Taking Control of the Drone Threat

Next-Gen counter-drone solutions for sensitive environments

Enabling a Drone-Powered Society

Drones bring tangible value and benefits to millions around the world and are reshaping the way modern societies function. Unmanned aerial systems (UASs), also known as drones, are changing the way various fields and industries operate. But as drones continue to proliferate, there is a small portion of bad actors, as well as inexperienced operators, who can cause tremendous damage. By mitigating this threat, D-Fend Solutions helps support today's drone-powered society.

The Drone Threat

Drones are becoming, faster, harder to detect and more durable. Many can fly long distances and carry heavy payloads, and are quite easy to operate, which poses safety and security risks to nearly every type of environment.

Affordable, easy to obtain drones can be used to conduct reconnaissance on soldiers and law enforcement, target critical facilities, smuggle drugs into a prison or across borders, disrupt major events and pose dangers to planes that are taking off and landing.

## Traditional Systems Struggle in Sensitive Scenarios

Traditional technologies have a role to play in a layered defense strategy, but they are insufficient in sensitive scenarios. During detection, radars often have trouble as the main counter-drone component differentiating between small drones and other flying objects, and they are complicated to operate. Radars generate false alarms and the issue with many acoustic solutions is they are often ineffective in noisy environments.

Jamming-based solutions, or hybrid solutions featuring jammers for mitigation, emit large amounts of energy to block drones' controller signals. Jammer-based tools may affect other radio communications, which could pose a problem for nearby broadcasts, or security personnel. Jamming solutions do not provide full control, as drone operators can regain control of the drone once the jamming ceases. Kinetic counter-drone solutions, which involve shooting down the UAS, are risky in crowded situations, because they can cause collateral damage. And optical solutions are ineffective without clear line-of-sight.

Sensitive environments require a surgical and innovative anti-drone defense, considering severe detection difficulties from tall buildings and other objects, potential collateral damage, fears of disrupting adjacent communication signals and the need to distinguish between authorized and adversarial drones.
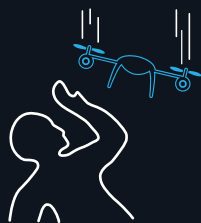
Flying Object False Positives
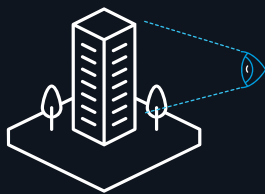
Requires Clear Line-of-Sight

Signal Disruption

Collateral Damage

EnforceAir: Proven, Tested & Selected By the Top Tier

Global Success

Hundreds of deployments of EnforceAir counter-unmanned aerial system (C-UAS) offering worldwide, including forward operating bases, highly traveled borders and ports, and major international airports.

Chosen

Selected as a best-in-class cyber, radio frequency (RF) system and acquired by top-tier federal government agencies.

Proven

Tested, selected and trusted by operational units and security agencies in sensitive environments. Deployed at high-level U.S. government agencies — including military, federal law enforcement and homeland security departments.

Selected for Large-Scale Events

Entrusted to protect large-scale events and high-level VIPs around the world, with tens of thousands of attendees at major stadiums, arenas and open-air venues.

A Solution for Every Scenario

D-Fend deals with different drone threats across different environments:

- Military
- National security
- Law enforcement
- Airports
- Borders
- Ports and harbors
- VIP executive protection
- Maritime operations
- Critical infrastructure
- Enterprise business
- Events
- Stadiums
- Media
- Prisons
- Landmarks and government buildings
- First responders
- Local government
- Safe city

D-Fend Solutions Counter-Drone Core Concepts

Control

The best way to **control** the drone threat and ensure **continuity** is to **take control of the drone**

Safety

A **safe landing** or fend off of the rogue drone is the best possible outcome for **safe airspace and continuity**

Focus

Counter-drone measures must **focus on the real risk, the most dangerous drones**, employ drone risk analysis, assessment, and prioritization

Future

The constantly changing and increasingly complex drone threat requires foreseeing the future and **always staying a drone threat ahead**

# EnforceAir Takes Control of the Drone and Takes Control of the Threat

Safe Landings for Safe Outcomes

EnforceAir, D-Fend Solutions' flagship counter-drone system, and its industry-leading radio frequency (RF)-based cyber takeover techology, delivers advanced capabilities to overcome rogue drone challenges across use cases and sectors. D-Fend's cyber takeover capabilities provide end-to-end detection and mitigation for situational awareness and operational continuity.

EnforceAir features the world's premier counter-drone, cyber, RF-based **takeover technology**. Our system, in either autonomous or manual mode, detects, locates and identifies rogue drones in the airspace, and then neutralizes the threat by taking **full control over the drone** and landing it safely in a predefined zone.

