



microdrones.com

Case Study

microdrones in Geomatics – Remote Sensing



Version 1.0

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Profiles: microdrones / Ingecor Geomática

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Case Study for Getting new geomatic solutions, UAV-microdrones based

The recent technological development of micro-UAV systems has opened up large new opportunities for surveyors and other Geomatic professionals in the field of photogrammetry and remote sensing activities. In fact so far these fields have been generally restricted to a few companies or government agencies with highly technical and expensive equipment (aircrafts, satellites, high resolution multispectral cameras, etc), and therefore only interested in large budget projects. But at the same time, the use of micro-UAV in Geomatics, has also brought significant new challenges, such as limited payload, the calibration of non-metric cameras, the automatic flight planning based in Waypoint Navigation Systems and including all geometric constraints of stereoscopic photogrammetry and all possible options about flight and navigation control and management of onboard sensors, and of course safety systems and legal issues.

Founded in 1998, INGECOR GEOMATICA SL is pioneer in using Micro UAV systems with Geomatic purposes. We started in the late of 2007, acquiring our first microdrones md4-200, and since then, we have worked hard to solve such difficult aspects until achieve satisfactory results, developing a whole process that we have named as:

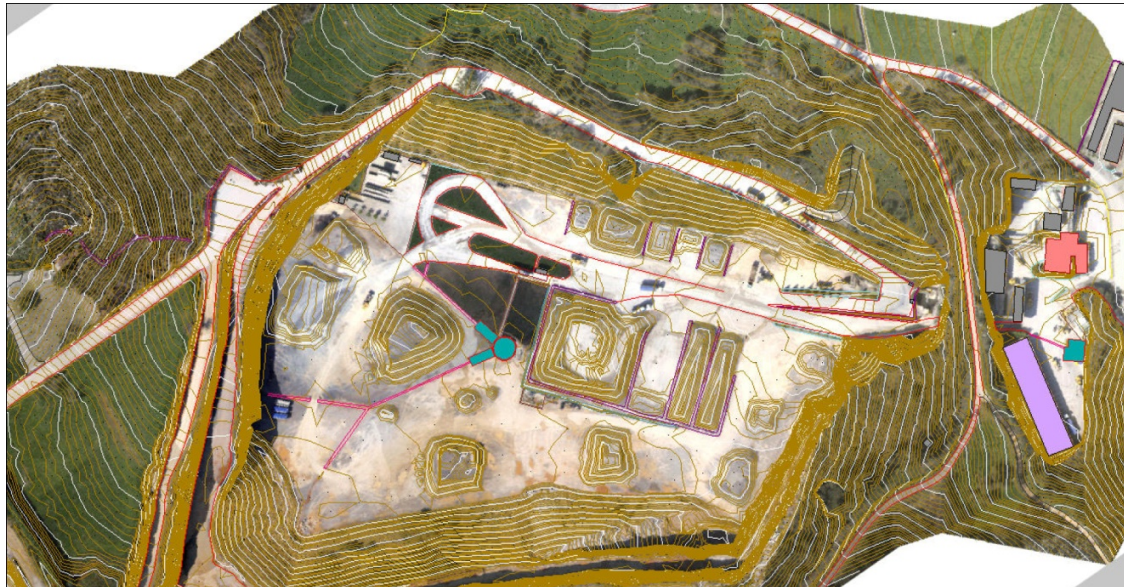


“Whole Process for obtaining High Definition & Accurate 3D Virtual Models of territory and heritage, from Micro-Unmanned Aerial Vehicles (Micro-UAV)”.

