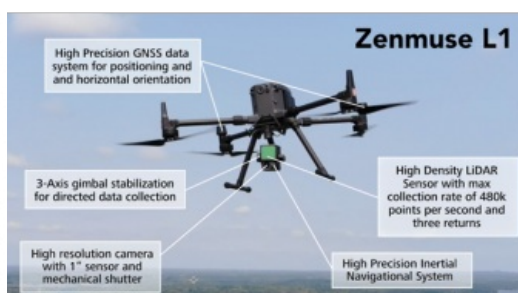
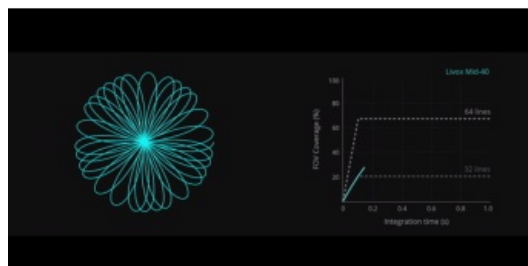


# DESIGNED FOR AERIAL DRONE LIDAR MAPPING PROJECTS ACROSS INDUSTRIES

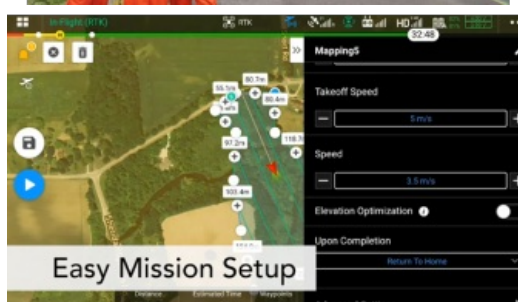
## New-generation Zenmuse L1 Lidar Drone System Combines Quality with Affordability



The [Zenmuse L1](#) is the first Lidar payload developed by DJI, integrating a Livox Lidar module, a high-accuracy IMU and a camera with a 1-inch CMOS on a 3-axis stabilized gimbal. The L1 delivers enhanced 3D data capture capability with a detection range of up to 450m, enabling the acquisition of up to 2 square kilometres of point cloud data in a single flight. It offers point cloud data capture with exceptional centimetre-level accuracy thanks to the high-precision IMU, vision sensor for positioning accuracy, plus GNSS data.



One of the benefits of this Lidar drone system is full integration with the [DJI Matrice 300 RTK](#) and the [DJI Terra](#) software ecosystem, so there is no need to invest in a third-party software service. This means faster, easier post-processing and a compatible, complete system to support the full suite of drone Lidar mapping business needs. The Zenmuse L1 launch is the first time DJI has released its own Lidar payload, and owners and operators can be confident about this powerful new Lidar solution because it is backed by the DJI commitment to quality.



Zenmuse L1 Lidar payload.

### Overcoming vegetation and terrain challenges with ease

Travis Le Moine, director of [Seiler GeoDrones](#), is an authorized reseller of the L1 Lidar drone and a longtime partner of DJI. Seiler has over a decade of experience in providing professional measurement solutions to the geospatial industry, specializing in custom drone solutions. Le Moine recently tested the [Zenmuse L1](#) above densely vegetated terrain with Peter Ferretti, spatial technology group manager at US-based engineering firm [Baxter and Woodman](#). Le Moine was keen to deploy the L1 for its agility and its precise data collection. "It uses a 360° circular beam on a gimbal to collect data, meaning that it's very directable, and it's therefore possible to collect precise data without excess noise," he noted. "This resulted in us needing less time in the field to capture data, and less time later in post-processing,

so there were clear advantages here for us in terms of accuracy and time-saving.” On this testing site, the high level of accuracy and agility provided by the DJI drone Lidar mapping system removed the need for guesswork.



The Matrice 300 RTK with the Zenmuse L1. (Image courtesy: Seiler GeoDrones)

Lidar offers significant benefits for challenging forest inventory that a surveyor would normally need to walk through. There is no longer the need to continually move the physical station and struggle to rely on GPS, which is less effective in heavy foliage. Le Moines noted the utility of the [L1](#)’s Lidar capability in capturing accurate data despite dense vegetation, a clear advantage over conventional photogrammetric methods. Ferretti was particularly impressed with the [L1](#)’s ability to penetrate vegetation and its quick turnaround times on the project. “It is also able to reach inaccessible or unsafe areas where conventional surveying just can’t be used,” he stated. Because the [L1](#) has three returns, there are multiple opportunities with every laser pulse to get a measurement on the ground to capture contours.



