DRONE SOLUTIONS

ENGINEERING SERVICES
THROUGH
APR TECHNOLOGY

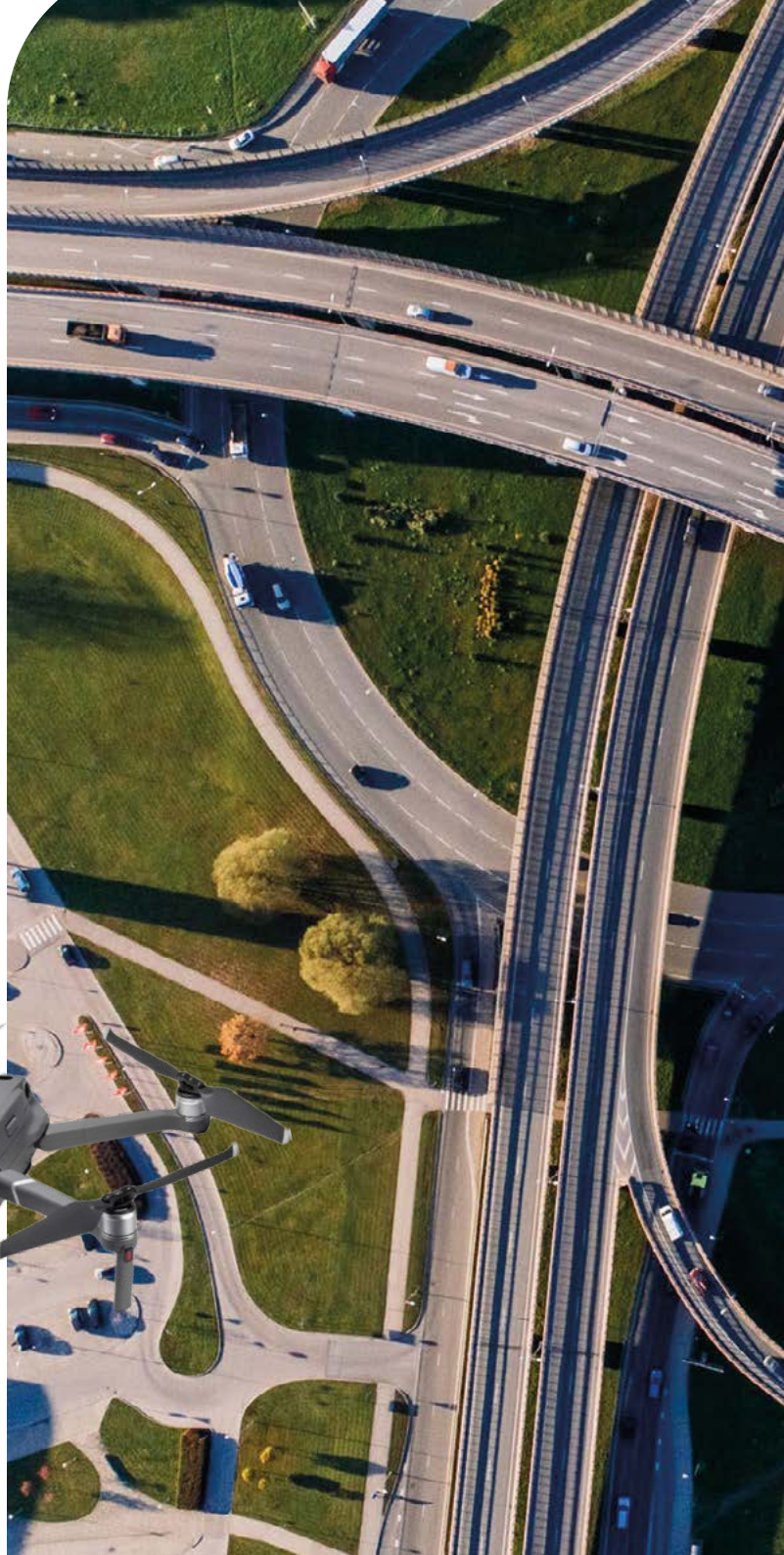
AISICO
for a safer life

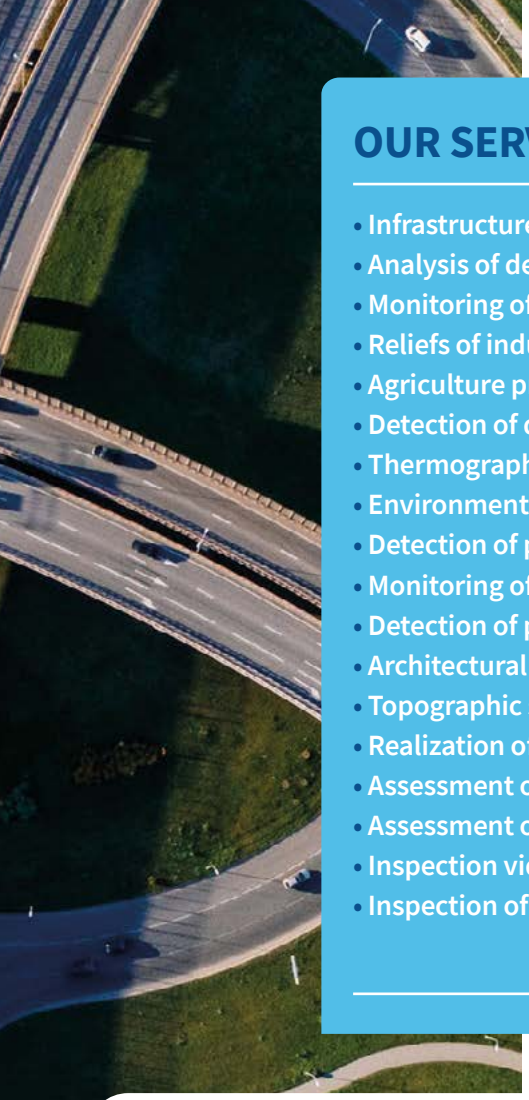
DRONE SOLUTIONS

Engineering services through APR technology

AISICO is an operator recognized by ENAC (Italian Civil Aviation Authority), which thanks to the versatility of our A.P.R. vehicles, is able to carry out monitoring and 3D modeling of infrastructures, photogrammetric surveys, and precision agriculture, through the use of Remote Pilot Aircraft Systems. AISICO's drones and pilots are authorized to carry out operations in critical and non-critical scenarios.

Thanks to the versatility of the A.P.R. systems and to the high experience and professionalism of the team, AISICO guarantees a perfect combination of skills and knowledge in different sectors in which it operates, offering to clients reliable results and customized solutions based on needs and type of services required.





OUR SERVICES

- Infrastructure reliefs, 3D modelling
- Analysis of degeneration and state of conservation of infrastructure
- Monitoring of distribution lines and energy plants
- Reliefs of industrial complexes
- Agriculture precision
- Detection of damages from atmospheric events and harvesting problems
- Thermographic scan
- Environmental monitoring
- Detection of polluting and toxic gases
- Monitoring of areas at risk of hydrogeological instability
- Detection of polluting waste, calculation of volume and projection
- Architectural surveys and 3D modelling
- Topographic surveys
- Realization of the three-dimensional landscape models
- Assessment of stability and volumetric estimate of quarry slopes and fronts
- Assessment of damages from natural events (floods, landslides)
- Inspection videos of areas at risk or of difficult access
- Inspection of enclosed and fenced areas

INFRASTRUCTURE SURVEYS

AISICO is highly specialized in surveys, inspection, and monitoring of infrastructures and actively collaborates with the most important road and railways infrastructure managers such as RFI, Milano Serravalle - Milano tangenziali, Ferrovie Nord Milano, Città Metropolitana di Bologna, Autostrade Centro Padane and many others.

Using state of the art drones, equipped with high-resolution cameras, thermal cameras, and 360° cameras, AISICO is able to inspect bridges, viaducts, road or railway infrastructures, dams, power lines, and any other anthropogenic structure, reaching inaccessible or critical areas.

Thanks to the use of an advanced proprietary data processing software, the inspection allows the georeferencing on 3D models, the identification and cataloging of any defects, in order to assess the conservation status of the artifacts.