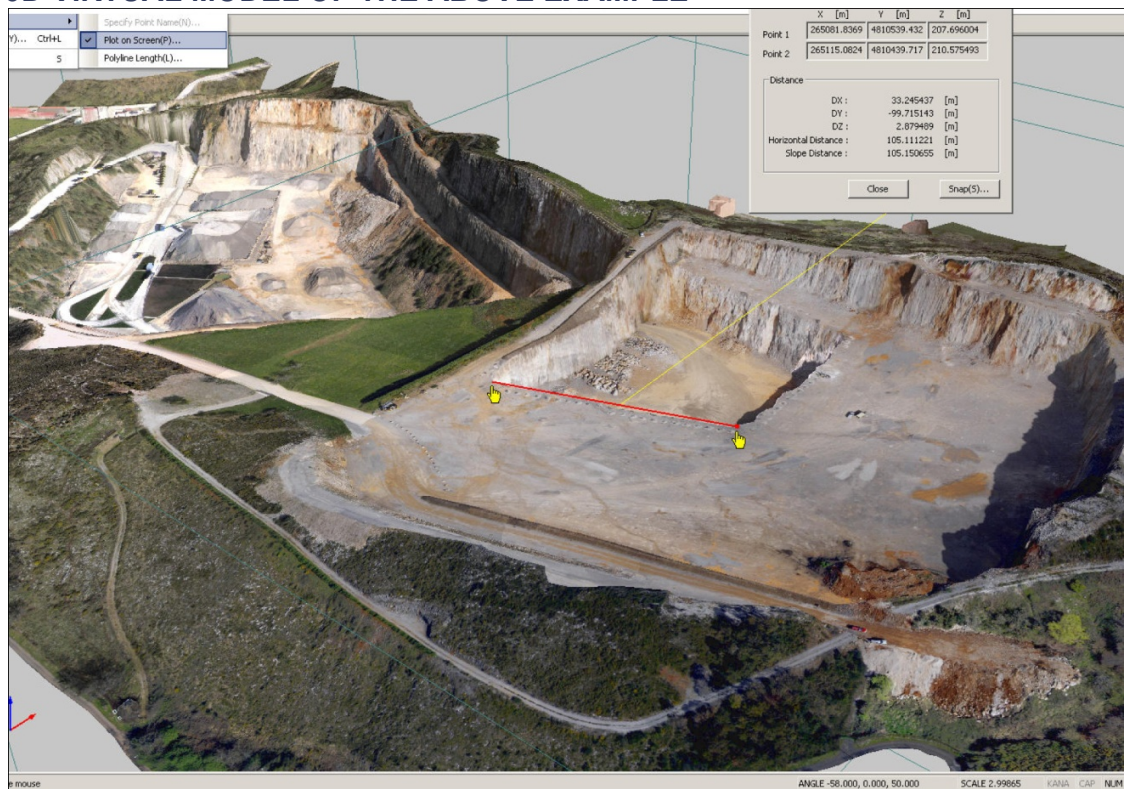
Geomatic Products

- **HIGH QUALITY CARTOGRAPHY** including **Accurate Digital Terrain Model (DTM)**
 - Avoiding the unnecessary specific risks of the surveying classical methods, especially in dangerous environments.
 - Within mining areas: No interferences with the exploitation labours. Rigorous volumetric control. Easy planning for new exploitation phases.
 - Incredible high performance in precise surveying
- **AERIAL ORTHOPHOTOS IN HIGH AND VERY HIGH RESOLUTION**, (from 1 to 7cm/pixel)
 - Analysis of environmental interactions and High levels of detail, never seen before. “A really new approach to urban planning and GIS applications”.
- **3D VIRTUAL MODEL** including **High Resolution Textured Image**, (1 to 7cm/pixel)
 - All before and besides:
 - It allows a whole vision from any point of view. “As if the reality was on your hand”.
 - You can rotate, move and zooming of a very easy way, as well as to obtain all kind of measurements (3D coordinates, distances, height differences, etc), and many derived products such as cross sections, contour lines, volumes, geological analysis, etc

