

# Drones: Toys or tools with huge potential?

Did you know that Pöyry experts use drone technology extensively to reduce development times and costs in a safe manner.

## THE GROWING IMPORTANCE OF DRONES

Unmanned Aerial Vehicles (UAVs), or drones as they are more commonly known, were initially developed for military applications. Over time, the technology has developed and drones have become more affordable and popular in everyday use—both for work (tools) and for play (toys).

Aside from their recreational use, drones can also be effectively used during all stages of infrastructure project development. They come into their own when gathering survey data fast. And this is exactly what Pöyry's experts are doing, generating valuable insight, which leads to better decisions. With expertise gained from many different projects in different industries, we have proven that drones are useful tools, that help contribute to excellent client project results.



## CLIENT BENEFITS

- **Flexibility:** drones can be effectively deployed during all project phases; especially in remote locations or difficult terrain.
- **Early insight:** during the early design phase, aerial photo mosaics are invaluable to give a bird's eye view for better understanding of the area and planning of initial site visits. Aerial photos can further be used for identification of suitable locations for main structures.
- **Informed designs:** during the same process, drones are used to acquire topographical data that can be used in the design phase. It is also ideally suited to capture regular progress photos and calculations of bulk earthworks.
- **Agile:** drones are compact and can be transported as carry-on baggage while traveling on airplanes. During operation, they can be remotely controlled up to 10 km radius and data collected during a mission can be post-processed within days. This all contributes to increased efficiency and cost reductions when acquiring survey data.



## OUR EXPERIENCE AND SERVICES

At Pöyry, our engineers use drones successfully for all project phases, from early conceptual stages through detailed design, to construction and operation of projects. Some examples how drones have been successfully used are provided below.

“We use drones effectively in support of other methods of information gathering.”

### USE OF DRONES



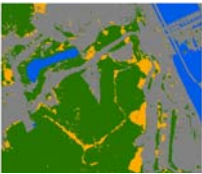
#### CAPTURING AERIAL IMAGES AND VIDEOS

Aerial images and videos are used to identify suitable locations for main structures, detailed planning of initial site visits and documentation during project construction and operation.



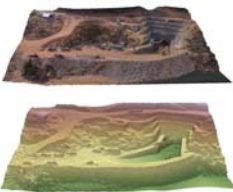
#### PROVIDING ORTHO-RECTIFIED AERIAL IMAGES

These aerial images can be used as overview maps, which can be used to contribute to environmental and social impact assessments (for example, land use and identification of potentially affected communities etc.)



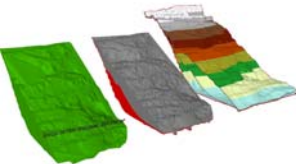
#### REMOTE SENSING

Drones equipped with a multispectral camera enables engineers and experts to identify aspects, such as vegetation cover, type and land-use etc.



#### TOPOGRAPHIC SURVEYING/ DSM AND DEM

In combination with ground control points (GNSS based), Digital Elevation Models (DEMs) can be generated in sufficient accuracy using photogrammetry (limited by dense vegetation). In some cases, drone-based topographic maps have been used for detailed designs, replacing more time-consuming and expensive terrestrial or LiDAR surveying campaigns.



#### PROGRESS MONITORING AND VOLUME CALCULATION

Accuracy of DEMs prepared at construction sites can be a few centimeters, which enables them to be used to calculate the progress at large excavations, road construction or placement of mass concrete.



#### INSPECTION FLIGHTS

Inspection flights in tunnels, shafts and hazardous areas: remote-controlled flights are very useful to inspect areas, where access is limited or restricted.

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#### PÖYRY DIGITAL

Digital technologies are changing and reshaping entire industries. To stay competitive, companies need to keep pace. Pöyry's experts bring both the industry insight, process, and technological innovation to guide you through your digital transition.