Non-repetitive scanning patterns. (Image courtesy: www.livoxtech.com)

## Insights from Indonesia

CEO of [Halo Robotics](#), Eli Moselle, also jumped at the chance to test out DJI’s new [Zenmuse L1](#) payload with a team from Pertamina Geothermal Energy. Based in Jakarta, Indonesia, Halo Robotics is an authorized distributor of full drone solutions and services across all industries. The team conducted several flights using the [L1](#) in combination with the Phantom 4 RTK and [DJI Terra](#). “Post-processing took as little as two to three hours, and had a very straightforward workflow,” they reported. Moselle and his team were impressed with the [L1](#)’s suite of safety features and high precision accuracy, and the RGB values produced by the point clouds made the outputs easier to understand and more efficient to work with.

Where conventional systems involving photogrammetry data can be time-consuming and expensive, the Pertamina operations team found that the L1 demonstrated its capacity in surveying as effective, fast, cost-effective and safe. Moselle recommends the [M300 RTK + L1](#) Lidar solution as a high-quality, effective tool in helping companies generate spatial data, perfect for elevation mapping and land morphology analysis. In Pertamina, the L1 aerial Lidar sensor enabled data to be collected for pipeline and power structures. “So they could be maintained efficiently and safely, without any environmental impact,” explained Moselle.



Pilots from Halo Robotics testing the L1. (Image courtesy: Halo Robotics)

Moselle’s team added: “With the [L1](#), things that were almost impossible and could have not been done before have now become possible to do, greatly helping our operations.” The [L1](#) ushers in a new era for aerial drone technology, delivering accuracy, productivity, cost and safety gains, and suitability across all kinds of projects, from geothermal drilling to power production and from vegetation mapping to power structures.

## Real-time point clouds in all weather conditions

Using a payload with an active scanning method like the [L1](#) is the perfect option for data capture in adverse weather conditions like rain, fog, cloud and low light. The [L1](#) could be deployed in scenarios too dangerous for conventional surveying, such as in the aftermath of an earthquake or flood, or for work on the road during the night, where the setting is unsafe for human surveyors. The DJI system can be used across multiple applications, for example, as an additional tool to support complex ground-based firefighting or search and rescue efforts. The powerful L1 drone Lidar mapping system is quite rugged and durable, with IP45 protection. The L1 and M300 together present a compact, stable and high-performing system. Minor mishaps are inevitable with drone use, no matter how experienced the operator, so it’s reassuring that the L1 and M300 are robust and repairable, designed to withstand all kinds of weather conditions and packed with practical, innovative features.

The ability to view point clouds in real time is built into the L1, enabling operators to generate true-colour point cloud models on-site using a feature called LiveView. Le Moine explained the advantage this payload has over its competitors: “Another unique feature about the L1 system is that you can see the data in real time, whereas most don’t show you that at all, or if they do, it’s only on a basic level.” This feature arms operators with accurate data to inform critical decisions.



The Zenmuse L1 Lidar drone system sets the new standard for aerial Lidar moving forward.

## Easy to use, accessible and automated

During testing, the L1’s ease of use came into its own. “There’s an automatic control to turn on all the high-precision components, whereas other systems need to be initialized manually, and that the GPS and IMU (inertial measurement unit) functions are already written into the software. DJI have done a great job here in developing the product in this way, since they’ve listened to surveyors working in the field: the software is really well written, initializing in exactly the way the IMU needs to,” commented Le Moine. He described how the software processing is primarily automatic, and that bringing data into the [DJI Terra software](#) is as straightforward and simple as taking the files off the memory card and dropping them into the software. It is easy to see why DJI is the leader in the commercial drone market, with such high-quality, uncomplicated tools at attractive prices.



“The software is really well written, initializing in exactly the way the IMU needs to.” (Image courtesy: Seiler GeoDrones)

## Affordable price and high return on investment

The L1 is an all-round winner when it comes to cost due to its affordable price point and very good value. “Most other systems are several times more expensive, but the [L1](#) has real-time data, is all integrated, has no incompatibility issues and competes against other systems that are several times more expensive,” Le Moine pointed out. Both Seiler and Baxter and Woodman agreed that the integration to the field software fit together well, reducing the need for additional third-party software, avoiding potential problems faced when the Lidar sensor functions separately from the drone. The launch of the L1 at such a high value-for-money price point means that it will actually be cheaper and more accessible for businesses to own the Lidar system, instead of renting it.

The [Zenmuse L1](#) Lidar drone system sets the new standard for aerial Lidar moving forward, with its healthy feature set, precision accuracy, real-time data delivery and comfortable ease of use. It is compact, powerful and accurate, enabling operators to effortlessly generate reconstructed models and accurate reports across a diverse range of projects. “The L1 offers some impressive specs, as well as critical efficiency gains in terms of both time and money,” according to Seiler. It is set to become an indispensable tool for GIS professionals. To learn more about the L1 or purchase the system, available in early 2021, [reach out to DJI Enterprise](#) today.

[Order Your L1 Today](#)

---

<https://www.gim-international.com/case-study/new-generation-zenmuse-l1-lidar-drone-system-combines-quality-with-affordability>

---