CARTOGRAPHY 1:1000 & ORTHOPHOTO 6CM/PIXEL – LIMESTONE QUARRY

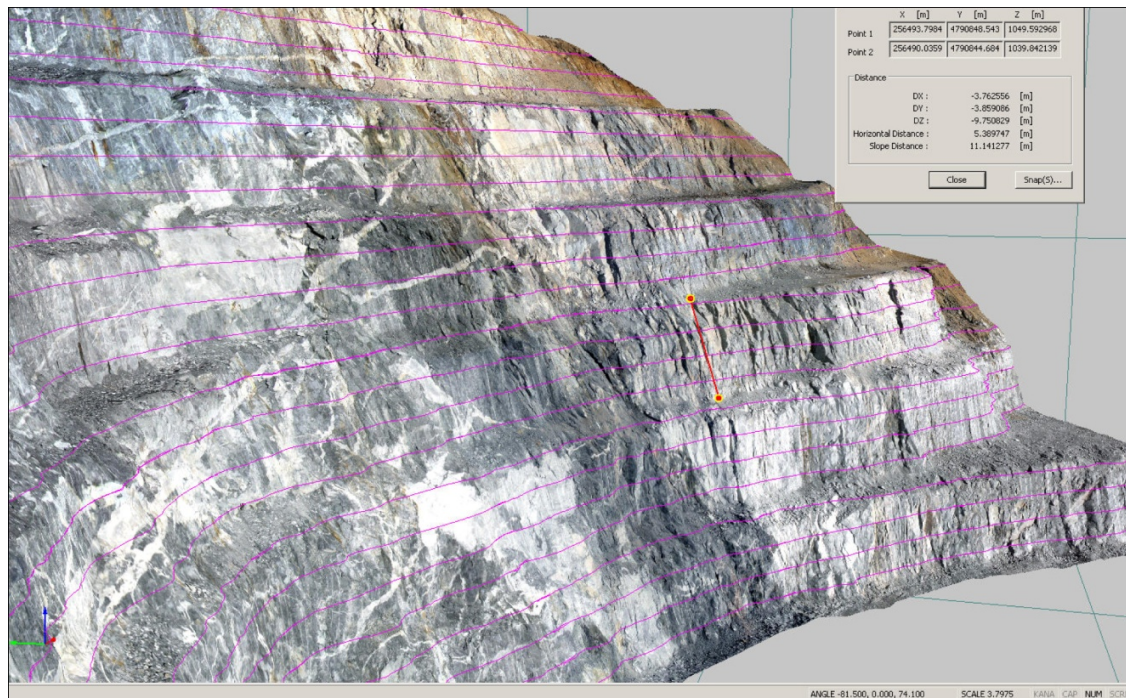


3D VIRTUAL MODEL OF THE ABOVE EXAMPLE



Measurement examples over the 3D model (3D coordinates, distance and height difference) –
See more on: http://www.ingecor.net/3DMicrodrones_eng.htm

3D VIRTUAL MODEL OF THE ABOVE EXAMPLE



I.e. – Measurement over the 3D model (3D coordinates, distance and height difference), and contour lines

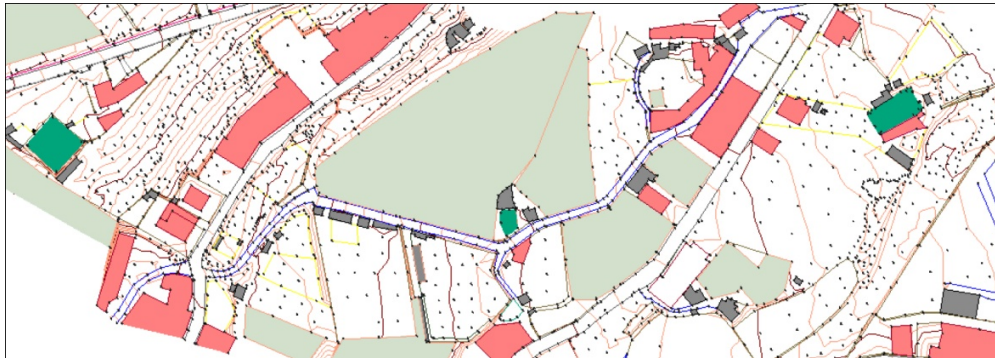
3D VIRTUAL MODEL OF THE SEGOVIA ANCIENT WALL, WITH VERY HIGH RESOLUTION IMAGE TEXTURE (1 CM/PIXEL). – HERITAGE RESTORATION



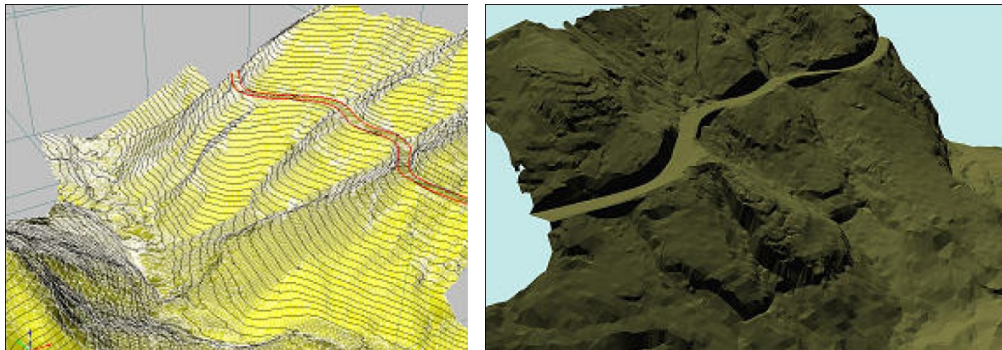
I.e. – Measurement of dimensions in masonry elements, over the 3D model

