

Photo: Patriot launch, Balikatan 2023 · U.S. Marine Corps, Cpl. Tyler Andrews · Public domain · Wikimedia Commons

OSINT · SITUATION ASSESSMENT

THE PRICE OF A KILL

The arithmetic of drone defence has become a strategic problem. Attackers launch drones costing tens of thousands of dollars; defenders have often answered with missiles costing millions. Interceptor drones, guns and lasers are closing the gap. This report argues that the overlooked lever in that equation is not the weapon but the sensor that cues it.

REPORT DETAILS

PUBLISHED	SUBJECT	SOURCE BASE
September 2026	What it costs to defeat a drone, and what drives the cost	CSIS analysis, U.S. Army solicitations and press, Ukrainian and Israeli official statements, defence press
METHOD	**VERDICT**	**CONFIDENCE**
Compare reported unit costs; separate weapon cost from sensing and cueing	Detection and cueing decide whether the cheap end of the ladder can be used	Moderate
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BOTTOM LINE

The high cost of shooting down cheap drones is real, and better sensing is the main way to bring it down. Shahed-type drones cost an estimated $35,000–50,000; U.S. and allied forces have used interceptors costing $1–4 million to stop them. Cheaper answers exist: Ukraine's Sting interceptor drones at about $2,100, gun crews on pickup trucks, and Israel's newly operational laser with a near-zero cost per shot. Every cheap option has a short range, though, so it works only if a sensor network can say, precisely and in time, where the drone will be. Ukraine's acoustic network did that for under $5 million in total. Spending on cheap, dense sensing is what lets a defender use the cheap end of the weapon ladder.

$1–4M

INTERCEPTORS USED AGAINST SHAHED-TYPE DRONES

◆ PER STARS AND STRIPES

$35–50k

A SHAHED / GERAN-2

◆ AS REPORTED

≈ $6,300

PER KILL WITH STING INTERCEPTOR DRONES

◆ THREE $2,100 STINGS PER TARGET

< $5M

UKRAINE'S WHOLE ACOUSTIC SENSOR NETWORK

◆ ABOUT 9,500 NODES

KEY QUESTIONS

How much does it cost to shoot down a drone?

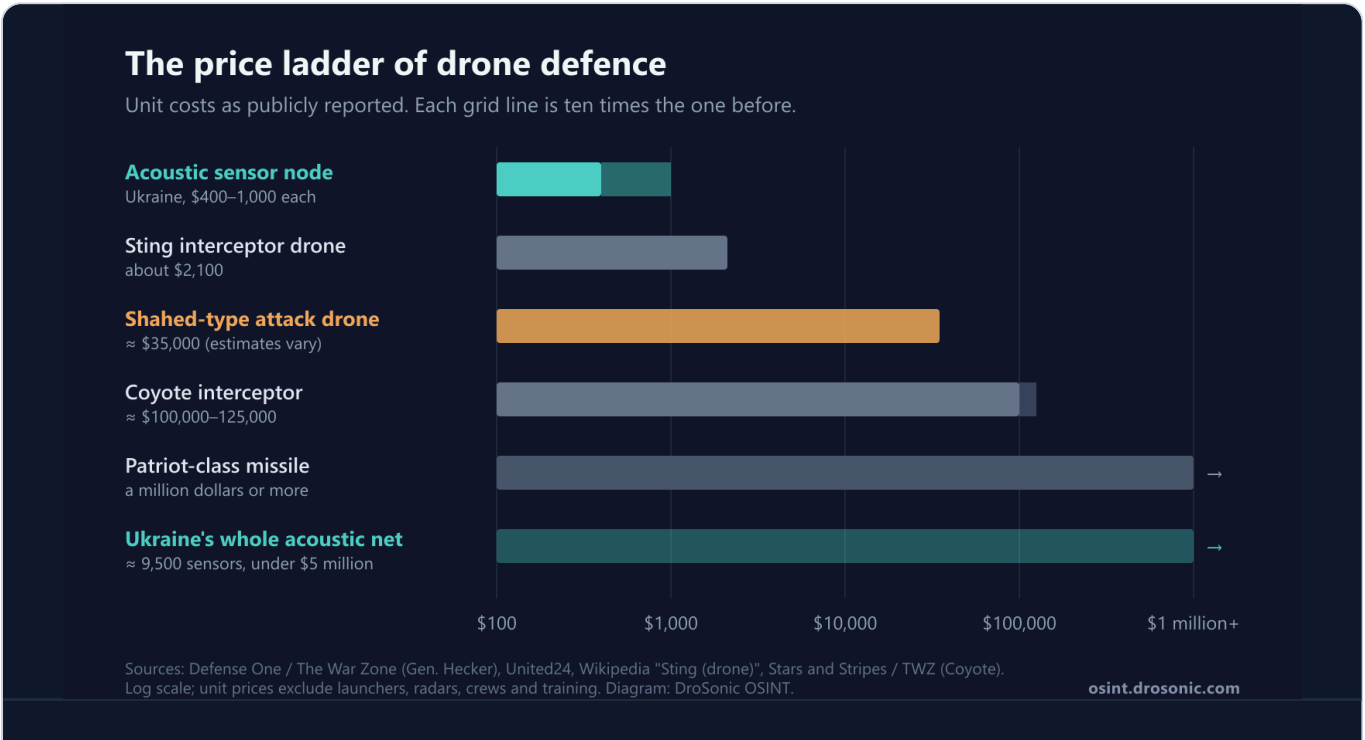
It ranges from a few thousand dollars to millions. Ukraine's Sting interceptor drones cost about $2,100 each (around $6,300 per kill if three are needed), the U.S. Army's Coyote $100,000–150,000, and missiles used against Shahed-type drones $1–4 million.

