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AVIAROBOTS

COMMERCIAL UAV OPERATIONS ACROSS RUSSIA

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AVIAROBOTS

Aviarobots is a commercial UAV operator providing remote sensing and infrastructure monitoring services across Russia and abroad. Our fleet comprises fixed-wing and multirotor UAVs by the following manufacturers:

- Lehmann Aviation // France
- Geoscan // Russia
- Unmanned // Russia

Power engineering

Visual inspections of overhead power lines, detection of line breaks and unauthorised activity in the exclusion zone.
Preventative thermal imaging of insulators. Electronic maps and 3D models for overhead power lines. Measurements of pylon inclination angles, conductor sagging, and the height of surrounding trees and shrubs.

Power engineering

Visual inspections of overhead power lines, detection of line breaks

Overhead power lines are monitored using fixed-wing UAVs. This significantly reduces inspection times as compared to ground inspections, particularly in difficult-to-reach areas, and is a considerably less expensive solution as compared to the use of manned aircraft.

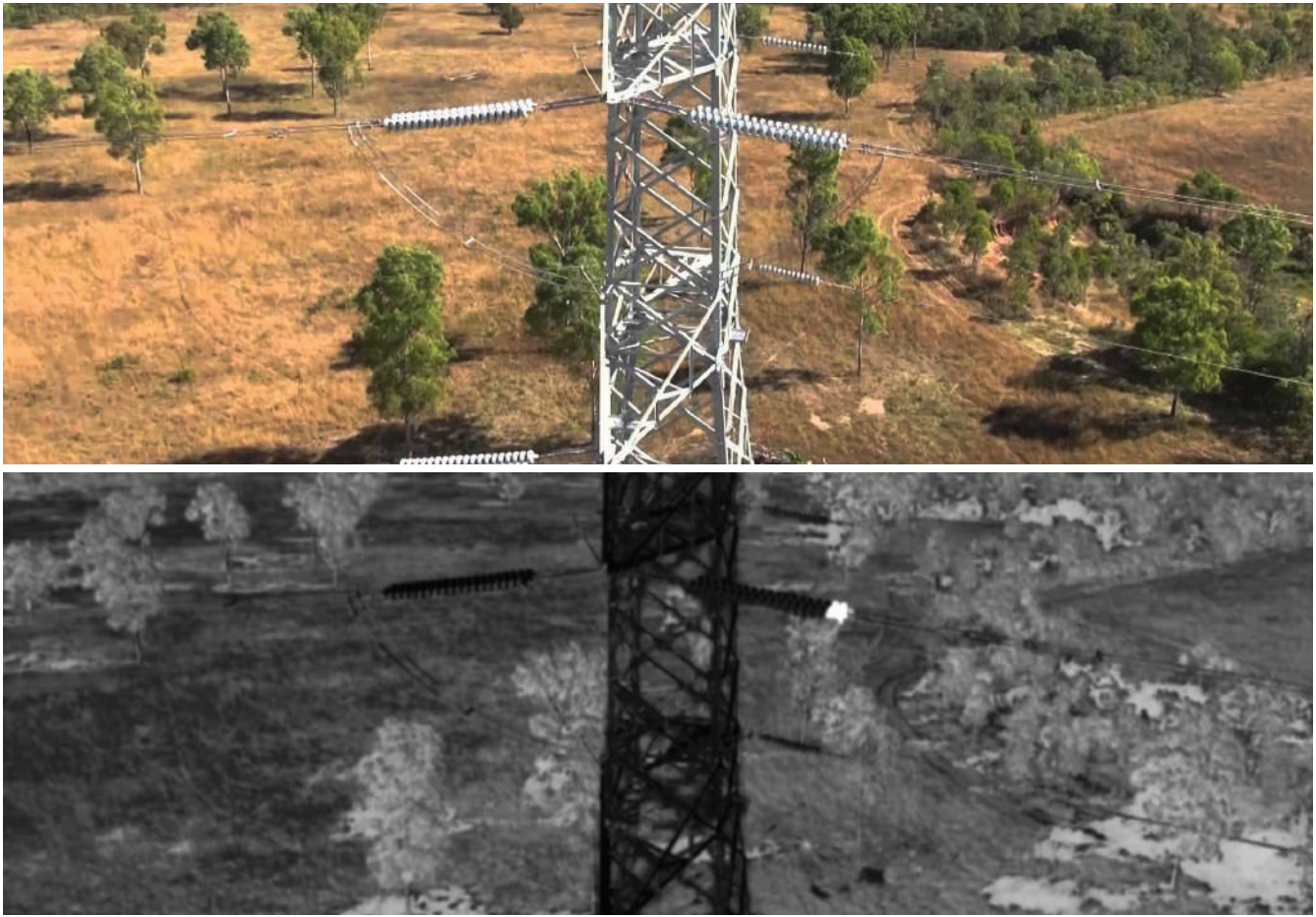
Inspection flights proceed at a safe distance from the pylons and conductors, and do not require power cutoffs. Based on the inspection results, a report is compiled on the condition of pylon components, any detected broken insulators, any structural damage, and the condition of the conductors and their insulation. Photographic and video recording may be complemented by thermal imagery.

If UAV-based inspections are conducted regularly, the data obtained is exported into the customer's geographic information system (GIS) and displayed in the form of historical layers. This allows for conducting retrospective analysis of malfunctions, and for identifying their causes.

Thermal imaging for power line contacts

Power engineering is a sector in which thermal imagery has been used especially successfully. Temperature differences detected with this method may reach tens of degrees, making them significantly easier to discern from background noise.

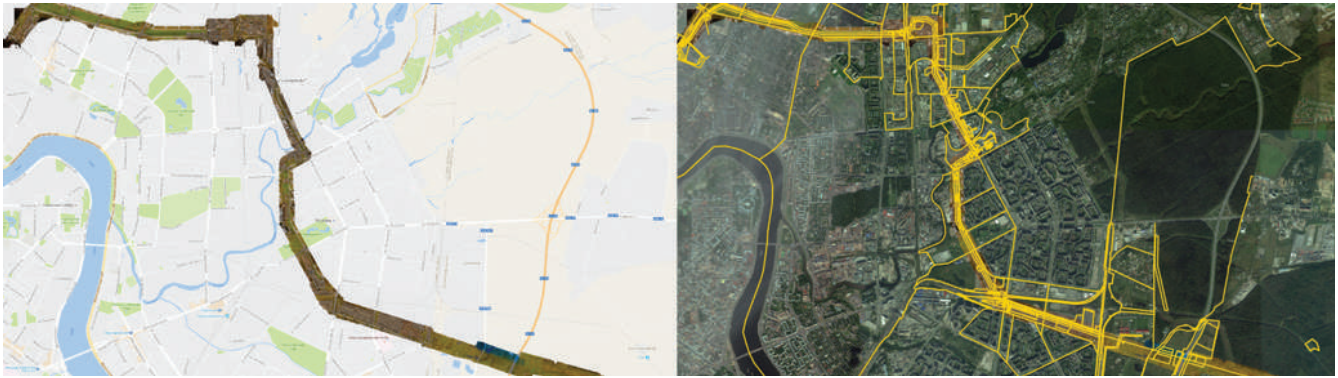
Until recently, thermal imaging of overhead power lines would involve either helicopters or ground maintenance teams. UAVs are considerably more cost-efficient than manned aircraft, and they collect much more detailed and accurate information than ground-based thermal imaging. Each pylon is inspected using a multirotor UAV. Thermal imagery is complemented by visible-spectrum photography and video recording, which allows for better identification of faulty insulator strings, exposed and encased contacts.

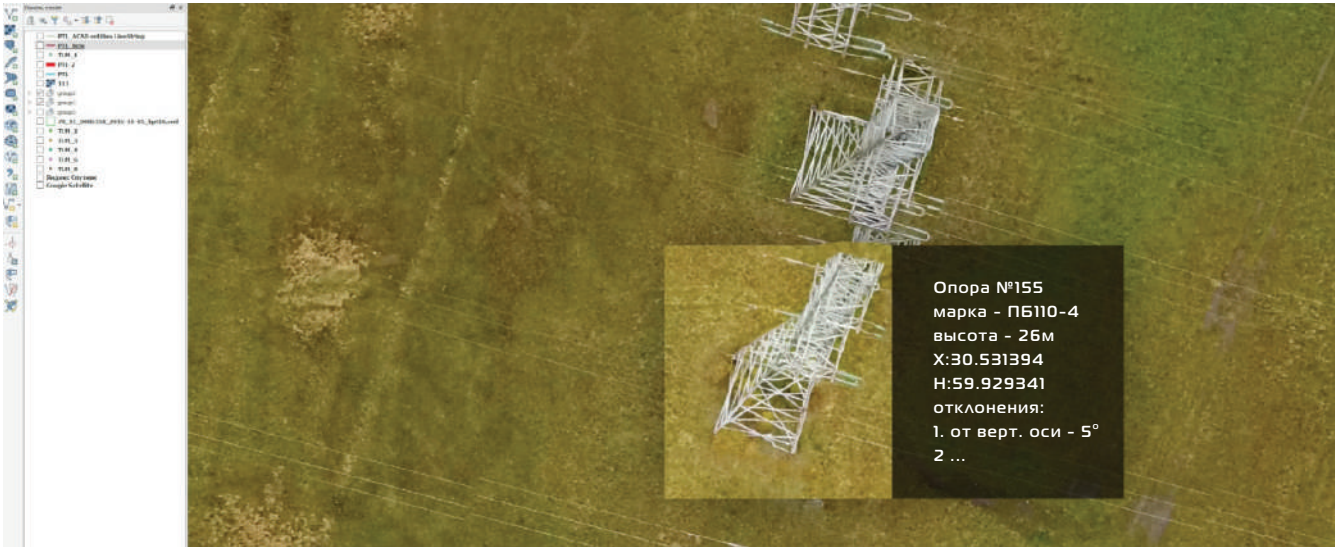


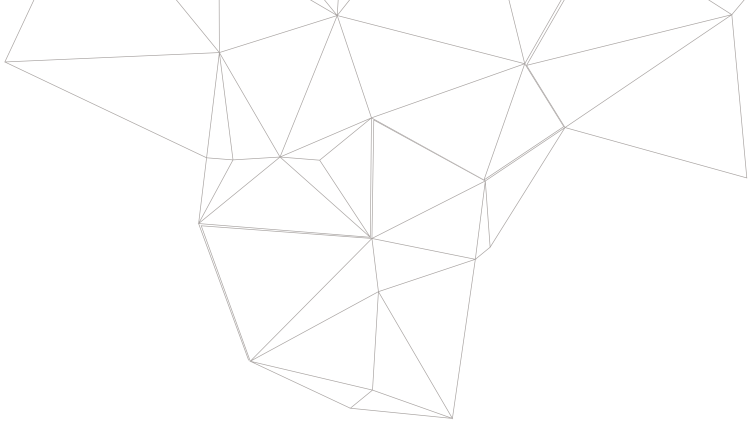
Power line electronic maps

The data obtained in the course of inspection flights is used in creating an accurate orthophotographic map of the area with a resolution of 5 cm and an accuracy of 15 cm in terms of standard deviation. The map is used for subsequent monitoring, as well as for updating or replacing the existing maps. It allows for comparing the actual location of facilities with the cadastral plan, for taking inventory of the facilities and detecting illegal intrusions into the exclusion zone. The orthophotographic map and digital model of the terrain are used as the basis for an electronic map of the customer's power line, which contains the coordinates and heights of the pylons, as well as information about the current condition of the pylons and any detected defects.

The electronic map can be exported into the customer's GIS. It may be used for subsequent planning of new power line routes, for reconstruction and construction purposes, and for identifying optimal access ways to the power line.




