UAV Surveys UNESCO World Heritage Site in Mexico

The Mexican company SkyBótica and the German drone manufacturer Aibotix have created detailed 3D models of the library and stadium of the National Autonomous University of Mexico (UNAM). With a resolution of up to 5mm, the point clouds are based on georeferenced, high-resolution aerial images generated with the Aibot X6 UAV.

The library, whose facade is decorated with large mosaics by several artists, including the famous Mexican painter Diego Rivera, and the Olympic University Stadium (Estadio Olímpico Universitario), home of the UNAM Pumas, belong to the Central University City Campus of UNAM, part of UNESCO World Heritage since 2007.

Equipped with a digital camera, the Aibot X6 generated in two flights, high-resolution, georeferenced images of the outer skin of the library. The mission ensured a sufficient image overlap, and the necessary capture angles with absolute stability – even with the inherent wind turbulence caused by the structure itself.

The Aibot X6 enables generation of high-resolution photos from the best perspectives with little time and effort, explained Jörg Lamprecht, managing director at Aibotix. During the flight, both vertical (nadir) and horizontal (oblique) images were taken. The data collected in this way was then processed further with the photogrammetry software Agisoft PhotoScan into a point cloud, a 3D model and an orthophoto, all with a resolution of up to 5mm. The photos also provide full documentation of the actual state of the building, said Lamprecht.

Apart from the library, the stadium of the university was also photographed from the air. The subsequently created orthophoto and 3D model can now be measured anywhere on the computer.

Technical Details

- Camera: Nikon Coolpix A
- Sensor resolution: 16.0 Megapixel (23.6mm x 15.6mm)
- Flight height: Library: distance about 20 - 30m
  Stadium: 100 m nadir and oblique from 60m and 20m
- Image Overlap: about 60% in all directions (left, right, front, back)
- Ground resolution: 0.5cm - 2cm

Data Processing

- Synchronisation of the GPS information with the images shot by Aerial Image Manager for a fast post-processing
- Further processing with photogrammetry software Agisoft PhotoScan