By means of the information obtained by the engineers, the infrastructure manager can constantly monitor its network, with a fast, economic, and timely system that guarantees the correct and cost-effective planning of interventions.

All data collected are easily archived, accessible and comparable with inspections performed in different periods.

Inspection of a bridge

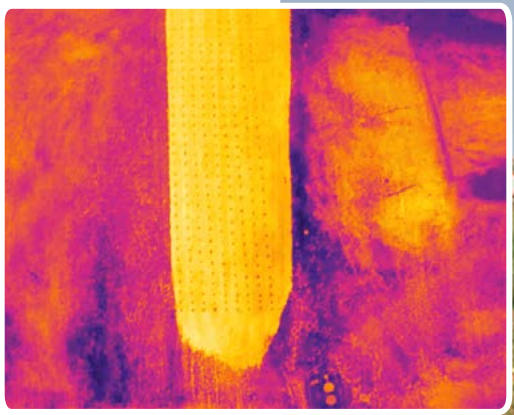
3D model of a bridge

Identification and cataloging of defects

PRECISION AGRICULTURE

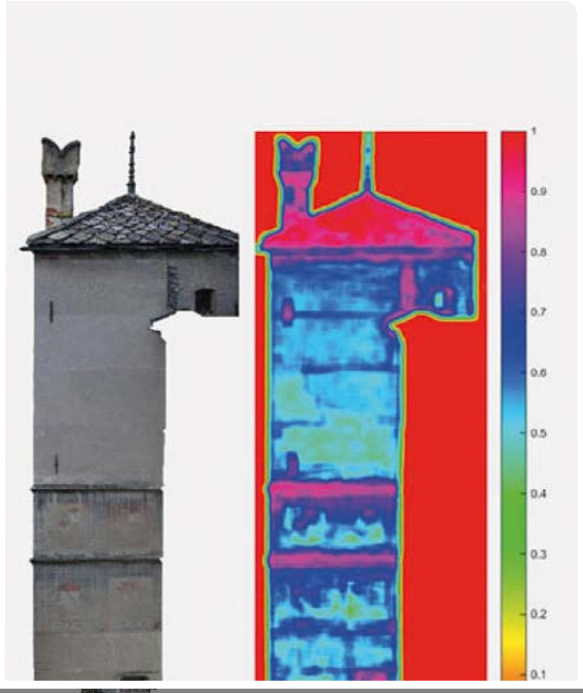
AISICO uses drones, also in BVLOS (Beyond Visual Line of Sight) mode, equipped with infrared, multispectral and thermal sensors, to monitor the health of soil or crop. Data is processed to make geo-referenced maps, which contain thematic details valid both for the identification of certain plant parameters and for the realization of prescription maps. This is useful for the planning of timely interventions.

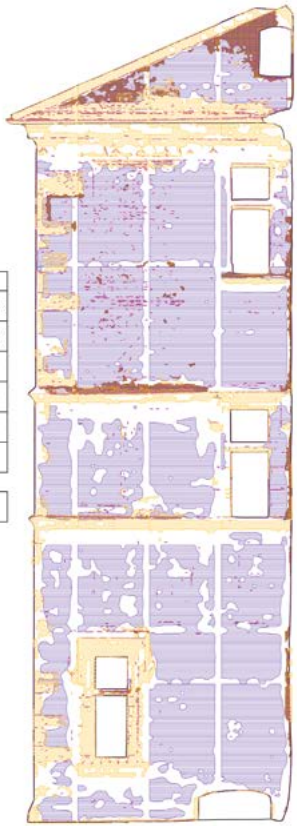
The combination of the data collected and the use of variable rate technology (VRT) machinery automates the intervention on crops only where necessary, reducing waste and allowing to optimize maintenance costs.



3D ARCHITECTURE RELIEFS

AISICO carries out high precision surveys and 3D modeling of land, buildings, infrastructures, and isolated elements, reaching high-risk or restrictive areas. Once the 3D model has been obtained, it is possible to calculate measurements (distance, surface, volume), analyze the geometry (distortion, depth of lesions, missing parts or protruding parts) and create an overview on the state of well-being or decay, so as to allow real-time monitoring over time of the site in question.