Опора №155
марка - П6110-4
высота - 26м
X:30.531394
H:59.929341
отклонения:
1. от верт. оси - 5°
2 ...

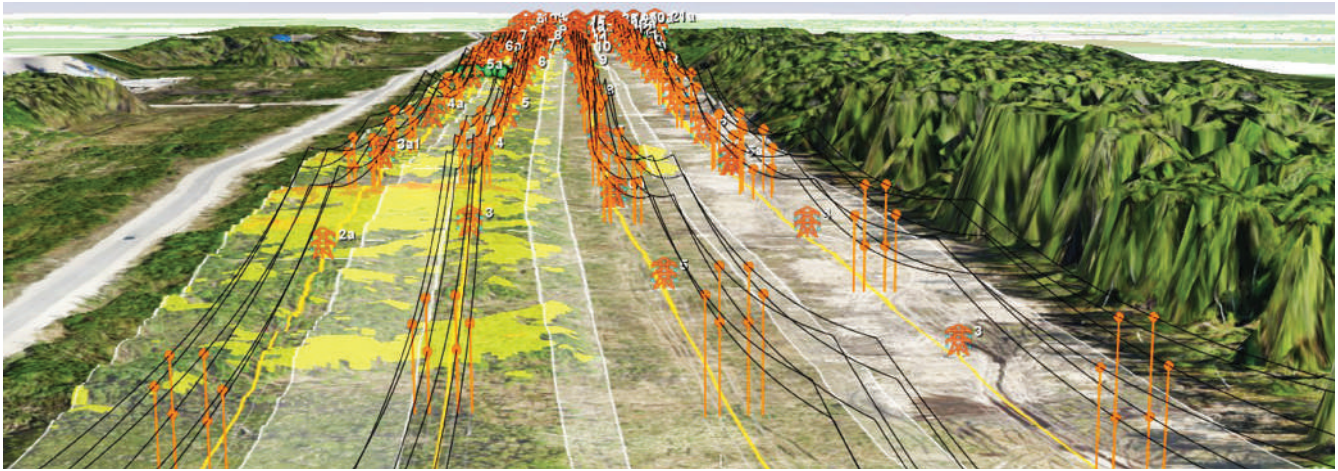


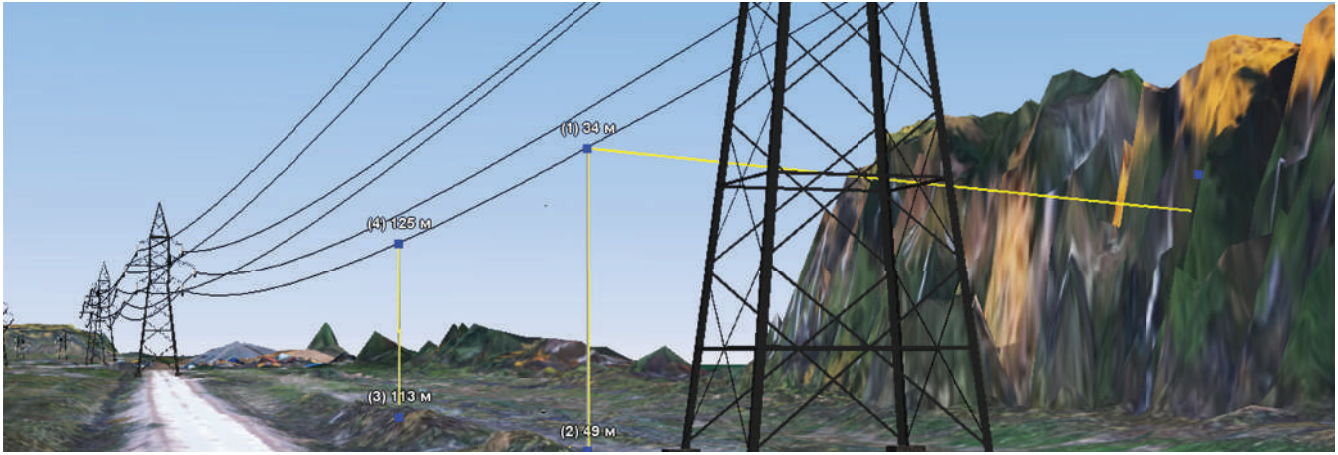
3D power line models, assessment of trees and shrubs, conductor sagging measurements

The orthophotographic map and the digital terrain model are used to create a highly accurate 3D model of the terrain, the surrounding trees and shrubs, the power line, and the customer's other ground-based infrastructure.

The model's accuracy is comparable to that of the laser scanning method; however, UAV-based remote sensing is much cheaper and efficient. 3D models thus obtained allow for exact size and volume measurements; for evaluating the height of trees and shrubs; for assessing forestation levels in the exclusion zone, and for identifying areas prone to tree falls. The results may be exported into CAD systems.

One promising use of power line 3D models is for calculating conductor trajectories, and for conductor sagging measurements.




(1) 34 м
(4) 125 м
(3) 113 м
(2) 49 м

Services for the power engineering sector

Aerial inspections of overhead power lines; detection of breaks, damaged pylons and signs of unauthorised activity in the exclusion zone.

An orthophotographic map with a resolution of 5 cm and an accuracy of 15 cm in terms of standard deviation. The map is used for subsequent monitoring, as well as for updating or replacing existing maps. It allows for comparing the actual location of facilities with the cadastral plan, for taking inventory of facilities, and for detecting illegal intrusions into the exclusion zone).

Assessing the exclusion zone vegetation's compliance to standards (heights of trees and shrubs, location of potentially dangerous trees, automatic calculation of the number of trees to be felled).

Three-dimensional textured models of the substations and pylons, topography, trees and shrubs in the exclusion zone.

Conductor sagging measurements for each power line span.

Designing new power line laying routes with the use of existing pylons and new models of conductors.

Thermal imagery surveys to assess the state of insulators and contacts.
Electronic power line maps exportable into the customer's GIS: determining the exact coordinates and inclination angle of each pylon; comparing the actual location of power line elements and the exclusion zone boundaries with the information contained in the state cadastral plan; creating a registration card for each pylon in the customer's GIS.

Supervision of construction works and contractor activity to ensure compliance with production requirements and design specifications.

Services for the oil and gas industry

Aviarobots provides round-the-clock oil-and-gas infrastructure patrols with video-recording, photographic, and heat-imaging payloads to detect unauthorised activity and illegal cut-ins (including underground taps), as well as for pipeline health assessment, in support of design and development operations, and also in support of natural and man-made disaster relief efforts.

Leak detection

Operational patrolling

Daytime and nighttime aerial patrols of the exclusion zone involve visible-spectrum (photographic and video) and thermal imagery. Data may be broadcast in real time to a mobile security point (the broadcasting range depends on the terrain). Any detected transgressions or failures are entered into a geographic information system (GIS), and can be viewed individually on an interactive map.

Leak detection

Oil products are characterised by their high emissivity in the IR band of the spectrum, due to the fact that hydrocarbons absorb sunlight. Oil and gas pipeline leaks produce thermal contrasts ranging between 2 and 2.5 degrees K. These are clearly visible in infrared (10 to 12 mkm) images with a sensitivity of around 0.2 degrees K.

For oil spills into water, the thermal contrast along the oil stain perimeter may reach 1.5 degrees K. This contrast is negative during the nighttime, because oil is colder than water, and positive during the day, because the oil film absorbs solar radiation better and grows warmer than the water surface.

Orthophotographic plan and textured 3D models

An orthophotographic area map with a resolution of 5 cm and an accuracy of 15 cm in terms of standard deviation is intended for updating, complementing or replacing existing maps. The map can be used for comparing the actual location of objects with the cadastral plan (taking inventory of objects and detecting intrusions into the exclusion zone).

The customer's infrastructure can be estimated, and its condition assessed, based on photorealistic 3D models.

Infrastructure facilities can be measured, their volume calculated, and profiles built for them. The resulting 3D models can be exported into CAD systems.

The reverse is also possible: structures or facilities under development can be added to a 3D model of the existing area for visualisation purposes, for supervision of territory development and construction works, or for presentations to investors and to the local population.

Supervision of emergency relief operations

Detection of accidents and emergencies (fires, floods, landslides) along pipeline routes. In case of emergency, UAV-based remote sensing helps collect comprehensive and current spatial information about the incident, mark its location on a map, assess development dynamics, promptly issue instructions to rescue parties, supervise the progress of each party, and perform predictive analysis.

Services for the oil and gas industry

Remote-controlled and autopilot-assisted patrolling of contiguous linear structures. Real-time transmission of video and thermal imaging signals. Detection of leaks and unauthorized activity in the exclusion zone.

An orthophotographic map with a resolution of 5 cm on the ground and an accuracy of 15 cm in terms of standard deviation is used for monitoring, as well as for updating or replacing existing maps. It can be used for comparing the actual location of objects with the cadastral plan (taking inventory of objects and detecting intrusions into the exclusion zone).

Evaluation of pipelines' technical condition, such as non-standard bedding, increased wear, ruptures, cracks, corrosion, damage to waterproofing and heat insulation. Inspection of places where pipelines cross with water obstacles, roads and railway lines.

Analysis of geodynamic and hydrogeological processes along pipeline routes.

Evaluation of soil subsidence, creation of maps for soil types, spring flooding and flooded areas, salinised soils, and soils prone to freezing or thawing.

Creation of highly accurate 3D models of terrain and infrastructure for performing of measurements and volume calculations, for profile building purposes, and for export into CAD systems.

Supervision of construction and contractor operations for compliance with technological processes and design specifications.

Leak detection

Agriculture

Land inventory, creation of electronic field maps, detection of intrusions into land use boundaries, creation of orthophotographic maps and highly accurate 3d terrain models. NDVI determination and development of precision farming instructions. Assessment of soil quality and yield forecasting.

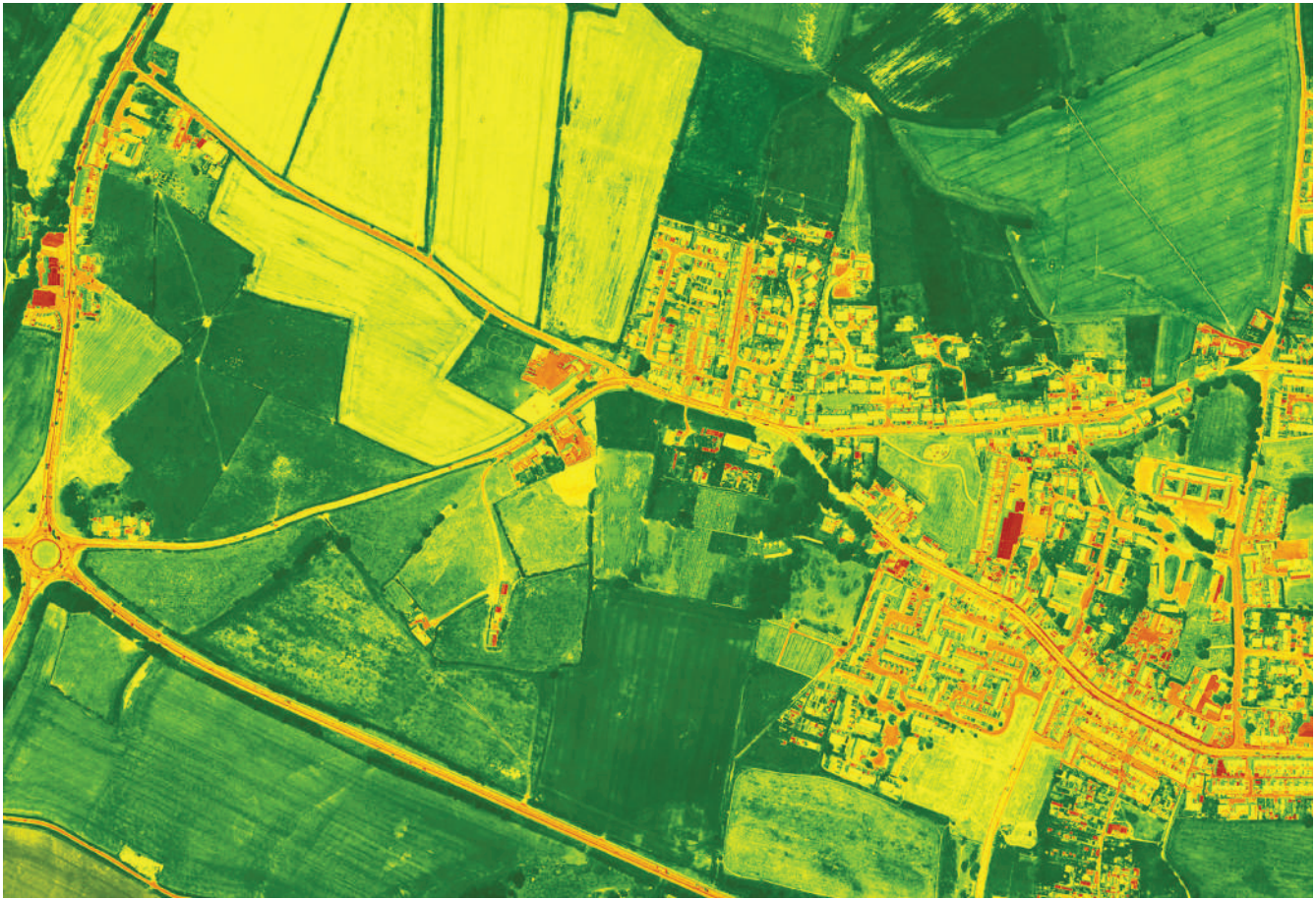
Monitoring of agricultural lands, support and supervision of agricultural operations. Harvest planning.

