

# Field Measurement Applications in the Context of On-Site Inspection

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The objective of this paper is to demonstrate the use of the magnetic method in the on-site inspection (OSI) regime and try to find the best magnetometer for OSI applications. It will be used mainly to locate underground infrastructure. Theoretical and practical applications are used to give insight to the qualitative and quantitative information obtained from magnetic measurements. Also, the advantages and limitations of the different types of magnetometers will be shown by presenting a comparison between different magnetometers that are based on different working principles in terms of the application and the survey results. Addressing general limitations such as the effect of object shape and orientation and some interpretation challenges such as the interpretation of merged anomalies. Survey technique privileges, such as gradient and vertical component gradient using the proton magnetometer versus fluxgate magnetometer which is a vector magnetometer are presented along with the measurement using overhauser, Cesium and Potassium magnetometers. Several survey configurations are also discussed such as total, gradient, backpack, and towed configurations. Practical limitations, such as survey speed, maximum observed intensity, physical effort, and processing time are addressed. The method's capability to resolve buried targets with various amount of magnetic materials and depth are presented using several case studies over buried pipes.

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## Promotional text

This paper was written to explain the diversity among the existing magnetometers and to highlight the question about the most suitable magnetometer for on-site inspection application.

## Oral preference format

in-person

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