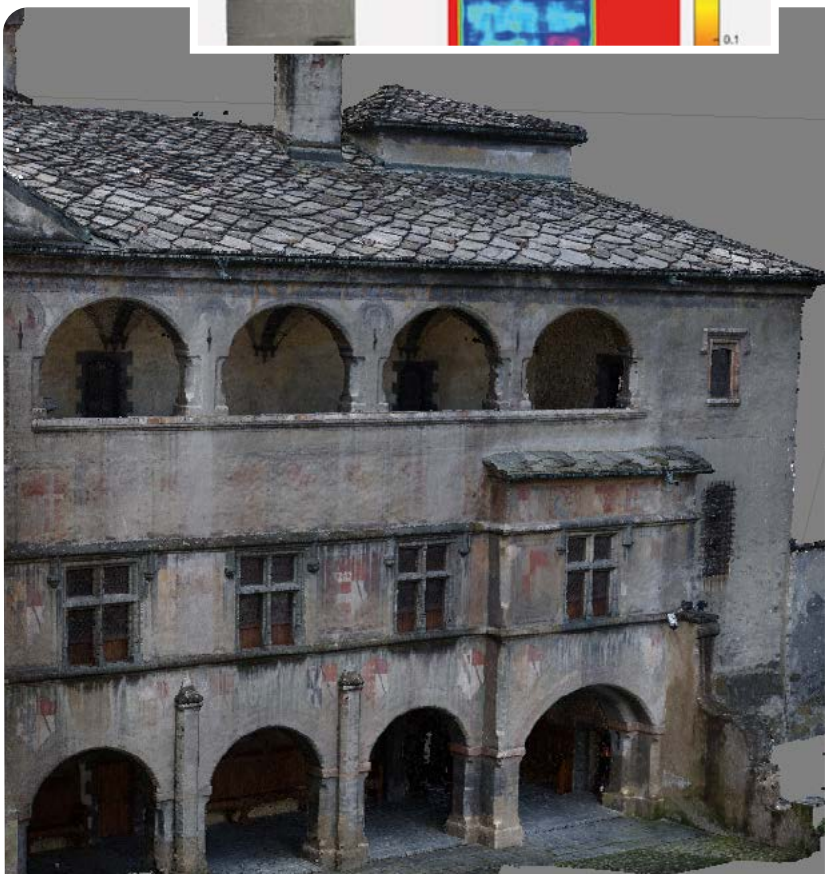
LEGENDA MAPPATURA DEGRADO

DESCRIZIONE DIFETTI	MQ	%
DILAVAMENTO	38.191	56%
INCROSTAZIONI E MACCHIE	14.135	21%
EFFLORESCENZE	2.257	3%
PATINA BILOGICA	0.000	0%
FESSURAZIONI	1.382	2%
TOTALE SUPERFICIE DIFETTI	55.965	

TOTALE SUPERFICIE	67.854	

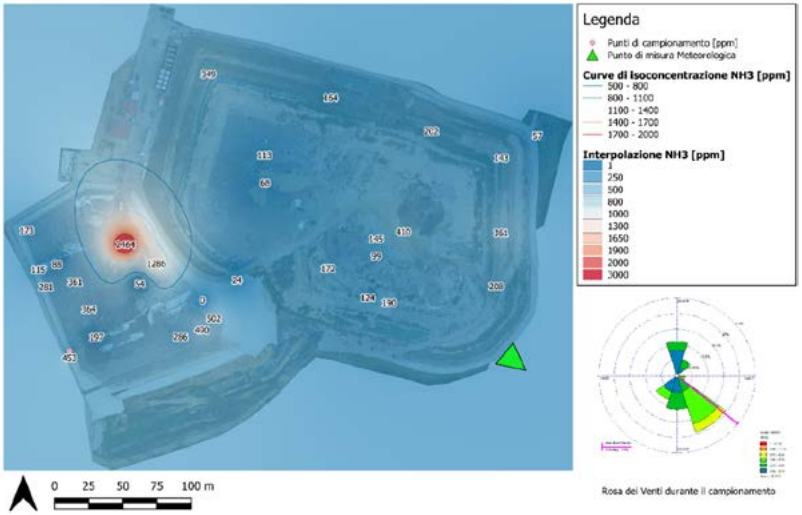
PROSPETTO NORD 2
FACCIATA "F"