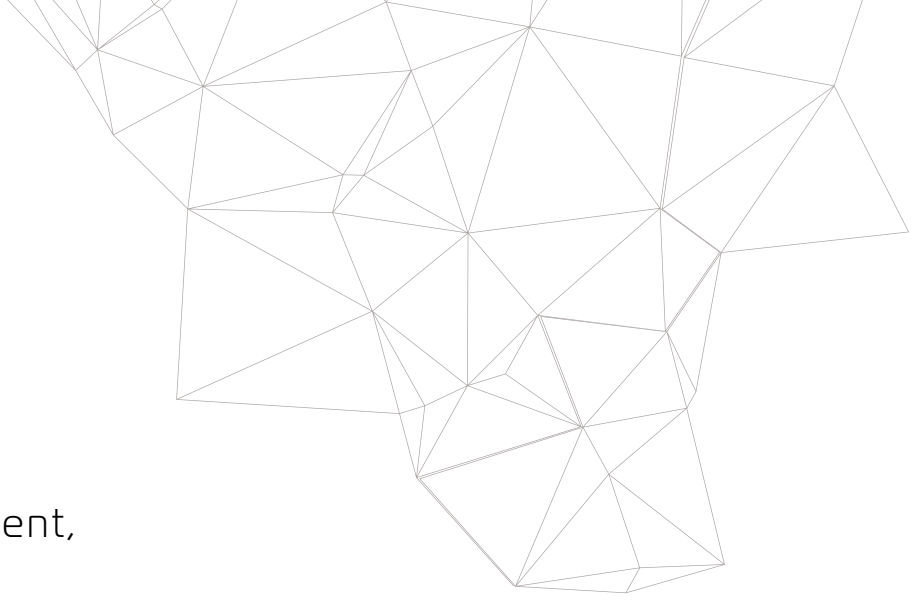
NDVI determination

The way vegetation reflects in the red and near-white IR parts of the electromagnetic spectrum is directly related to the proportion of green biomass. The state of vegetation is quantitatively assessed using the so-called Normalised Difference Vegetation Index (NDVI), which also characterises the density of vegetation.

The NDVI enables crop producers to appraise the germinating capacity and growth rate of plants and the productivity of farmlands. The index is calculated as the difference between the spectral reflectance measurements in the near-infrared and red parts of the spectrum divided by their sum.

The NDVI varies between -1 and 1. Green vegetation's reflectance in the red part of the spectrum is always lower than that in the near-IR part, because chlorophyll absorbs visible light; therefore the NDVI cannot be negative for green vegetation.



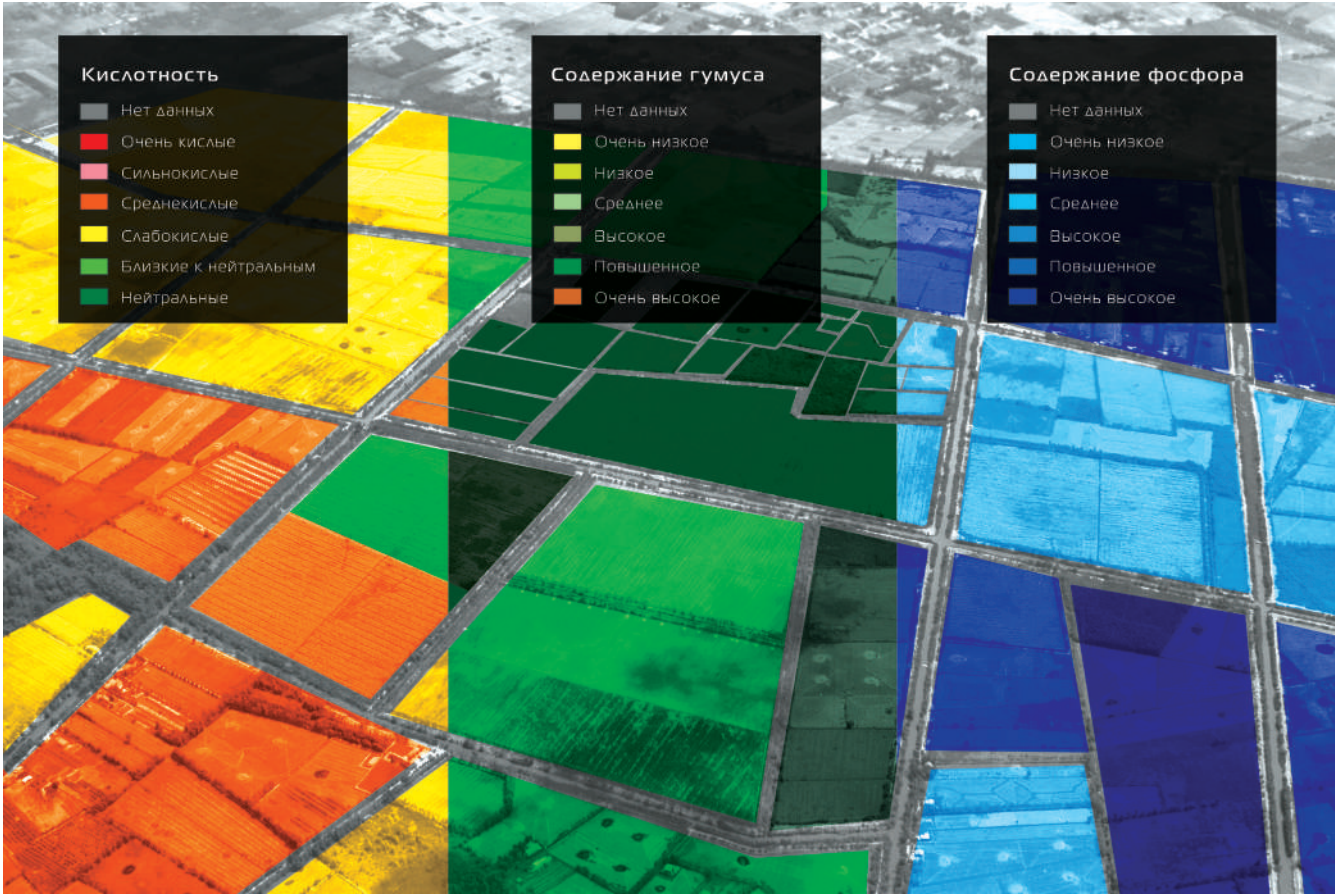


Soil quality assessment, yield forecasting

Agrochemical soil analysis in combination with NDVI maps helps develop instructions for the differentiated introduction of mineral fertilisers.

If no agrochemical survey data is available, the NDTV maps may be used for optimising the sampling process: instead of taking soil samples based on a regular grid, samples may be taken in certain areas, which reduces the number of samples to be taken and helps mitigate the influence of random factors on the analysis results.

Land auditing with the use of UAVs helps identify inarable lands; compare the actual field boundaries with those specified in the cadastre; analyse the condition of crops (death or oversowing); detect procedural irregularities; create a 3D model of the target field; and assist security services in their work.


Кислотность
Нет данных
Очень кислые
Сильнокислые
Среднекислые
Слабокислые
Близкие к нейтральным
Нейтральные
Содержание гумуса
Нет данных
Очень низкое
Низкое
Среднее
Высокое
Повышенное
Очень высокое
Содержание фосфора
Нет данных
Очень низкое
Низкое
Среднее
Высокое
Повышенное
Очень высокое

Specification of farmland boundaries as compared to cadastre plan

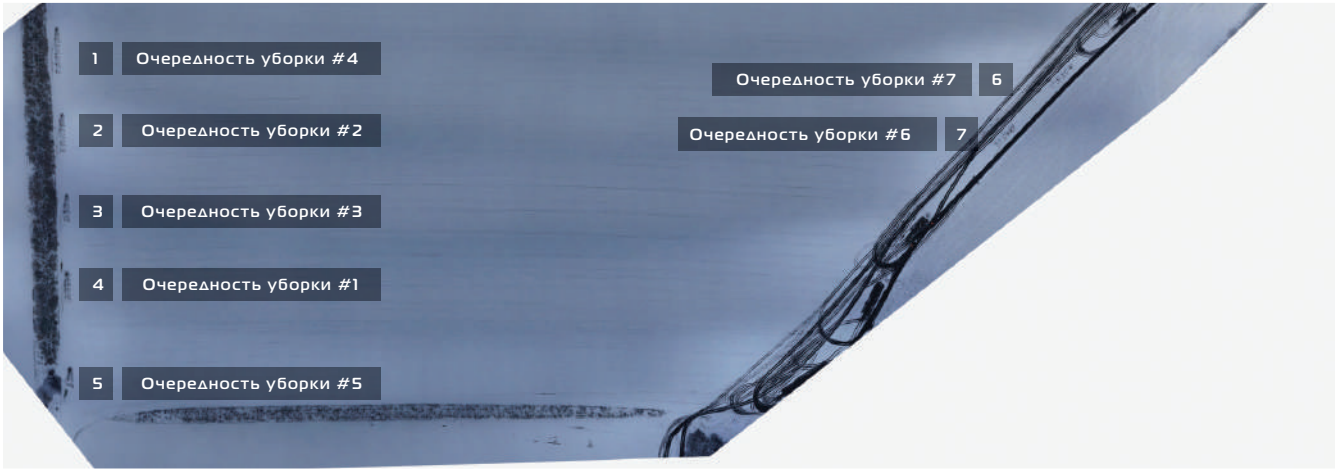
The accuracy of information about a field's area and boundaries directly affects the cost estimates for its treatment and the evaluation of its productivity. Discrepancies between maps dating back to the 1970s and the 1980s and the actual state of affairs may reach 20%. This leads to miscalculated procurement costs for seeding materials and pesticides, and also to incorrect assessments of land productivity. Inventorying lands with the use of UAVs is significantly more accurate and effective than the conventional methods of ground-based surveying or satellite imagery analysis.

