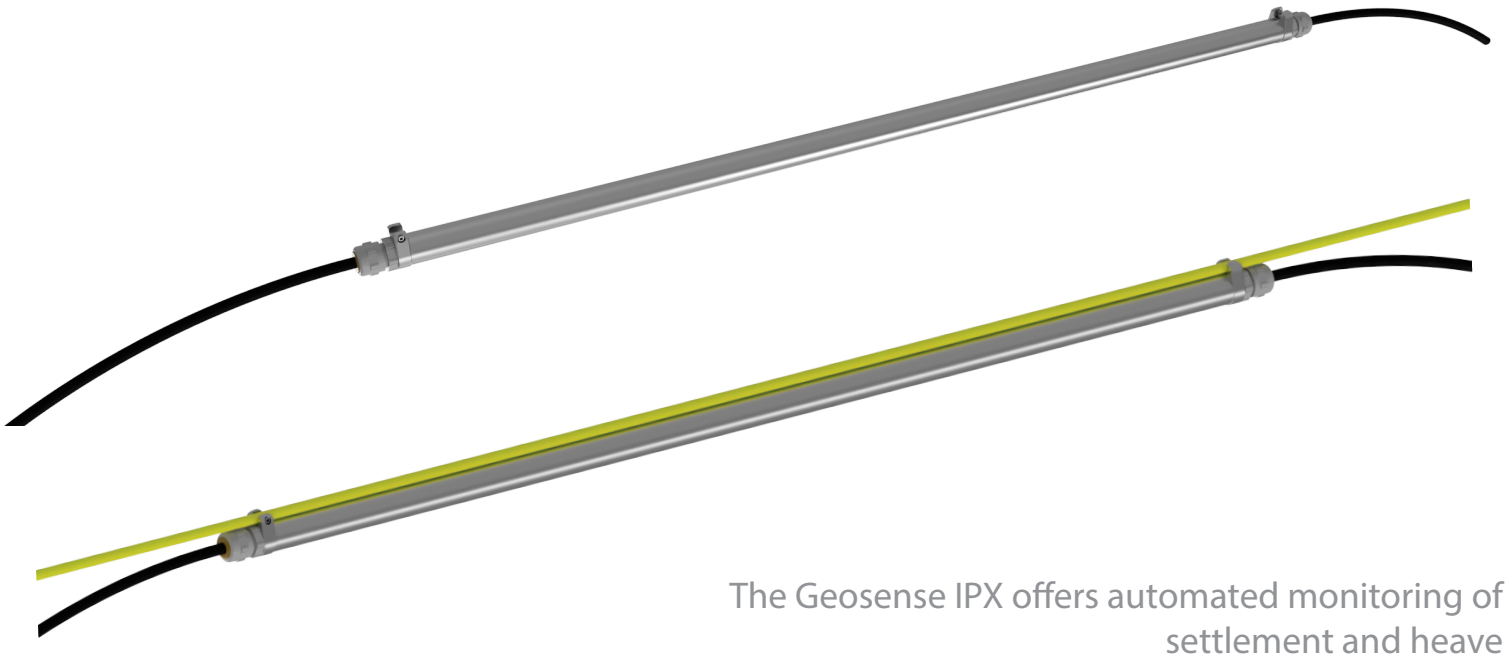
DATASHEET

TWO YEAR WARRANTY

IPX

In-place Extensometer

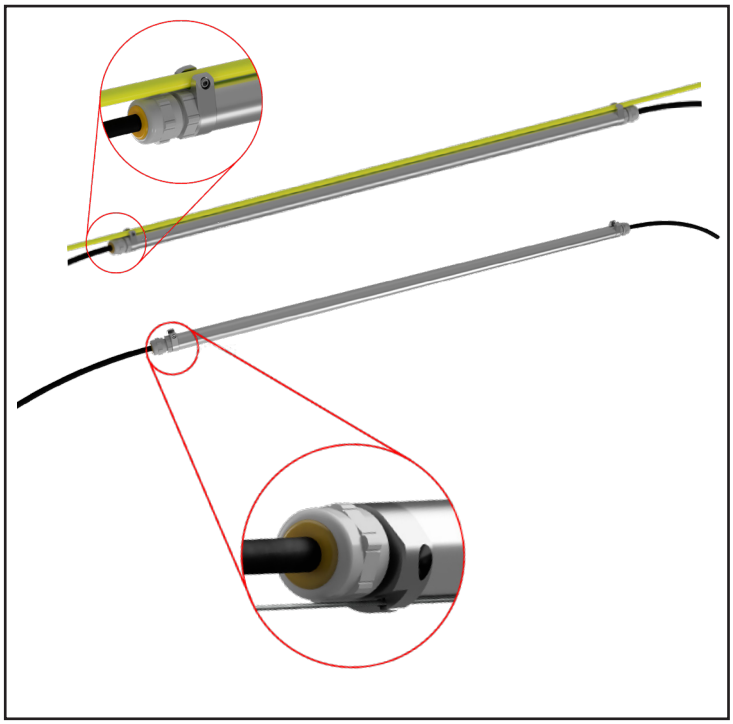


The Geosense IPX offers automated monitoring of settlement and heave

GEOSENSE

IPX

Overview



The In-Place Extensometer (IPX) delivers high-precision, near real-time data on settlement or heave within subsurface strata or fill materials. This enables straight forward, automated monitoring of both the rate and magnitude of consolidation or heave within targeted layers, as well as the distribution of deformation with depth.

Capable of monitoring up to 50 positions within a single borehole with sub-millimetric accuracy, the IPX provides an effective and economical way to gain a comprehensive understanding of ground behaviour in response to your project activities.

Featuring a unique bottom-supported design, the IPX adapts easily to construction changes — whether extending with fill or adjusting with excavation. It allows for the addition of measurement points within fill material, facilitating the assessment of engineered stabilization and compaction processes.

The IPX is offered with two mounting options: side-mounted rod support for on-site adaptability and wire suspension for straight forward, ready-to-install convenience.