Automated mapping of degradation of Castello di Issogne



ENVIRONMENTAL MONITORING

Through the use of suitably equipped drones, AISICO carries out environmental surveys and monitoring that guarantee valid support in follow-up monitoring, natural disasters, fire prevention, flora evolution, and the presence of pollutants. The drones can be equipped with specific gas sensors, so as to guarantee correct sampling of both urban and industrial areas.



ENERGY

By using drones with updated and advanced photographic and thermographic sensors, thermic and multispectral cameras, AISICO carries out inspections in the energy sector to monitor the conditions of energy distribution networks, power and hydroelectric power plants, dams, oil and gas pipelines, methane pipelines and wind farms thus granting the access also in areas difficult to be reached. By video, thermographic or multispectral surveys, we can control the health of structures in elevation, like trellises, wind turbines and overhead power lines, but also the possible leaks along gas and oil distribution lines. Video inspections by drones are used to monitor thermoelectric power plants by measuring the emission quantities and the absolute temperatures. Dam monitoring is achieved by air photograms of the structure in order to detect structural defects and decay levels. Sensors can be applied to drones for submarine inspections as well.
The use of special sensors on drones allows the efficiency evaluation of a wind farm, on wide areas, and this may be helpful to reduce risks for the people involved in the surveys and grant a continuous inspection activity. This will result in a quick spotting of any technical or structural anomalies and in the scheduling of maintenance works with fewer costs and risks and no need to suspend ongoing activities.

PHOTOGRAMMETRIC SURVEYS

AISICO is able to carry out high-precision photogrammetric surveys, which make it possible to produce DTM (Digital Terrain Model) models of the terrain, suitable for reporting precise geo-referenced data, variable according to altitude, with the identification of contour lines useful for the realization of topographic services, geological surveys, site mapping or monitoring of sites with hydrogeological instability.

Through the acquisition of nadiral images and images with different angles, it is possible to generate both orthophotos and three-dimensional models of the surveyed object, measurable in scale, with geometric, chromatic, and material characteristics clearly identifiable. In post-processing, it is also possible to obtain DSM (Digital Surface Model) models of the surfaces and DEM (Digital Elevation Model) models, including also the anthropic elements detected.