UAV-assisted remote sensing allows for building a highly accurate orthophotographic mapand a a 3D model of the area, for specifying field boundaries and areas, for updating information about the actual land use, and for determining the type of vegetation.

Storage clamp measurements and clearing prioritisation

UAV-assisted aerial photography and thermal imaging of storage clamps for root vegetables allows for combining a highly accurate orthophotographic field map with the results of a thermal imaging survey to build 3D storage clamp models, calculate the volume of stored crops with a high degree of automation, and prioritise their clearing order (the heat emission captured by the thermal imager allows for quantitative assessment of the speed of decomposition processes).

In November 2016, Aviarobots tested this method on sugarbeet storage clamps in Voronezh Region.


1 Очередность уборки #4
2 Очередность уборки #2
3 Очередность уборки #3
4 Очередность уборки #1
5 Очередность уборки #5
Очередность уборки #7 6
Очередность уборки #6 7

Кагат #1
излучение = 109
Кагат #2
излучение = 151
Кагат #3
излучение = 150
Кагат #4
излучение = 169

Services for agriculture

Visual farmland inspections based on photographic and video recording materials allow for evaluating the condition of fields; for detecting culture losses or oversowed areas, inarable lands and procedural violations; for identifying areas affected by flooding or drought; and also in assisting security services. Aerial observation is an effective substitute for ground-based surveys.

Evaluation of land quality and yield forecasting.

Creation of electronic field maps.

Land inventory, detection of farmland boundary violations. Creation of an orthophotographic map with a resolution of 5 cm and an accuracy of 15 cm in terms of standard deviation.

NDVI determination and development of precision farming instructions.

Real-time farmland monitoring, support and supervision of agricultural operations.

Comparison of the actual farmland boundaries with the state cadastre.

Development of clearing priority plans for root crop storage clamps.

Maintenance of field logs and procurement estimates for seeding materials, plant protection products and fertilisers.

Creation of highly accurate three-dimensional terrain models with measurable heights, distances and areas.

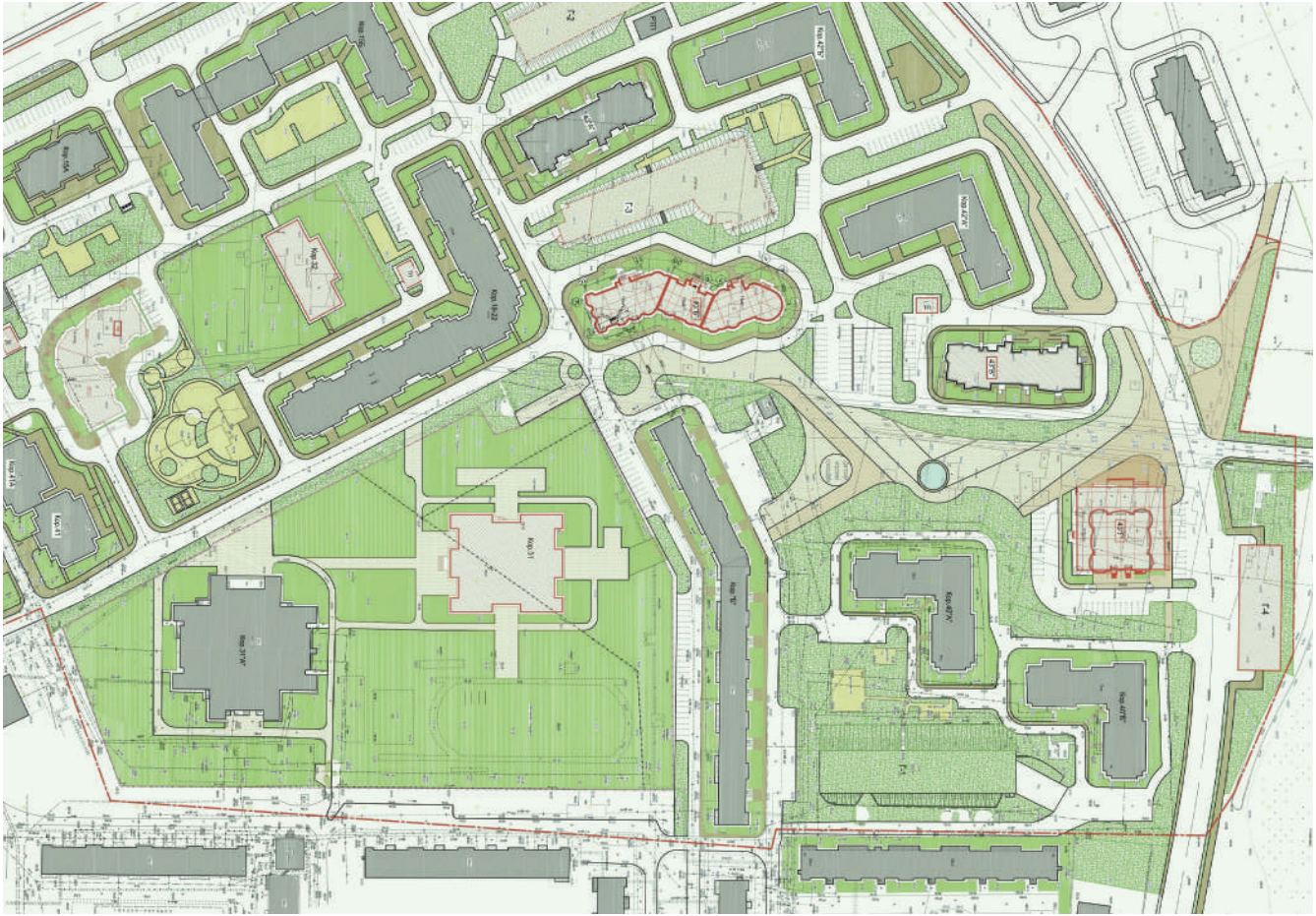
Urban development, housing and utilities services

The use of UAVs allows for collecting accurate, current and comprehensive geographic data in an inexpensive and prompt manner. Integrated geographic informatrion products based on UAV-assisted imagery are used in technological, architectural and managerial decision-making processses related to urban development zoning, area planning, architectural design and oversight.

More detailed and accurate general plans

In most Russian cities, municipal services use general plans at a scale of 1:5000 (or 1:2000 at best).

As a rule, these plans are no longer current due to dynamic changes in urban infrastructure. The use of UAVs allows for creating current general plans at a scale of 1:500 based on the results of aerial photography.



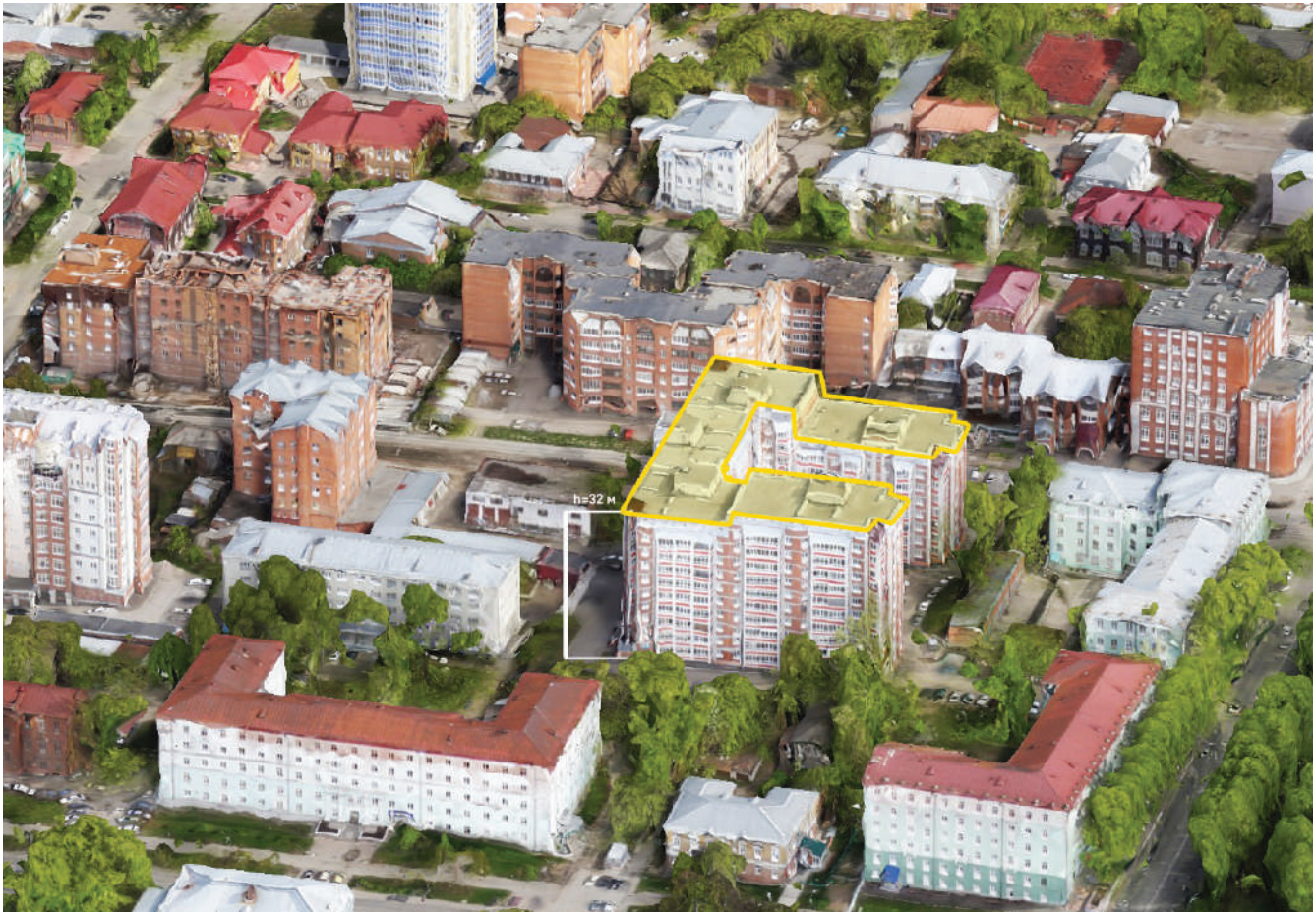
Detection of cadastral errors and squatting

Orthophotographic maps and digital terrain models can be superimposed on the state cadastral registry to detect squatting, unregistered structures, and breaches of the Land Code, and also to help municipal authorities calculate taxes, rent payments and redemption prices.

Accurate, measurable and realistic urban 3D model

Highly accurate 3D models are opening up new opportunities for urban planning. Comparable in accuracy to the results of airborne laser scanning, they allow for measuring buildings, identifying visibility areas, calculating volumes of structures, and building profiles. These 3D models can be exported into CAD systems.

