

ROGUE DRONE NEUTRALIZATION BY SMART JAMMING*

To counter the new drone security threats, MEDUSA is a smart countermeasure opposing a proportionate response to a drone attack, whether it is an isolated UAV or a swarm, and works best in conjunction with HYDRA detection input that allows MEDUSA to reduce its collateral interferences.

**The purchase and utilization of such technologies is strongly regulated and requires export license on CERBAIR's side. Please liaise with your local regulator to make sure you are entitled to import and use this equipment.*



Drones: a growing concern

Because drones can guarantee the **anonymity and impunity** of their pilots, they have become the perfect tool for malevolent actors. **Small, nimble, inconspicuous, affordable, easy-to-use** and able to transport diverse payloads with increasing levels of autonomy, drones today bypass all traditional security measures and put all critical sites at risk. Risk of attack or collision, vector of espionage or contraband: malevolent drone intrusion scenarios are numerous.

Our mission

Since 2015, CERBAIR has **secured its clients' near airspace** with high-tech solutions. To cope with the **asymmetrical threat** posed by drones, CERBAIR aims at **democratizing high performing solutions** to protect the many with its unique approach:

- Highest Cost-Efficiency on the market
- Mobility and Simplicity of use
- Modularity and Upgradability

MEDUSA

Ultimate rampart against drone attacks, MEDUSA is a range of drone neutralization solutions based on **electromagnetic (EM) jamming**. Similar to the mythological gorgon Medusa, who turned those who beheld her to stone, MEDUSA produces an EM emission that **instantly pins down surrounding drones**, effectively countering them just like its old apotropaic symbol was supposed to ward off Evil.



Key takeaways

- Instantaneous, gradual and proportionate neutralization depending on the level of threat: isolated drone VS swarm
- Long range: 1,6/1 or 2/1 ratios
- Broad coverage: 2,4/5,8 GHz/433/900 MHz/L
- Smart mode: RF range targeting to reduce EM interferences and automatic trigger via integration with HYDRA
- Ease of installation: 10 min / 2 PAX
- Modular, evolutive and highly configurable

Why neutralize?

During a drone intrusion, a security operator can either use **indirect measures** such as arresting the pilot, or **neutralize the rogue drone**.

When the attack scenario is very serious and lives are at risk, the security operators' chain of command needs to **react ASAP** in order to neutralize the rogue drone in time. In such cases, the **countermeasure's efficiency and low collateral damage** are paramount for the success of the mission.

Several types of drone countermeasures exist: kinetic, electromagnetic or directed energy weapons.

Although all categories and sub-technologies present their own pros and cons, **smart jamming*** is the most efficient and balanced drone countermeasure to be deployed in a complex urban environment in which limiting the entailed collateral damage is very important. Thus, smart jamming constitutes an efficient **last rampart** against drone attacks.

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MEDUSA solutions composition

Hardware

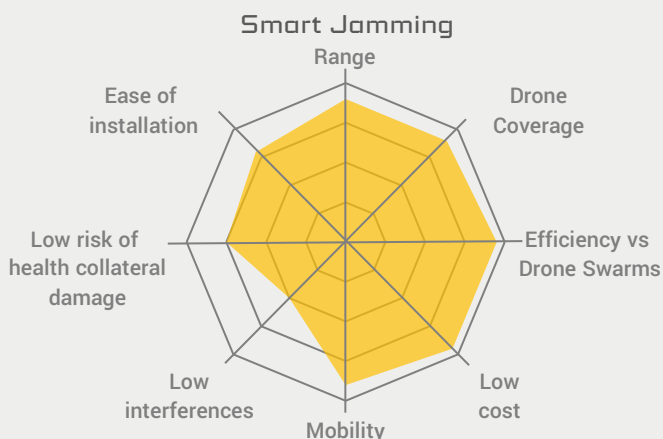
- Case holding signal-generating electronic boards and power amplifiers
- Antennas, cables and mounting.

Software

- Remote control via integration with HYDRA:
 - Settings and effector status.
 - Access to smart mode / automatic trigger.
 - Alarm and automatic deactivation after long uninterrupted use for safety.

Service

- Site reconnaissance.
- System calibration and training.
- Hardware warranty and software maintenance.