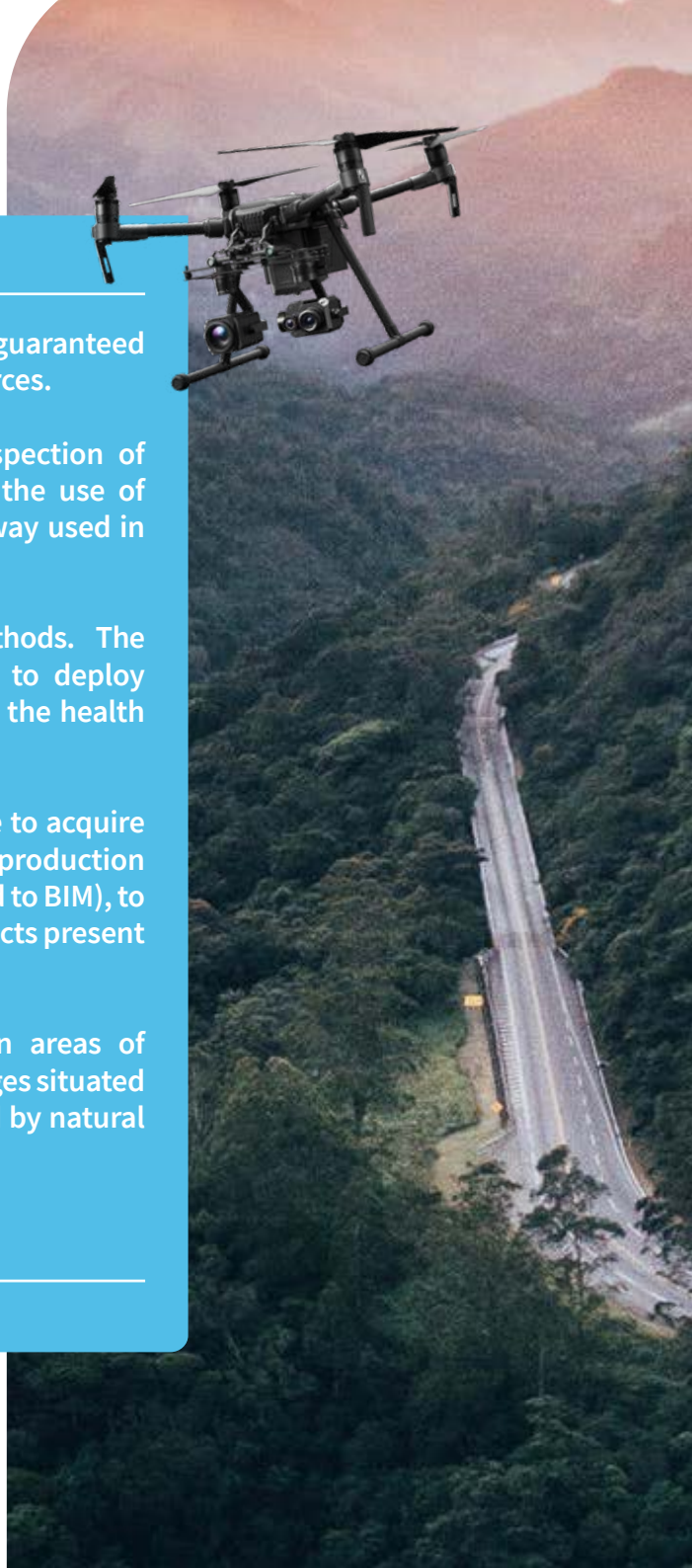
3D model of a topographic survey

3D reconstruction of a landslide

VIDEO INSPECTIONS

AISICO carries out video inspections using special drones, suitably equipped with high-resolution optical sensors, guaranteeing an accurate level of detail, and total absence of risk for operators, unthinkable with traditional systems. Video inspections can consist of simple aerial shots, for tourists or promotional purposes, or for more complex operations; AISICO carries out video inspections to check the condition of buildings, pipelines, roofs, or entire industrial complexes. Our operators can carry out video inspections to draw up damage documentation for insurance purposes, to search for survivors following natural disasters, or to inspect areas that are difficult to access. These inspections may also cover confined, inaccessible, or risky areas for inspectors such as silos, pipelines, sewerage systems, decks, roads, and railways.

ADVANTAGES



- **REDUCED COSTS** compared to traditional methods, with guaranteed and timely results, even with limited or contained resources.