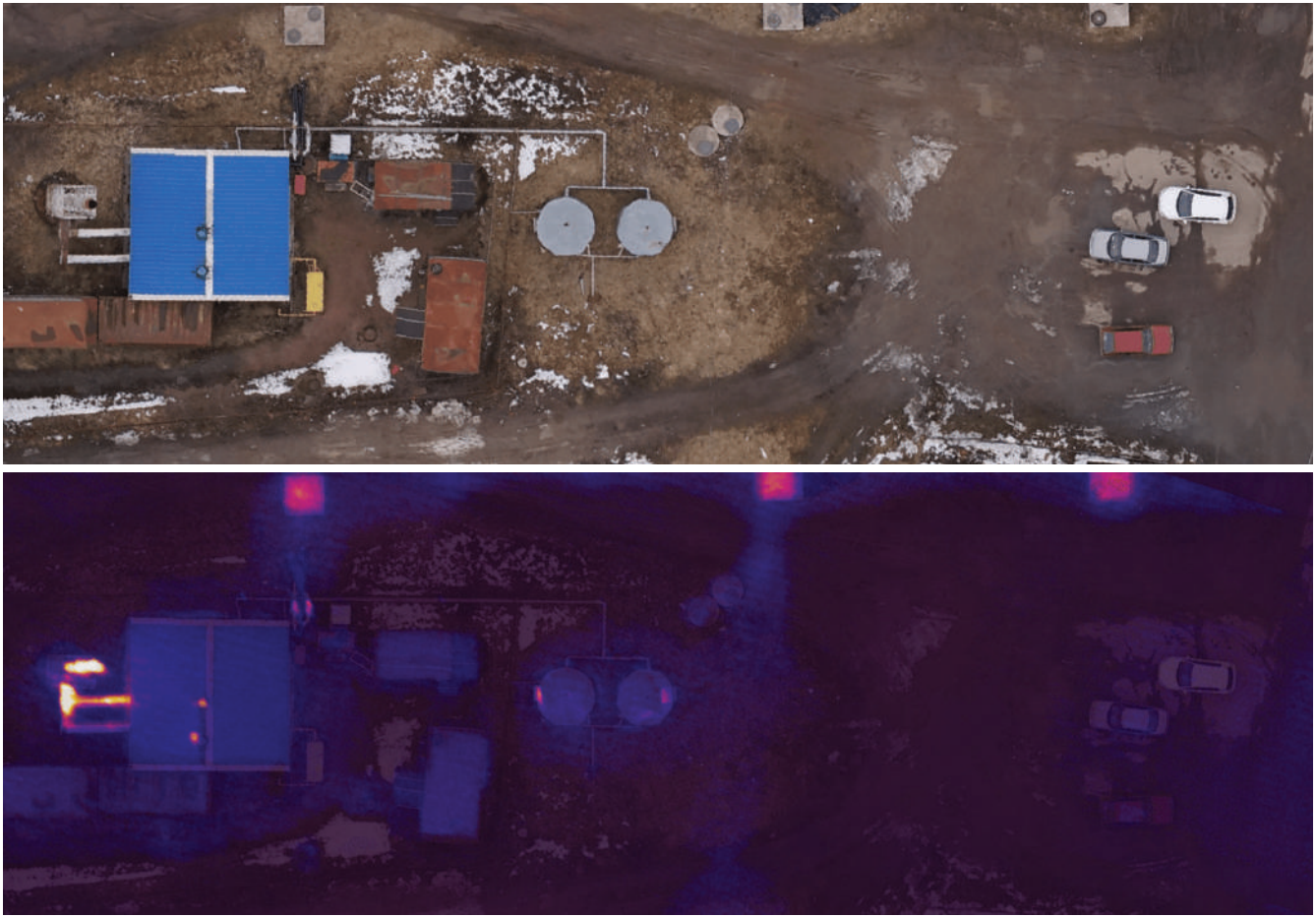
The reverse is also possible: structures and facilities under development can be incorporated into a 3D model of the existing urban area for visualisation purposes, for area development and construction oversight, and in presentations intended for investors and the local population.


h=32 м

Heat loss mapping for urban infrastructure

Combining the orthophotographic map of urban infrastructure with the results of a thermal imaging survey helps create a highly accurate heat loss map and analyse the level of infrastructural readiness for the winter season.

Thermal imagery complements conventional preventative measures, it helps identify inefficient insulation on overland and underground heating mains and assess the quality of insulation in buildings.



Services for urban development, housing and utilities services

Creation of an orthophotographic map with a resolution of 5 cm and an accuracy of 15 cm in terms of standard deviation to complement or replace existing maps.

Creation of current general plans at a scale of 1:500 to replace the older ones, which are made at a scale of 1:2000 or 1:5000.

Detection of discrepancies between the actual land boundaries and the state property cadastre; detection of squatting and unregistered buildings.

Creation of a spatial framework for urban development automation systems or for public information portals.

Inventory of municipal property and assessment of its conditions based on orthophotographic maps and photorealistic 3D models.

Audit of infrastructure for compliance with regulatory documents; control of lessee compliance with municipal property use standards.

Monitoring of temporary structures and facilities: detection of unauthorised use of advertising space, supervision of mobile vending outlets, of green spaces (to measure tree heights and identify potentially threatening vegetation).

Operational audit of construction works, control of contractor compliance with technological processes and design specifications.

Emergency modelling (natural and man-made disasters) to draft emergency action plans.

Creation of highly accurate 3D models for cultural heritage sites and tourist attractions.

Performance monitoring for housing and utilities services, evaluation of the quality of preparations for different seasons, compilation of heating maps.

Transport infrastructure

Daytime and nighttime patrolling flights with photographic, video recording and thermal imaging payloads; detection and visual assessment of failures and emergencies.

Creation of highly accurate orthophographic maps and electronic infrastructure maps, and their export into any GIS. Creation of geotagged 3D models and their export into a CAD system. Geodetic support for the design and construction of contiguous linear structures.

Transport infrastructure

Detection of infrastructure failures and transgressions

Daytime and nighttime UAV patrols with the use of photographic, video recording and thermal imagery allow for monitoring transport infrastructure facilities both in operation and under construction, and also for detecting and documenting instances of unauthorised activity.

Detection of failures and emergencies in the interest of maintenance services. Collection of current information about all aspects of construction works in the interest of engineering services. Complete situational awareness in support of managerial decision-making.

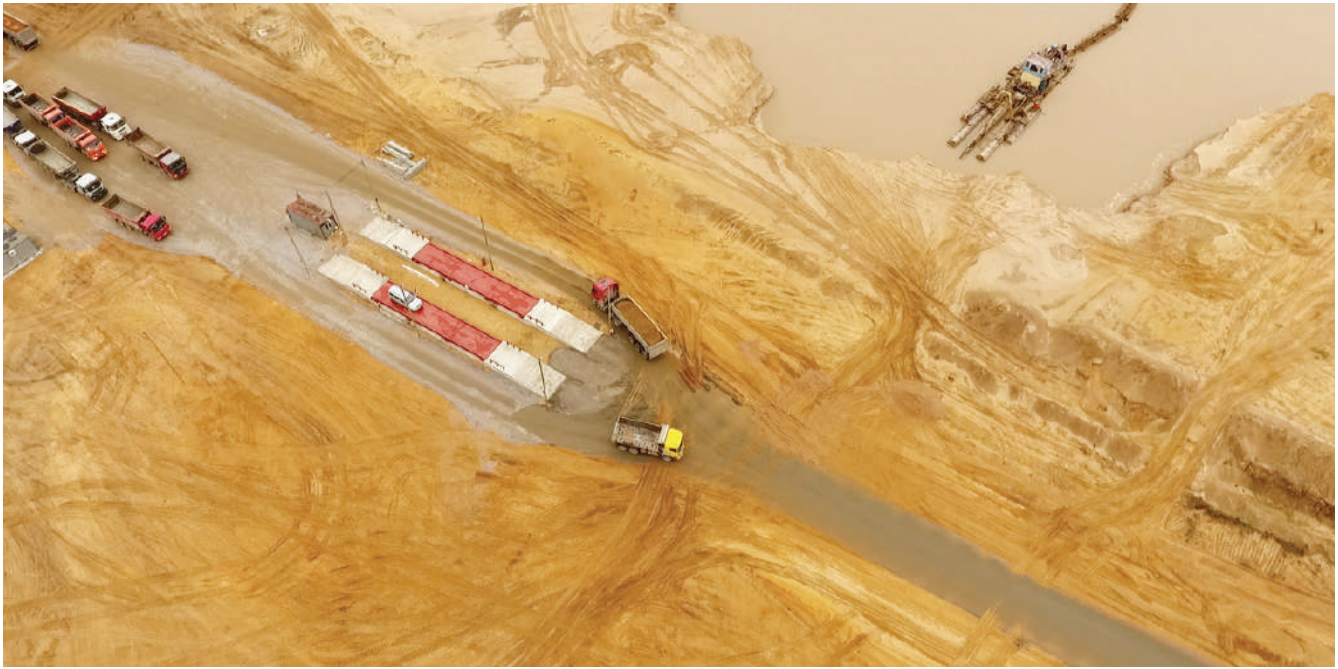
All data thus collected is exported into the customer's GIS (if the customer does not have one, Aviaribots will make its own GIS available). This considerably simplifies corporate and inter-agency analysis of any detected failures and transgressions.

Contractor oversight

Using UAVs for photographic and video recording allows for unobtrusive real-time oversight of contractors, including their compliance with construction regulations, operational procedures, and health and safety rules.

Any violations thus detected are entered into the customer's GIS in the form of violation reports. A violation report specifies the time and location of the incident and provides its brief description, complete with any associated photos and videos. The data collected in the course of each new survey flight is superimposed, as a new historical layer, onto a multilayer orthophotographic map, allowing for retrospective analysis of each construction phase and for identifying the cause of each incident.

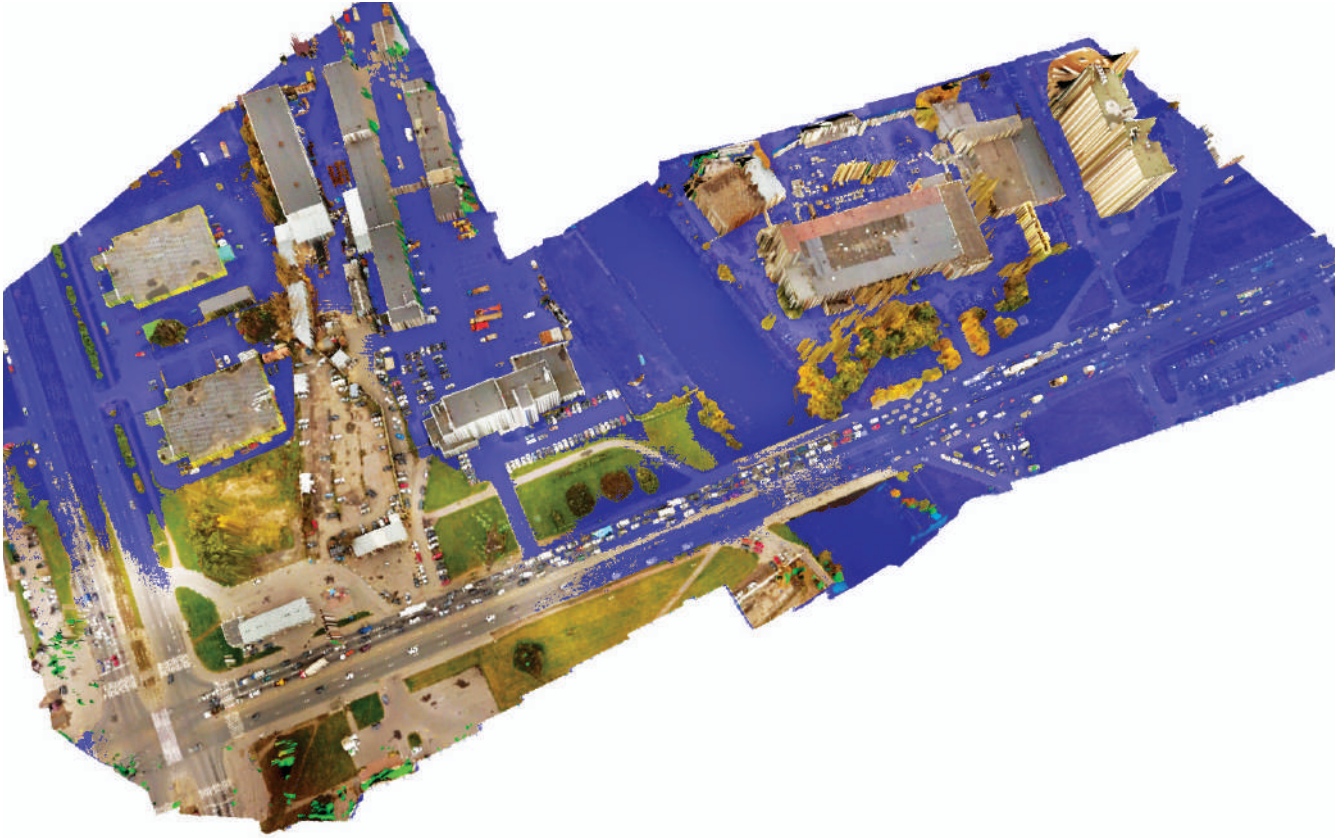
These tools help collect evidence for possible court actions.

