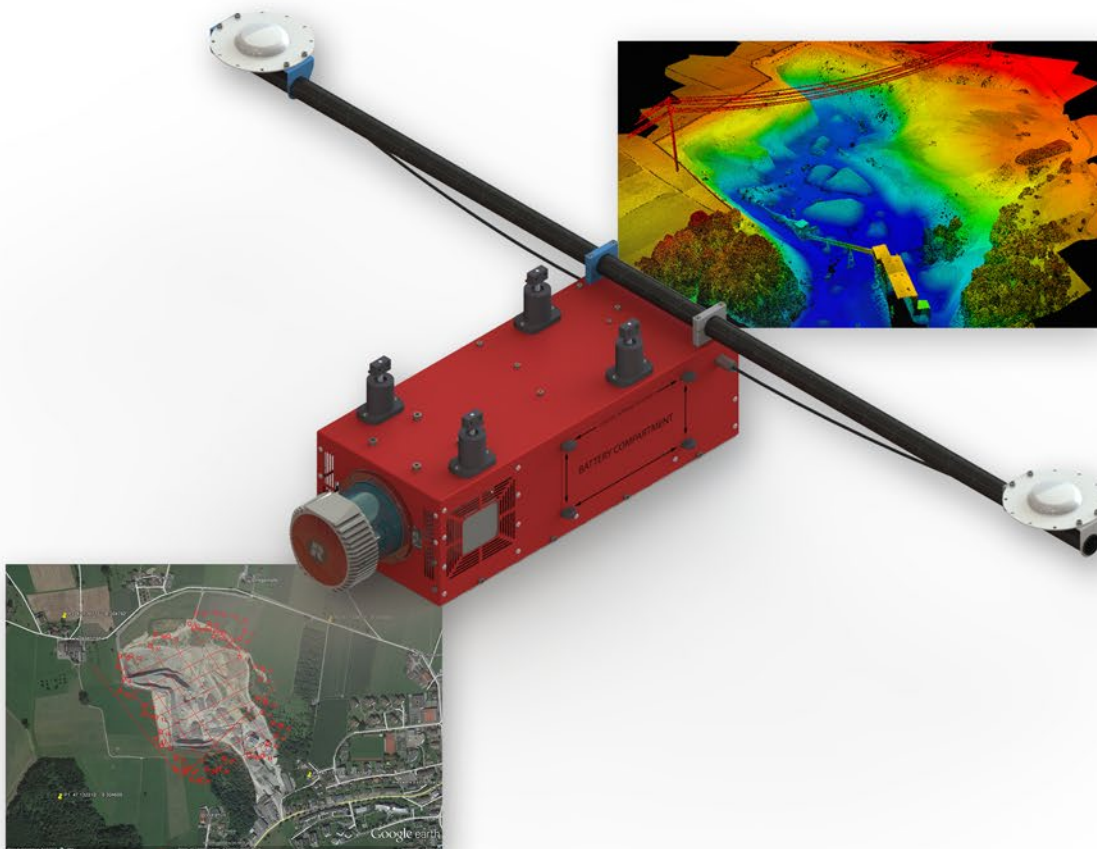




ALMI Technology

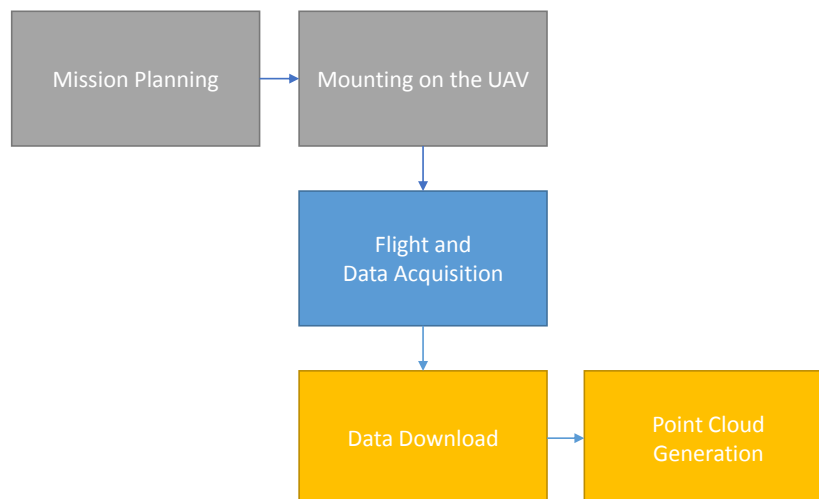
Airborne Laser Scanning Technical Details & Specifications



