



# PUTTING MICRODRONES TO WORK FOR YOU.

General Presentation

Your Name and Date

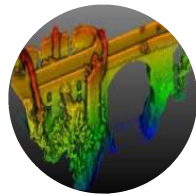




mdLiDAR  
1000HR aaS

## THE NEXT GENERATION OF OUR INDUSTRY LEADING DRONE LiDAR SURVEY EQUIPMENT IS HERE.

mdLiDAR1000HR aaS: 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 airframe, 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.



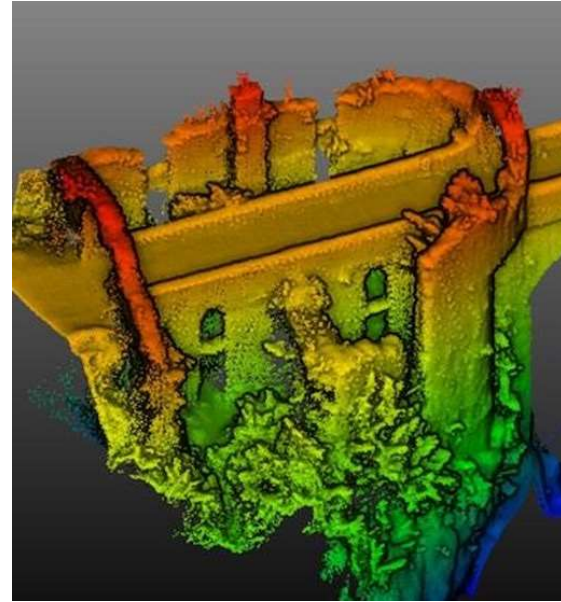


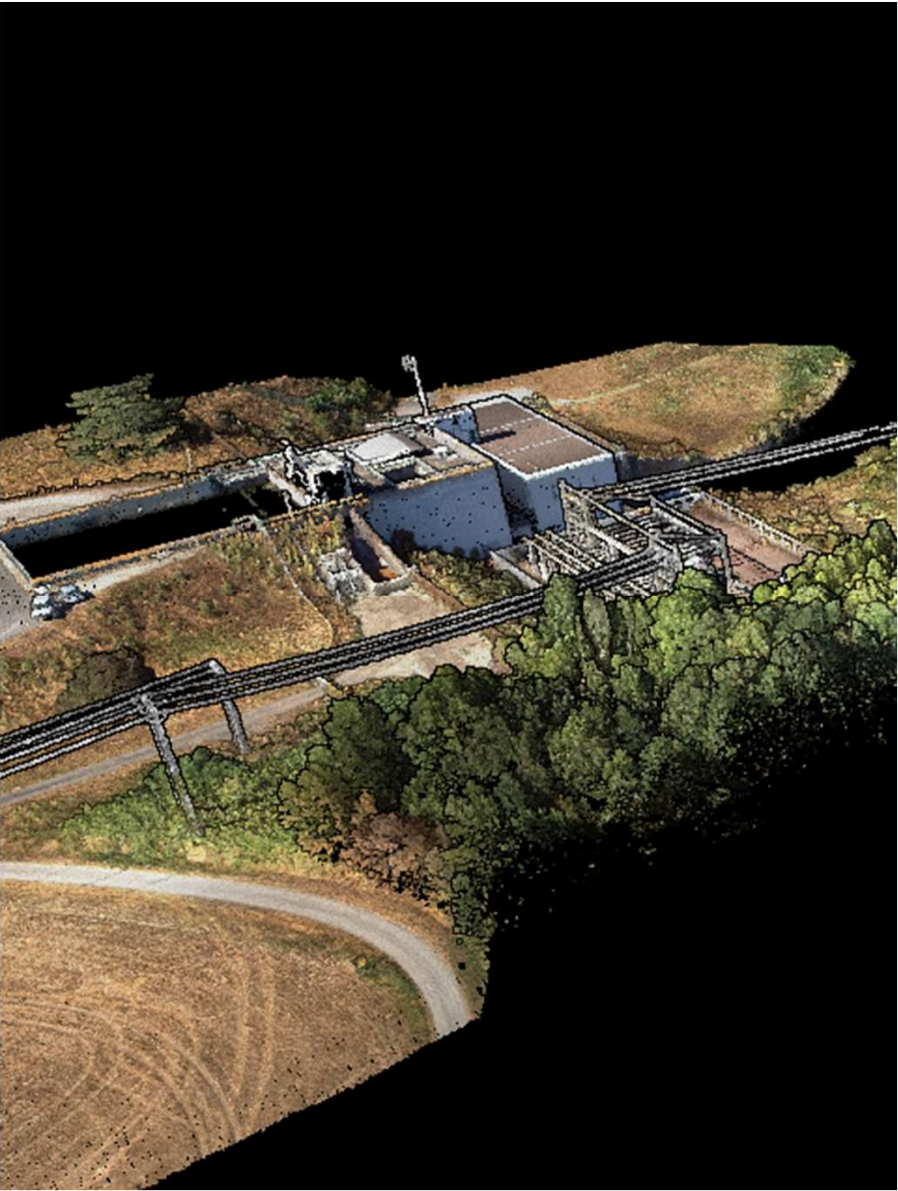
mdLiDAR  
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## BRING HIGH RESOLUTION LASER FOCUS TO YOUR DRONE LiDAR SURVEYING PROJECTS