Why is cheap drone defence hard?

Cheap weapons such as guns and interceptor drones have short range, so they must be told exactly where and when to engage. Without dense, cheap sensors to cue them, defenders fall back on expensive long-range missiles.

THE RULER — THE WHOLE ARGUMENT

The price ladder



THE PRICE LADDER — WHERE THE DRONE SITS, AND WHAT ANSWERS IT

Unit costs as publicly reported, on a log scale. The whole acoustic network that cued Ukraine's gun crews cost about as much as one or two top-tier interceptors.

DIAGRAM: DROSONIC OSINT · ORIGINAL · VALUES FROM THE SOURCES CITED BELOW

FIELD 01 — THE ASYMMETRY

Missiles against mopeds

The headline comparison is stark. Iranian Shahed-136 drones and Russia's Geran-2 copies cost an estimated $35,000–50,000 each, and during Iranian attacks U.S. and allied forces used interceptors costing $1–4 million apiece to shoot them down.[Stars and Stripes↗] In 2024 Gen. James Hecker, commanding U.S. Air Forces in Europe, put it bluntly: shooting a roughly $30,000 drone with a million-dollar missile is "not the right side of the cost curve."[The War Zone↗]

Analysts at CSIS warn against taking the ratio too literally. Comparing a $2 million missile with a $2,000 drone "can be misleading", argues CSIS's Wes Rumbaugh, because what matters is the value of what the interceptor protects. A cheaper close-in gun once let a missile get within a mile of a warship worth about $2 billion, and "the cost of using these cheaper interceptors, however, was operational risk."[CSIS↗] Both points hold. Expensive interceptors are sometimes worth it, and no defender can afford to make them the default against mass drone attacks.

Attackers exploit the gap on purpose. A 2024 study by the Center for Security Studies at ETH Zurich notes that although Ukrainian air defences intercept more than 80% of Shaheds, defending against them costs Ukraine "incomparably" more than the drones cost Russia, and that Russia sends barrages of cheap loitering munitions, some of them decoys without explosives, to drain Ukraine's stock of expensive air-defence missiles. Its conclusion: "The most serious obstacle regarding drone interception is financial rather than technical."[CSS, ETH Zurich↗] The same arithmetic applies at sea (see also Sea Drones Have a Voice Too). Against Houthi drones estimated at a few thousand dollars each, the U.S. Navy was firing Standard Missile-2s costing up to about $2.1 million a shot.[Politico↗]



VIDEO: PLAY IT IN THE ONLINE REPORT

PATRIOT LIVE FIRE — THE TOP OF THE LADDER

German Air Force Patriot missiles fired during Exercise Artemis Strike at the NATO missile range in Crete. Each shot from the top of the ladder costs more than many drones it could be used against.

