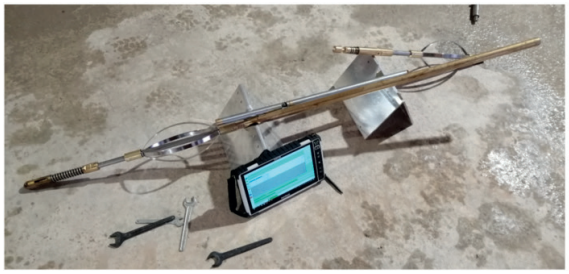
SixGyro

Borehole deviation measurements

YOUR CHALLENGES

- **Survey** the profile of both vertical and horizontal **boreholes**, along their **entire length.**
- Applications include **injection boreholes**, **jet grouting**, **freezing, coring** or **existing pipes.**



OUR SOLUTION

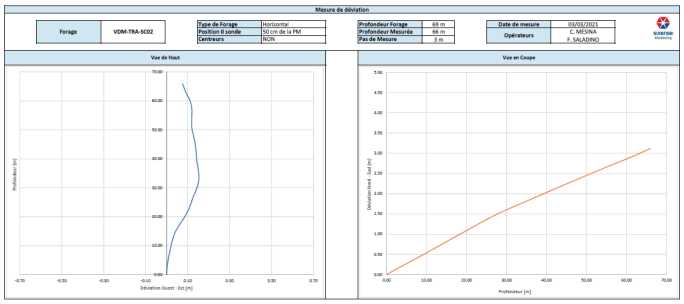
The **SixGyro gyroscopic probe** provides **borehole deviation measurements** regardless of whether they are horizontal or vertical to **any depth / length.**

Centralisers are used to ensure the probe can fit in any borehole regardless of diameter.

Measurements can be made in **cased** or **uncased boreholes** in **metal drill pipes**, as the probe is not susceptible to magnetic interference.

THE BENEFITS

- Permits the survey of **all types** of **boreholes**
- The equipment is **portable** and can be **operated** by a **solo single person**
- The measurement process is **fast:** approximately 15 minutes for a 30-metre borehole in 1-metre steps
- The **measurement step** can be varied



Sixense's

- Our reputation for excellence is built on our client's satisfaction.
- The worldwide specialists of in accurate and useful measurements.
- More than 20 years of experience in measurements and geotechnical projects.

CONTACT US

› monitoring@sixense-group.com

› MEASUREMENT OF SOIL AND STRUCTURAL MOVEMENTS

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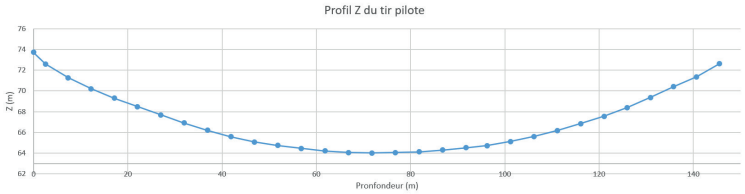
Borehole deviation measurement

TECHNICAL PRINCIPLES

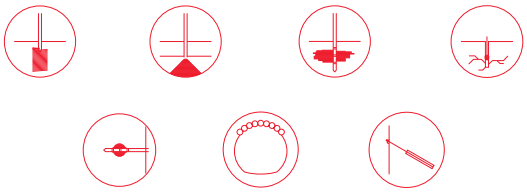
SixGyro combines **inclination measurements** by MEMS accelerometers and **azimuth measurements** by a **gyroscopic sensor.** There is no limit on the borehole length.

The azimuth start point must be measured by other means (topographically, GPS, etc.).

SixGyro calculates the shape of the borehole by succesive integration of measured angles.



APPLICATIONS



Borehole deviation measurement during:

- Directional drilling boreholes
- Injection boreholes, jet grouting, freezing
- Ground anchor installation, umbrella arch construction
- Coring

SPECIFICATIONS & LIMITATIONS

- **Dimensions:**
  Diameter: 22 mm
  Length: 700 mm
  Weight: approx. 4 kg
- **Battery capacity** enabling **one day of measurements**
- **Accuracy** of the device:
  0.1° en inclination (0.2%) ; 0.5° in azimuth (0.9%)
- Ultimate measurement accuracy depends on the accuracy of the device, the accuracy with which the azimuth start point has been measured, and the positioning of the probe within the borehole.

TOOLS AND RELATED SERVICES

- SixGyro measurements can be integrated with **geophysical measurements** to verify the soil characteristics around the borehole.
- For **jet grouting** operations, we can integrate a SixGyro measurement with a Cyljet survey for complete quality control of the column.
- Sixense Monitoring offers other borehole measurement solutions: inclinometers, extensometers, piezometers, etc.

REFERENCES

- Future Grand Paris Express station Vert de Maison, Line 15 South: measurement of freezing and injection boreholes on maximum 70 m length
- Survey of a 160 m directional borehole beneath the St Quentin canal
- Several surveys of vertical, horizontal or inclined boreholes on worksites

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