APPLICATIONS

Typical applications include:

- Consolidation of soil and fill during embankment construction
- Heave during and post-excavation
- Validation of ground improvement design
- Subsidence of tunnels or mines
- Slope stability – cuttings, embankments or natural slopes
- Lateral displacement beneath or within an embankment
- Tailings storage facilities - consolidation of tailings, stability of dams or dry stacks
- Extend through fill or reduce with excavation

FEATURES

- Well suited to all soil types
- Compatible with Geosense 42mm magnetic extensometer systems
- Integrated with all major geotechnical data loggers
- Up to 50 instruments in a single installation
- Easily target specific strata and strategraphic boundaries
- Side mount system makes modifications easy
- Output in engineering units – no data conversion required
- Single cable bus for easy, low-cost data logging and telemetry options
- Low power – no need for external power supply or solar panels

IPX

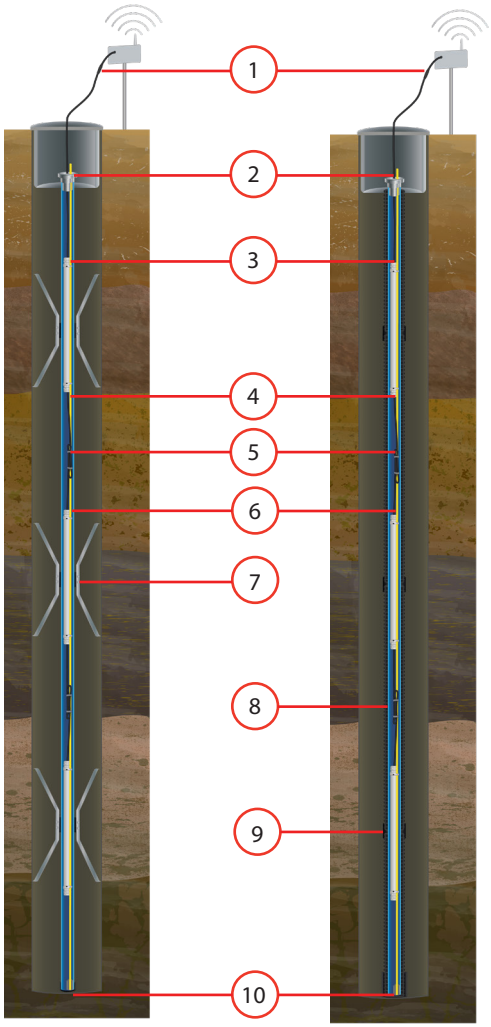
STANDARD, ROD MOUNTED

Our unique rod-mounted support system allows the sensors to be bottom supported, providing a natural reference and offering easy adaptation during, and post-installation, including extension or reduction at the surface.

