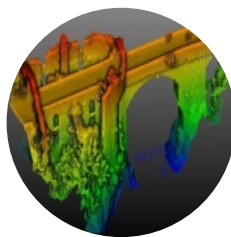mdLiDAR 1000HR

microdrones

GE industrial drone line

PROVEN INDUSTRY LEADING DRONE LIDAR SURVEY EQUIPMENT AND SOFTWARE

mdLiDAR1000HR: HR means high resolution pointclouds and increased coverage is made easier and more accessible than ever.

SURVEY GRADE DRONE LASER SCANNING

By combining our robust and field proven md4-1000 aircraft, with a fully integrated high-resolution LiDAR & camera payload, you can capture ultra dense LiDAR data quickly and safely in the field, and then turn it into a 3D point cloud back at the office or on your laptop.

BRING HIGH RESOLUTION LASER FOCUS TO YOUR DRONE LiDAR SURVEYING PROJECTS

Microdrones has developed an end-to-end LiDAR solution combining a drone, a LiDAR payload, a fully integrated LiDAR processing and photogrammetry software workflow, and world class support to consistently provide quality deliverables.

mdLiDAR1000HR is a fully integrated system for producing 3D point clouds optimized for land surveying, construction, oil & gas and mining applications.
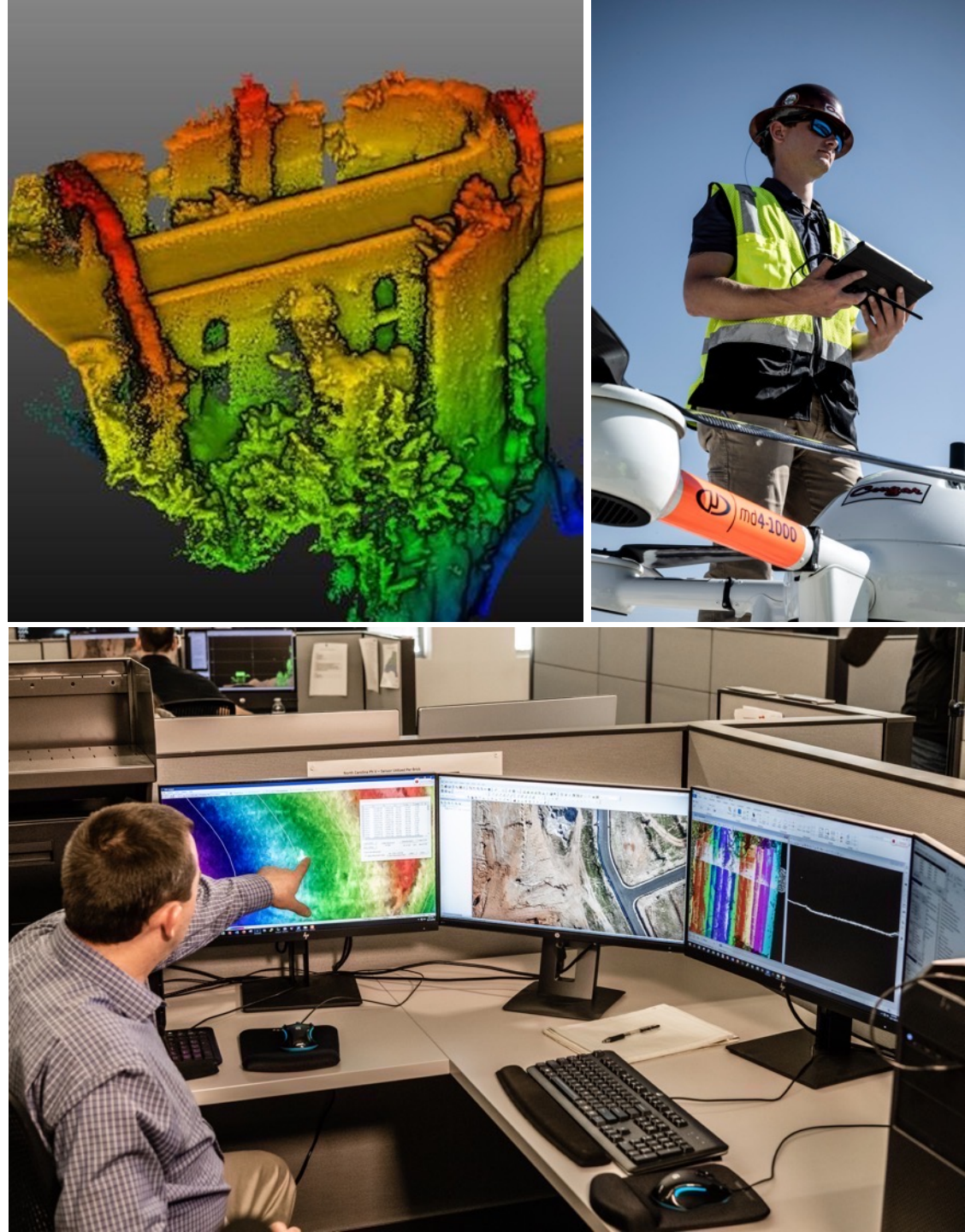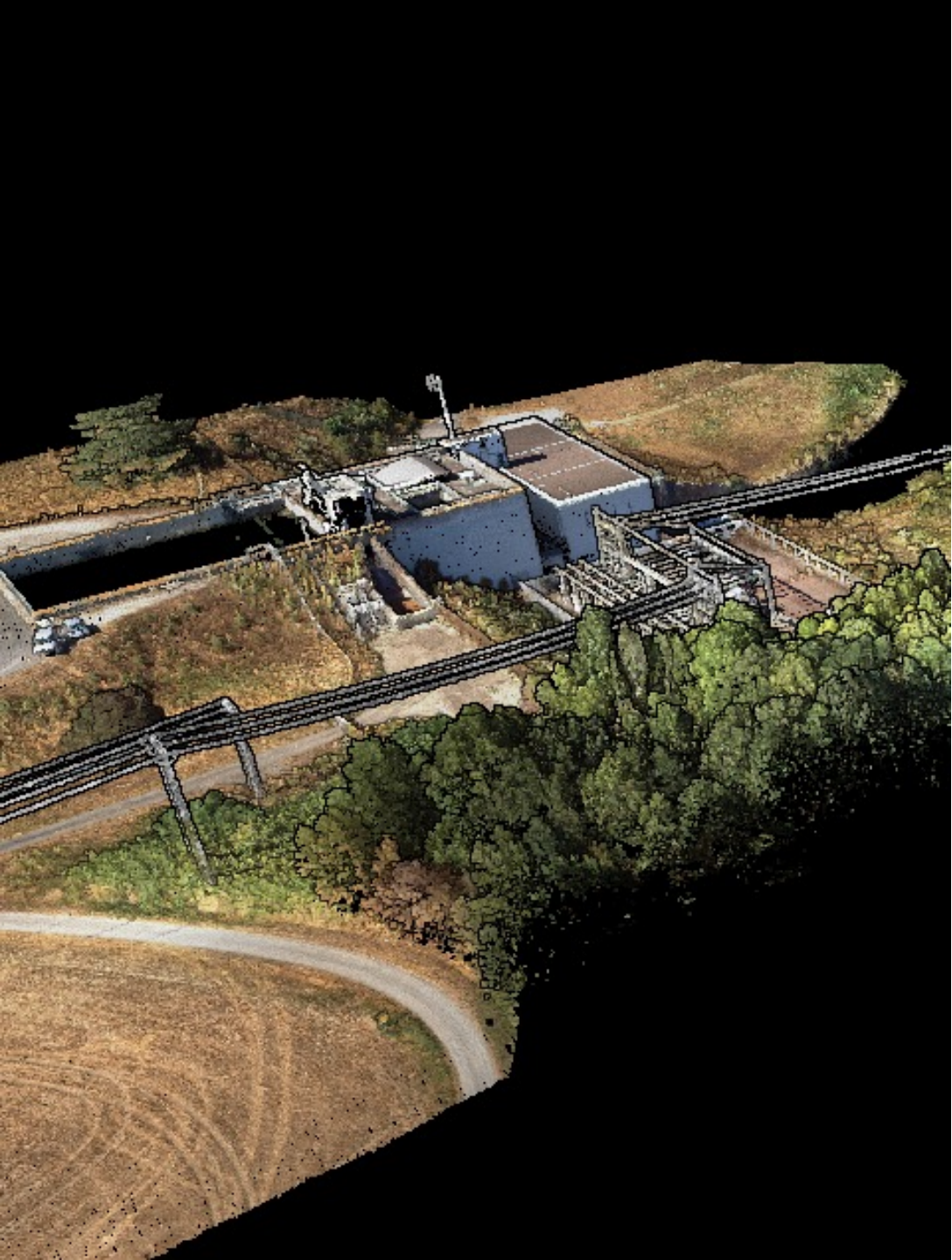
WHY SHOULD YOU INVEST IN DRONE BASED LiDAR?

