

Applications

Vibrating wire piezometers are used to monitor pore-water pressure and water levels.

Typical applications include:

- Monitoring pore-water pressures to evaluate slope stability.
- Monitoring dewatering systems and wick drains at construction sites.
- Monitoring pore pressures to check the performance of earth fill dams.
- Monitoring containment systems at landfills and tailings dams.
- Monitoring water levels in stilling basins and monitoring wells with appropriate barometric corrections.*

Operation

The vibrating wire transducer inside the piezometer converts water pressure to a frequency signal via a diaphragm, a tensioned steel wire, and an electromagnetic coil.

The transducer is constructed so that a change in water pressure on the diaphragm causes a change in the tension of the wire. The electromagnetic coil excites the wire, which vibrates at its resonant frequency. The coil then acts as a pickup, senses the frequency of vibration, and transmits a signal readout device.

The readout or data logger then converts the frequency signal to a pressure in engineering units by applying calibration factors.

Piezometers that are installed in observations wells and stilling basins that are open to atmosphere, used of a "vented" version of the piezometer is recommended if high resolution readings are required. Vented piezometers automatically compensate for changes in atmospheric pressure.



Advantages

Groutable: VW piezometers can be installed in boreholes that are backfilled with a bentonite-cement grout. This technique makes it possible to install multiple piezometers at different elevations in the same borehole.

High Resolution: VW piezometers provide a resolution of 0.025% FS.

High Accuracy: Most ranges provide an accuracy of $\pm 0.1\%$ F.S.

Rapid Response: VW piezometers respond very quickly to even small changes in pore-water pressure.

Reliable Signal Transmission: Signals from the VW piezometer can be transmitted long distances

Compatible: VW piezometers are compatible with loggers such as the Campbell CR6 or the CR1000 with VW adaptor and with GeoCloud Wireless Nodes.

Specifications

Sensor Type: Pluck-type vibrating wire sensor with built-in thermistor and tripolar plasma surge arrestors.

Range: Standard ranges include 50, 100, 250, and 500 psi. Custom calibration ranges are available.

Resolution: 0.025% F.S. with suitable readouts.

Accuracy: $\pm 0.1\%$ F.S.

Linearity: $< 0.5\%$ F.S.

Materials: Stainless steel wetted surfaces, including the sintered steel filter.

Length x Diameter: 5.2 x 0.75 inch.

Signal Cable: Four conductor cable attached at factory. Vented cable available on request.

Photo & specifications courtesy of Geokon Inc