The plastic-coated GRP rod provides a robust, temperature stable support for the sensors. Alternatively, the string can be suspended from the top of the casing to allow survey control.

IDEAL FOR

- Embankment Construction
- Cuttings
- Deep excavations
- Ground Remediation
- Tailings Dams



IPX Standard, rod supported, with 6 legged spider magnets

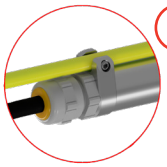
IPX Standard, rod supported, with flexible conduit and magnet target couplers

1 **IN-LINE CONNECTOR**

Field connections made easy. The in-line submersible connector allows you to quickly connect and disconnect data loggers or additional instruments. Dummy connectors available for connector protection. Locking Sleeves available for secure connection where cable tension is likely.

2 **TOP SUPPORT**

Standard IPX top support to fit 25mm or 35mm ID casing. Includes an M10 socket for secure fitting of survey markers or prisms.



3 **IN-PLACE EXTENSOMETER - STANDARD**

High precision digital magnet displacement transducer to suit 1 1/4" (DN32) access tube. Saddle clamp for easy mounting on 6mm support rod.

4 **SUPPORT ROD**

High-quality plastic-coated GRP rod – 6mm OD – comes with stand and reel with braking mechanism for safe and efficient installation. Refill lengths also available.

5 **TWISTED PAIR CABLE**

Water Blocked 4 x 0.34mm^2 foil screen cable with drain wire. Black, 6.7mm PUR jacket.

6 **ACCESS TUBE**

Flush threaded PVC access tube allows cement bonding at joints for simple on-site assembly. 1 1/4" (DN35).

IPX

SLIMLINE, WIRE SUSPENDED

Wire suspended systems come fully assembled for out-of-the-box deployment. Its slimline design makes it well suited to retro-fitting in traditional 33mm magnetic extensometer access tube to automate existing magnetic extensometers, instantly and significantly improving data quality and availability. Ideal for long-term monitoring, reducing costs and risk.

IDEAL FOR

• Retro-fit with existing, manually monitored magnetic extensometers

7 MAGNETIC TARGET

Available in 43mm ID - to suit Geosense 1 1/4" access tube - and 70mm ID - compatible with most flush coupled inclinometer casing. Magnetic targets are grouted within the borehole and move with the surrounding ground independently of the access tube. Available in 3 or 6 legged variants, without legs, or attached to a plate for surface installation.

8 FLEXIBLE CONDUIT

Compressible, corrugated conduit can be grouted into borehole or within fill for embankment raises, allowing the made ground to settle around the extensometer system. Available in DN50 (for 43mm OD casing) or DN80 (for 70mm OD casing).

9 MAGNETIC COUPLERS FOR FLEXIBLE CONDUIT

In-line magnetic couplers for flexible conduit. Available for DN50 or DN80.

10 BOTTOM SUPPORT

Protects GRP support rod during installation and throughout operational life. High quality stainless "steel with two 2mm set screws for securing to the rod.