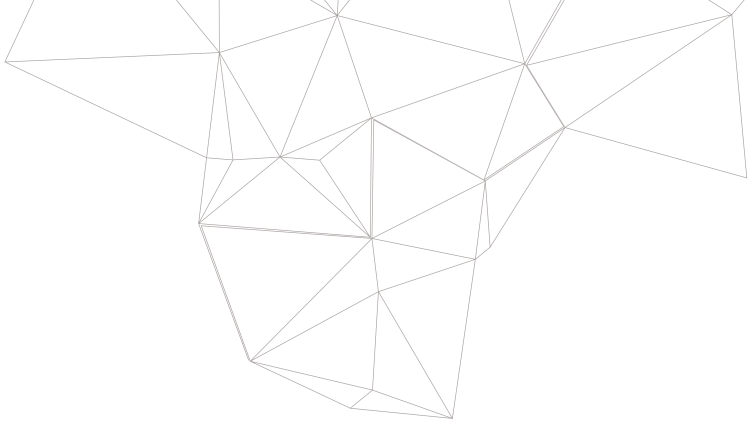


Emergency modelling, coordination of rescue operations

A highly accurate 3D model of terrain and infrastructure, based on the data obtained in the course of survey flights, allows for modelling a variety of natural disasters and man-made emergencies, and for drafting relevant action plans.

In the event of an actual emergency, UAV-assisted remote sensing helps create a comprehensive and current spatial picture of the situation, map the emergency area, assess the emergency dynamics, set real-time tasks for rescue parties, supervise the progress of each party, monitor the situation and predict its development.



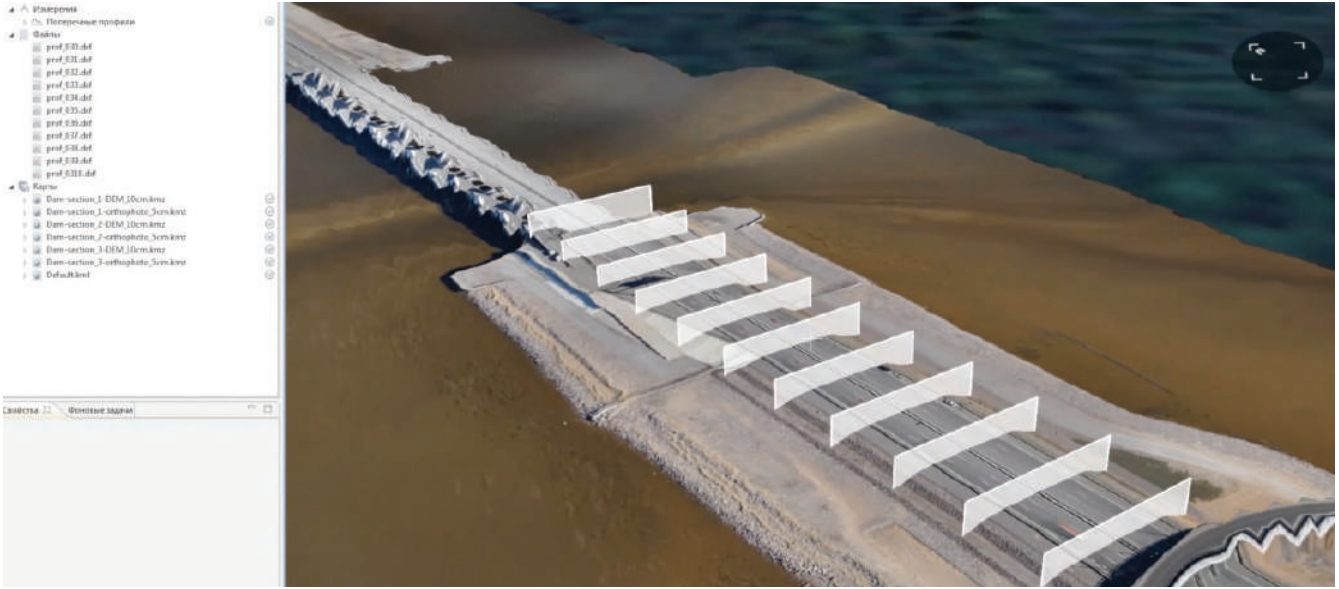


Support for design and surveying activity

The survey results are used to produce an orthophotographic map, an elevation model and a digital terrain model. This allows for creating accurate 3D terrain models, which can be used in selecting optimal routes for new roads and optimal locations for new transport infrastructure elements.

The digital surface models and elevation models are fully compatible with GIS and CAD systems, and can be used in designing new facilities.

Aerial photography is also used successfully in geodetic engineering surveys for the construction of linear structures. It helps quickly create topographic plans at scales of 1:500, 1:1.000 and 1:2,000, even for difficult-to-reach and dangerous areas and despite the presence of water bodies or other obstacles in the vicinity.



Services for transport infrastructure

Transport infrastructure

Daytime and nighttime patrolling flights with photographic, video recording and thermal imaging payloads, detection and visual assessment of failures.

Detection of unauthorized activities: illegal junctions, foreign objects in the exclusion zone, waste dumps, utilization of existing quarries, deviations from approved projects, attempts by trucks and large construction vehicles to bypass weight stations.

Creation of highly accurate orthophotographic and electronic transport infrastructure maps in any GIS, complete with information about the condition of infrastructure elements (road signs, etc.).

Creation of three-dimensional geotagged models and their export into a CAD system. Insertion of facilities under development into the model of existing terrain and infrastructure for visualisation purposes. Estimation of the flow of filling materials, assessment of quarrying development based on 3D models.

Emergency modelling (flooding, rockfalls, avalanches, etc.) based on 3D visualization.

Forestation assessment for the boundaries of lands situated near transport infrastructure elements; automatic calculation of the number of trees for felling, calculation of tree and shrub heights.

Geodetic support to construction operations.

Oversight of contractor compliance with construction regulations.

Comparison of the actual location of infrastructure elements with land cadastres.

Environmental damage mapping.

Preparation of materials for amending territorial planning documents in support of construction operations.

Mining industry

Highly accurate and current geospatial information about a quarry, cut or mine for the development of current graphic documentation.

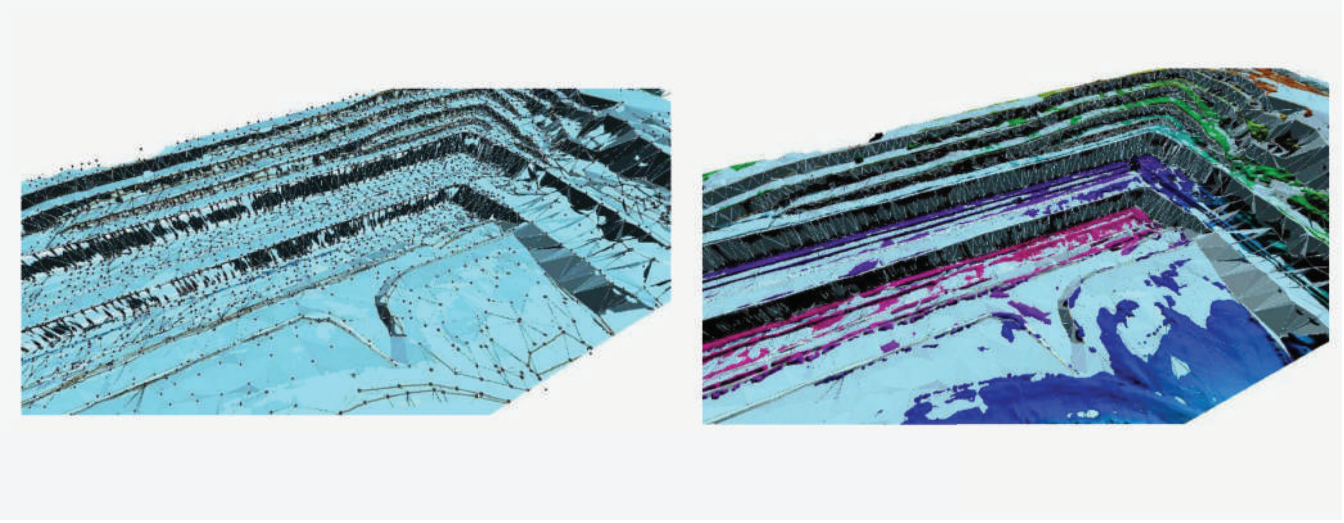
Centimetre-accurate orthophotographic maps and digital terrain models. Surveys of dangerous and difficult-to-reach areas. Creation of 3D models for mining facilities with accurate assessment of their volumes, and their export into a CAD system. Aeromagnetic surveys of difficult-to-reach areas.

Mining industry

Surface mapping for quarries, cuts and mines

Digital surface models created with the use of UAV-based surveys are significantly more detailed than those based on ground surveys. They are created in the form of regular grid with centimeter spatial resolution.

The image depicts a 3D model created in a CAD system based on the results of a ground tacheometric survey, and the result of combining that model with he model based on an aerial photographic survey.

