



& RAILWAY INSPECTION **Monitoring Using Drone Technology**

Aerial and LiDAR Photography

High-quality drone imagery of railway infrastructure - a fundamental element in maintaining a sustainable track inspection system

Railway Buildings & Bridges

to access areas that are hard-to-reach or dangerous for people.

Drones allow detailing the structures to be detected and analyzed.

The GIS team produces 3D models and topographical maps to secure the structural integrity of Buildings and Bridges.



INSPECTION

Railway Track

to determine the length of the track, detect dangers, and safely support thousands of kilometers of the rail tracks and infrastructure.

The GIS team reconstructs obtained high-resolution aerial images into several topographical maps like 3D models and 3D Point Clouds.



INSPECTION

Traction Substation & Level Crossing

Overhead Lines & Railway Catenary Lines

- Overhead Lines infrastructure modelling
- Lines validation against vegetation infestation or dirt build-up



Height and Nature of Invasive Vegetation

- Location and position of individual trees, fallen or bent trees
- Highest trees

Drainage Slope

Based on Digital Terrain Models, slopes are detected above or below a given angle, thus allowing flood modelling, mapping of noise levels due to trains.



BOREY

The unique mobility of the system allows quick Borey transportation and deployment in minutes.



MTOW: 15 kg

Max payload: 4 kg

Flight time: 1 hour (with 4 kg payload)

Maximum speed: 30 m/sec

Practical ceiling: 3,500 m

Operational range: 220 km

Temperature range: -20°C...+40°C

Watch the [Borey UAV](#) in action

DRONES FOR INSPECTION

GSG 140T

Gyro-stabilized 3-axis gimbal with **thermal camera**.

Thermal camera: LWIR 640 x 512

Weight: 1.2 kg

Direct drive

Angle of rotation: roll – +/- 30°, yaw – 360°, pitch – +/- 100°

Absolute encoder



Digital Camera

Max resolution: 8,000 x 6,000

Effective pixels: 42 megapixels

Sensor size: Full frame (35.8 x 23.8 mm)

Focal length (equiv.): 35 mm



UVH 25EL

The UVH 25EL is a fully automatic drone with an electric motor.



MTOW: 25 kg

Max payload: 5 kg

Flight time: 1.5 h

Maximum speed: 120 km/h

Practical ceiling: 3,500 m

Temperature range: -20°C...+40°C

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Watch the [UVH-25EL](#) in action

DRONES FOR INSPECTION



Lidar

Measurement range: 200 m

Accuracy: ± 3 cm

Field of View (Vertical): -25° to $+15^\circ$

Field of View (Azimuth): 360°

Rotation Rate: 5 - 20 Hz

Points/Second: 0.6/1.2 million

Pixel Resolution: 12.94mm x 60m

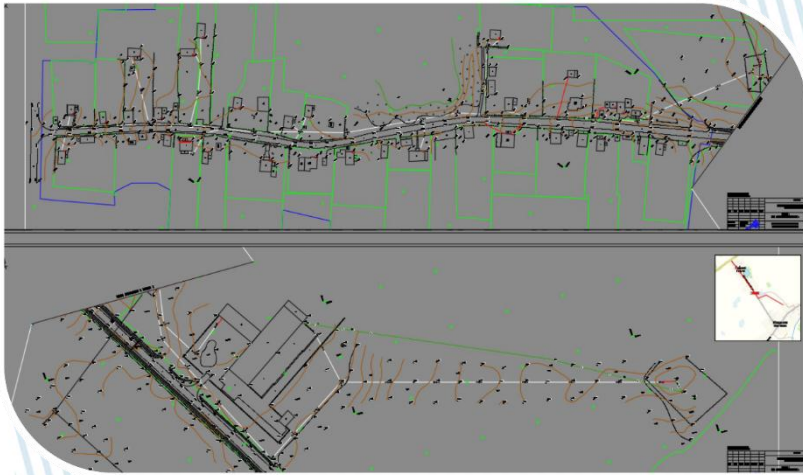
Pixel Size: 3.45 μ m

Resolution: 4096 \times 2160

Topographic Maps

Images and LiDAR data at a high level of precision and in great detail allow creating accurate 3D site maps, including contours and terrain, at a fraction of the time and cost of traditional survey methods.

Of 1:500 scale



DATA PROCESSING

High-definition images, thermal infrared, and Lidar.
Data visualization through a Geographic Information System (GIS).



3D Models

A 3D model refers to a digital spatial model that is created by using aerial images taken by a drone. 3D models are a great way to visualize three-dimensionality of an object.

Orthomosaic

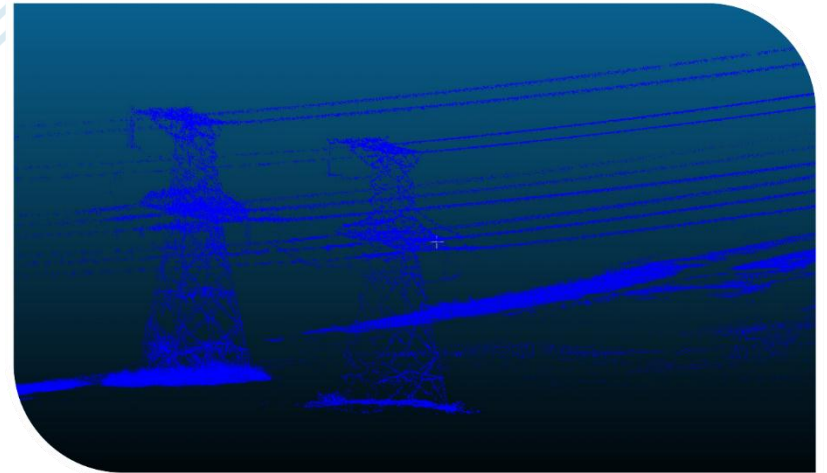
provides accurate measurements
such as horizontal distances and surfaces

Drone images are corrected for image distortion and stitched together during post-processing to create a highly-accurate orthomosaic.

