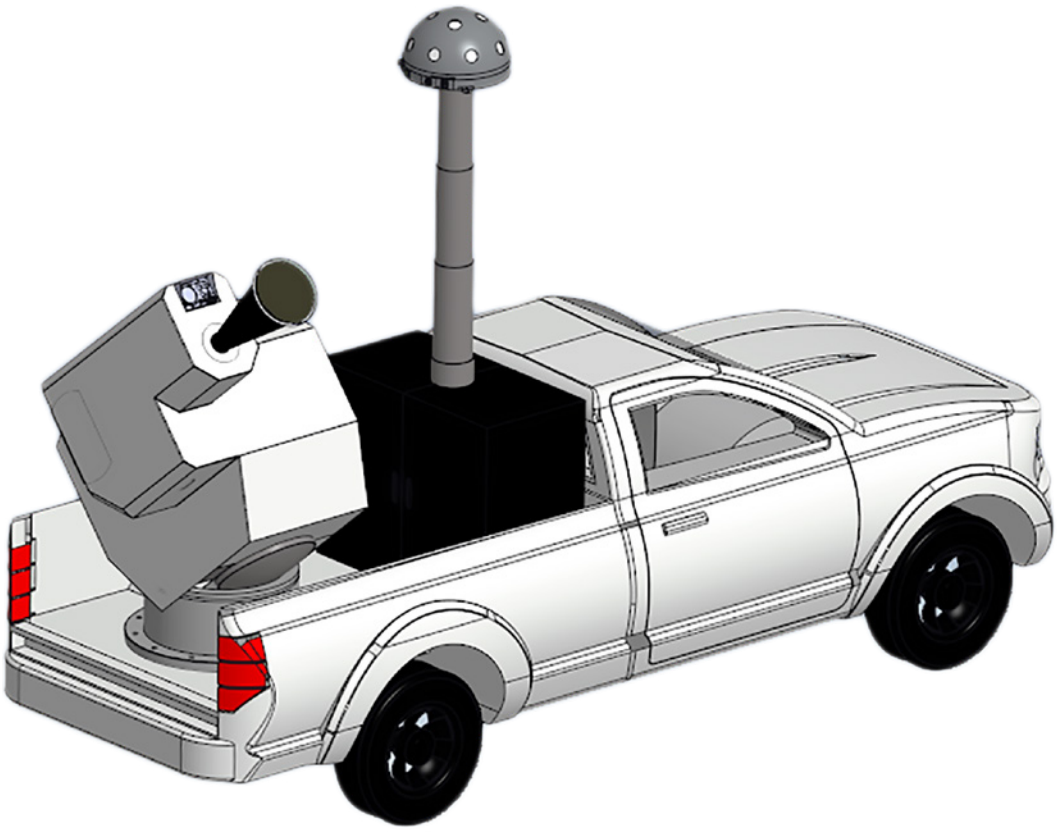
ITHPP

ALCEN

Neutralization of autonomous drones

# Multi-role, anti-UAV mobile defense system



**Compatible with current and future threats**

- Piloted or autonomous drones of all sizes
- Single or swarming drones

**Mobile**

- Installation on a 4×4 type carrier
- System can be used with batteries and a generator for greater autonomy

**Quick and easy use by 2 operators**

- 1st operator in charge of detecting and selecting threats to handle
- 2nd operator in charge of identification, decision to neutralize and neutralization

**Safe**

- Operator safety taken into account

from **spark** to **lightning**

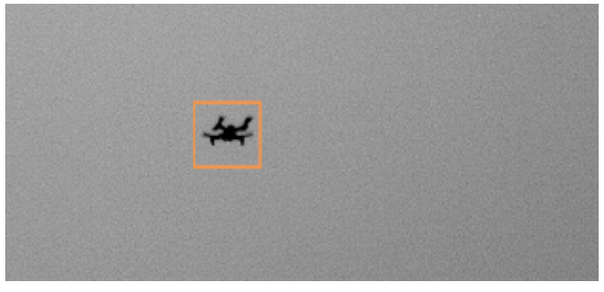
## DETECT AND LOCATE DRONES

Optronics system – LHERITIER


**Detect drones in real time**
- 360° horizontal detection field
- 90° vertical detection field
- Operational range of about 1,000 m for a 30 × 30 cm drone
- Multi-threat automatic detection and tracking
- Assessment of distance (less than 450 m and then less than 130 m)

