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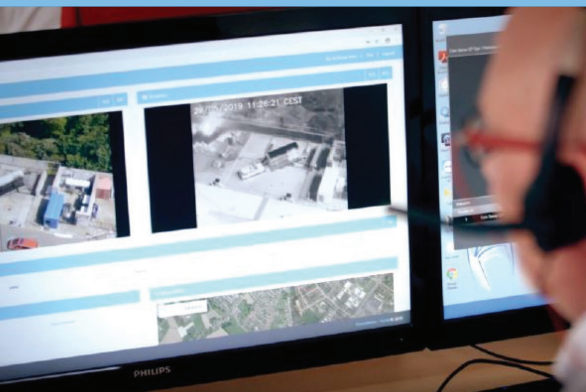
## DRONEMATRIX



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-Frank VanWelkenhuyzen  
CEO, DroneMatrix

[www.dronematrix.eu](http://www.dronematrix.eu)



## CASE STUDY

# DroneMatrix Selected WiBotic for On-demand Operations in Harsh Environments

### ■ CHALLENGE

DroneMatrix is a European drone manufacturer that builds and implements the next generation of aerial robotic technology. They specialize in surveillance, security, and inspection applications, and work with organizations that require on-demand drone operations in harsh environments. DroneMatrix was one of WiBotic's first drone customers, looking for fully autonomous wireless charging solutions.

Two of DroneMatrix's customers had requirements for on-demand drone operations in inhospitable environments. A solar energy farm and the Singapore Police Coast Guard approached DroneMatrix for inspection and surveillance applications in areas that are difficult for humans to patrol or access.

The solar farm needed the ability to inspect vast solar panel arrays for equipment failures, and also wanted to benefit from persistent drone surveillance, to prevent thieves from taking valuable metals – including copper – from the site. But the dust, wind and dirt severely impacted each drone's lifespan.

Operating in similarly harsh environments, the Singapore Police Coast Guard patrol boats work in and around corrosive salt water. They inspect ships for migrants, something done quickly and safely with a surveillance drone sent from the port.

These customers asked DroneMatrix to meet requirements for fast on-demand deployments and reliability in incredibly challenging environments.

## ■ SOLUTION

For both customers, DroneMatrix delivered a product called YACOB that includes a climate-proof steel enclosure with a retractable funnel shaped landing pad. The landing pad reduces weather-related impacts by sliding into and out of the housing assembly on the side rather than on the top, and the landing pad enables takeoffs and landings without human intervention. Wireless charging takes that a step further by enabling the drone to be autonomously charged once it enters the enclosure.

It's extremely expensive – according to DroneMatrix – to provide human staff for repetitive battery swapping between flights. As a result, they find wireless charging far more efficient. Wireless charging means that drones are always ready to operate, even in punishing environments at a moment's notice.

Frank VanWelkenhuyzen, DroneMatrix CEO, says it's important that their customers can charge the drones quickly and without human intervention: "Charging must be done independently and the whole system is completely automated. Wireless

charging avoids points of failure such as oxidation and bad contact. The drones are placed in harsh marine and desert environments. It's important that the charge of the battery is completely wireless."

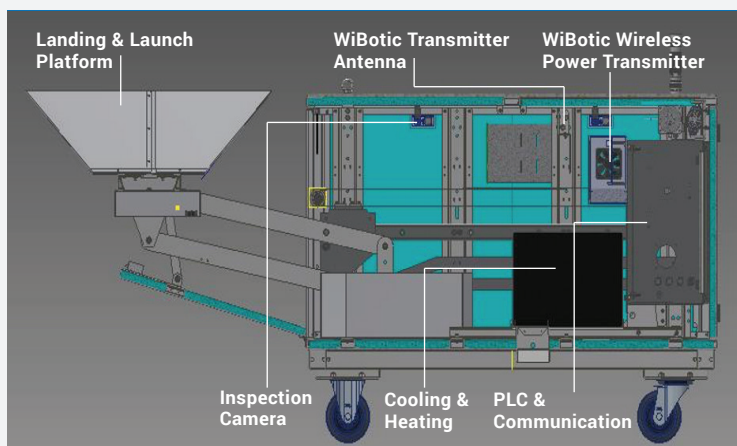
Notably, Frank's team is already pursuing new wireless charging applications for inspecting construction sites, delivering medicine between hospitals, and surveilling urban settings.

One common challenge – regardless of the country in which a drone company operates – is the legal restriction on autonomous flight. "One thing we have underestimated is the legal framework," Frank said. "If you want to pilot a drone remotely, you get into a legal framework that is very difficult. But the police and the firefighters have an exception, so this is our first focus. If you're going to fly to an emergency from a police station rooftop or a fire truck, you need to be sure your drone is always charged and ready to fly. The officers can't be expected to maintain drone batteries with so many other important tasks to perform, so wireless charging is critical to the overall solution for that market as well."

### **"Wireless charging avoids points of failure such as oxidation and bad contact."**

Frank VanWelkenhuyzen, CEO - DroneMatrix

Inside the YACOB station, the WiBotic transmitter circuit is mounted to one of the enclosure walls. The transmitter antenna is mounted vertically in the center of the enclosure, so it aligns with the drone after the tray has been pulled inside.



Onboard the drone, the receiver circuit and antenna are fully enclosed inside the vehicle's electronics bay. The receiver antenna is positioned near the outer plastic wall to align with the transmitter antenna once the drone is inside the YACOB station.