In areas of high vegetation do you spend hours cutting line to topo the site? This system can help streamline your current workflows to become more efficient, while helping you to complete more projects.

EASY END-TO-END WORKFLOW:

mdLiDAR
1000HR

PLAN

FLY

PROCESS

VISUALIZE

- Simple mission planning using mdCockpit
- User selects flying height, drone speed and LiDAR strip overlap

- Fully automated mission execution, realtime monitoring, and flight control using mdCockpit

- Thorough georeferencing data processing using the Applanix APX-15 UAV DG and mdInfinity Software
- Automated final point cloud processing using mdInfinity processing software

- Final point cloud in standard ASPRS LAS format, View your deliverable in mdInfinity software, or export to use within any GIS or CAD software environment that you currently use

PROCESS

ACCURACY ASSESSMENT
Provided by Microdrones Geomatics department

- Test Area in Siegen, Germany
- 16 Check Points
- Varrying surfaces

mdLiDAR 1000HR

Test Area and Check Point Distribution

GCP ID	Horizontal Accuracy (m)	Height Accuracy (m)
G1	0.009	0.009
G2	0.009	0.008
G3	0.009	0.009
G4	0.009	0.009
G5	0.009	0.008
G6	0.008	0.008
G7	0.008	0.008
G8	0.008	0.008
G9	0.008	0.006
G10	0.008	0.006
R11	0.008	0.006
R12	0.009	0.009
R13	0.009	0.009
R14	0.009	0.009
R15	0.009	0.009
R16	0.008	0.006

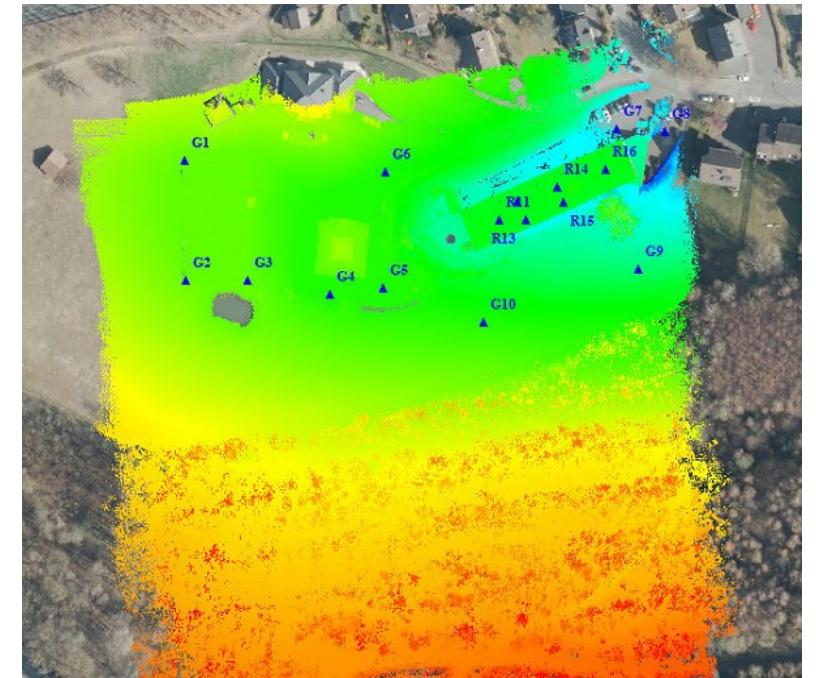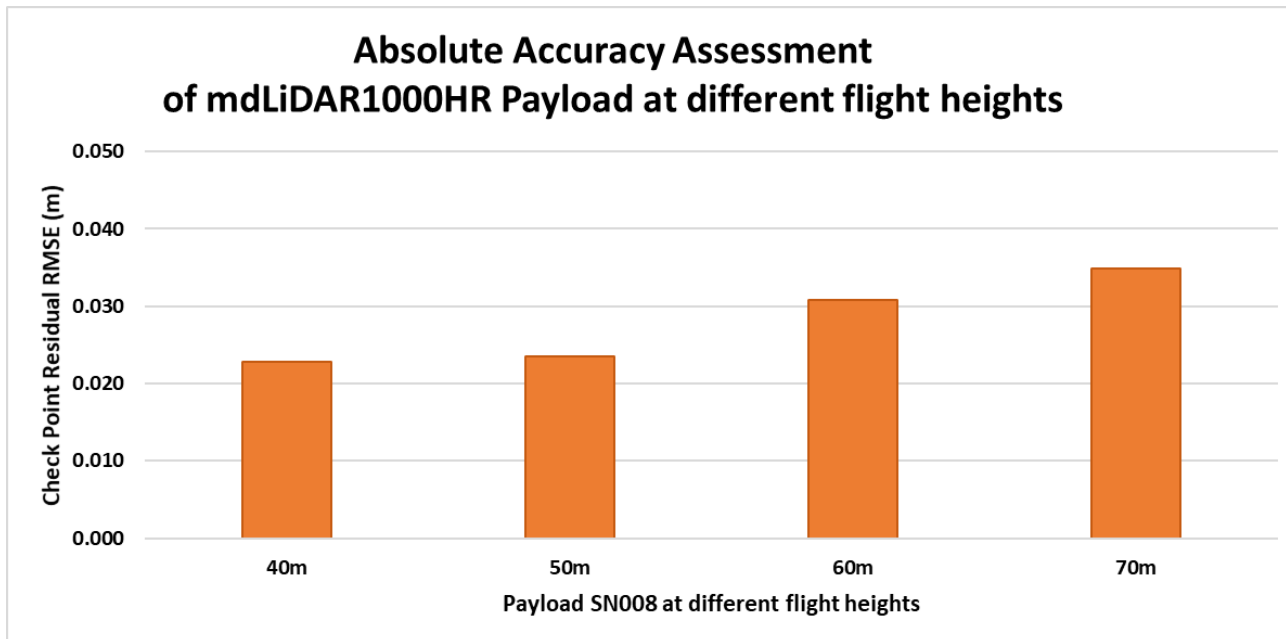# ACCURACY ASSESSMENT

