

Gyroscopic survey using the Gyromat 2000/3000

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HIGHLIGHTS

- GEODATA offers the measurement of azimuths using a fully automated gyroscope system in a world first.
- The possibility of centric and eccentric setups assures great flexibility in adapting to difficult conditions (inclined shafts, etc.)
- Complete objective definition of the measurements by automatic direction measurement and optimal results with respect to observation time and accuracy
- Immediate control of the measurement results and high data reliability by storing during the measurement



Gyro-measurement in a subway tunnel

Field of Application

Precision gyroscopic measurements are indicated wherever the required measurement accuracy is not achievable by other means. This is often the case in tunnel measurements where the final accuracy cannot be achieved by traverse measurements. Supporting gyroscopic measurements can also be useful for checking the orientation of portal nets and in the industrial sphere.

Description of Performance

Principle of operation of the system used

For fully automated measurements of azimuths using the Gyromat 2000/3000, both the Gyromat and the adapted total station with automatic target capturing are controlled by a PC with serial interface via an EUPALINOS online application. The only remaining manual step comprises the execution of a learning phase to determine the target points or the centre in the case of eccentric measurements. Subsequent procedures are fully software controlled, with important results being made available immediately during and after the measurement. Data is saved after each individual measurement.



Gyromat 2000 with fix assembled Total-station

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Direction measurements are full set measurements. Only distant targets, from a distance of about 1 500 m, must be measured manually. All relevant equipment data is continuously monitored and deviations from permissible maximum values are reported.

Analysis

The final analysis of the measurements is separated into the transfer of calibration and azimuth within the framework of a complete data stream. Grid declinations are computed directly from the UTM coordinates, or as relative values using an iterative procedure. The effect of gravity can be compensated for if plumb-line deflections are available.

Measuring process

- Centric or eccentric setup of the gyroscope
- Learning phase (setup data for the target points)
- Checking communication between total station and PC
- Initialising instrument, measurement and reporting of the inclination of the vertical axis
- Start of the measurement and automated set measurement

User Advantages

- Fully automatic measurement with comprehensive documentation of the measurements and analyses
- Use of free instrument positioning near the axis to avoid lateral refraction and optimal adaptation to local conditions
- Minimal time required for the measurement
- High flexibility in terms of position and target points and ease of observation under difficult working conditions
- High data security



Calibration measurement for a hydro-power project

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Scope of Services and Delivery

GEODATA offers gyroscopic measurement services worldwide, including equipment and highly qualified staff.