

UAV S360 Provides New Payload Option for Aerial Photography



Hanseatic Aviation Solutions GmbH is pleased to announce their innovative new system for aerial photogrammetry. The solution integrates the iXU150 medium format camera from Phase One with the Applanix APX-15 UAV, a GNSS-Inertial OEM position and orientation solution for direct georeferencing of mapping sensors, all flown on their UAV S360. The result is a high-accuracy, low-cost mapping solution with a commercial fixed-wing drone.

With a wingspan of 3.6 m and a maximum take-off weight of 25 kg, the S360 easily carried the imaging payload of 5.5 kg. Powered by a 62 ccm combustion engine, the S360 can perform these missions for up to four hours at an airspeed of 90 km/h. This solution is ideal for conducting UAV aerial surveys in areas that range from 10 to 100 square kilometers. Due to its small weight and size, the system is extremely mobile and is launched and flown quickly, easily, at low cost.

The solution is powered independently of the avionics with two dedicated 4-hour batteries, allowing quick and easy replacement of the entire sensor system from the payload bay when necessary.

PAYOUT COMPONENTS

The payload consisted of the iXU150, a 50-megapixel camera with medium format CMOS sensor and a 55mm lens from Schneider-Kreuznach, and the Applanix APX-15 UAV.



Solution

The APX-15 UAV

Is a complete hardware and software solution comprised of a single-board OEM module (6 x 6.7cm, 60 grams), containing both a survey grade multi-frequency GNSS receiver and high performance MEM's inertial sensors. Also includes the POSPac UAV Office Software for post-processing data.



THE MAIDEN FLIGHT

The maiden flight was performed on June 23, 2016, in Bremerhaven, at the no-longer-active airport Luneort. The S360 initially flew in the main direction at 210 m above ground level (AGL) and then again in the transverse direction at 310 m, allowing for a later boresight calibration of the camera based on the made photos. The camera was triggered every 75 m by the flight computer. For each image created, the positioning and orientation data from the APX-15 UAV was read by the iXU150 and stored in the header of the photo. Simultaneously the APX-15 UAV stored the data and ID into its internal memory. After the flight, the data was post-processed and corrected using the included Applanix POSPac UAV software and its Smartbase module, and Trimble VRS Now resulting in a final accuracy of 2 cm without GCP's.



6208x8280 Pixel, 306 m AGL, 1/1600., f8

About Hanseatic Aviation Solutions GmbH

Hanseatic Aviation Solutions GmbH offers innovative Products and Services based on our extensive experience in the aviation industry. Our Unmanned Aerial Systems offer proven concepts, following hundreds of successful flight hours and many

missions. Both systems are unique due to its modular payload concept-one platform can carry different payloads that can be exchanged in the field quickly and easily. As a development and manufacturing company we can provide bespoke tailored systems unique to your application, as well as small series production.

For more, please visit: www.hanseatic-avs.de

About Phase One

Industrial Phase One Industrial is a division of Phase One A/S and is dedicated to research, development and manufacturing of specialized industrial camera systems and equipment. Phase One Industrial camera systems are built specifically for applications such as aerial photography, homeland security and inspection. The company provides advanced hardware and imaging software solutions that meet the unique requirements of their users. For more, please visit: <http://industrial.phaseone.com/>

About Applanix

Applanix, a Trimble Company (NASDAQ: TRMB), develops, manufactures, sells and supports products and solutions for mobile mapping and positioning. Applanix' products and solutions are used in a variety of applications, including road profiling, GIS data acquisition, aerial surveying and mapping, railroad track maintenance and seafloor mapping. Established in 1991, Applanix supports its growing global customer base with exceptional service. For more, please visit: <http://www.applanix.com/products/dms-uavs.htm>

EXAMPLE RESULTS

From approximately 310 m AGL a ground resolution of 3 cm (GSD) can be achieved. 484 pictures were taken, and quality control was carried out by Phase One. With a survey area of 15 square km, 75 minutes of flight time is required. With an overlap of 60%, every 3 seconds a picture is taken, meaning a total of 1,400 images (50 MB in raw format or 147MB as TIFF) is produced (overlap cross flights line: 30%.

Next Step

Moving forward, we plan to integrate the newest camera model of Phase One, the IXU-R 1000, with a 100 MP CMOS sensor and a 50mm Rodenstock lens. This configuration will be particularly useful in agricultural applications, where excellent resolution and very good area coverage is necessary.

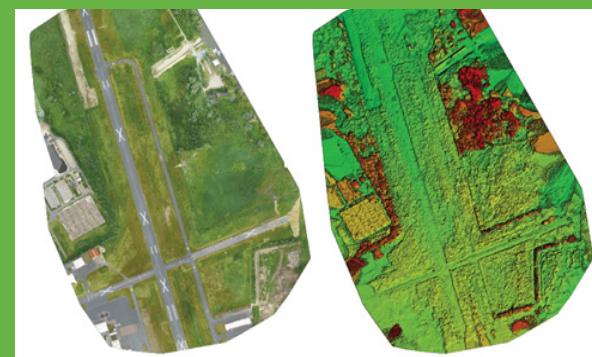


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.



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