RoGeo XYZ Service

In-line High-Resolution Pipeline Route Mapping, Curvature Measurement and Strain Assessment

Optimize pipeline uptime and performance

World's largest ILI tool fleet ensures high availability

Cost-effective deformation assessments

Pipeline assets are at risk of reduced operational performance, damage and eventual failure because of additional loads caused by ground instability. Geohazard-related events, climate extremes and the actions of third parties that might damage your pipelines cannot always be predicted, but pipeline operators can design and implement a holistic and integrated geometric deformation risk management strategy. This reduces your risk and, as part of a wider integrity management framework, can identify multiple threats to further safeguard your pipeline assets.

Pipeline assets often traverse terrains that are difficult to access and map, or your original route maps may be lost following multiple changes of ownership. RoGeo XYZ is a high-resolution mapping service that meets your GIS and mapping challenges by providing detailed pipeline location data. High-resolution in-line inspection and mapping of your pipelines can detect, categorize and locate global deformation and pipeline movement, enabling pipeline operators to act before significant damage is caused leading to pipeline downtime or potential failure. A high-end IMU accurately measures angular changes and accelerations in the X,Y and Z axes as the tool moves through the pipeline.

Our RoGeo XYZ Services offer a set of coordinates that define the pipeline route. Based on that the position of corresponding features can be defined. The pipeline route can be exported to GoogleEarth or any GIS (including features and references).

There are three different RoGeo XYZ Services available:

- RoGeo XYZ Routing
- RoGeo XYZ Mapping
- RoGeo XYZ HiRes Mapping
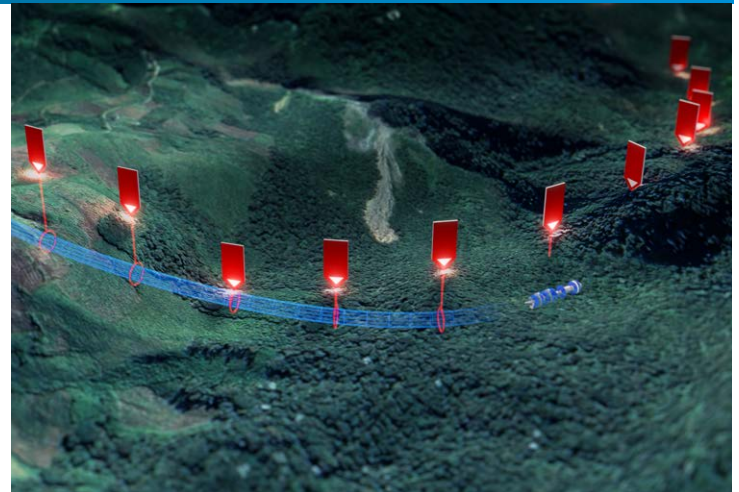
The three different services uses different IMU (inertial measurement unit) types and result in different accuracies.

In addition to providing accurate coordinates of pipeline routes, the RoGeo XYZ Service provides crucial input to the following integrity assessments:

- Pipeline Movement to identify changes in the pipeline route caused by geohazards, mining activity or other nearby construction activities
- Bending Strain to quantify bending loads that could lead to localized pipeline deformation or fracture
- Depth of Cover to provide pipeline cover depth throughout the pipeline to identify locations not meeting design requirements and at increased risk of external interference
- PipeDrift to provide a method of identifying pipeline movement as part of routine maintenance pigging or pipeline screening

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Technical Specifications

Standard Operating Specifications

Tool sizes available	4"–56"[1]
Pipeline product	Gas or liquids
Product temperature range	0 °C–55 °C (32 °F - 131 °F)
Operating speed range	Up to 8.0 m/s (17.90 mph)/ minimum 0.5 m/s (1.118 mph) required
Maximum operating time	400 hours (depending on ILI tool basis)
Maximum inspection length	1.000 km (620 miles) (depending on ILI tool basis)

Note: Please contact ROSEN for conditions outside of these specifications.
[1] Tool sizes for RoGeo XYZ Hires Mapping are available from 6"–56".

Service Performance Specifications
RoGeo XYZ Hires Mapping Accuracies

Within this section the accuracies for high-resolution XYZ mapping are given. The defined values are valid for the given Tie-Point distance and for an optimal recommended tool velocity of 1.0 m/s (3.3 ft/s) - or faster[1].

Size	Tie-Point-Distance[2]		
	500 m (1641 ft.)	**1000 m (3281 ft.)**	**2000 m (6562 ft.)**
06"–08"[3]	0.7 m (2.3 ft.)	1.0 m (3.3 ft.)	1.5 m (4.9 ft.)
10"–56"	0.4 m (1.3 ft.)	0.5 m (1.6 ft.)	0.7 m (2.3 ft.)

[1] Required minimum velocity 0.5 m/s (1.6 ft/s).
[2] Accuracies are given for a certainty level of 80 %. Other tie-point distances are available on request.
[3] Higher accuracies for 6'' and 8'' are available on project base.

Service Performance Specifications
RoGeo XYZ Mapping Accuracies

Within this section the accuracies for XYZ Mapping are given. The defined values are valid for the given Tie-Point distance and for an optimal recommended tool velocity of 1.0 m/s (3.3 ft/s) - or faster[1]. As they base on a limeted amount of datasets this is a draft version until a larger database is collected.

04"–56"	Tie-Point-Distance[2]		
	400 m (¼ mile)	**800 m (½ mile)**	**1600 m (1 mile)**
Accuracies	0.6 m (2.0 ft.)	1.1 m (3.6 ft.)	2.3 m (7.5 ft.)

[1] Required minimum velocity 0.5 m/s (1.6 ft/s).
[2] Accuracies are given for a certainty level of 80 %.

Service Performance Specifications
RoGeo XYZ Routing Accuracies

Within this section the accuracies for XYZ Routing are given. The defined values are valid for the given Tie-Point distance and for an optimal recommended tool velocity of 1.0 m/s (3.3 ft/s) - or faster[1].

04"–56"	Tie-Point-Distance[2]				
	400 m (¼ mile)	**800 m (½ mile)**	**1200 m (¾ mile)**	**1600 m (1 mile)**	**2000 m (1¼ mile)**
Accuracies	1.0 m (3.3 ft.)	2.0 m (6.6 ft.)	4.0 m (13.1 ft.)	6.0 m (19.7 ft.)	8.0 m (26.2 ft.)

[1] Required minimum velocity 0.5 m/s (1.6 ft/s).
[2] Accuracies are given for a certainty level of 80 %.

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