



FlexiMeasure™

Application Focus: Vertical Monitoring

Vertical Monitoring Challenges

The use of movement sensors deployed in a vertical string can deliver significant benefits in many structural and geotechnical applications. Precise, reliable, automated monitoring instruments can warn stakeholders of problems and inform long term decision-making, helping to protect assets and people. Instruments such as inclinometers have been used to measure lateral earth movement and structural deflection for at least 30 years. Widely available inclinometer options share a number of limitations however: they tend to be heavy and hard to handle, power-hungry and not very flexible. This limits their value in many engineering or mining applications where sites tend to be remote from mains power supply and hard to access due to factors such as time pressure, rough ground or restricted space.

Solution: FLEXIMEASURE™

FlexiMeasure™ from Senceive provides an alternative that is easy to transport and use, highly adaptable and built around the company's well-proven, precise, triaxial wireless tilt sensors.



Used vertically in geotechnical applications, FlexiMeasure™ provides a modern carbon fibre in place inclinometer (IPI) solution to measure lateral ground movement in a range of applications. Examples include:

- earth structures such as tailings dams
- levees, landfill tip cells, sheet piled walls
- slopes and deep excavations such as mines.

Used in structural monitoring applications, a string of FlexiMeasure™ segments can be embedded in, or attached directly to, a building or structure to measure change in verticality. Example applications include:

- bridges, retaining walls, shafts and other civil engineering structures
- diaphragm walls and secant piles
- buildings.

Because it is quick to install and easy to re-deploy it is ideal for use on structures that are under construction, or on third party assets nearby. And with virtually no maintenance requirements, it is also well-suited for longer term structural health monitoring.

The carbon fibre segments can be connected in seconds and are available in four lengths, ranging from 0.5 metre to 3 metres.



Up to 32 segments can be used per string. A number of casing options are available, including 59 mm or 49 mm ID inclo casing. Segment lengths can be mixed, which means that it is not critical to know exact borehole depth before installation, potentially preventing the need for costly re-mobilisations. With a single one metre segment weighing just 250 grammes it is often possible for one person to carry a full system to site and install it in less than an hour.

FlexiMeasure™ self-configures on site, with data transmitted via a smart gateway immediately it is installed, cutting the need for a detailed installation report. The robust IP67 gateway provides a 4G/PoE/WiFi communication uplink to WebMonitor – Senceive's cloud based visualisation software. Internal memory provides back-up data storage. It is engineered for low power operation and to supply the system with uninterrupted power and communications due to its on-board battery and optional solar PV panel or DC supply.

FlexiMeasure™ simplifies complex vertical monitoring challenges, providing a precise, robust way to monitor lateral ground movement and change in verticality of structures.