D-FEND
SOLUTIONS

Taking Control of the Drone Threat

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. Small, unmanned aerial systems (sUASs), 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 Solutions 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 sUAS, 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
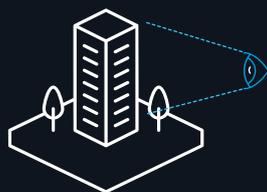
Requires Clear Line-of-Sight

Signal Disruption

Collateral Damage

EnforceAir: Proven, Tested & Selected By the Top Tier

Global Success

Hundreds of deployments of EnforceAir, D-Fend Solutions' flagship counter-unmanned aerial system (C-UAS) product, worldwide across four continents, 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 government officials 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

Control

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

Safety

A **safe landing** or fending 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,** and assess and prioritize detection and mitigation efforts on those major threats

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
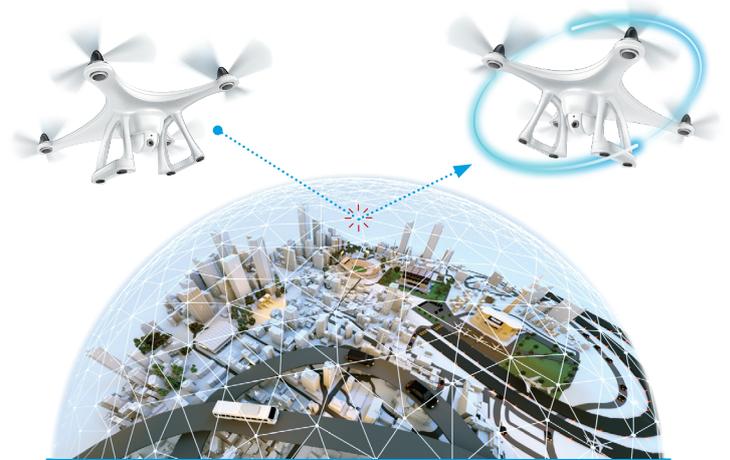
Safe Landings for Safe Outcomes

EnforceAir, D-Fend Solutions' proven C-UAS product, 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 your airspace, and then neutralizes the threat by allowing you to take **full control over the drone** and land it safely in a predefined zone.

Key Benefits & Advantages

- Unique capability to mitigate risk by TAKING CONTROL of drones
- Land rogue drones safely in a predefined safe zone
- Employs non-jamming, non-kinetic technology that does not require line-of-sight
- IFF distinguishes between authorized and unauthorized drones
- Advanced, autonomous system
- Wide variety of deployment configurations and complete operational flexibility
- End-to-end C-UAS capabilities for any scenario or environment
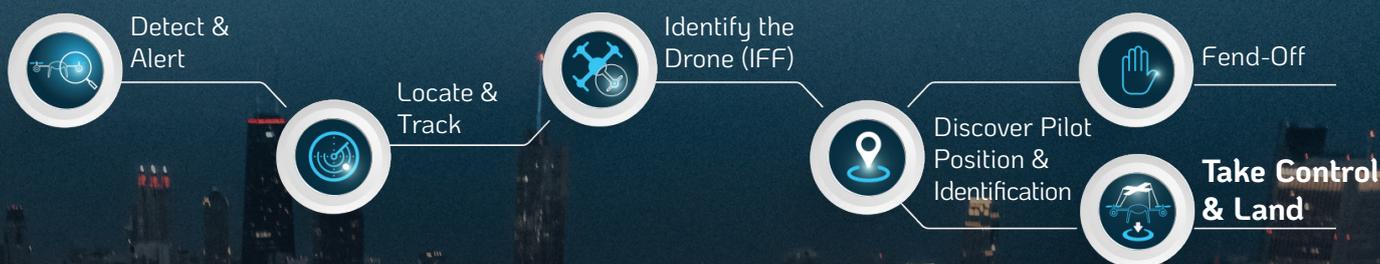- Open API for integration with Command & Control systems

Preserve Operational Continuity

EnforceAir passively and continuously scans and detects unique communication signals used by commercial drones. Once detected, EnforceAir extracts the drone identifiers for an "identification: friend or foe" (IFF) process. It decodes the telemetry signal to extract the drone position with GPS accuracy. This includes the take-off position near the pilot in real-time. Authorized drones can continue to function without interruption, while the system tracks the rogue drone remote controller position for selected drone communication protocols.

During the mitigation process, the takeover process commences and the pilot loses all control of the drone, including video and telemetry information, and cannot regain it. 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 the Drone (IFF)** → Discover Pilot Position & Identification → **Fend-Off** → **Take Control & Land**

Detect & Alert

There is an alert when a drone is detected according to its unique communication signal:

- Passive & long distance
- No need for clear line-of-sight
- Designed to operate in noisy and sensitive environments

Locate & Track

Real-time location tracking by extracting the drone's GPS position:

- Passive & accurate
- No need for clear line-of-sight

Identify the Drone (IFF)

Extraction of the drone's unique communication identifier ("tail number"):

- Passive
- Selective — distinguishes between authorized and unauthorized drones in the area (IFF)

Discover Pilot Position & Identification

Discovery of the drone's take-off position (home point) with GPS accuracy while in midair:

- Passive
- Indicates drone pilot's position and remote controller location for most advanced protocols at time of take-off

Fend-Off

Disconnecting the signal of the drone operator's remote control, causing it to fly back to its take-off position, or to act in accordance with the drone's original configuration:

- Active-RF
- No reprogramming or data intervention

Take Control & Land

Setting a new flight path for safe landing of the drone to a pre-defined position:

- Active-RF (brief time period)
- Defines exact behavior of drone when controlled by the system
- Facilitates **safe** landing path, preserving **continuity**

Multiple Deployment Options for 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
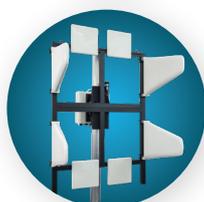
Vehicular Deployments

Military Vehicle
An optional, dual-use kit for mobile and ad hoc static deployment that can be combined with the ground-level military tactical deployment kit.

Vehicle
For sensitive mobile scenarios, the system is easily mounted and transferred between different vehicles within minutes, without drawing undue attention, or modifying the vehicle.

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, with 360-degree omni-directional coverage.

Stationary Deployments

High-Altitude Stationary
For stationary, 24/7 deployment settings. It features a high-performance, omni-directional antenna.

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
- 360° perimeter security using omni antennas
- Support for both manual and pre-configured autopilot flight modes

Easy Deployment & Operation
- Autonomous
- 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

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 solutions 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.

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For more information, please visit:
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