1 cm/pixel, accuracy up to 2 cm



DATA PROCESSING



3D Point Clouds

provide a very accurate model for distance
(slant and horizontal), area and volume measurements

A densified point cloud is generated from
drone images. Each point contains
geospatial and color information.

Point density up to 400+pts/m²

Watch the [3D Point Clouds](#) in action

*The images created by UAVOS

BENEFITS

- Higher-resolution visual inspections compared to ground-based inspections
- Save cost, time and resources
- Safety of personnel

Following each drone inspection, our clients receive a detailed report and deliverables including:

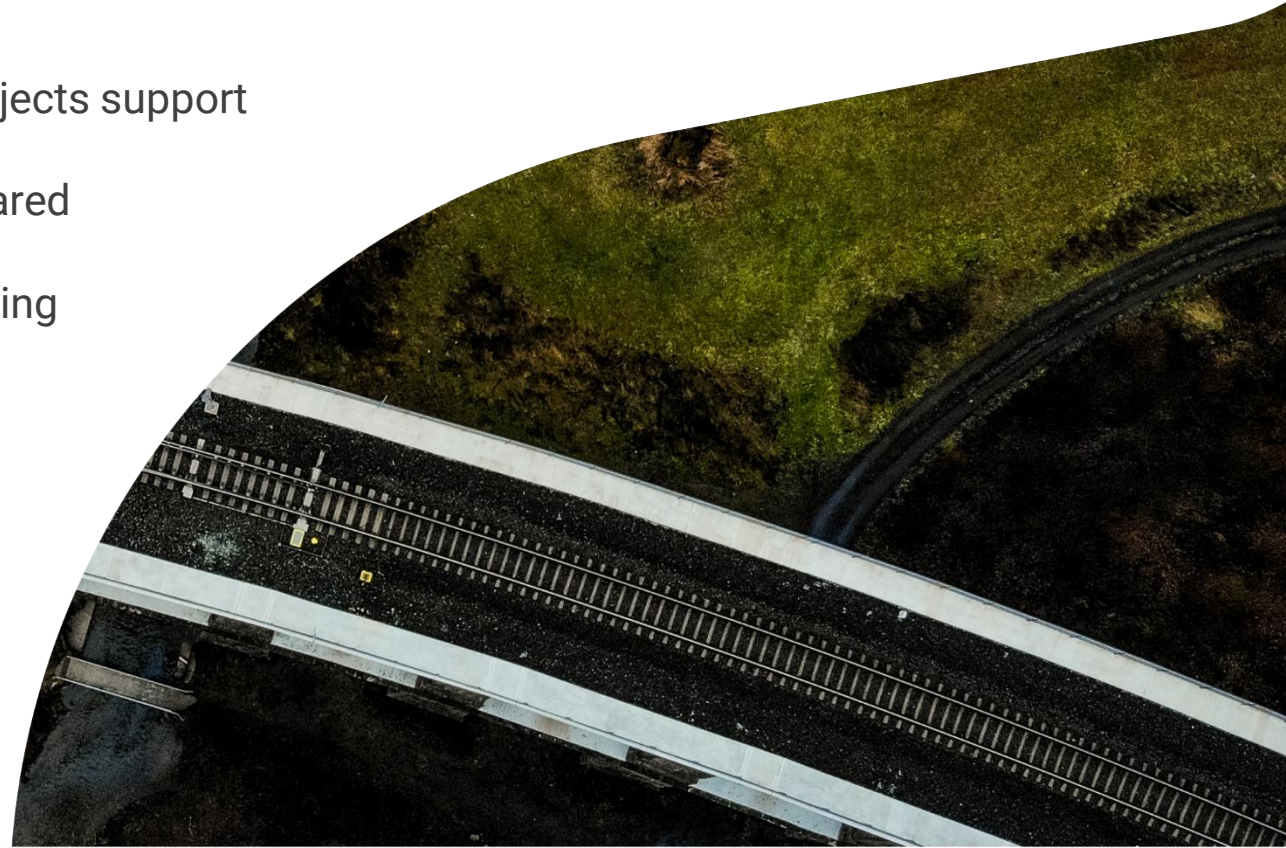
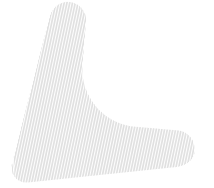
- Inspection reports
- Photo, LiDAR, and Thermal images
- High-definition videos
- High resolution pictures
- Point cloud data
- DSM, DTM or DEM files



Why Choose UAVOS ?

UAVOS team of pilots, geodesic staff, mapping professionals, and GIS experts provide the highest quality service maximizing clients benefits.

- Highly experienced in government projects support
- Drone pilots are UAS BVLOS certified
- Both hardware and software are prepared and manufactured in-house
- Financially solid with investment backing





UAVOS

THANK YOU

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