DEFENSE AND MUNITIONS

April 2026
DefenseAndMunitions.com

What to prepare for on the frontlines, in the skies, on the factory floors, and more.

WARFARE REDEFINED:

THE DEFENSE INDUSTRY'S TRANSFORMATION IN 2026

PROMESS' Fully Electric Presses

ROYAL PRODUCTS' MTC Multi-Tasking Chuck

OKUMA AMERICA'S LB3000 EX III Turning Center

Building MILITARY DOMINANCE with affordable mass

Winning battles with scale and efficiency in weapons design and manufacturing.

By **ADIT GIRDHARI**

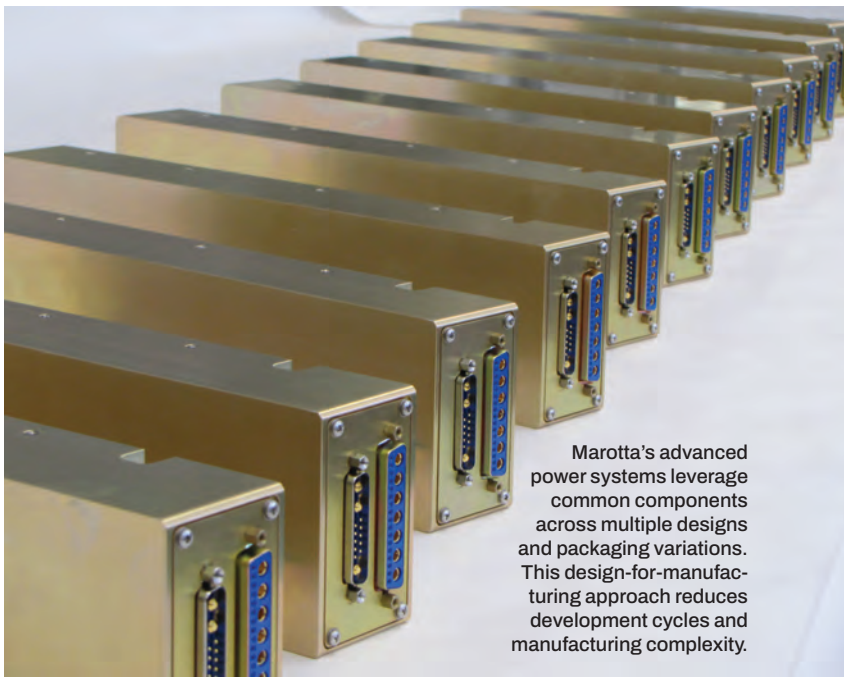
The next era of defense superiority won't be defined by the most advanced weapons, but the ability to build and replenish quickly and at scale. Good enough now is more valuable than perfect five years from now.

Defense manufacturing is known for systems pushing the limits of technology but often taking years to deliver and costing millions per unit. The pursuit of "exquisite" weapons is an industry hallmark. However, the world has changed, and this approach doesn't always work in our contested global environment, not solely, anyway. Advanced weapons play their part, but future readiness requires greater agility. True readiness is about having the most sophisticated weapon and consistently

PHOTO @ISTOCKPHOTO.COM COURTESY OF MAROTTA CONTROLS, INC.

having enough of the right weapons that can be built quickly and affordably.

That's affordable mass – a defense strategy focused on scalable production, faster timelines, and smart performance trade-offs. It's not about cutting quality, but prioritizing effectiveness over perfection. Development time is key, changing the defense manufacturing mindset from building the best to building what's needed quickly.



Marotta's advanced power systems leverage common components across multiple designs and packaging variations. This design-for-manufacturing approach reduces development cycles and manufacturing complexity.

READINESS IS COMPLEX (AND FRAGILE)

Current defense readiness depends on stockpiled assets, not replenishing or scaling production quickly, especially during an active conflict. At the same time, there's a stark mismatch between costs and pace of production: think about million-dollar interceptors taking down thousand-dollar drones, limited artillery stockpiles, and missile resources that can be depleted within days if the conflict warrants such action.

Many of the country's adversaries are prepared to deploy high-volume, low-cost weapons to saturate the battlefield and stretch limited defense inventories. China and Russia are investing heavily in missile and drone arsenals designed to outpace U.S. capacity.

Regional militias, once armed with minimal air defenses, have evolved into adversaries equipped with integrated air defense systems capable of countering non-stealth aircraft and legacy weapons. While our fifth-generation platforms, such as the F-35 strike fighter and future B-21 long-range strike bomber (LRS-B), can penetrate these defenses, they must carry an inventory of stand-in mid-range precision-guided munitions (PGMs) to take full advantage of stealth technology. The ideal mix of munitions is survivable in high-threat zones, affordable to produce in large quantities, and adaptable across various mission sets.

MOBILIZING COMMERCIAL MANUFACTURING

The American defense industry's centralized procurement isn't inherently conducive to solving this problem. Compared to China, the U.S. has siloed its defense contractors into a closed system, missing out on the possible benefits of adding commercial industrial production into the loop.