SOLUTIONS CHARACTERISTICS	MEDUSA 100+	MEDUSA 200+
		
AVERAGE RANGE	500 m*	1 km**
FREQUENCIES/ POWER/ RATIOS	433,05 – 434,79 MHz / 15W / >1/1 863 – 870 MHz / 15W / >1/1 902-928 MHz / 15W / >1/1 1171 – 1381 MHz / 15W / >1km 1570 – 1620 MHz / 15W / >1km 2400 – 2483,5 MHz / 15W / >1.6/1 5725 – 5875 MHz / 15W / >1.6/1	433,05 – 434,79 MHz / 50W / >2/1 863 – 870 MHz / 50W / >2/1 902-928 MHz / 50W / >2/1 1171 – 1381 MHz / 50W / >2km 1570 – 1620 MHz / 50W / >2km 2400 – 2483,5 MHz / 50W / >3/1 5725 – 5875 MHz / 50W / >3/1
POWER ADJUSTMENT RANGE	100mW to 15W adjustable in real time	100mW à 50W adjustable in real time
DIRECTIONALITY	Omnidirectional or directional (upon request)	Omnidirectional or directional (upon request)
RECO. DISTANCE BETWEEN 2 SYSTEMS	500 m	1 km
INCLUDED EQUIPMENT	Case, antennas, cables and mountings	Case, antennas, cables and mountings
OPERATION TEMPERATURE	-20°C to +55°C	-20°C to +55°C
DIMENSIONS	55 x 34 x 22 cm	63 x 50 x 30 cm
WEIGHT	20 kg	25 kg
CONNECTIVITY C2	Ethernet 1000 Base T (Gigabit)	Ethernet 1000 Base T (Gigabit)
POWER SOURCE	230 VAC	230 VAC
	* With a pilot located at 1 km	* With a pilot located at 2 km

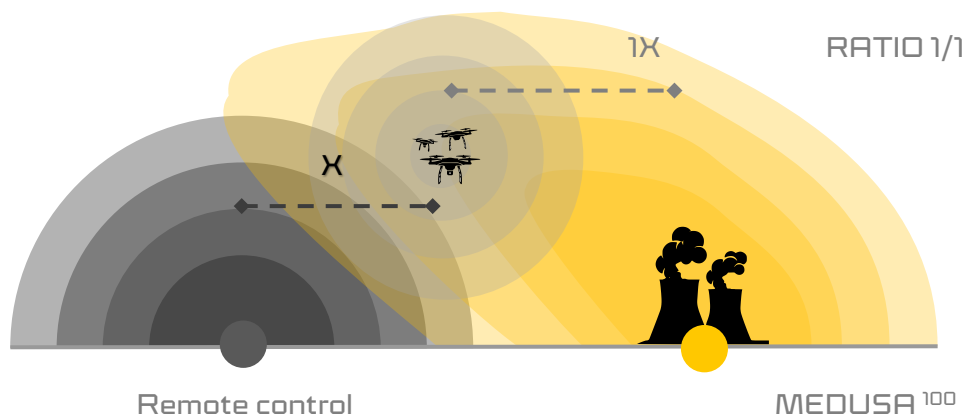
How jamming affects drones

- Jamming **interferes with the communications** that drones rely on, namely the uplink, downlink and GNSS reception.
- Once one or several of these channels is jammed, the drone automatically triggers its **emergency procedure** that its pilot chose before take-off:
 - Safe landing.
 - Return to Home.
 - Hover until battery is depleted, then safe landing.
- If GNSS reception is also saturated, the drone will not be able to Return To Home and will therefore trigger its safe landing by default.



Range

Several factors can impact neutralization ranges such as the distance ratio [MEDUSA – Drone] / [Drone – Remote Control], the drone model, local RF pollution, topography, surrounding constructions or weather conditions.



Mobility kit

To temporarily protect a sensitive site or event. Includes a wheeled transport case, a tripod and antenna mounting.



Spectrum extension

To increase the neutralization coverage by adding low frequency ranges on which several rarer drones can operate.

Client references



French Ministry of Defense

CERBAIR is proud to equip several units of the French Army with its anti drone solutions.

G7 in Biarritz

CERBAIR was honored to take part in securing the 2019 G7 summit from drone threats.



Colombian Air Force

CERBAIR actively protects some bases of the Colombian Air Force from potential drone attacks.



“ CERBAIR proved to be a company that perfectly understood the drone threats and the means to protect from them. [...] Their deep knowledge of anti drone technologies involved in detection, identification and neutralization [...] their toolbox approach [...] are key assets to secure your near airspace from malicious drones with the highest level of professionalism.

Stéphane Durand, CEO



CERBAIR's radiofrequency based technology detects the vast majority of civilian drones in the air today. It is easy to install, integrates seamlessly into existing security systems and is controlled by a user-friendly interface that allows its operations to be up and running quickly, saving time and money.

Jean-Michel Aulas, Chairman ”



SCAN ME

Partner of **MBDA**
MISSILE SYSTEMS

CERBAIR is supported by several prestigious investors including MBDA (European leader in missile and missile guidance system), ensuring the sustainability of the company. Together, we work hard on designing complete anti drone solutions for armies.