



Advanced Technology & Engineering Inc.

Counter – Unmanned Aerial Systems Design Concepts

01 Understanding C-UAS and Its Strategic Importance?

An Essential Layer of Modern Air Defense

Counter-Unmanned Aircraft Systems (C-UAS) are integrated defense solutions designed to detect, track, identify, and neutralize hostile or unauthorized drone threats.

The rapid increase of affordable, autonomous, and coordinated drones presents growing challenges to conventional air defense systems.

By combining advanced sensing, intelligent command and control, and effective countermeasures, C-UAS capabilities provide essential protection for **military installations, critical infrastructure, and strategic assets**, ensuring operational security, force protection, and mission continuity.



02 C-UAS Operational Principles and Core Subsystems?

From Detection to Threat Neutralization Through Integrated Technologies

C-UAS operates through a coordinated sequence of detection, tracking, identification, threat assessment, and engagement.

Radar, Radio Frequency (RF) detection, acoustic sensors and Electro-Optical/Infrared (EO/IR) sensors provide complementary surveillance, while an integrated Command and Control (C2) system enables real-time sensor fusion, threat evaluation, and coordinated responses.

Electronic Warfare (jamming, blinding, sensor disruption technologies), kinetic interceptors (anti-drones, guided rockets and missiles), special machine guns and directed-energy effectors deliver appropriate countermeasures, forming a unified, responsive, and interoperable defense architecture.

03 Our Role in the C-UAS Ecosystem?

Core Technology Developer, EO/IR Specialist & Integrated Defense Solution Provider

We position ourselves as a ***core technology developer and system integrator*** within the C-UAS ecosystem, with comprehensive in-house capabilities across the entire Electro-Optical and Infrared (EO/IR) domain.

Our expertise encompasses the design and development of laser designators, laser illuminators, advanced imaging and camera systems, coded-signal detection and decoding technologies, and laser warning systems.

Beyond EO/IR, we develop dedicated hardware and software solutions for Command and Control (C2), as well as advanced Electro-Optical Electronic Warfare (EO-EW) capabilities, including optical jamming and sensor blinding disruption technologies.

To complement our proprietary technologies, we maintain strategic partnerships with specialized suppliers of RF radar systems, pan-tilt positioning mechanisms, and other mission-critical subsystems.

By combining our in-house technological expertise with a network of trusted industry partners, we deliver modular, scalable, and fully integrated C-UAS defense solutions tailored to diverse operational requirements.

C-UAS DEFENSE SYSTEM CONCEPTS

Basic Concepts for Counter-UAS Defense Systems

CONCEPT 01 — EO-SHIELD

ELECTRO-OPTICAL COUNTER-DRONE DEFENSE SYSTEM

COMPACT. PASSIVE. PRECISION-ORIENTED.

A compact electro-optical C-UAS defense system designed to detect, identify, track, and mitigate drone threats around sensitive sites and critical infrastructure.

KEY FEATURES



EO/IR Detection

High-resolution visual and thermal surveillance



Laser Warning

Detection of hostile laser illumination and threats



Integrated C2

Real-time sensor fusion and threat evaluation



EO-EW Response

Authorized optical countermeasures for precision mitigation

HOW IT WORKS

1



DETECT

EO/IR / Laser Warning

2



TRACK

Target lock and stabilization

3



ASSESS

C2 threat evaluation

4



MITIGATE

Optical / EO countermeasure response

SYSTEM CONFIGURATION



EO/IR TURRET
Detection & Tracking



LASER WARNING SENSOR
Threat Detection



TRACKING HEAD
Precision Tracking



INTEGRATED C2
Sensor Fusion & Control



EO-EW MODULE
Optical Countermeasures

PRIMARY APPLICATIONS



Critical Infrastructure



Sensitive Facilities



Localized Point Defense



Industrial Sites



C-UAS DEFENSE SYSTEM

GUARDIAN

MOBILE. INTEGRATED. RAPIDLY DEPLOYABLE.

A mobile, multi-sensor C-UAS defense system designed to detect, track, identify, and neutralize drone threats in dynamic environments.

KEY FEATURES



Multi-Sensor Integration

Radar, RF and EO/IR for comprehensive situational awareness



Rapid Deployment

Vehicle-mounted and operational in a short time



Integrated C2

Real-time sensor fusion, threat evaluation and coordinated response



Layered Countermeasures

Electronic and electro-optical effectors

HOW IT WORKS



SYSTEM CONFIGURATION



RADAR

Detection & Tracking



RF SENSOR

Detection & Direction Finding



EO/IR SYSTEM

Identification & Tracking



C2 SYSTEM

Sensor Fusion & Engagement Management



COUNTERMEASURES

RF Jamming / EO Jamming & Dazzling

PRIMARY APPLICATIONS



Tactical Deployments



Temporary Military Installations



Mobile Asset Protection



Border Security

▶ CONCEPT 03

AEGIS INTEGRATED

MULTI-LAYERED STRATEGIC C-UAS DEFENSE SYSTEM

A multi-layered strategic C-UAS defense system designed to protect wide operational areas through integrated sensing, centralized command and control, and coordinated layered response.

KEY CAPABILITIES



Distributed Surveillance

Radar, RF and EO/IR nodes for wide-area situational awareness



Centralized C2

Unified threat picture, prioritization and engagement coordination



Layered Response

Electronic, electro-optical and optional third-party effectors



Scalable Architecture

Modular deployment across multiple protection zones

HOW IT WORKS

1

DETECT

Radar / RF / EO-IR

2

FUSE

Multi-sensor data fusion

3

PRIORITIZE

Threat evaluation

4

COORDINATE

Layered response management

5

RESPOND

Electronic / EO / integrated effectors

SYSTEM CONFIGURATION



RADAR NODE

Detection & Tracking



RF NODE

Detection & Direction Finding



EO/IR STATION

Identification & Tracking



CENTRAL C2

Fusion & Engagement Management



COUNTERMEASURES

EW / EO-EW / Integrated Response

PRIMARY APPLICATIONS



Military Bases



Airports



Strategic Infrastructure



Industrial Complexes



Large-Area Defense



Advanced Technology & Engineering Inc.

**We Provide Subsystem Designs and Supply Solutions
to Prime Contractors for C-UAS Defense Systems.**

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Thanks