VIDEO: U.S. ARMY, ANTHONY SWEENEY · PUBLIC DOMAIN · WIKIMEDIA COMMONS

FIELD 02 — THE CHEAP END

Drones, guns and light

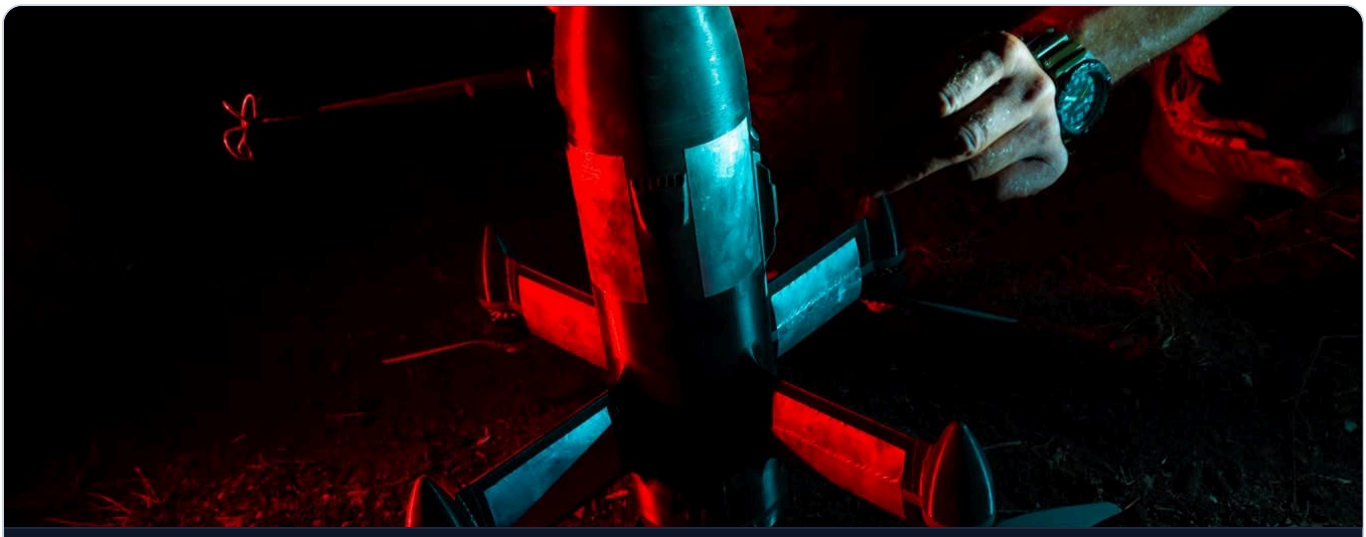
Four families of cheaper effectors have moved from concept to service:

— **Interceptor drones.** Ukraine's Wild Hornets Sting is a 3D-printed quadcopter costing about $2,100 that flies at up to 343 km/h to destroy Shaheds. Wikipedia↗ The maker claims success rates of up to 90%, often using three interceptors per target, about $6,300 per kill before training and detection costs. Espreso↗

— **Small missiles.** The U.S. Army's Coyote interceptor costs $100,000–150,000 per round, and in 2026 the Army sought a next-generation counter-drone missile under $150,000. Stars and Stripes↗

— **Lasers.** Israel took delivery of Iron Beam, its first operational high-power laser air-defence system, in December 2025. Its marginal cost per interception is described as "nearly zero". Algemeiner↗

— **Guns.** Ukraine's mobile fire groups, machine guns and autocannon on pickup trucks, shoot down drones with ammunition costing a tiny fraction of a missile, after as little as six hours' training. The War Zone↗



STING INTERCEPTOR — ABOUT $2,100 A SHOT

A soldier of Ukraine's 118th Mechanised Brigade with a Sting. It still has to be guided onto a target someone has found.

PHOTO: UKRAINIAN GROUND FORCES · CC BY 4.0 · WIKIMEDIA COMMONS



IRON BEAM — NEAR-ZERO COST PER SHOT

Israel's laser air-defence system, operational from December 2025. Like every cheap effector, it must be pointed at a target that something else has found.

PHOTO: ISRAEL MINISTRY OF DEFENSE · CC BY-SA 4.0 · WIKIMEDIA COMMONS

FIELD 03 — THE CATCH

Cheap weapons need precise cues

Every item at the cheap end shares one weakness: **short reach**. A machine gun is effective over a few hundred metres to a kilometre or two, an interceptor drone needs to be launched towards a target within minutes, and a laser must be pointed at a drone in line of sight. None of them can search the sky for itself, so each depends on another sensor to point it at the target, much as a microphone array points a camera in The Ear Points the Eye.

That makes cueing the hidden cost driver. When cueing is poor, defenders spend more: they fire more interceptors per target, keep crews on standby across wide areas, or fall back on long-range missiles that can find targets themselves. When drones evade the gun crews by flying high, the costs climb fast. In 2025, Ukrainian analysts reported Skynex and Gepard crews firing 30–40 smart shells, at about $9,000 each, at a single drone without success after Russia raised its flight altitude. Euromaidan Press↗

> **A $2,100 interceptor is only cheap if something cheap tells it where to go. The sensor is what decides which end of the ladder you can use.**

FIELD 04 — THE LEVER

What Ukraine's sensor network bought

Ukraine's answer to Shahed waves shows the lever. A national acoustic network of about 9,500 sensors, each costing $400–500, fed flight routes to mobile fire teams on tablets. Gen. Hecker put the whole network at under $5 million, and said it helped defenders shoot down 80 of 84 drones in one attack. The War Zone↗ By United24's later account, about 20% of targets entering Ukrainian airspace are tracked by acoustic data alone. United24 Media↗

Set that against the ladder above. The entire sensing layer cost about as much as one or two top-tier interceptors, and it is what made the gun crews (the cheapest effector of all) usable at scale. Our report Listening to the Sky describes how the network works.