Key Benefits & Advantages

• Unique capability to mitigate risk by TAKING CONTROL of drones

• Combined RF detection and decoding technologies with no false alerts

• Land rogue drones safely in a predefined safe zone

• Employs non-jamming, non-kinetic technology that does not require line-of-sight

• Distinguishes between authorized and unauthorized drones

• Operates in noisy and sensitive environments

• Advanced, autonomous system

• Wide variety of deployment configurations for seamless operational flexibility

• End-to-end C-UAS capabilities for any scenario or environment

• Open API for integration with Command & Control systems
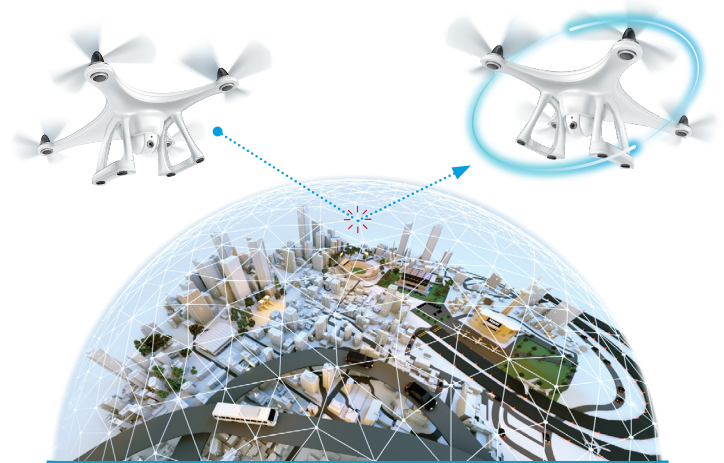
Preserve Operational Continuity

EnforceAir passively and continuously scans and detects unique communication signals used by commercial drones. Once detected, EnforceAir can distinguish between authorized and unauthorized drones. It locates and tracks the drone, pilot/remote controller and the take-off position with no need to rely on ground-station signal reception. EnforceAir provides real-time location tracking with GPS accuracy. Authorized drones can continue to function without interruption.

During the mitigation process, takeover commences and the pilot loses all control of the drone, including video and telemetry information, and cannot regain it. The system can be set to either fend-off the drone, sending it back to its takeoff position, or take control and land the drone safely in a pre-defined position. EnforceAir empowers organizations with operational flexibility for large organizations across domains, environments and scenarios.

Since the system does not rely upon jammers or kinetic technology, EnforceAir avoids collateral damage, interference, disruption or disturbance. EnforceAir transmits a precise and short signal that takes control over the rogue drone without interfering with other drones and communication signals. Continuity prevails as communications, commerce, transportation and everyday life smoothly proceeds.

EnforceAir
Capabilities & Benefits
Across the
Drone Incident Lifecycle

Detect & Alert　　　Locate & Track　　　Identify

Fend-Off

Take Control & Land

Passive　　　　　　　　　　　Active
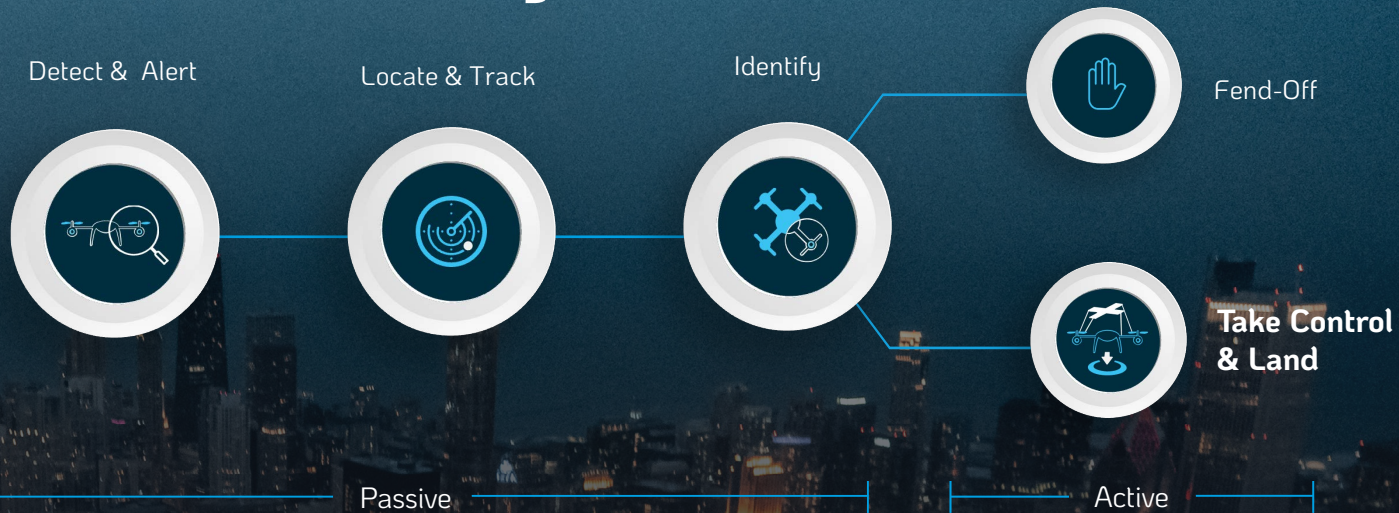
Detect & Alert

- Passive
- Combined RF Cyber detection and decoding
- No false alerts
- Long-distance
- Operates in noisy RF environments