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 aaS 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:



- Simple mission planning using mdCockpit
- User inputs the point density or flying height and drone speed



- Fully automated mission execution and real-time mission monitoring 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 process in.





## ACCURACY ASSESSMENT

Provided by Microdrones Geomatics department

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



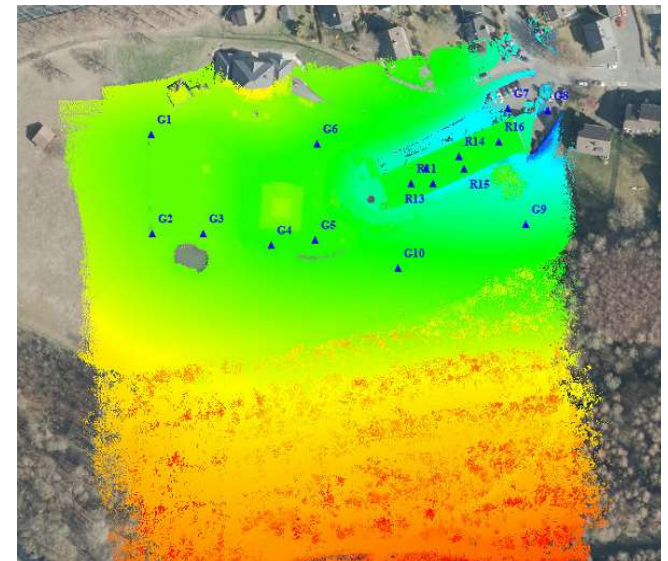
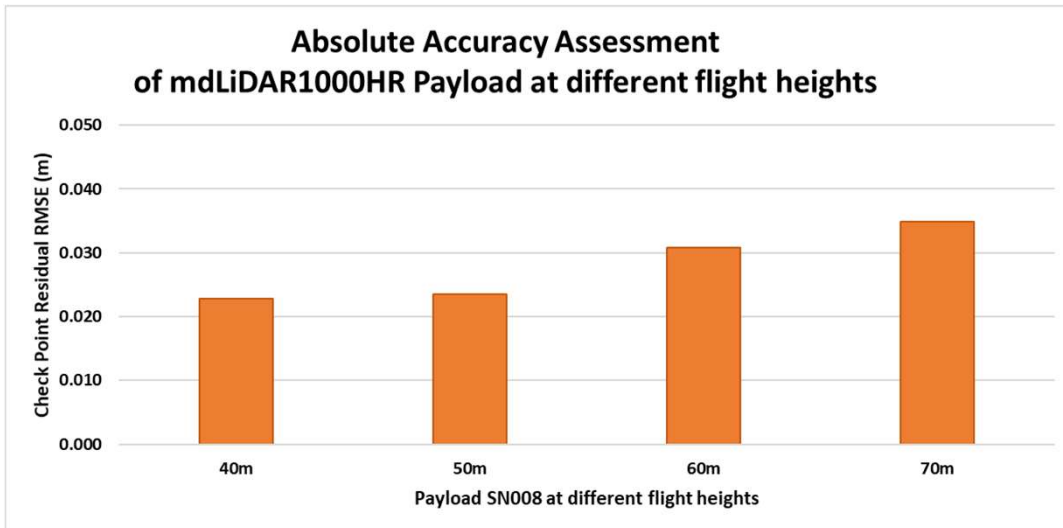
GCP ID	Horizontal Accuracy (m)	Height Accuracy (m)
G1	0.009	0.009
G2	0.009	0.008
G3	0.009	0.009
G4	0.009	0.009
G5	0.009	0.008
G6	0.008	0.008
G7	0.008	0.008
G8	0.008	0.008
G9	0.008	0.006
G10	0.008	0.006
R11	0.008	0.006
R12	0.009	0.009
R13	0.009	0.009
R14	0.009	0.009
R15	0.009	0.009
R16	0.008	0.006