11 SUSPENSION WIRE CLAMP

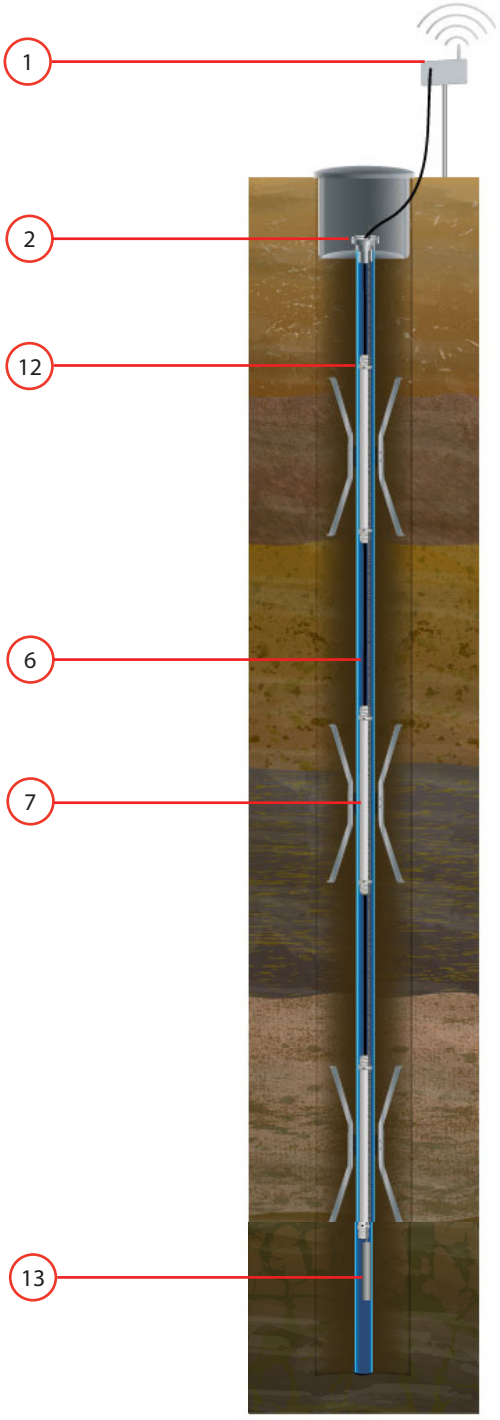
Collar and grub-screw for locking the IPX suspension wire.

12 IN-PLACE EXTENSOMETER - SLIMLINE

High precision digital magnet displacement transducer to suit 1" (DN25) access tube. Wire suspended.

13 SINKER WEIGHT

Stainless steel sinker weight for slimline IPX.



IPX Slimline, wire suspended, with 6 legged spider magnets

IPX

SPECIFICATIONS

IPX-04

26mm

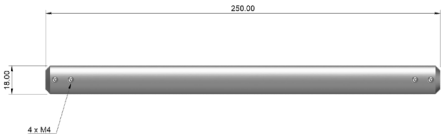
IPX-04-S

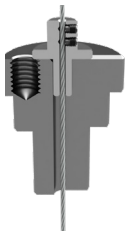
21mm

710mm

SLIMLINE IN-PLACE EXTENSOMETER SUSPENSION KIT

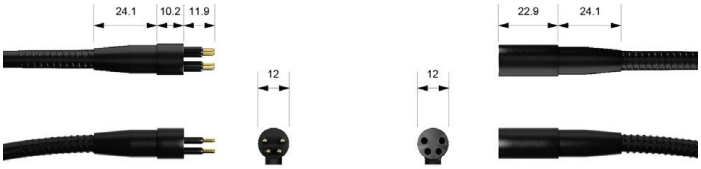
- IPX-A-SUS – includes top support, wire suspension clamp, 1mm stainless steel wire and sinker weight
- IPX-A-SW1 – Spare sinker weight for slimline IPX





IN-PLACE EXTENSOMETER

- Standard design, ±200mm measurement range
- Slimline design, ±200mm measurement range

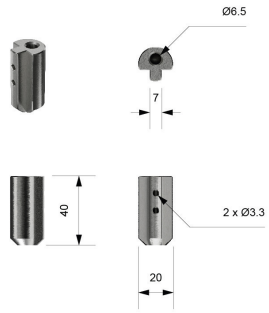


CABLES AND CONNECTORS

- Cable, 4 x 22 AWG, 6.7mm OD, LSZH, PUR jacket, water blocked
- In-line submersible connector – male plug
- In-line submersible connector – female socket
- In-line splice kit