The U.S. now has an official price for the expensive end. In July 2026 the Congressional Budget Office estimated that a layered defence for one representative military base, built from radars at $10 million each, radio detect-and-jam systems, kinetic interceptors and handheld jammers, would cost about $74 million to buy and install and $5 million a year to run, or $7.4 billion for 100 sites. Its options include no acoustic sensors, which it called inexpensive but "less practical for widespread use." CBO↗

CONFIDENCE

How sure we are, and what would change it

Moderate confidence in the unit costs. Most are press estimates or contract-derived averages; manufacturers and governments rarely publish true per-unit or per-kill costs, and figures differ by source and year.

High confidence in the structural point that short-range, low-cost effectors depend on accurate cueing.

Our assessment is that investment in dense, cheap sensing has an outsized effect on the overall cost per kill. Published cost-per-kill data that included sensing and crew costs would test it.

DROSONIC — OUR APPROACH

Cheap ears for cheap weapons

DroSonic sits at the bottom of the price ladder on purpose. Its networked sensors detect, classify and locate drones by sound, running neural networks on low-cost edge hardware, so coverage can be bought in numbers rather than in single expensive radars. Their job is to give the precise, timely cue that makes cheap weapons usable. DroSonic↗ Its U.S. provisional patent application covers tiered defeat cueing: sending the track to the cheapest effector that can still reach the drone. DroSonic↗

It is the approach that worked for Ukraine (Field 04), built as a product. A DroSonic prototype was tested against live drones at DIRT Days 26.04 in September 2026. DroSonic↗ No unit price has been published.



DIRT DAYS 26.04 — THE CHEAP END OF THE LADDER

DroSonic's test position at the field exercise. The sensor is what lets a gun crew take the shot instead of a missile.

PHOTO: DROSONIC · FIELD-TEST WRITE-UP

CLOSE — WHAT IT MEANS

Spend on the ears to save on the arrows

The drone defence cost debate usually focuses on the weapon: the missile that costs too much, the laser that costs almost nothing per shot. The more useful question is what lets a defender choose the cheap weapon. The answer is a sensing layer dense and accurate enough to cue short-range effectors in time, and cheap enough to deploy in the numbers that coverage requires.

Passive acoustic sensors were the answer Ukraine improvised. At DroSonic we are building that layer to the standard military bases and critical infrastructure need: networked, passive and inexpensive enough that sensing never becomes the bottleneck in the kill chain.

ABOUT DROSONIC

DroSonic builds passive acoustic drone detection: networked sensors that listen for drones instead of their radio signals, using acoustic AI and edge computing. DroSonic OSINT is our open-source research into the threat that technology is built to meet.

THE RECORD SO FAR

OCT 2026	Joined the SOF RACER consortium, which connects USSOCOM with commercial technology companies
SEPT 2026	Prototype tested against live drones at DIRT Days 26.04, a field exercise supported by CMI2 with U.S. Central Command and U.S. Army DEVCOM
SEPT 2026	Technical presentation at NDIA's Emerging Technologies for Defense conference on detecting fibre-optic and radio-silent drones
SEPT 2026	Filed U.S. provisional patent 64/148,522 on passive acoustic detection, classification, localisation and defeat cueing
JUL 2026	Pitched to the U.S. Space Force at Space Systems Command's Reverse Industry Engagement Day, Colorado Springs

How DroSonic detection works → · Where it is used → · Talk to the team →

THIS REPORT ONLINE

https://osint.drosonic.com/assessments/drone-defence-cost-per-kill.html

Cite as: Mujtaba, G. (2026, September 29). *The Price of a Kill: Counter-Drone Costs: Interceptor Drone and Missile Prices per Kill*. DroSonic OSINT. https://osint.drosonic.com/assessments/drone-defence-cost-per-kill.html

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DroSonic OSINT: open-source assessments on drones and counter-UAS from DroSonic, passive acoustic drone detection. drosonic.com · sudo@drosonic.com



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Ghulam Mujtaba, Ph.D., is the founder and CEO of DroSonic and leads its work on passive acoustic drone detection. A computer engineer with 13 years of experience building machine-learning systems for edge hardware, he holds a Ph.D. in computer engineering from Gachon University in South Korea, was an NSF postdoctoral fellow at West Virginia University in the United States, and is an Assistant Professor of AI and Data Science at Regis University in Denver, Colorado. An IEEE Senior Member, he has published more than 20 papers on deep learning, computer vision and multimedia for edge devices.

PROFILE ↗ LINKEDIN ↗ ORCID ↗

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