OPPOSITE PAGE: Advanced weapons have their place in warfare, but true readiness requires increased agility more than just having the most sophisticated weapon. Higher quantities of 'good enough' weapons bring scale and efficiency to the battlefield, prioritizing effectiveness over perfection while reducing development time and costs.

PHOTO COURTESY OF MAROTTA CONTROLS, INC.

In a recent report, the Center for Strategic and International Studies (CSIS) surmised China is rapidly developing a robust defense industrial base to deter, fight, and win a war against the United States. CSIS also proposed specific steps to strengthen the U.S. defense industrial base to deter China and prepare for contingencies in case deterrence fails, noting "...the United States is lagging in several areas of its defense industrial base, weakening the prospect of deterrence and warfighting. For instance, the United States faces a serious shortfall of munitions – especially long-range precision munitions – and other weapons systems for a protracted war in such areas as the Indo-Pacific."

Today looks very different from the industrial mobilization of the 1930s, where commercial industry was called upon to power defense output. History provides a parallel though, and our commercial ingenuity is being found among start-ups and innovators willing and excited about disrupting bureaucratic obstruction. In contrast to longstanding procurement norms, companies such as Anduril bring a Silicon Valley philosophy to the table, building first and selling later.

Call them mini-primes, firms you may have never heard of run by entrepreneurs who think more like tech founders than defense contractors. As newcomers, their primary advantage is they don't know what's supposed to be impossible. They're not asking the Pentagon for upfront development money, instead saying "We'll build it, you come buy it when you're ready." It's a radically different relationship than the traditional cost-plus contracts that have dominated defense procurement for generations. And it's exactly what's needed to fuel affordable mass.

SCHEDULE DRIVES SUCCESS

Modern global conflicts develop over months, not decades. What could you build in six months? This kind of thinking must be reflected in how designs progress from concept to combat-ready hardware. Tighter development timelines change everything, highlighting the need to adapt rather than re-invent

systems. Overhaul isn't required; for example, systems such as established actuation or power control platforms can be adapted by applying specific changes reflecting new mission needs.

Avoiding blank-sheet designs, engineers must capitalize on proven architecture, standard components, and existing supply chains. Technical maturity is built in, allowing materials to be adjusted, system output scaled, or performance re-tuned to meet the need at hand.

Initiating designs closer to the finish line delivers remarkable results. Prototypes move from design to delivery in weeks rather than years, reducing costs and quickly meeting mission thresholds. Risk is minimized, with meaningful features of a 'new' design already proven in earlier programs. Overall, this design strategy maintains engineering rigor balanced with adaptable, repeatable designs that can be manufactured quickly.

REFINING THE SUPPLY CHAIN

Weapons only work if we can actually make them. Affordable mass requires the removal of manufacturing bottlenecks. This can be achieved by creating a networked, high-trust supply base where suppliers pre-stock critical parts and collaborate early in the design process.

Many defense suppliers are also bringing more capabilities in-house, rather than relying on dozens of different suppliers with their own timelines and priorities. It's vertical integration taken to the next level, and it's a competitive alternative to managing a diverse supply chain that must somehow maintain unity of operations. Most suppliers recognize by controlling more of their own destiny, they can move faster and cheaper and deliver as promised. When you need something tomorrow (and in this business, you often do), it's costly to be waiting on someone else's schedule.

Missile power supplies

GOOD ENOUGH TO WIN

Affordable mass doesn't mean settling for mediocrity. Every system must meet its minimum performance threshold, but not every system has to push beyond that at all costs. A weapon that meets the mark and can be delivered today may be more valuable than a marginally better one delivered next year.

An important part of this transition is psychological, not technical. Engineers and program managers must learn to value 'good enough' solutions, something going against how they've been trained to think. The new mindset works like this: instead of building one system meeting 100% of requirements, build something meeting 70% of requirements but costing a tenth as much and deliver it in months rather than years. If that extra 30% performance is required, engineers can iterate on the design and improve it while the first version is already in production. It's the classic Silicon Valley approach but applied to defense. Ship a minimum viable product, then improve it based on real-world (in this case, battlefield) feedback.

As our adversaries expand their industrial output, America's advantage must come from innovation in more than technology. For industry partners, this means embracing standardization, prioritizing speed, and investing in vertical integration. For defense leaders, it means valuing good enough now as much as perfect someday. D&M

"CURRENT DEFENSE READINESS DEPENDS ON **STOCKPILED ASSETS**, NOT REPLENISHING OR SCALING PRODUCTION QUICKLY."

Mission fin control actuation systems

Marotta Controls, Inc.
https://marotta.com

About the author: Adit Girdhari is vice president of business development for power and actuation systems at Marotta Controls. Connect with him via email agirdhari@marotta.com or via LinkedIn.