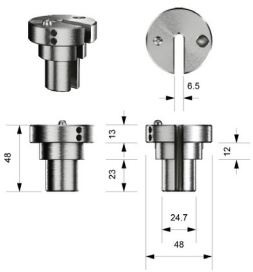
BOTTOM SUPPORT

- Stainless steel bottom support, 20mm OD



TOP SUPPORT

- Stainless steel top support, suitable for 25mm or 35mm ID access pipe



GRP SUPPORT ROD – 6MM

- GRP rod with reel, 60m
- GRP rod with reel, 100m
- GRP rod with reel, 150m

IPX

PERFORMANCE SPECIFICATIONS

Range[1]		400mm	
Resolution		0.001mm	
Precision		± 0.05mm	
Repeatability		± 0.06mm	
ACCURACY			
Displacement	± 200mm	± 100mm	± 25mm
Accuracy	± 0.25mm ±0.07%[2]	± 0.2mm ±0.1%[2]	± 0.15mm ±0.3%[2]
POWER SUPPLY		4-16VDC	
POWER CONSUMPTION (12V)			
	Boot	Idle	Measure
	100ms@50mA	4mA	500ms@20mA

All uncertainties stated to 2σ.
[1]May vary depending on magnetic target used
[2]Potential error as a percentage of the utilised range

SPECIFICATIONS - PHYSICAL

Material	Grade 304 Stainless Steel
Dimensions	707.5mm x 19mm x25.75mm
Weight	440g

SPECIFICATIONS - ACCESSORIES

Cable	4x0.34mm^2 water blocked, foil screen with drain wire. 6.6mm LSZH PUR Jacket
Cable Weight	44g/m
Support rod	4mm GRP with 2mm plastic overwrap
Support rod weight	40g/m
Top/bottom support material	304 Stainless Steel

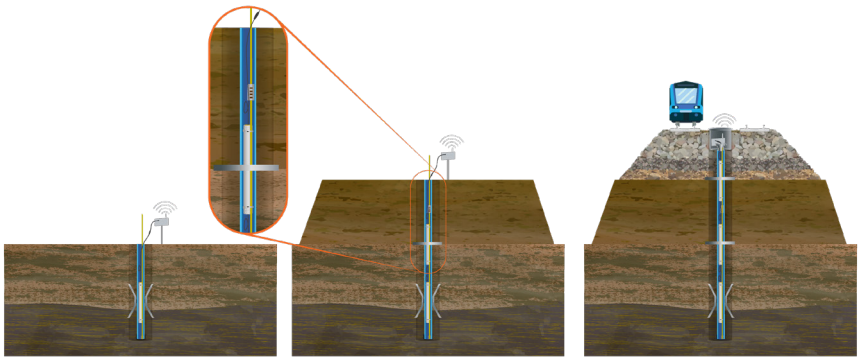
IPX

APPLICATIONS

CONSOLIDATION

ROAD & RAIL EMBANKMENTS – EARTHFILL DAMS – TAILINGS DAMS – PRE-LOAD & SURCHARGING

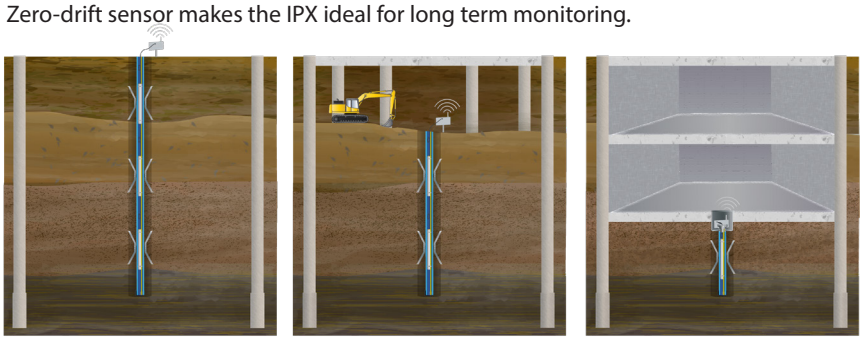
Easily Extend through fill to accommodate embankment raises.
Well suited to all ground types thanks to high precision, contactless displacement transducer.



HEAVE

TOP DOWN CONSTRUCTION – ROAD & RAILING CUTTINGS – CUT AND COVER TUNNELS – SURCHARGE REMOVAL

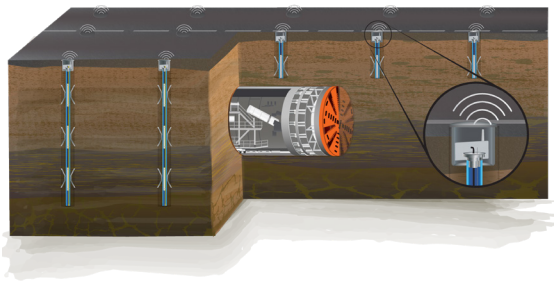
Bottom support allows monitoring continuity from pre-construction to asset operation.
Zero-drift sensor makes the IPX ideal for long term monitoring.