## ACCURACY ASSESSMENT

Provided by Microdrones Geomatics department

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



*Processed through mdInfinity and evaluated with  
Global Mapper*





## POINT CLOUD DATA

Provided by Microdrones Geomatics department



### Flight parameters

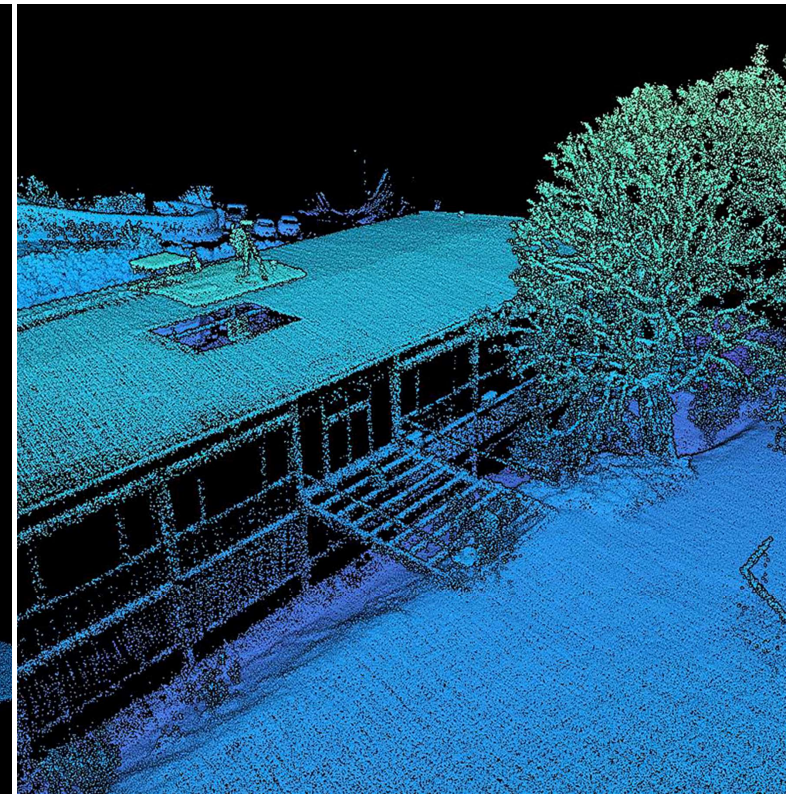
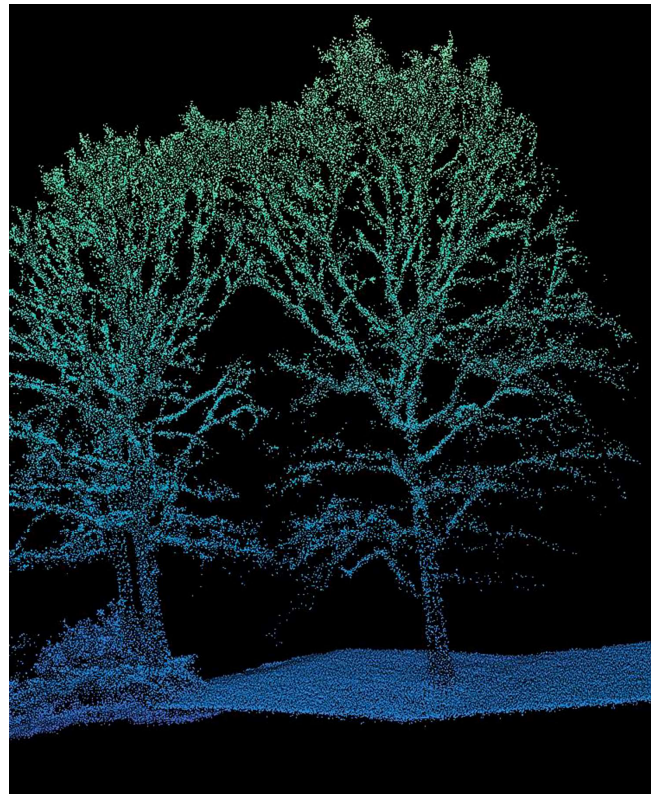
- 40m AGL
- 4 m/s
- 60% sidelap