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Technical Details



Workflow

- Missionflightplanning and testing the laser scanner to get the desired point density. This can be done in the laboratory before going out to the flight field.
- The payload is mounted to the UAV on the flight field within minutes. After the initialization process, (acquiring GPS, establish wireless connection etc.), it is ready for the scan flight.
- The laser scanner can be started and stopped during the flight. Status information of the scanner and the INS/GPS system is sent continuously to the ground control station and differential GPS correction information is sent to the payload.
- The laser scan data and the INS/GPS data is recorded and stored onboard. After landing, it can be downloaded to the ground control station laptop.
- The RIEGL software package (www.riegl.com) is used to process the point cloud by combining laser scan data and INS/GPS position information data.

Specifications



RIEGL VUX-1 UAV Scanner (www.riegl.com)

Laser Pulse Repetition Rate: Up to 550 kHz
 Field of View: 330°
 Maximum Height to Ground: 110m (@ 550 kHz PRR)

xNAV550 INS/GPS (www.oxts.com)

Position Accuracy: 0.02m RTK
 Roll/Pitch: 0.05°
 Heading: 0.1°



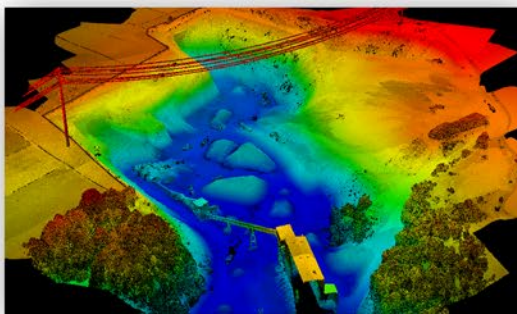
Scout B1-100 UAV Helicopter

Maximum Payload: 18kg
 Maximum Velocity: 15m/s
 Maximum Altitude: 1600m AMSL

Typical Scenarios (small, medium, large area)

Area covered[km ²]:	1	6	10
Flight Velocity [m/s]:	5	10	15
Flight Altitude [m AGL]:	50	80	100
Scanning Angle [deg]:	75	110	110
Point to Point Distance [cm]:	6	10	15
Line to Line Distance [cm]:	6	10	15
Points density[pts/m ²]:	300	100	50
Mission Duration [min]:	60	60	60
Data Size [GB]:	8	12	12
Photo overlay:	yes	no ¹	no ¹

1) The wide scanning angle makes it impractical to cover all points by a photo camera



Facts & Features

Facts of the ALMI Technology

- The ground control station can remotely communicate with all payload components to configure them before the flight.
- The scanner can be started and stopped remotely from the ground control station during the mission flight.
- Status information of the laser scanner and the INS/GPS is sent to the ground control station to monitor the ongoing data acquisition during the flight.
- The hardware integration of the payload includes an advanced vibration damping to protect the sensitive parts from vibration caused by the engine and the rotors of the UAV system.

Features of the ALMI Technology

The ALMI technology

- ... can be combined with all state-of-the-art RIEGL laser scanners.
- ... has been optimized for OXTS INS/GPS navigation units.
- ... provides online status information of the scanner and the INS/GPS system.
- ... allows remote access on the recorded data.
- ... allows to send differential corrections to the payload during the flight.
- ... can be upgraded to store the differential GPS correction data on ground.
- ... can be upgraded with a digital photo camera for point cloud photo overlay.