**Locate and designate the target**
- Send location data to the processing unit

**An innovative sensor**
- Composed of 12 very high resolution cameras
- Half-space coverage



Drone detection at 1,000 m

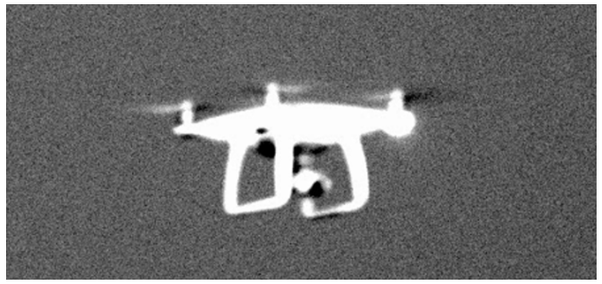
## IDENTIFY AND CLASSIFY DRONES in real time, day and night

Optronics system – LHERITIER


**Identify drones in real time**
- Operational range of about 800 m for a 30 × 30 cm drone

**Classify drones**
- Inform user of the type of threat

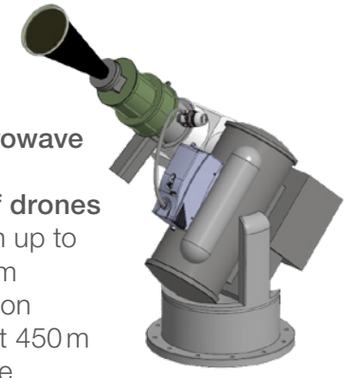
**Innovative optronics device**
- CAT-EYE camera for a field of identification of 2.3° (horizontal) × 1.3° (vertical)
- Active imaging to identify targets in degraded visual conditions
- 16.5° (horizontal) × 9.3° (vertical) wide field camera for viewing effects of neutralization