SUBSIDENCE

TUNNELS – MINES – CAVERNS – UNDERGROUND STRUCTURES

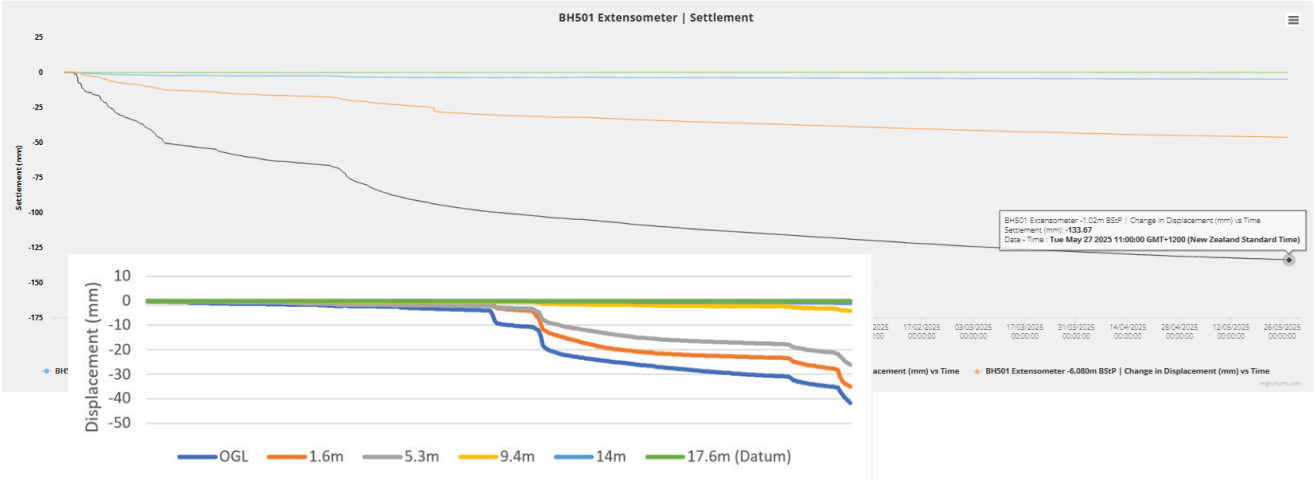
Top suspended system allows external referencing for absolute displacement monitoring.
The compact headworks fit easily within a monitoring well cover for low profi le installations.



GRAPHS/DATA

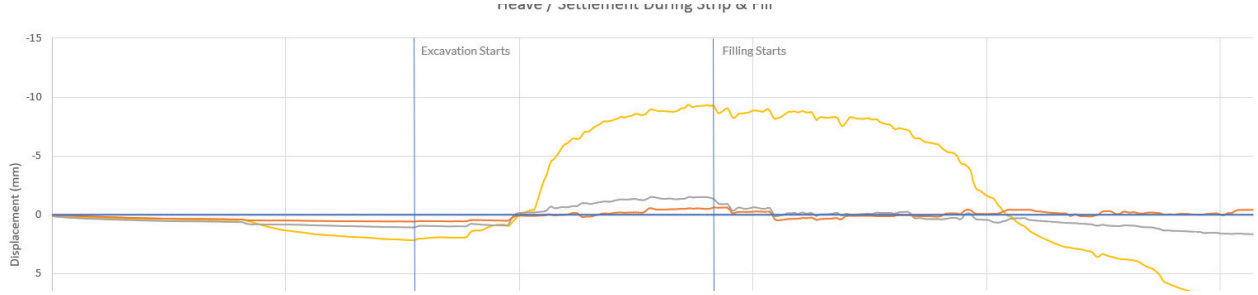
TARGETED CONSOLIDATION TRACKING

Promptly identify consolidation and heave trends to guide embankment construction and optimise fill rates.



