



شركة إتقان للخدمات البيئية
Etqan Company for Environmental Services

LABTRONIC

SMART SURVEILLANCE OF MOSQUITOES & DISEASE VECTORS

LEC TRAP

Intelligent Mosquito Surveillance for
Smart Cities



- ▶ Automated 24/7 mosquito monitoring & capture
- ▶ On-device AI species identification & counting
- ▶ Cloud-connected data for public-health teams

A COMPLETE SURVEILLANCE STATION IN A SINGLE ENCLOSURE

The LEC Trap combines proven mosquito-attraction physics with modern edge-AI and IoT connectivity. Deployed unattended in the field, it lures, captures, identifies and counts target vector species — then streams that intelligence to the platforms public-health teams rely on for decision-making.



24/7

Continuous autonomous operation, day and night, in all weather.

AI

On-board vision model classifies species and sex, then counts automatically.

IoT

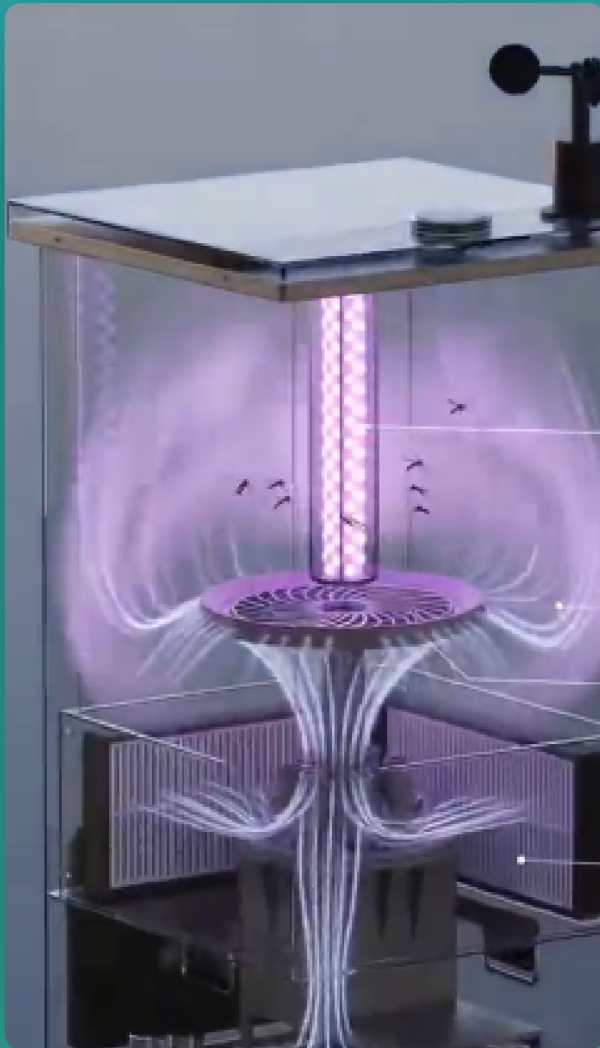
GPS-tagged data pushed to the cloud for live mapping and alerts.

WHY IT MATTERS FOR VECTOR CONTROL

- ◆ Replaces labour-intensive manual trapping and lab counting with automated, repeatable data.
- ◆ Early detection of vector abundance supports timely, targeted intervention.
- ◆ Standardised, geo-referenced records improve surveillance quality and reporting.
- ◆ Network of stations builds a real-time risk map across a city or region.

ATTRACT • CAPTURE • IDENTIFY • REPORT

A tuned multi-spectrum light source and airflow field lure host-seeking mosquitoes toward the intake, where a high-efficiency fan draws them into the identification and collection chamber.



1

ATTRACT

Multi-spectrum UV-LED array emits wavelengths tuned to host-seeking mosquitoes, drawing them toward the station.

2

CAPTURE

A high-efficiency suction fan generates a downward airflow vortex that pulls approaching mosquitoes into the intake.

3

IDENTIFY

Specimens pass a high-resolution camera; the on-board AI classifies species and sex, then increments live counts.

4

COLLECT & REPORT

Mosquitoes settle into the drawer-style collection box while geo-tagged data streams to the cloud platform.

AIRFLOW PATH

Diffuser guides air and specimens through the filtration zone.

WEATHER SENSING

Integrated anemometer contextualises captures with wind data.

PRESERVATION

Removable drawer keeps specimens intact for optional lab verification.

ENGINEERED FOR THE FIELD

01

MULTI-SPECTRUM UV-LED LURE

Tunable light array optimised for target vector species, with long service life and low power draw.

02

HIGH-EFFICIENCY SUCTION

Aerodynamic fan and diffuser create a reliable capture vortex without harming specimen integrity.

03

ON-BOARD AI VISION

Edge camera and classification model identify species and sex, then count captures automatically.

04

DRAWER-STYLE COLLECTION

Slide-out box preserves specimens for optional laboratory verification and audit.

05

INTEGRATED WEATHER SENSING

Onboard anemometer and environmental sensors correlate captures with local conditions.

06

WEATHERPROOF HOUSING

Rugged, corrosion-resistant enclosure engineered for continuous outdoor deployment.



AT THE CORE

Every subsystem — light, airflow, vision and connectivity — works together so a single unattended station delivers laboratory-grade surveillance data.

SPECIES-LEVEL INTELLIGENCE, AUTOMATICALLY



Onboard camera classifying captured specimens

As each mosquito is captured it passes a high-resolution camera. An embedded neural network identifies the species and sex in real time, then updates per-species counts — no manual sorting or lab microscopy required.

