Applanix and Think 3D Deliver UAV Lidar Mapping with Direct Georeferencing

Historically, Lidar-based aerial surveys were impractical for all but the very largest UAVs due to the size and power constraints. Recently, however, Applanix and Think 3D have joined forces to make airborne Lidar scans from small drones not only possible, but also practical, cost effective and highly accurate.

Applanix has developed a small, lightweight and low powered DG (Direct Georeferencing) solution and applied it to Think 3D's Stormbee multicopter, integrated with Trimble's AP15, to make it possible and deliver maximum efficiency, accuracy and performance for Lidar surveys from any unmanned vehicle.

Integrated Solution

The Stormbee is a directly georeferenced UAV Lidar solution for 3D Industrial Mapping applications, designed to collect survey grade spatial data in a significantly more cost effective and efficient way than static Lidar. Stormbee uses 3D mapping technology including FARO's Focus 130 laser scanner, Trimble's AP15 GNSS/Inertial receiver, Applanix's POSPac UAV GNSS/Inertial Post-Processing software and Stormbee's proprietary Beeflex software for Lidar Point Cloud Generation.

Challenge and Solution

Industrial applications (GNSS denied environments) pose unique challenges for laser scanning using traditional static systems due to obstructions and poor signal environments. These issues lead to increased costs and operational time. By using the Trimble AP15 with two antenna and the Applanix post-processing software (POSPac MMS) for georeferencing the Lidar data, Stormbee provides an accurate real-time and post mission solution for all motion variables.

Results

Applanix has brought together its decades of experience in multi-frequency, multi-constellation Differential GNSS and inertial based positioning and orientation with small-form factor hardware and software, to produce a DG solution for professional aerial mapping on UAVs.

Some of the benefits include:

- Compact, easy-to-operate and cost-effective
- Centimetre level mobile positioning accuracy for 3D mapping products
- Improved productivity – with optimised workflow from data capture to georeferenced point cloud generation
- Superior visualisation – Lidar scanners provide more accurate information of structures than camera technologies

With a system delivering better than 5cm accuracy (RMS) and high resolution. Stormbee and Applanix offer highly-accurate 3D detail from a platform moving at speeds up to 15m/s.