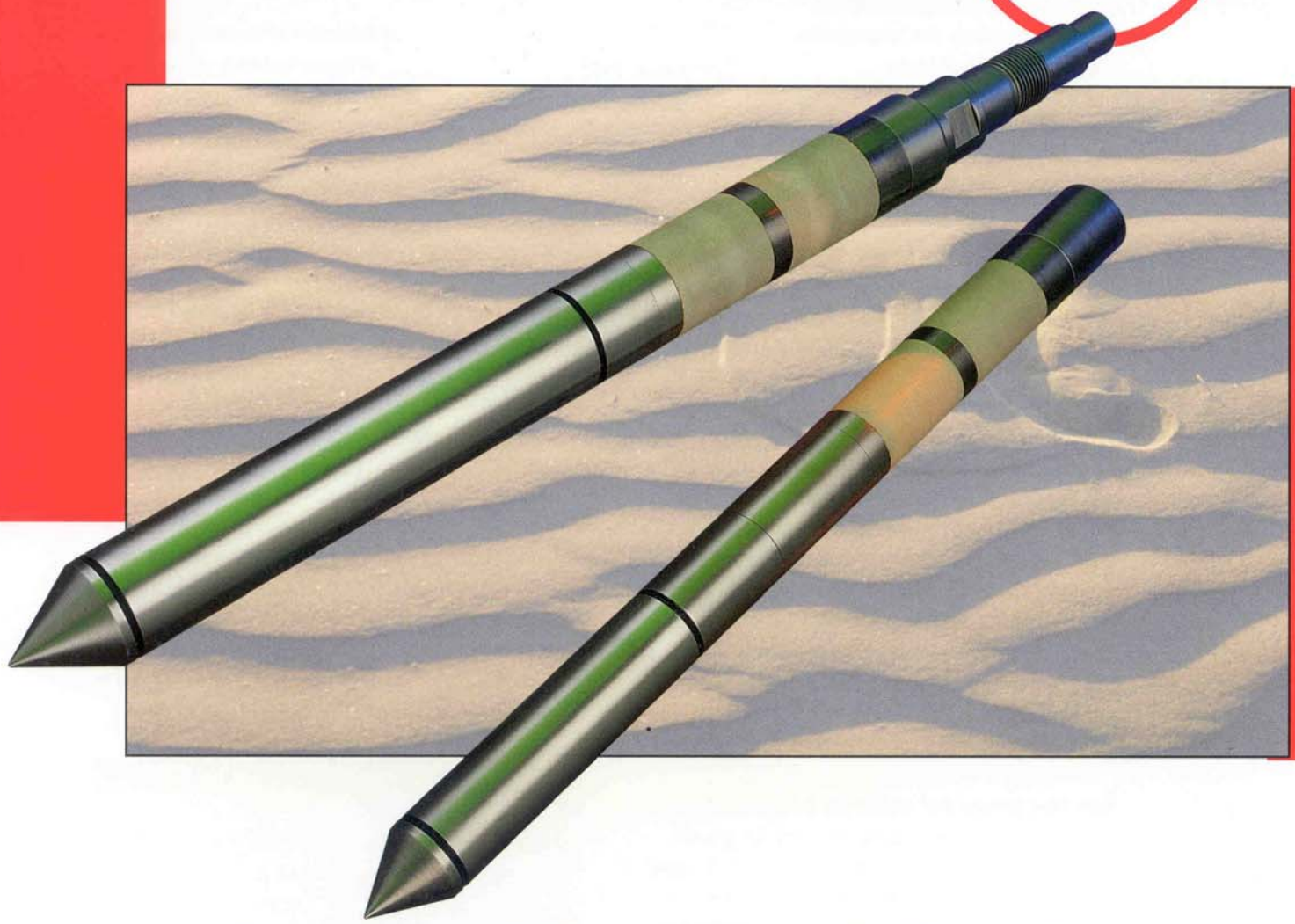
a.p. v.d. berg®



CONDUCTIVITY CONE

S 24

Conductivity cone

Introduction

Some years ago, the conductivity cone was developed for measuring the density of individual sand layers. Today an important application has been added, namely the investigation of contaminated soil layers.

"Van den Berg in every field"

Description

The conductivity which is measured appears to be dependent on the density of the medium and the conductivity of the groundwater. This implies that measurements can be taken mainly in groundwater and saturated soil layers, in which an exchange of ions takes place. By first determining in a seperate measurement the conductivity of the groundwater, the density of the medium, expressed in a resistivity factor, can be deduced. Several other factors, however, influence the total conductivity of the soil, namely the resistivity of the sand particles in it, the resisivity of the groundwater, the porosity and the amount of clay particles. For unsaturated soil layers, another factor is important, namely the extent of saturation. Conductivity measurements of soil are very suitable for obtaining information when it is possible to isolate the influence of one parameter, in this case groundwater. As such, a decline in conductivity in non-conductive quartz sand will be a direct reflection of the extent to which the groundwater is polluted.

Tests have proven that mainly the existence of clay particles influences the conductivity of the ground. Consequently, the conductivity cone can also be used to detect sand and clay layers. In order to eliminate this extra influence during measurements in contaminated soil, the use of a standard tip-friction cone is necessary. In practice this means that the conductivity sensor is installed behind the friction jacket.
The friction ratio, calculated from the tip and local friction parameters, gives a valuation of the soil classification, expressed in a numerical value between 0.6 and 10. Against the background of this data, the degree of contamination can be determined.

Summary

In connection with penetrometer, conductivity measurement is a fast and efficient method for:

a) detection of sand or clay layers at those locations where the groundwater structure is constant;

b) tracing fresh and saturated salt water-carrying layers in coastal areas.

c) the detection of contamination in saturated or partly saturated soils which have a dipole character, such as heavy metals. This is done in combination with a tip-local friction measurement, for the parameter conductivity does not, by itself, provide sufficient information in assessing contaminated areas.

Also thin soil layers can be traced very well because the signal of the tip and friction measurements can coincide with that of the conductivity signal. If desirable, the conductivity ratio diagram provides valuable information on whether and to what extent the soil is contaminated at a specific location.

Specifications	
Number of electrodes:	2
Cell constant:	≈ 0.47
Connector type:	16 pin
Signal output:	0-4 Volt

Corresponding supply module with the following ranges: 0 - 400 mS, 0 - 40 mS, 0 - 4 mS, 0 - 400 µS

- Supplied with a matched type 10 or 15 cm^2 cone.
- Supplied as an adaptor to existing ELC cones.

We reserve the right to change specifications without notice.

A.P. van den Berg Machinefabriek B.V.
IJzerweg 4, P.O. Box 68
8440 AB Heerenveen, The Netherlands
Phone +31 (0)513 63 13 55
Fax +31 (0)513 63 12 12
E-mail info@apvdberg.nl
http://www.apvdberg.nl

A.P. Van den Berg, Inc.
P.O. Box 654, 109 Greenwood Circle
Milford, PA 18337 USA
Phone +1 570 296 8224
Fax +1 570 296 4886
E-mail apvdberg@ptd.net

Divisions of Verenigde Bedrijven Van den Berg Heerenveen Holding B.V.