Provided by Microdrones Geomatics department

- Test Area in Siegen, Germany
- Vertical accuracy 2cm-4cm RMSE

mdLiDAR
1000HR

Absolute Accuracy Assessment of mdLiDAR1000HR Payload at different flight heights

Check Point Residual RMSE (m)

Payload SN008 at different flight heights

Processed through mdInfinty and evaluated with Global Mapper
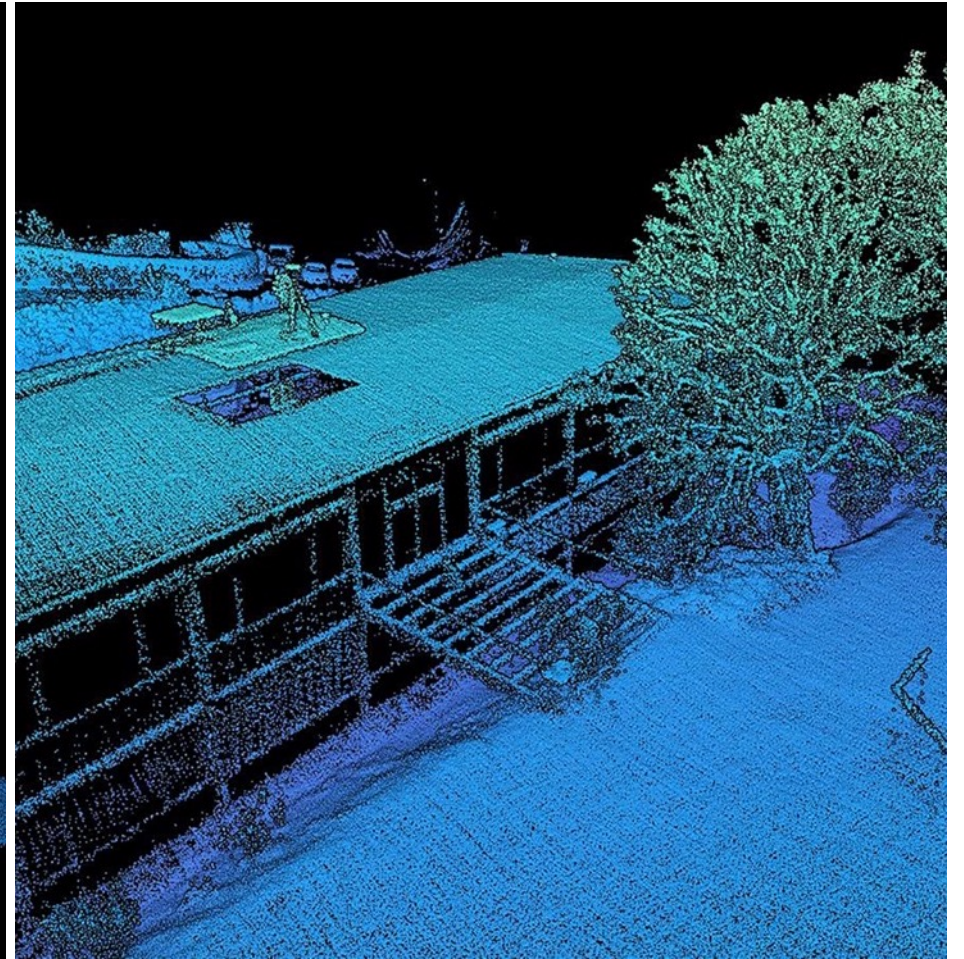
Flight parameters

