tailings.

Technical specifications

Feature	Icone Vane
Length (unprotected)	1120 mm
Length (with protection tube)	1500 mm
Rotation speed slow version	0,1 – 6° per second
Rotation speed fast version	0,2 – 12° per second
Rotation speed high speed version	1 – 60° per second
Water depth	4000 meter
Maximal torque slow and fast version	100 Nm (electronically limited)
Maximal torque high speed version	70 Nm (electronically limited)

For more information