Identify

- Obtains unique drone identifiers, including make, model and serial number
- Determines unique drone communication attributes
- Identifies modified/tampered drones
- Reads remote ID, but not dependent on it
- Distinguishes between authorized and unauthorized drones
- Passive

Locate & Track

- Real-time location tracking by extracting drone position with GPS accuracy
- Locate and track drone, pilot/remote controller and take-off position
- Not dependent on ground-station signal reception
- No need for clear line-of-sight
- Passive

Fend-Off

- Disconnects drone signal from pilot remote control
- Causes drone to fly back to takeoff position or to act according to original fail-safe configuration
- Surgical to target drone only
- Non-jamming
- Active RF Cyber

Take Control & Land

- Sends drone via safe route, safe landing to pre-defined position
- Defines exact behavior of drone upon takeover
- Prevents pilot from regaining control of drone
- Surgical takeover
- Active RF Cyber

Multiple Deployment Options for Seamless Operational Flexibility

EnforceAir provides the ultimate in operational flexibility. Its core components can be easily transferred, mounted and configured within a matter of minutes, providing the ability to move anywhere at any time.

EnforceAir Deployments
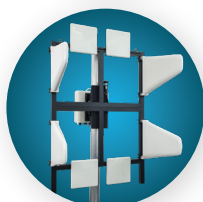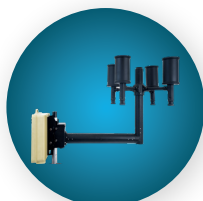
Vehicular Deployments

Military Vehicle
Provides protection on the move, with a dual-use setup kit for mobile and static deployments, enabling military personnel to rapidly move EnforceAir onto a tripod when required

Vehicle
For sensitive mobile scenarios, a discreet deployment, delivering a moving bubble of protection, without attracting undue attention. The system is easily mounted and transferred between different vehicles within minutes, and simply transitions from mobile to tactical or static deployment.

Tactical Deployments

High-Altitude Tactical
Suitable for urban and sensitive environments, covering drones coming at both high and low altitudes, with a folding antenna that is specifically designed for installation at high altitudes.

Ground-Level Tactical
Complete support for ground forces and law enforcement personnel, with an ultra-wide-band, ground-level antenna.

Stationary Deployments

High-Altitude Stationary
For stationary, 24/7 deployment settings, a dual-purpose setup kit, with an enhanced vertical aperture to detect and mitigate drones that take off from short distances, while also contending with UAVs that approach from above and below the horizon.

Long-Range Directional
Intended primarily for stationary, long-range coverage deployments protecting airports and border airspaces, this kit combines unique technology to enable not only detection, but also safe mitigation of these sensitive areas.

Complex Challenges Require a Multi-Disciplinary Approach

D-Fend Solutions' talented team is comprised of experts with extensive experience in air defense, electronic warfare and cybersecurity, including personnel from elite military intelligence technology units. We attack the most difficult counter-drone challenges with a multi-disciplinary approach that encompasses a diverse set of technologies.

Additional D-Fend Differentiators

Advanced Proprietary Protocols
EnforceAir supports the most advanced long-range drones, and commercial and proprietary radio (DIY) protocols, with unique ability to reprogram them to fly a new route and land them controllably and securely in a pre-defined safe zone. We target the real threat — the most dangerous drones.

High Performance
- Ability to handle swarming and massing
- Long-range coverage, with 360° perimeter security using omni antennas
- Advanced RF technology and compliance with radio regulations
- Support for both manual and pre-configured autopilot flight modes

Easy Deployment & Operation
- Autonomous, with multiple receivers and transmitters, and powerful real-time processing
- Configurable mitigation methods, fend-off or takeover control/land
- Stationary and/or mobile deployments operations with quick and easy setup
- Low power and small footprint
- Easy transport, simple handing, and set-up

Future-Ready — Always A Drone Threat Ahead

D-Fend Solutions is committed to foreseeing future drone threats. We relentlessly develop new capabilities to stay ahead and anticipate even the most unpredictable drone challenges, with an eye to proactively building next-generation, optimal offering for the coming dangers. Continuous software updates result in an up-to-date response to new drone models and DIY radio components.

D-Fend Solutions takes on this challenge by bringing together all the necessary competencies, employing a robust and experienced research and development group with extensive, cross-domain experience. Our experts possess advanced skillsets, knowledge of best practices and real-world trade craft for counter-drone threat reaction and response.

Control the Drone to Control the Threat

About D-Fend Solutions

D-Fend Solutions is the leading counter-drone takeover technology provider. We focus on the real threats from potentially dangerous drones, so that varied organizations around the world can maintain full control of drone incidents in complex environments and be prepared for future threats. EnforceAir, our flagship offering, automatically executes radio frequency, cyber takeovers of rogue drones for safe landings and safe outcomes. Authorized drones that enable modern society can proceed uninterrupted. D-Fend Solutions facilitates continuity by ensuring the smooth flow of communications, commerce, transportation and everyday life.

D-FEND
S O L U T I O N S

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