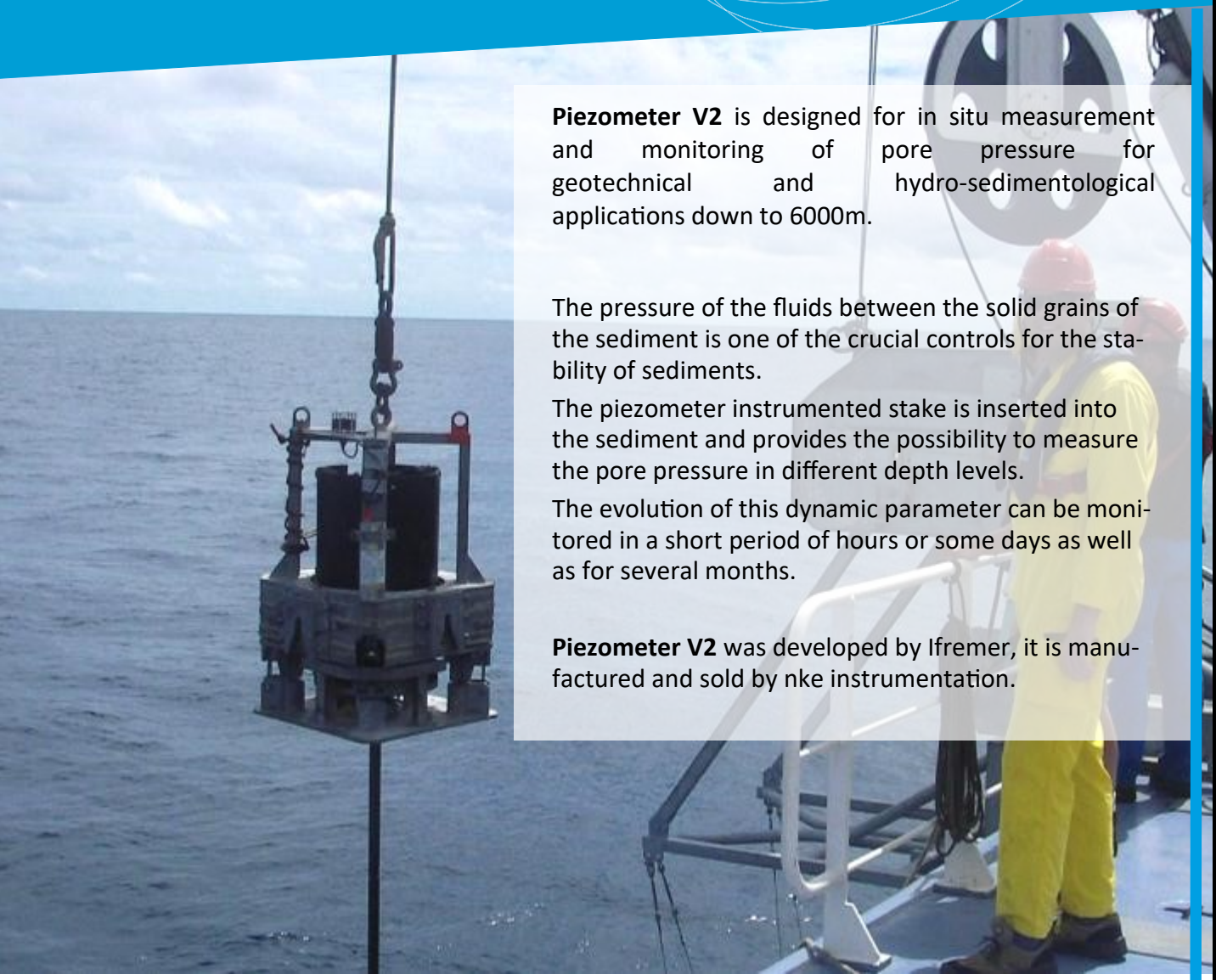
Piezometer V2

Deep sea sediment pore pressure monitoring

Deep sea



Piezometer V2 is designed for in situ measurement and monitoring of pore pressure for geotechnical and hydro-sedimentological applications down to 6000m.

The pressure of the fluids between the solid grains of the sediment is one of the crucial controls for the stability of sediments.

The piezometer instrumented stake is inserted into the sediment and provides the possibility to measure the pore pressure in different depth levels.

The evolution of this dynamic parameter can be monitored in a short period of hours or some days as well as for several months.

Piezometer V2 was developed by Ifremer, it is manufactured and sold by nke instrumentation.

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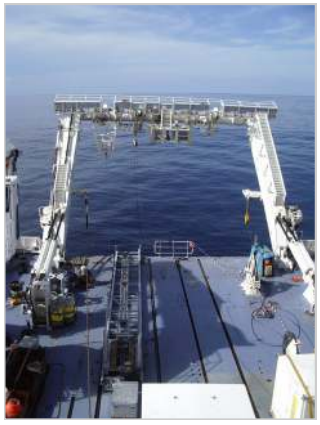


Main features

Instrumented stake	• made with a set of tubes joined by a connecting part called sleeve • several length of tube available	• diameter of tube: ext 60 mm / int 47 mm • length of first tube: 75 cm • lengths of tubes: 75, 150 and 300 cm • length of the final pin: 45m • Maximum global length = 15 m
Sensors	• differential pressure sensor subject to hydrostatic pressure and pressure of the sediment associated with a temperature sensor	• differential Hastelloy pressure sensor • range: ± 200 kPa (1kPa = 10mb) • accuracy: ± 0.5 kPa • maximum pressure: -300 kPa / + 400 kPa • temperature range: 0°C to +50°C • accuracy: ± 0.05°C
Digitizing board (MPT module)	• scans both sensors (P+T) • sends the result on a RS485 digital bus	• calibration in pressure and temperature
Data logger board (MDS module) located in a waterproof titanium container in the returnable part	• clocks measurement acquisition • records and dates measurements • communicates via wire link (ex: connection deep sea observatory) • option: communication via acoustic or inductive interface	• maximum sampling rate: 1 mn • Max. number of MPT: 12 • autonomy with 5 MPT: 800d sampling 1 mn • storage capacity: 1 to 8 Go SD card • low clock drift • time setting: with PC or GPS clock • tilt sensor along 2 axes

Piezometer V2 enables short and long term measurements:

- To determine the hydraulic parameters of the sediments based on the dissipation of the interstitial pressure generated by the sinking of the piezometer
- To identify and quantify the hydraulic gradients in the sedimentary layers
- To detect the processes responsible for interstitial overpressures (thermal gradient, dissociation of gas hydrates, seismic shock, fluid migration...)
- To quantify the effect of these unpredictable processes on the generation and dissipation of interstitial overpressures.

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