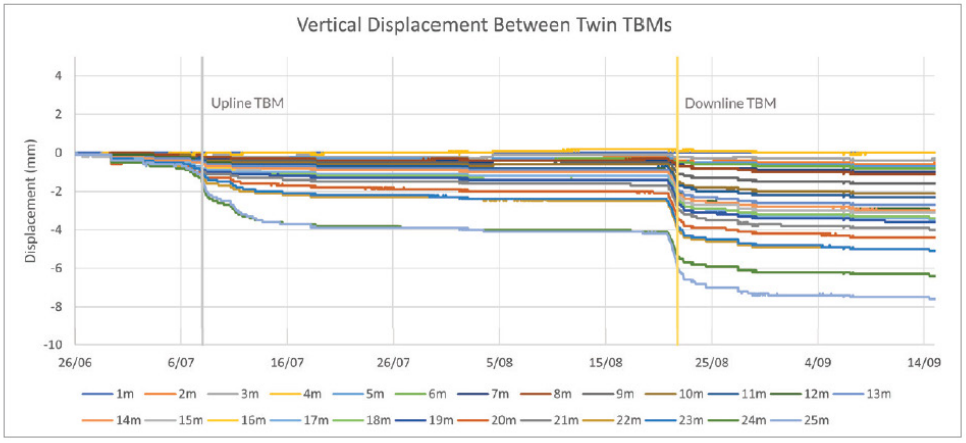
OPTIMIZED CONSTRUCTION CONTROL

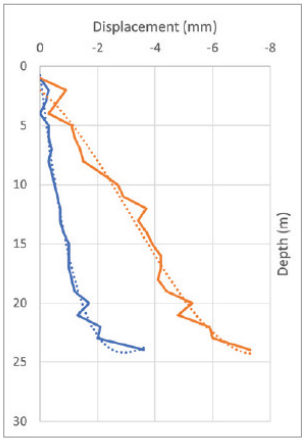
Detailed movement trends help fine-tune excavation sequences, ground support designs, and construction timelines.

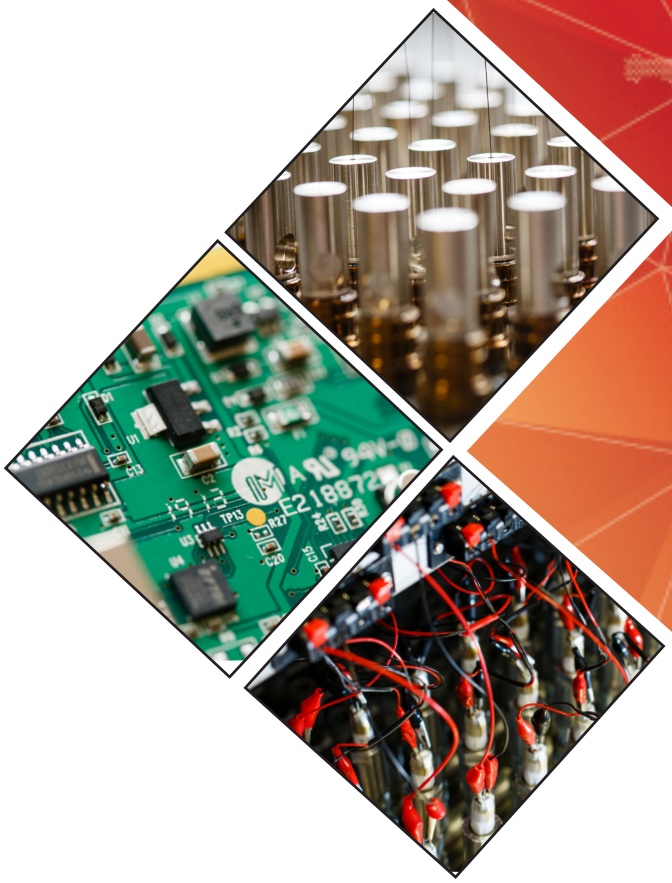


UNPARALLELED DEFORMATION INSIGHT

High-density, multi -point measurements provide a detailed displacement profile throughout the entire borehole length, validating designs, supporting smarter decisions, and protecting your team from the unexpected.







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