

DRONESCAN HADEDA



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*Innovative Inventory
Technologies*

The DroneScan Solution

About DroneScan

DroneScan has developed an airborne data collection system to provide large, uniform warehouses with a robotic solution for stock take, providing live feedback and integration with Warehouse Management systems. It has proven to save hundreds of man-hours, but most importantly, has provided a safer alternative to traditional, labour intensive methods involving reach trucks, forklifts, man-cages and scissor-lifts.

DroneScan uses a drone (or buffalo model) to scan the barcode on each pallet and records the location of each item in the warehouse management system, proving to be up to 50 times faster than manual capturing.

DroneScan uses the latest drone platforms, hardware, software, scanning and communications technology and integrates to existing warehouse management systems and Excel.

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About the Hadedda

The DroneScan Hadedda system is an attachment mounted on-board a drone consisting of electronics, software and scanners that performs the data collection. The on-board hardware and software controls the barcode scanner, sends and processes commands to and from the ground station, all the while checking for operator intervention and taking measurements from on-board sensors.

The DroneScan ground station is a windows tablet running software that stores and processes the gathered data from the onboard system. The ground station is a combination of a warehouse management and a drone controlling system. It also integrates to the customer's warehouse management system.

The key differentiator of the DroneScan system is that it not only scans the barcodes of items in the warehouse, but it can also provide the WMS location of the items using its onboard sensors and the structure of the warehouse itself. No fixed installations, markings, beacons or abnormal warehouse preparations are needed.



Specifications

Theoretical maximum barcode Scanning Speed	2 barcode scans per second
Actual scanning speed in flight (manual flying of drone)	One barcode every 5 seconds
Target scanning speed (with automated positioning of drone)	One barcode every 2 seconds
Optimal barcode scanning distance:	30 – 90 cm
To scan one section of 4 racks with 10 pallet positions (manual flying of drone)	7 minutes
In comparison: Traditional forklift and hand held scanner to scan 4 racks with 10 pallet positions	80 “man” minutes
Hover flight time with payload and extended battery	13 minutes
Weight of DroneScan onboard system	350g
Size of DroneScan onboard system	10cm wide x 17cm long x70 cm high
Compatible Drone	DJI Matrice M100 quad copter with guidance.
Navigation accuracy	+/- 10 cm
Maximum width of warehouse	100m
Maximum height	25m
Minimum pallet position width	50cm

Live Feedback

A high visibility display is mounted at an angle on the drone, providing instant feedback of the BIN location, incremental scan number, battery life and information about the scanned item, this allows the operator to focus on the drone without needing to glance down at the tablet. The drone also emits an audible beep and flashes a light as a scan success indicator.

How the project supports the business goals and strategies:

- Improve Health and Safety
- Improve Efficiencies
- Keep Current with Technological Improvements
- Reduce Cost
- Reduce Carbon footprint
- Reduce Headcount

Reasons why the project is needed

- Prove ROI on new technologies
- Continued innovation in line with the industry
- Upskilling staff
- Save money



Integration

The Drone logs its data to the DroneScan database, the ground station software integrates to customer systems, files and the cloud, not only for storing the data scanned, but to provide position and navigation information.

The DroneScan ground station tablet and software communicates with the Drone via a peer to peer RF connection. This leaves the tablet's wifi connection available for communicating with the customer's network, allowing for real time integration.

Customised integration solutions can be developed using the following technologies:

- File import/export (e.g. Excel, CSV, Tab Delimited, XML)
- Web Services (e.g. REST, SOAP)
- API (e.g. RFC, BAPI)
- IoT (Azure IoT hub)