### Single strip point density

- 330 pts/m<sup>2</sup>

### Average point density

- 680 pts/m<sup>2</sup>

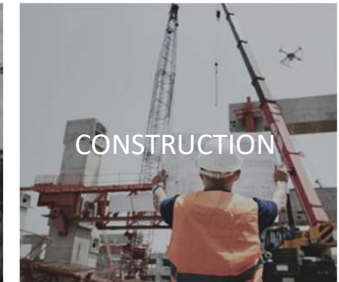




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## WHAT CAN YOU DO WITH IT?

mdLiDAR1000 HR aaS is a versatile package that can be used for a wide range of applications. Some of the most common uses are:



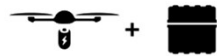
# SURVEY EQUIPMENT



## PLATFORM



md4-1000



Charger & Rugged  
Carrying Case



Tri Blade  
Quadcopter



Integrated Cooling  
Covers



Mag-less  
Navigation

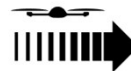
## COMMUNICATIONS



Encrypted Digital  
Data Link



mdRC



Extended Communication  
Range Operation



Multiple Tablet Control



# SURVEY EQUIPMENT



## PAYLOAD



Fully Integrated High Resolution LiDAR & Camera



Applanix APX-15 UAV DG

## SURVEY EQUIPMENT SOFTWARE



mdCockpit Tablet Software



Tap & Fly



mdINFINITY<sup>CO</sup>

mdaas

DG ENABLED

## DATA PROCESSING MODULES



mdINFINITY∞

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



mdInfinity is available in online and desktop versions.

## TECHNICAL SPECS



### 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

#### Solution Take off Weight (TOW)

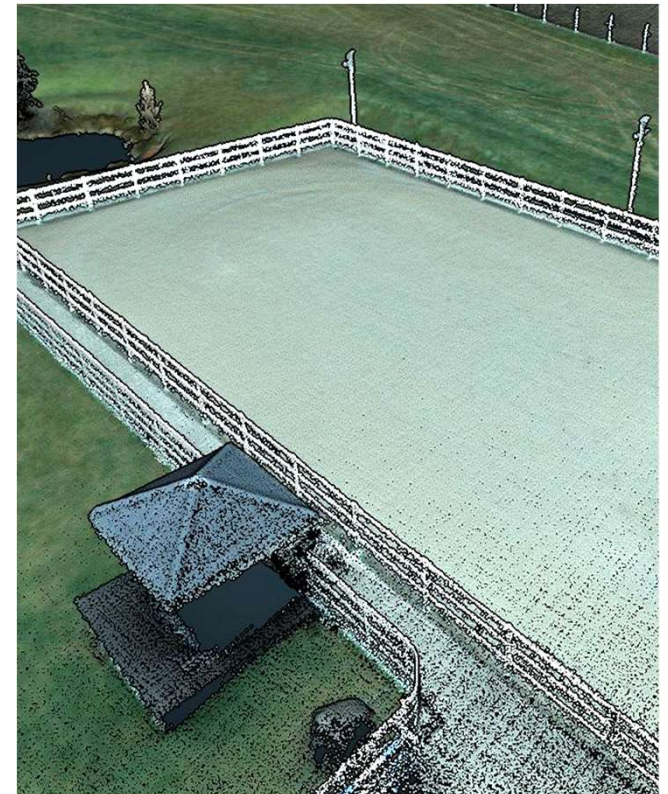
6500 g

#### 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 <sup>(1)</sup> (m/ft)	30 / 100	45 / 150	60 / 200
<b>Speed (m/s)</b>	<b>Covered square area at 30% sidelap (ha / ac)</b>		
4	15 / 37	25 / 62	34 / 84
6	25 / 62	34 / 84	50 / 123
8	34 / 84	50 / 123	62 / 153
<b>Speed (m/s)</b>	<b>Average Point Density in pts/m<sup>2</sup> <sup>(2,3)</sup> (square area / 1 scan line)</b>		
4	428 / 312	282 / 208	212 / 156
6	287 / 208	189 / 138	141 / 104
8	216 / 156	144 / 104	107 / 78
<b>Camera GSD (mm)</b>	21	31	41
<b>Swath width (m/ft)</b>	60 / 200	90 / 300	120 / 400
<b>Number of Laser Returns</b>	2	2	2

<sup>(1)</sup> Flight Altitude Above Ground Level (AGL)

<sup>(2)</sup> Coverage estimated for approximately 25 minutes of flight time

<sup>(3)</sup> Average density calculated with 30% overlap on 5 lines, average density will depend on surface type.