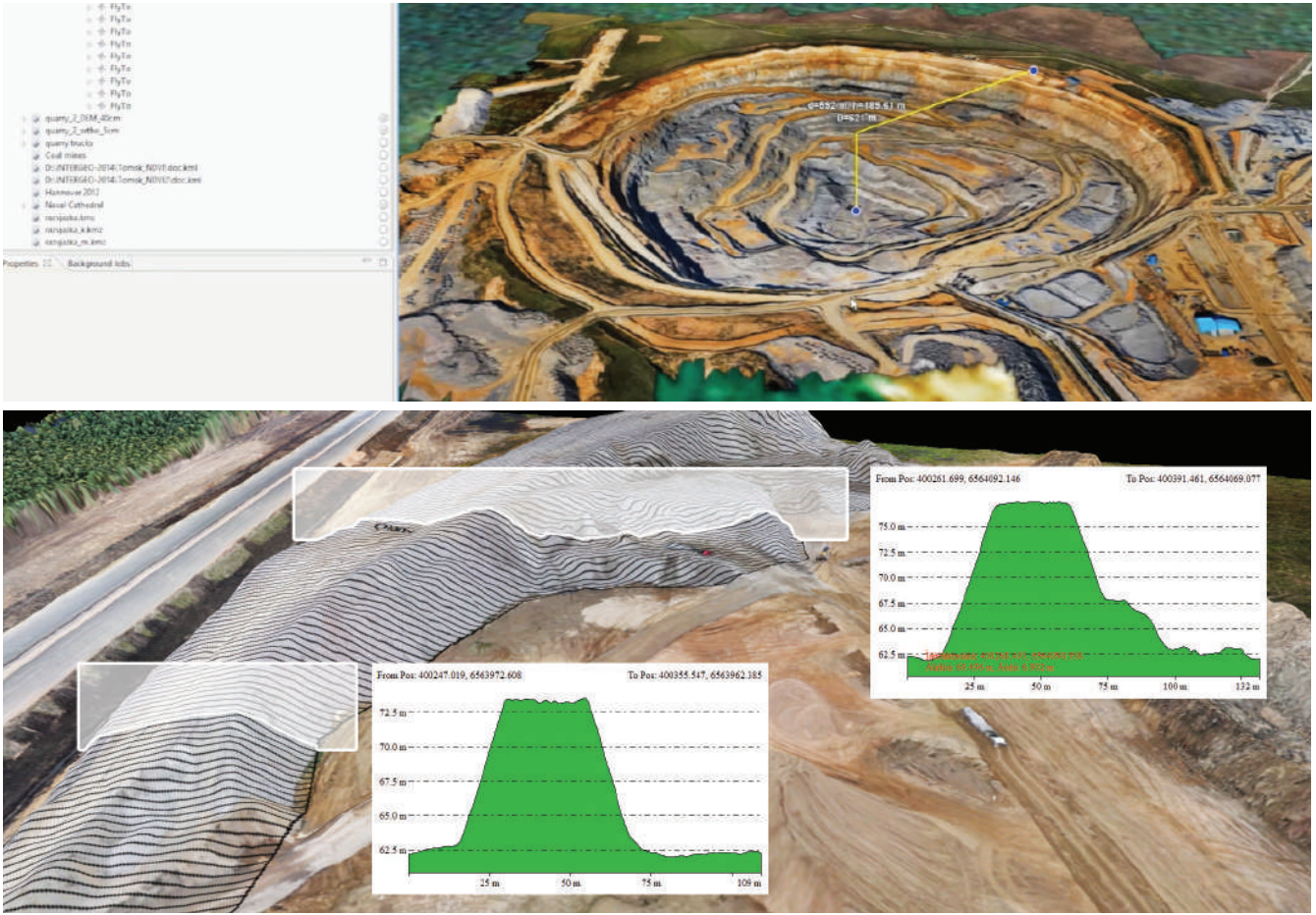


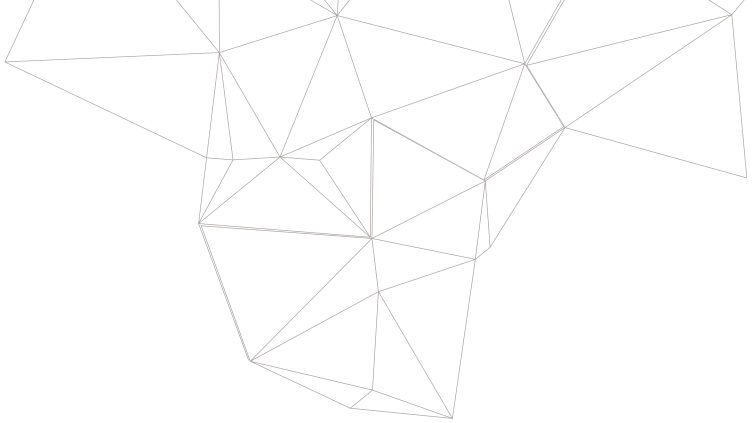
Automated estimation of extraction volumes, overburden and losses

The data obtained is used to create an orthophotographic map with a resolution of up to 5 cm and an accuracy of 15 cm in terms of standard deviation; a digital terrain model; and a textured 3D model of the quarry or cut.

The resulting three-dimensional geotagged models can be exported into a CAD system; facilities under development can be inserted for visualisation purposes.

The 3D models are used for calculating the volumes of overburden and ores extracted from the quarry, to analyse the condition of the quarry sides, to create topographic profiles, to search for deformations and displacements, and to assess production volumes.

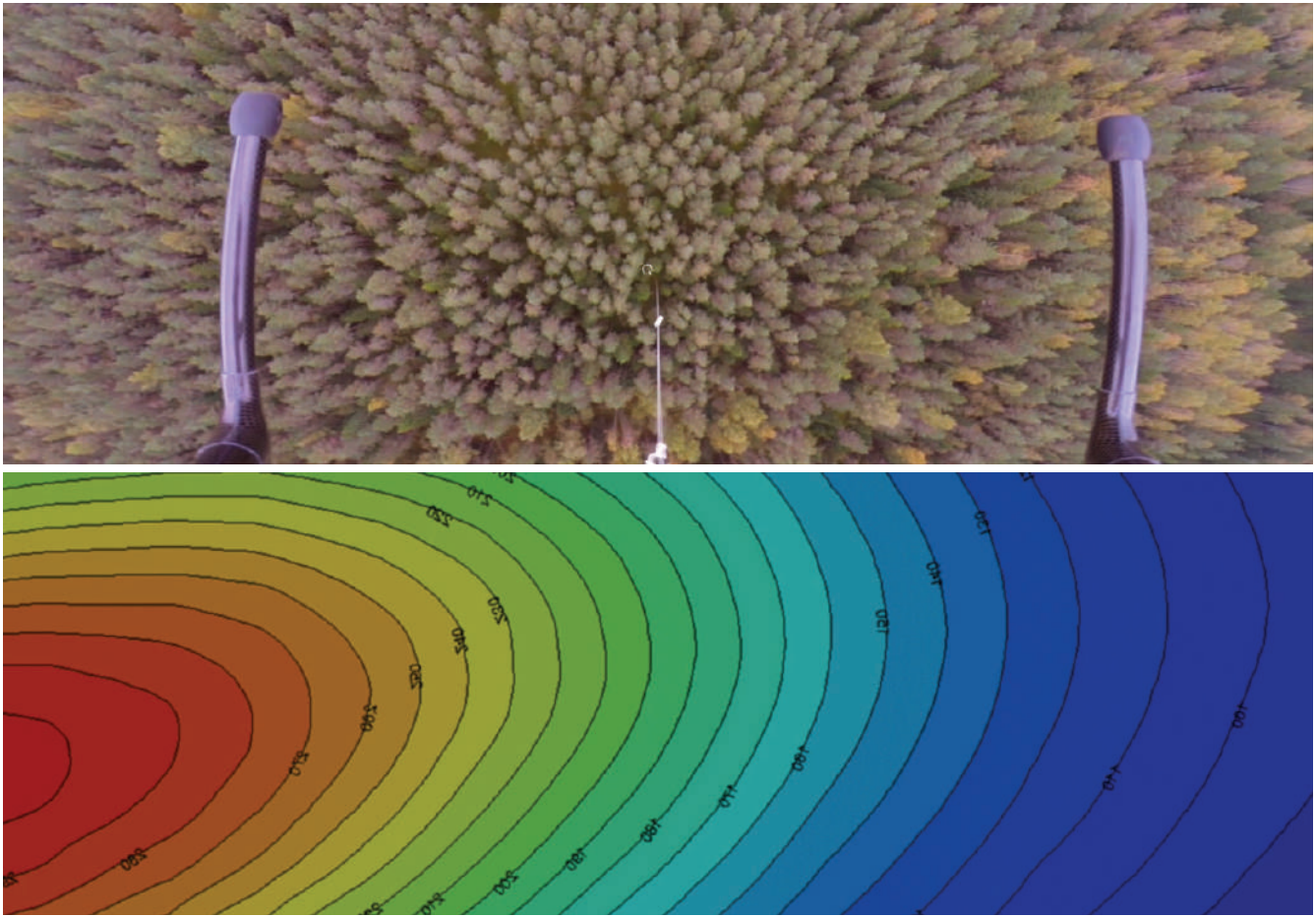

From Pos: 400247.019, 6563972.608
To Pos: 400355.547, 6563962.385
72.5 m
70.0 m
67.5 m
65.0 m
62.5 m
25 m
50 m
75 m
109 m
From Pos: 400261.699, 6564092.146
To Pos: 400391.461, 6564069.077
75.0 m
72.5 m
70.0 m
67.5 m
65.0 m
62.5 m
25 m
50 m
75 m
100 m
132 m



Aeromagnetic surveying of difficult-to-reach areas

Magnetometric surveys are performed with the use of a multirotor UAV carrying a quantum magnetometer. This method combines the advantages of ground-based surveys (highly detailed results) and aeromagnetic surveys using manned aircraft (shorter surveying times).

The method is particularly efficient in surveying medium-sized target areas, when the use of manned aircraft is unfeasible and ground-based surveys are too expensive.



Services for the mining industry

Centimetre-accurate orthophotographic maps and digital terrain models that are more detailed than those resulting from ground-based tacheometric surveys. Data collection and processing is fully automated, which rules out human errors.

Collection of geospatial data for dangerous and difficult-to-reach sites.

Creation of as-fitted drawings and presentations.

Aeromagnetic surveying of difficult-to-reach areas for prospecting and mapping purposes.

Condition analysis for quarry slopes and profiles, stability and safety assessment for faces and heaps.
Detection of deformations and displacements, assessment of environmental impact.

Creation of 3D geotagged models and their export into CAD systems; highly accurate calculations of the target's volume and size; creation of relief profiles. This method reduces the cost of surveying operations while increasing their speed and accuracy.

Emergency modelling (floods, landslides, avalanches, man-made disasters) to draft emergency action plans.

Preventative inspections of quarry power lines, detection of line breaks.

Control and assessment of the volumes of ores mined and overburden removed; assessment of mining losses, planning of future mining operations

Conservation and environmental protection

Detecxtion of unauthorised activity (unlicensed mining, poaching, illegal construction and logging operations). Mapping the damage caused to the enviroment, searching for unauthorised waste dumping sites. Wildfire patrols. Forest inventory. Wildlife surveying and migration monitoring.

Conservation and environmental protection

Survey flights to map official and unauthorised landfills

The use of UAVs allows for quickly locating unauthorized dumps of household and construction waste, creating an orthophotographic map and a digital model of the dumping area, building a highly accurate 3D terrain model, and measuring the current volume of waste already dumped on the site.

Regular survey overflights of landfills and illegal dumping sites helps assess their growth dynamics and estimate the accumulation of waste volumes over a certain period of time.

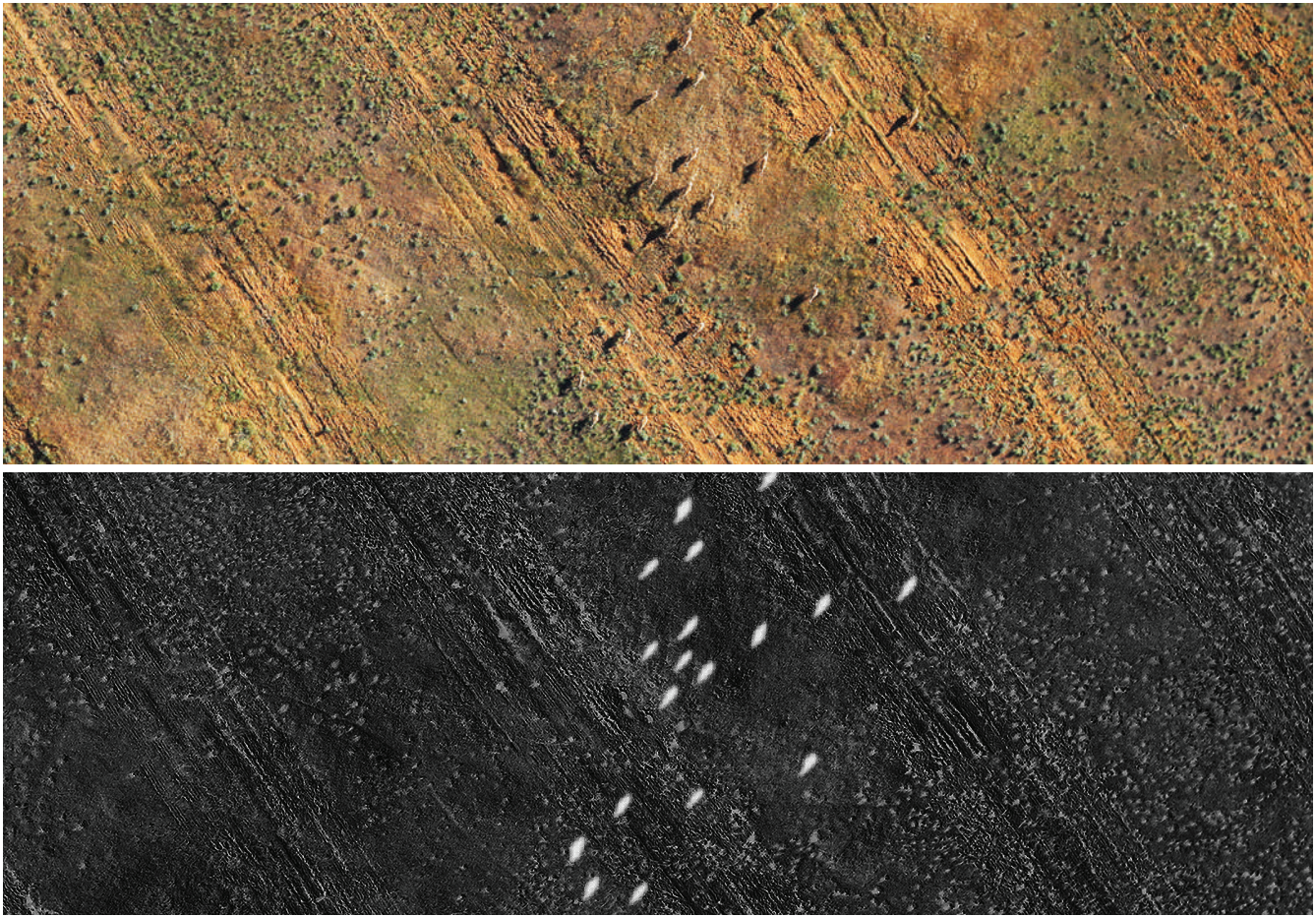
Wildlife monitoring

Aerial wildlife monitoring is among the most accurate methods of determining a population's size, range and concentrations.

