



AŽD Praha s.r.o.

Usage of DRONES in Railway Diagnostic

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Usage of drones in infrastructure inspection

- Regular 2D scanning (pasportization) and comparing by SW tools
- Checking of long time not used railway areas before reopening
- Checking of infrastructure elements (houses, distributors, level crossings, signals, etc.)
- Using for extraordinary situations (3D model of situation)
- Detection of broken rail
- Checking of turnouts (point machine functionality, point blades structure, point locking supervision, etc.)
- Detection of LED lights functionality
- Checking of energetic and catenary elements
- Checking of transmitters poles
- Checking of rail profile by means of Lidar
- Video and photo scanning for PR

Legislation

- Legislation of Civil Aviation Administration
- New European legislation – registration to category „Specific“
- Obtaining the exemption for drone flying (trial operation) – permission from Railway Authority
- Exemption for automatic flight without direct supervision (according to FPV) – only exemption from Civil Aviation Administration
- Future prospect – fully autonomous flights without using remote controller (using 4G, 5G GSM network) – actually tested under 4G

AŽD Praha is permitted for operation in category “Specific”, testing permitted at selected track sections under specific conditions

IMPORTANT – to prove safety of the flights under all circumstances!

Autonomous operation - testing

- Specific SW for flight mission and drone control
- Flight mission is controlled by onboard PC
- Specific SW for onboard PC for AI (Artificial intelligence - Object identification)
- Automatic take off and landing from the specific spot
- Automatic wireless power supply of drone
- Accurate landing and flight course upon GPS using correlation data RTK (Real Time Kinematics)
- Drone equipped with 3 cameras sensor (4K-20xZoom, 4K-WIDE, thermo-camera and laser range-finder)
- Drone can be further equipped with Lidar sensor or 45 MPx camera.
- Data transmission from drone in real time (FullHD resolution)

