## Combatting Sky Threats


# Success Story

**The latest anti-drone defense tactics are won on the ground with mobile and elevated defense hardware.**

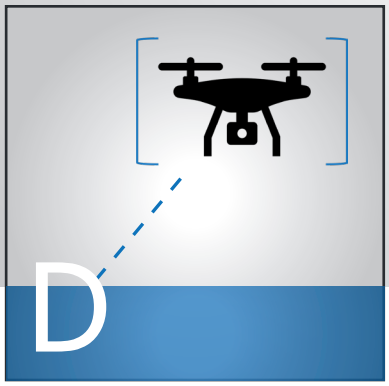
While malicious drone use continues to grow and threaten civilian environments, the need for detection and deterrence is quickly becoming a necessity for police and surveillance forces worldwide. Like manned airborne defense tactics, unmanned airborne defense tactics require the use of both personnel and technology for detecting and pursuing, but with the added need to immobilize the invading drone. It may surprise you to learn that some of the most effective defenses against an unauthorized drone, do not actually take place in the sky; they happen on the ground. The HTX (Home Team Science and Technology) Agency in Singapore is helping police forces counter drone threats with the development of a new anti-drone interference vehicle: the Xentinel™. Equipped with drone-detection capabilities up to a kilometer away and requiring only one person to operate, the Xentinel™ is outfitted with the **Will-Burt Low-Profile Pneumatic Non-Locking Mast** – engineered for fast operation, minimal nested height and maximum payload capacity.

# The Challenge

**Traditional situational awareness operations may not adequately detect or mitigate unauthorized or malicious drone invasions.**

Anti-drone desist systems utilize detection and disabling capabilities, such as tracking and jamming, which require direct line of sight and close proximity to the drone. How then, can the hardware be positioned high in the air and be mobile enough to follow the erratic flight of a drone? Short of hitching an officer to a self-propelled jet pack, a mobile response unit equipped with an anti-drone defense system is the next best thing.

Drone defense operations can be labor-intensive and problematic for security teams, particularly in bigger cities. Jamming systems, for example, are essential for disabling unwanted drones but are virtually unusable without direct line-of-sight and impractical without elevation. In order to cover such expansive areas, conventional operations typically consist of large teams of personnel equipped with handheld drone-jamming guns that require human eyesight for detecting and




## Detection

Early detection and surveillance are key tactics for assessing and preventing unauthorized drone incursions.


## Tracking

High vantage points with direct-line-of-sight provide the most accurate flight monitoring and positioning info for tracking.


## Jamming

Signal jamming technology is a critical advantage for rapid and complete airborne threat mitigation.

targeting. Compared to computer-assisted jamming systems, human eyesight has a limited range and would significantly reduce the response time needed to intercept an invading drone. Additionally, both tracking and jamming capabilities are utterly useless for ground-level defense operations if they're constrained to a fixed position. Installing these systems on a mobile unit is not only advantageous, it's vital.

Many people have asked, as did we, why not employ another drone to intercept these airborne invaders? Detecting, tracking, and most importantly, disabling, invading drones requires an array of equipment – radar to detect radio signals, a camera for visual confirmation, and "smart" jamming devices to incapacitate the drones without affecting other electronic signals or devices, such as smartphones.

The biggest challenge to using another drone for counter-offense, is the sheer weight of the hardware. With overall equipment load of almost 50 lb/22 kg, it far-exceeds the lifting limit of most small unmanned aircraft, not-to-mention the meager lifting limit of a low-altitude drone.

# The Solution

**Detecting, tracking, and disabling unauthorized drones requires an array of equipment to restrict unwanted drone incursions.**

With 100 years of experience serving the defense and security industries, Will-Burt was asked to provide a solution that could not only elevate the hardware, but could also withstand the maneuvers of a high-speed vehicle, be easily and quickly deployed and be reliable.

## Equipment

Our proposed solution for the Xentinel™ vehicle, was our most compact mast, the Low-Profile Pneumatic Non-Locking Mast (nicknamed the "Low-Pro"). The Low-Pro mast used in this application has a nested height of only 6.5 ft/2 m, an extendable height of 26.7 ft/8.2 m, and a payload capacity of up to 300 lb/136 kg. Beyond the specs however, the Low-Pro has several operating features that make it ideal for use in this anti-drone defense vehicle.

For starters, the unique internal collar design is the key to its low nested height whereby each collar on each tube section fits inside the succeeding tube, reducing stowed height by as much as 24 in/61 cm compared to standard non-locking masts. The top of the mast on the Xentinel™, when fully stowed, sits just above the vehicle's roof line, making it relatively hidden from view when not in use.

Because anti-drone defense operations must be able to move quickly from position to position, the Low-Pro's non-locking features means there's no need to wait for the locking mechanisms to engage/disengage, allowing the Low-Profile mast to be extended and retracted in minutes.

In addition, Will-Burt's double-key mast design minimizes mast twist as the unit extends, maintaining a constant and accurate position of the radar and camera systems and better stabilization of the payload.

# Results

**Mobilizing and elevating drone defense equipment increases airborne threat awareness, increases response time, and improves public safety.**

Malicious drone incursions not only pose a risk to government or defense facilities, they are fast becoming an unavoidable threat to nearly all locations and environments, including civilian. Combatting drones with mobile and elevated ground-defense technologies will be the key to rapid detection and disablement. With the mobility and drone defense capabilities of the Xentinel™ and the elevation of critical drone detection hardware by the Will-Burt Low-Pro mast, police forces will soon be better equipped to protect public facilities and safeguard civilian populations from unauthorized drones while also maintaining current manpower levels. Trial operations of the Xentinel™/WB Low-Pro mast are slated to begin in 2021.

If you would like to see how our mast products can help your anti-drone defense elevation needs, contact us with questions or to request a quote at: **www.willburt.com/contact-will-burt/contact**

We don't just elevate your hardware, we elevate your operations.