• 40m AGL

• 4 m/s

• 60% sidelap

Single strip point density
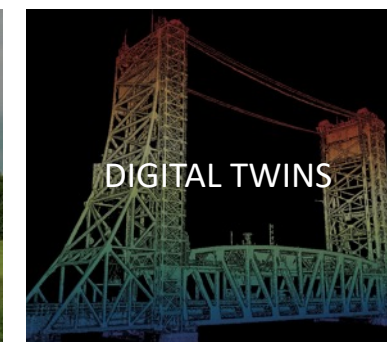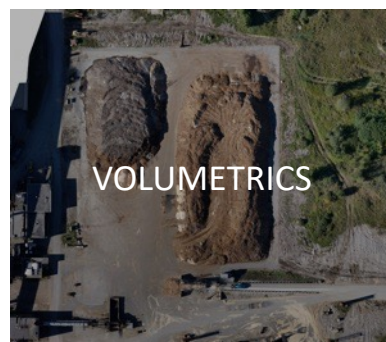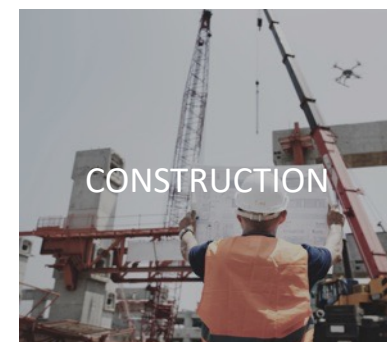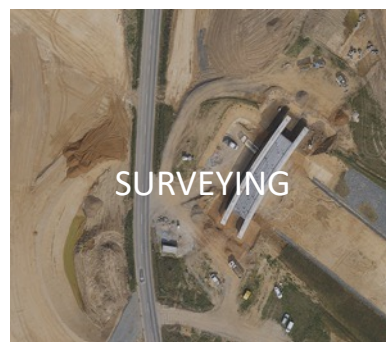
• 330 pts/m²

Average point density

• 680 pts/m²

WHAT CAN YOU DO WITH IT?

mdLiDAR1000HR is a versatile package that can be used for a wide range of applications. Some of the most common uses are:

SURVEYING

MINING
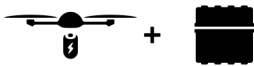
CONSTRUCTION

VOLUMETRICS

PRECISION AGRICULTURE

DIGITAL TWINS

SURVEY EQUIPMENT

PLATFORM

md4-1000

Charger, Flight Battery & Rugged Carrying Case

Integrated Cooling Covers

Mag-less Navigation

LED Light Rings

COMMUNICATIONS

Encrypted Digital Data Link

mdRC

Extended Communication Range Operation
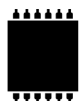
Multiple Tablet Control

Remote ID Enabled

PAYLOAD

Fully Integrated High Resolution LiDAR & Camera

Applanix APX-15 UAV DG

SURVEY EQUIPMENT SOFTWARE

mdCockpit Tablet Software

Tap & Fly

DATA PROCESSING MODULES

mdLiDAR 1000HR

mdINFINITY IS A POWERFUL ECOSYSTEM THAT WILL ENABLE YOU TO QUICKLY AND EFFICIENTLY PROCESS GEOSPATIAL DATA, WITH CONVENIENT PAYMENT OPTIONS.