The number of animals detected in the area inspected by the UAV is calculated based on optical and thermal photographic and video imagery. The images are geotagged to determine the animals' whereabouts.

In the processing phase, the photographic and thermal images are superimposed for automatic calculation of the population's size.

The data thus obtained is used to extrapolate the number of animals onto the entire area with the use of government-approved methods.



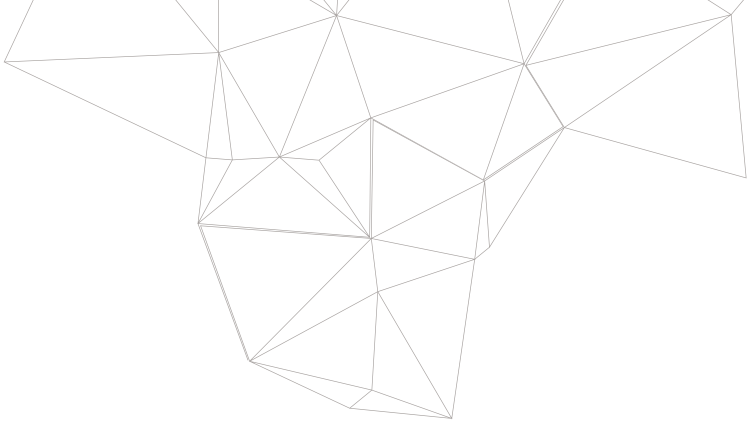
Wildfire patrolling and coordination of firefighting teams

For wildfire patrols we use a fixed-wing UAV carrying a remote-controlled video camera with a 28x optical zoom. Mounted on a remote-controlled gyrostabilised platform, which allows for 360-degree horizontal rotation, the camera can cover the entire lower hemisphere.

In normal visibility, the aircraft patrols at altitudes ranging between 600 and 800 m. On detecting smoke the operator flies the aircraft towards the smoke source. Wildfire sites are documented in the form of photographic images or video recording. Each wildfire thus detected continues to be monitored until fully extinguished, with inspection flights performed two or three times daily. Each new flight updates the map of the fire area to assess the spread dynamics. The operator identifies the main direction in which the fire is spreading; assesses possible associated threats; detects individual hotspots, dangerous areas, and sites where the fire is going to meet the firebreaks; and also locates people and equipment on the ground.

Detailed inspections in support of firefighting efforts are performed at altitudes of 200-400 m.

Combined optical/thermal video cameras are used for detecting concealed fire pockets.



Clandestine anti-poaching patrols

Our anti-poaching patrols involve a fixed-wing UAV carrying a remote-controlled gyrostabilised camera with a 28x optical zoom, 360-degree rotation and coverage of the entire lower hemisphere, or a fixed-wing UAV carrying a triple payload of thermal imager, video camera and photographic camera. The signal from both video cameras (optical and thermal) is transmitted to the ground station in real time.

The UAV is powered by an electric motor, making it virtually impossible to detect. This allows for concealed observation of illegal activity.

If the poachers discover that they are being watched, and attempt to flee, the UAV will follow them to document their actions (the dumping of firearms, tackle or catch), thus collecting photographic and video evidence for subsequent inquiry.

+30
0
-30
-60
-90
-120

Conservation and environmental protection services

Round-the-clock monitoring flights in support of oversight operations.

Detection of unauthorised mining activity; evaluation of the volumes extracted, including as applied to the use of prospecting licences to extract mineral resources in industrial quantities.

Environmental mapping (detection of unauthorised activity in designated forest lands, detection of lost sections of forests); assessment of the damage caused to the environment.

Landfill mapping for household and industrial waste dumping sites, detection of illegal waste dumps.

Assessment of current waste volumes and their growth dynamics.

Detection of poaching activity and collection of evidence in the form of photographic, video and thermal imagery.

Survey flights to measure wildlife populations with the use of optical and thermal imaging equipment, to specify the areas populated by wild species, and to monitor their migrations.

Survey flights to specify the borders of conservation areas, reserves and wildlife sanctuaries.

Detection of illegal logging and construction operations.

Detection and monitoring of wildfires, aerial support to firefighting operations.

Post-wildfire inspection flights and oversight of clean-up operations.

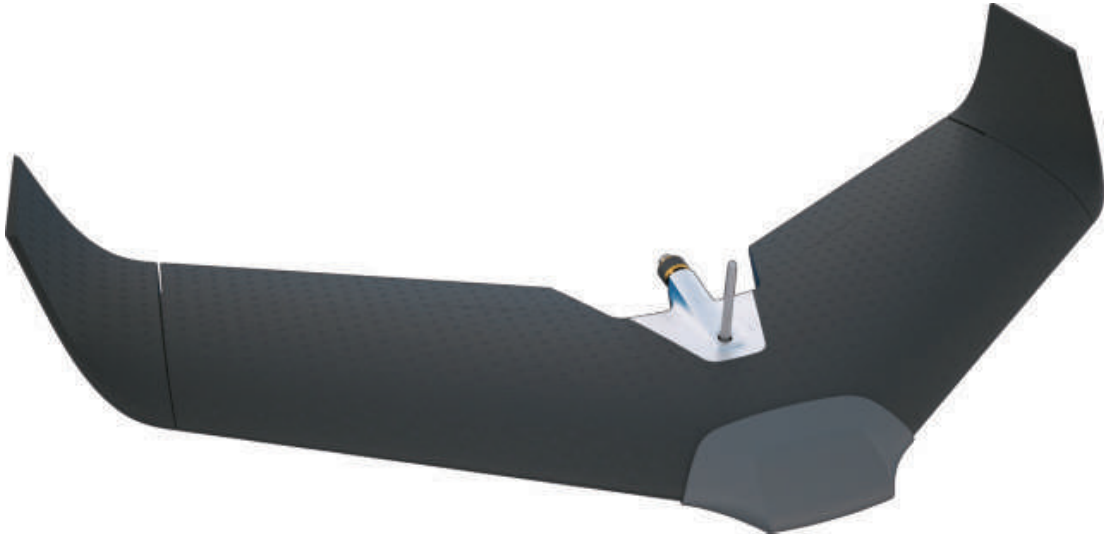
Forest inventory; automatic assessment of the number of tree crowns, height measurement for trees and shrubs.

UAVs for sale

Aviarobots is an official distributor of UAV products by the following manufacturers:

- Lehmann Aviation // France
- Geoscan // Russia
- Unmanned // Russia

Hands-on operation of our partners' UAVs has enabled us to test their advantages and disadvantages and come up with the optimal operating methods for each vehicle type and payload.



Lehmann Aviation LA 500

UAVs for sale

This lightweight UAV comes with a professional photographic camera and a geodetic GPS receiver. It is recommended for building accurate orthophotographic maps, digital terrain models and 3D models of small areas.

up to 45 min
endurance

up to 60 km
range

1.25 kg
MTOW

electric
engine type

LA 500

LEHMANN AVIATION

Takeoff readiness time	5 minutes
Launch method	hand-launched
Recovery	belly landing
Airspeed	20 to 80 kph
Wingspan	116 cm
Operational temperatures	-25 to +65°C

Max payload weight	0.5 kg
Min safe flight altitude	100 m
Max flight altitude	3,500 m
Recommended wind limit	up to 10 m/sec
Max wind limit	12 m/sec

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GEOSCAN 101

GEOSCAN 101 simple to use, operates fully automatically. To run simply put it on the catapult and press a button on the ground station. When GEOSCAN 101 will finish flying, he will slowly descend by parachute to the starting point.

up to 1 h
endurance

up to 60 km
range

3.1 kg
MTOW

electric
engine type

Geoscan 101

GEOSCAN

Takeoff readiness time	10 minutes	Max payload weight	0.8 kg
Launch method	catapult	Min safe flight altitude	100 m
Recovery	parachute	Max flight altitude	4,000 m
Airspeed	64 to 130 kph	Recommended wind limit	up to 10 m/sec
Wingspan	130 cm	Max wind limit	15 m/sec
Operational temperatures	-20 to +40°C		

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GEOSCAN 401

System with vertical take-off and landing.
This quadcopter Has a record flight duration.
The complex GEOSCAN 401 enables
prolonged observations of a given point and a quick
change of perspective.

up to 1 h
endurance

up to 15 km
range

9.5 kg
MTOW

electric
engine type

Geoscan 401

GEOSCAN

Takeoff readiness time	4 minutes
Launch method / Recovery	vertical, auto mode
Airspeed	0 to 50 kph
Size in flight mode	156x156x56 cm
Size assembled	71x20x19 cm

Max payload weight	2 kg
Min safe flight altitude	10 m
Max flight altitude	500 m
Max wind limit	12 m/sec
Operational temperatures	-20 to +40°C

GEOSCAN 201

This autopilot-assisted UAV can operate automatically, enabling aerial photography overflighths of vast territories and contiguous areas

up to 3 h
endurance

up to 210 km
range

8 kg
MTOW

electric
engine type

Geoscan 201

GEOSCAN

Takeoff readiness time	10 minutes
Launch method	catapult
Recovery	parachute
Airspeed	64 to 130 kph
Wingspan	230 cm
Operational temperatures	-20 to +40°C

Max payload weight	1.5 kg
Min safe flight altitude	100 m
Max flight altitude	3,000 m
Recommended wind limit	up to 10 m/sec
Max wind limit	12 m/sec

SUPERCAM S350

It takes a single group of operators with a single Supercam S350 UAV just one day to cover an area measuring 20 by 20 km. UAV-based aerial imagery is an effective alternative to high-resolution satellite-based imagery

up to 4 h	up to 360 km	11.5 kg	electric
endurance	range	MTOW	engine type

S350

SUPERCAM unmanned.ru

Takeoff readiness time	10 minutes
Launch method	elastic/pneumatic catapult
Recovery	parachute
Airspeed	65 to 120 kph
Wingspan	350 cm
Operational temperatures	-40 to +40°C

Max payload weight	3 kg
Min safe flight altitude	150 m
Макс. высота полёта	3600 м
Рек. допустимая скорость ветра	до 10 м/с
Макс. допустимая скорость ветра	15 м/с

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