Aedes

incl. *Ae. aegypti* — dengue, Zika

Culex

incl. *Cx. quinquefasciatus* — WNV

Anopheles

malaria vectors



sex determination

SAMPLE CAPTURE LOG

ILLUSTRATIVE

SPECIES	SEX	COUNT	CONFIDENCE
<i>Aedes aegypti</i>	♀	14	98.2%
<i>Culex quinquefasciatus</i>	♀	9	96.7%
<i>Culex sp.</i>	♂	6	94.1%

On-board library covers 20+ vector species at ≥ 95% classification accuracy. Capture-log figures above are illustrative.

FROM THE FIELD TO YOUR DASHBOARD

Every station is GPS-tagged and cloud-connected. Capture data, species counts and device health stream to a central platform, so teams manage an entire network remotely.



GPS GEO-TAGGING

Each capture and station is precisely located for accurate risk mapping.

WIRELESS DATA UPLINK

Cellular / Wi-Fi connectivity pushes data to the cloud at configurable intervals.

REMOTE HEALTH & ALERTS

Monitor status, receive threshold alerts and schedule maintenance from anywhere.

THE MANAGEMENT PLATFORM



Live risk map

Network-wide abundance at a glance.



Trend analytics

Species trends over time.



Threshold alerts

Automatic outbreak warnings.



Data export

Open formats & API access.

SPECIFICATIONS

Typical values; final figures may vary by configuration and market.

PHYSICAL

Dimensions (H×W×D)	1150 × 420 × 420 mm
Weight	≈ 28 kg
Housing material	Powder-coated aluminium alloy
Ingress protection (IP)	IP65
Mounting	Ground pedestal / pole

POWER

Input voltage	AC 100–240 V, 50/60 Hz
Power consumption	≤ 45 W (typical)
Solar / battery option	Optional (solar + backup)

ATTRACTION & CAPTURE

UV-LED wavelength	365 nm UV-A, multi-spectrum
Lamp service life	≥ 20,000 h
Optional CO ₂ module	Available (slow-release)
Collection capacity	≥ 800 specimens / cycle

SENSING & AI

Camera resolution	5 MP (2592 × 1944)
AI species library	20+ vector species
Classification accuracy	≥ 95%
Environmental sensors	Wind, temp., humidity

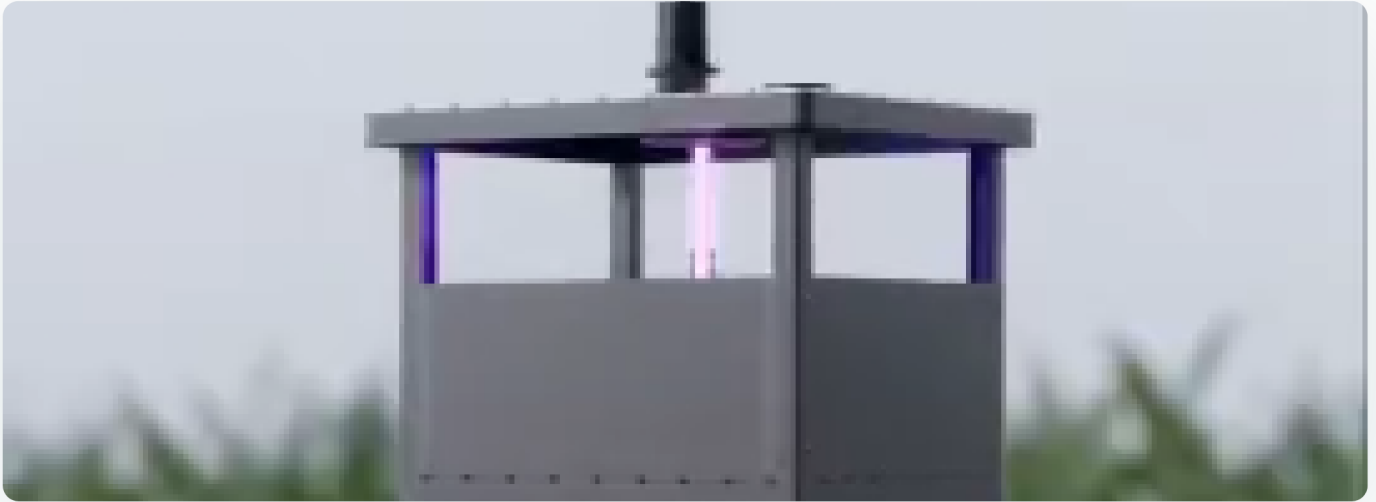
CONNECTIVITY

Cellular	4G LTE (Cat-1)
Wi-Fi	2.4 GHz 802.11 b/g/n
Positioning	GPS
Data reporting interval	Configurable, 10 min – 24 h
Cloud platform / API	Web dashboard + REST API

ENVIRONMENTAL

Operating temperature	–10 °C to +55 °C
Operating humidity	10–95% RH, non-condensing
Warranty	24 months

BUILT FOR REAL-WORLD DEPLOYMENT



URBAN VECTOR CONTROL

Continuous monitoring across neighbourhoods, parks and public spaces.



AGRICULTURE & RURAL ZONES

Protecting farms, plantations and rural communities.



RESIDENTIAL COMMUNITIES

Compounds, resorts and campuses seeking quiet, chemical-free monitoring.



WETLANDS & STANDING WATER

Surveillance of high-breeding habitats and drainage zones.



PORTS & BORDER HEALTH

Early warning at points of entry against invasive vectors.



DISEASE SURVEILLANCE PROGRAMS

Dengue, malaria and West Nile monitoring for public-health agencies.



— GET IN TOUCH

LET'S DEPLOY SMARTER SURVEILLANCE

Talk to our team about pilots, network deployments and configuration for your vector-control program.

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