Drone identification at 800 m

## NEUTRALIZE DRONES

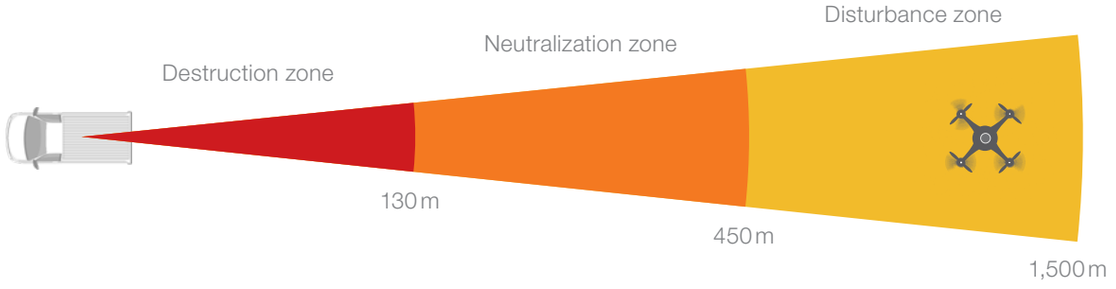
High power microwave system – ITHPP



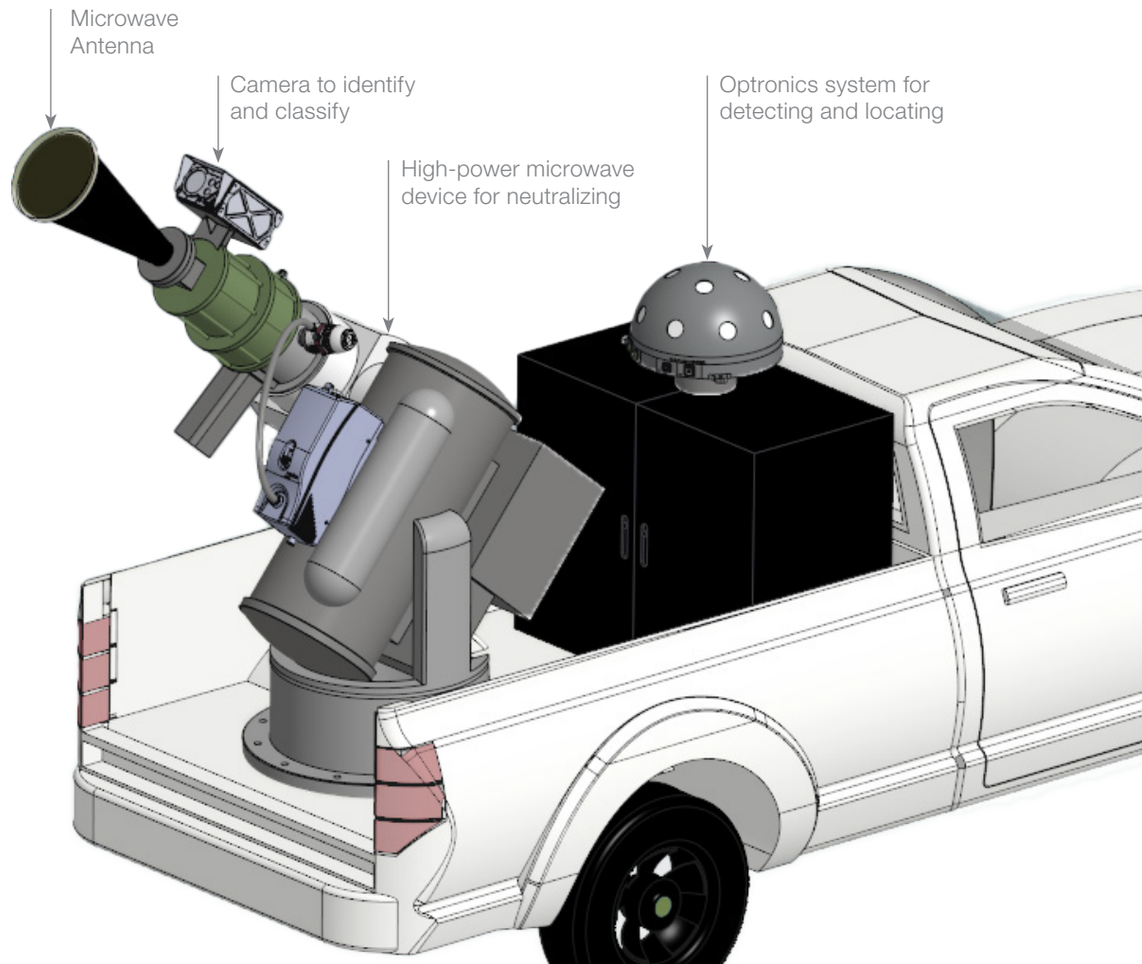
**X-band microwave radiation**
- Marx generator (in collaboration with the CEA)
- BWO oscillator (Backwards Wave Oscillator)
- Horn antenna

**Fires on user command**
- Detection mode
- Tracking & firing mode

**Effect of microwave radiation on electronics of drones**
- Destruction up to about 130 m
- Neutralization
- up to about 450 m
- Disturbance up to 1,500 m




## DIAGRAM OF DEVICE WITHOUT FAIRING



## Technical Data — Optronics System

### Detection and Localization

| | |
|---|---|
| Field of View | 360° × 90° |
| Resolution | < 0,5 mrd |
| Sensitivity | Day to night 1 |
| Latency | < 100 ms |
| Accuracy of Localization | < 2 mrd |
| Dimensions | Diameter : 500 mm<br>Height : 500 mm |
| Mass | < 15 kg |
| Energy Consumption | < 150 W |

### Identification and Classification

| | |
|---|---|
| **Narrow Field of View** | |
| Field | 2,3° × 1,3° |
| Resolution | < 20 µrd |
| Sensitivity – Passive Mode | Day to night 2 |
| Sensitivity – Active Mode | Night 3 to night 5 |
| Latency | < 40 ms |
| **Wide Field of View** | |
| Field | 16,5° × 9,3° |
| Resolution | < 0,15 mrd |
| Sensitivity | Day to night 2 |
| Latency | < 40 ms |

## Technical Data — Neutralization

### Marx Generator (in collaboration with the CEA)

| | |
|---|---|
| Amplitude | 400 kV |
| Pulse Length | 80 ns |
| Rise Time | 5 ns |
| Repetition | 100 pps |

### BWO (Backward Wave Oscillator) Microwave Source

| | |
|---|---|
| Frequency | 7,9 GHz |
| Power | 100 MW |

### Antenna

| | |
|---|---|
| Type | Cornet |
| Gain | 28 dBi |

With more than 20 years of expertise, ITHPP has become the French leader in high-power pulsed and high-power microwave technologies. On the basis of customer specifications, ITHPP designs and manufactures highly innovative systems adapted to scientific research and also to civilian and military applications.

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