See more on: http://www.ingecor.net/3DMicrodrones_eng.htm

CARTOGRAPHY 1:1000 FOR A RING ROAD, equidistance contour lines 0.5m



CARTOGRAPHY & HIGH RESOLUTION DTM – HIGHWAY IN GRAND CANARY ISLAND

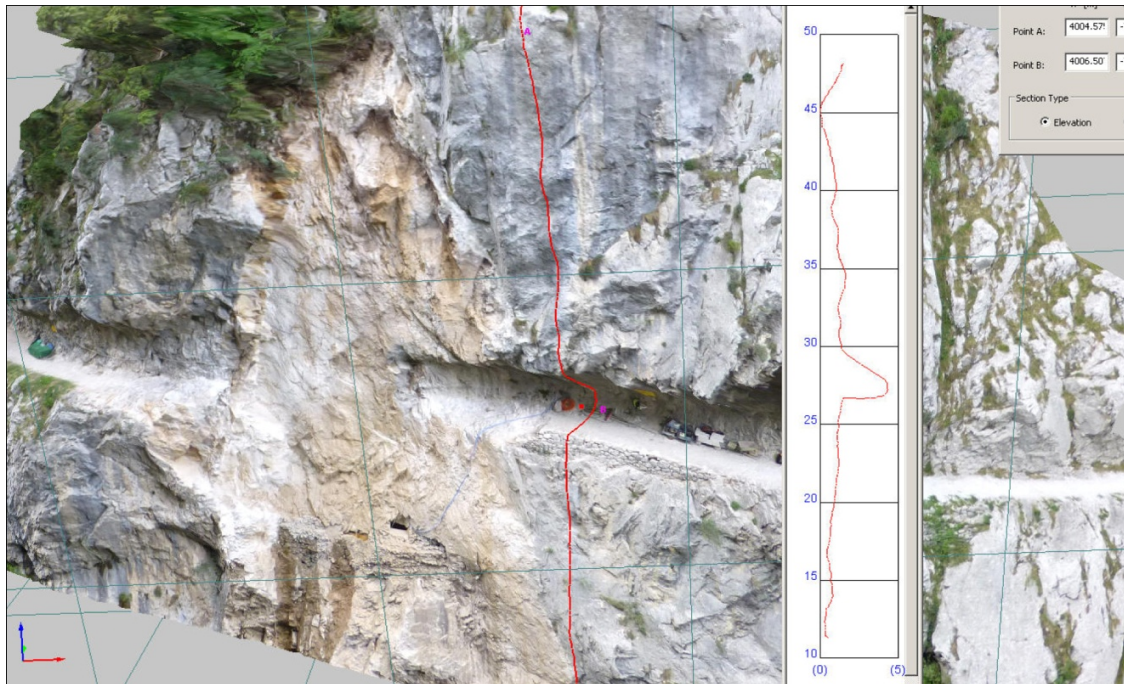


See more on: http://www.ingecor.net/3DMicrodrones3_eng.htm

**CARTOGRAPHY & HIGH RESOLUTION ORTHOPHOTO (4CM/PIXEL) –
- EXPANSION WORKS OF THE JOVE-GIJON HOSPITAL -**



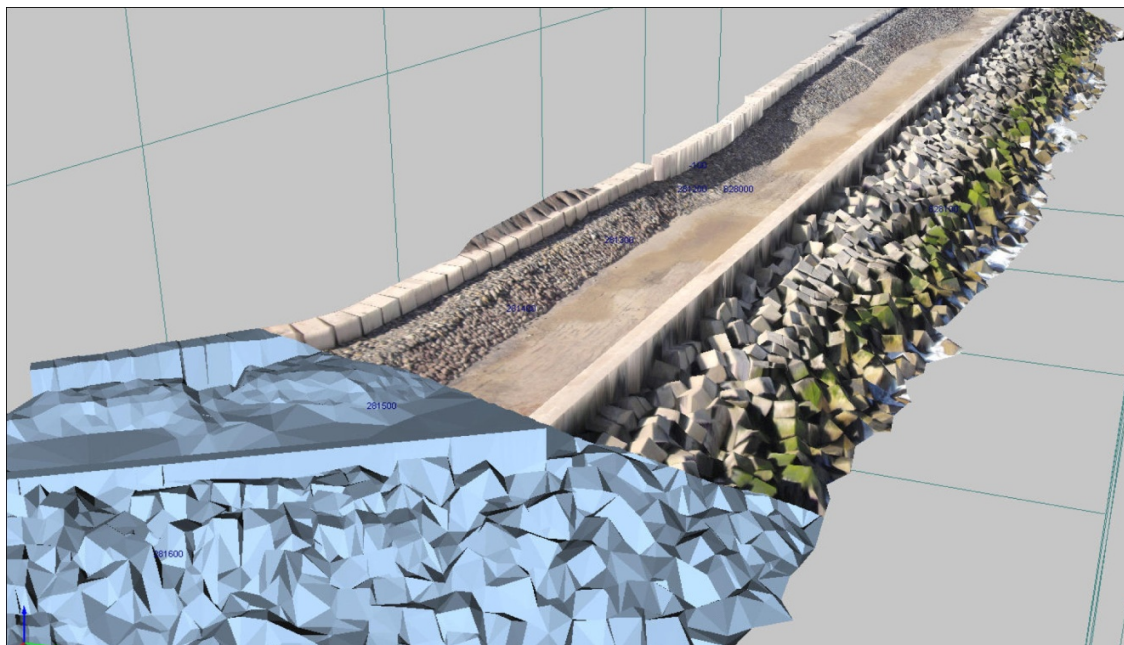
3D VIRTUAL MODEL WITH VERY HIGH RESOLUTION IMAGE TEXTURE (1,7 CM/PIXEL) – BIG DETACHMENT IN THE CARES GORGE TRAIL – PICOS DE EUROPA NATIONAL PARK