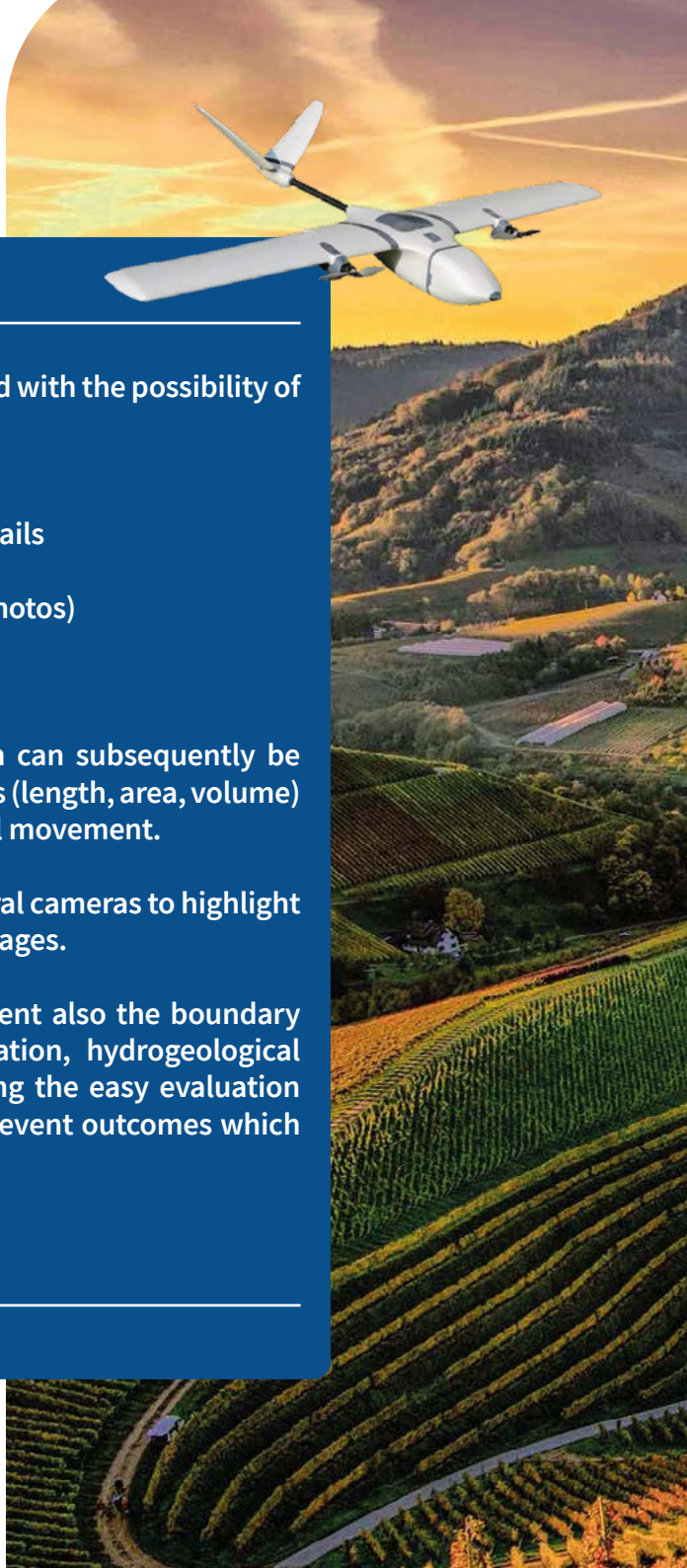
- **LIMITLESS CIRCULATION** using drones during the inspection of infrastructures such as viaducts and bridges. In fact, the use of drones is not restricted to the use of part of a carriageway used in traditional systems.

- **GREATER SECURITY** with respect to traditional methods. The collection of data can succeed without the necessity to deploy personnel in dangerous areas, therefore without risk to the health and safety of the on-site inspectors.

- **RAPID EXECUTION** flights of a few minutes it is possible to acquire numerous high-quality data which can be used for the reproduction of a simple video or a 3D reconstruction (from point cloud to BIM), to the analysis of the final elements and the analysis of defects present in the infrastructure or historical site.

- **ACCESSIBILITY AND SIMPLICITY** of inspection also in areas of difficult or critical access, for example, viaducts and bridges situated in inaccessible or highly elevated areas or areas affected by natural disasters or spaces inaccessible to staff.

STRENGTH POINTS



- Possibility of a live data view on a monitor from the ground with the possibility of detailed inspection of areas of greater interest

- Non-invasive inspections carried out risk free
- High resolution photographic images of the structural details

- General photographic images (and georeferenced orthophotos)

- Detailed high-resolution videos

- 3D modeling of structures or parts of structures, which can subsequently be analyzed on a PC with the possibility to change dimensions (length, area, volume) without limitations and without the necessity for physical movement.

- Analyses carried out with thermo-cameras or multi spectral cameras to highlight diverse problems in the presence of humidity or pipe leakages.

- Moreover, the aerial views, allow to inspect and document also the boundary areas to constructions (such as water streams, vegetation, hydrogeological instability, roads and railways intersections etc.) allowing the easy evaluation of impact upon the structures under examination and prevent outcomes which would otherwise not be possible in a timely manner.

AISICO
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SAFER ON THE ROAD,
SAFER IN LIFE.

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