

Case 13.1 Inspection with Drones and Artificial Intelligence, Greece



Systematic inspection of structures play a critical role for structural safety and functionality. Defects should be recognised at their early stage of development for repair costs to be minimised

Most of modern countries have adopted Inspection Schedule for structures such as bridges, tunnels and retaining walls that have constructed in motorways. Also, a rating system of the observed defects is adopted in order to obtain a rating value for each structure that will classify in a rough way the importance of defects observed and need for further investigation.

Inspection schedule in Greek motorway demands Visual Inspection of bridges every 3 years in order to detect any significant damages and repair them as soon as possible.

Besides eye observation, photocameras with proper lenses and binoculars Drones (UAV) can now be used to obtain photos/videos of high resolution at areas or structural elements where access is impossible by foot or ladder..

60 bridges of a major motorway in Greece were inspected lately by using drones operated by **NDTitan Tasos Gotzamanis**, Geotest SA.

The soffit of the decks were inspected, the pier caps and the elastomeric bearings. Some bridges are above river crossings and inevitably access to elements demand the use of underside platform, if there were no Drones. The visual inspection comprised, furthermore, traces or moisture that could indicate deficiency of waterproofing system over deck and expansion joints.



Finally, excessive deformations, bulging and oxidation of elastomeric bearings was performed with drones in a fast and efficient way with low cost.

Artificial Intelligence will play a main role in future technological applications. Geotest SA follows this technological path in order to implement this powerful tool into Drones and specially for performing Visual Inspection of structures. By this means, automation in detection of defects will be performed faster and more efficient thus adding extra value to Management of Infrastructure.

Reporting / Piloting by **NDTitan Tasos Gotzamanis**