I.e. – Easy way to obtain vertical cross sections, by only clicking over the 3D model

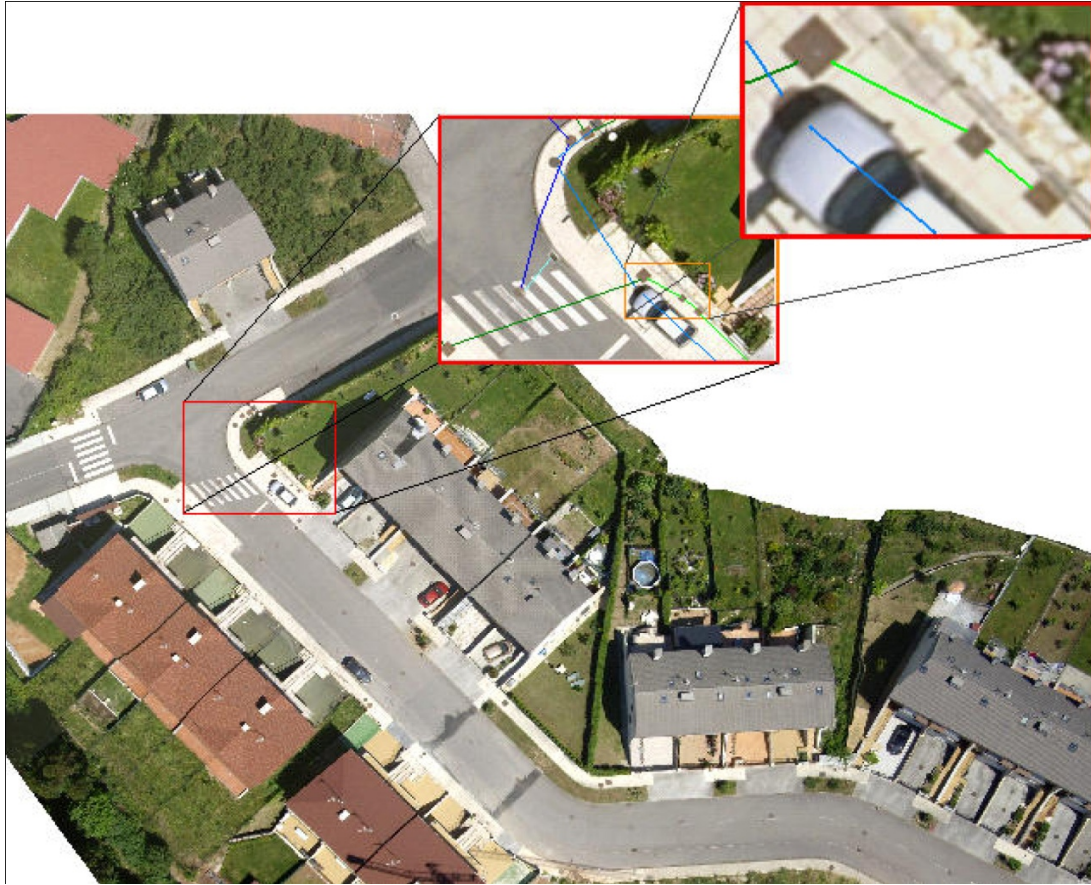
See more on: http://www.ingecor.net/3DMicrodrones2_eng.htm

3D VIRTUAL MODEL OF THE GIJON HARBOUR EXPANSION WORKS (5 CM/PIXEL)



See more on: http://www.ingecor.net/3DMicrodrones_eng.htm

HIGH RESOLUTION ORTHOPHOTO (4 CM/PIXEL) – GIS URBAN SERVICES NETWORKS –



**CASE STUDY – FLOOD AREAS OVER THE 3D VIRTUAL MODEL OF A RIVER BASIN. –
WORLD HERITAGE SITE of “SIEGA VERDE”.**