Available Data Processing Modules:

- Trajectory processing
- Georeferencing
- Boresight calibration
- Strip adjustment
- Precision enhancement
- Point Cloud Direct Colorization
- FORMap
- Ground Classification

mdInfinity is available in online and desktop versions.

SOLUTION COMPONENTS

Platform
md4-1000

Payload
• LiDAR Sensor: Velodyne PUCK VLP-16
• Camera Sensor: SONY IMX264
• Georeferencing: APX-15 UAV

Software
• mdCockpit
• mdInfinity

TECHNICAL SPECIFICATIONS
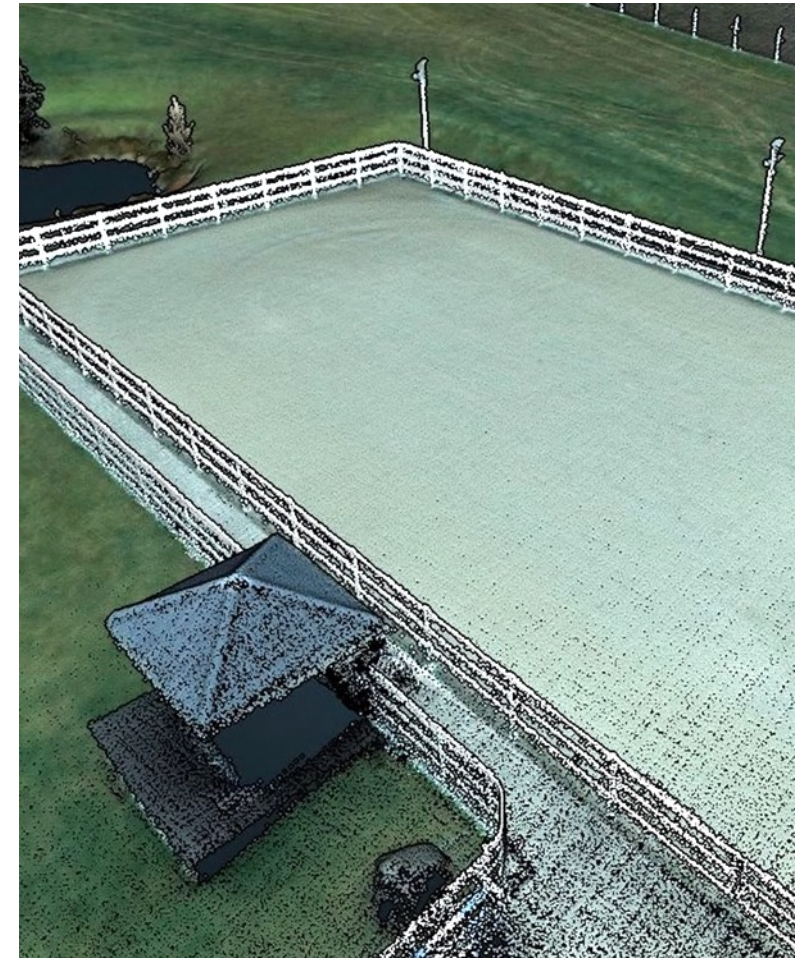
Takeoff Weight (TOW)
6500 g

System Operational Temperature
-10 °C to 50 °C
14 °F to 122 °F

System Accuracy
• LiDAR Point Cloud:
    • 4 cm RMSE

• Photogrammetry:
    • Horizontal: 1-2 pixels
    • Vertical: 3-4 pixels

TECHNICAL SPECS

Flight Altitude AGL [1,2] (ft/m)	100/30	150/45	200/60
Speed (m/s)	Covered square area at 30% sidelap (ac/ha)		
4	37/15	62/25	84/34
6	62/25	84/34	123/50
8	84/34	123/50	153/62
Speed (m/s)	Average Point Density in pts/m^2 [2,3] (square area/1 scan line)		
4	428/312	282/208	212/156
6	287/208	189/138	141/104
8	216/156	144/104	107/78
Camera GSD (mm)	20.7	31.1	41.4
Swath width (ft/m)	200/60	300/90	400/120
Number of Laser Returns	2	2	2

[1] Flight Altitude Above Ground Level (AGL)
[2] Coverage estimated for approximately 25 minutes of flight time
[3] Average density calculated with 30% overlap on 5 lines, average density will depend on surface type.