MANUFACTURING RESILIENCE

Building Capacity When the World Needs It Most

Operationalizing surge capability for critical defense systems.

manufacturing capacity · supply chain risk · defense industrial base · operational excellence

> The newsletter for operational leaders who prefer honest diagnosis over geopolitical denial.

Issue Summary

The demand for critical defense systems—specifically high-priority programs like PAC-3 and THAAD—is no longer a steady climb; it is a sharp, vertical spike. In these environments, the pressure to produce more, faster, is immense. However, there is a fundamental gap between "having an order" and "having the capacity to fulfill that order."

The core problem many leaders face today is treating production volume as a financial calculation rather than an operational reality. Just because a program has been funded and a contract signed does not mean the floor can absorb the load. To survive these surges, leadership must move away from viewing supply chain resilience as a "nice-to-have" procurement goal and start treating it as a core operational metric. We need to harden our processes so that when the demand spikes, the production line doesn't buckle under its own weight.

The Illusion of Available Capacity

In many manufacturing environments, we fall into what I call **The Availability Mirage**. This is the belief that because you have the raw materials on-site and a signed contract in your hand, you possess the capacity to scale.

On the shop floor, this isn't true. True capacity is not just "space" or "hours"; it is the presence of every specific constraint required for a finished product. You can have an empty assembly bay, but if that bay lacks the specialized calibration tools needed for high-precision components, your capacity is zero. If you have ten extra operators but they lack the specific training to handle hazardous materials on the line, your capacity is still zero.

We must distinguish between *potential* capacity and *deployable* capacity. Potential is what looks good in a spreadsheet during a budget meeting. Deployable capability is what remains when we account for specialized component lead times, high-precision tolerances, and skilled labor bottlenecks. When the demand spikes, you don't need more "space"; you need a hardened ability to move units through every gate without stopping.

Why the Supply Chain Keeps Snapping: The Hidden Constraints

The reason many production lines fail during a surge is not because of poor effort; it’s because they were built on fragile foundations. We often mistake "having a supplier" for having a resilient supply chain.

In high-stakes defense manufacturing, several factors create these hidden snap points. A single component—a specialized seal, a unique alloy, or a specific microchip—can halt an entire production line if it comes from only one source with a six-month lead time. When the order volume triples, that "single" source becomes a massive bottleneck.

The Management Assumption	The Operational Reality
"We have enough parts to meet the current contract."	"The primary supplier for Component X is at 95% capacity and cannot fulfill any additional orders."
"Adding a second shift will double our output."	"Shift B lacks access to the specialized test rigs required for final certification, creating an immediate bottleneck."
"We can swap in a generic part if needed."	"The specific tolerance of this high-heat component cannot be met by any other manufacturer currently on the market."

When we don't identify these single points of failure early, we are simply waiting for a spike in demand to expose them. A robust system doesn't just have enough parts; it has diverse sources and verified paths for every critical item.

The Cost of Waiting

Underestimating how long it takes to "ramp up" is not an optimistic planning choice—it is a high-risk gamble. When we fail to harden our capacity before the demand hits, the costs are immediate and

severe:

1. **Operational Delays:** Production lines grind to a halt as they wait for specialized parts that were assumed to be available but aren't.
2. **Missed Deployment Windows:** In defense systems, timing is everything. A delay of months in assembly can mean missing a critical window for deployment or integration.
3. **Increased Risk Exposure:** When we scramble to find "workarounds" during a crunch, quality often takes the hit first. Shortcuts on the floor lead to failures in the field.

The cost of a proactive audit is high—it requires time and effort now. The cost of being unprepared is much higher; it results in public delays, safety risks, and the long-term erosion of trust with your stakeholders. We must choose the hard work of preparation over the easy path of optimistic forecasting.

Three Steps to Hardening Operational Capacity

To move from a fragile state to

Call to Action

What single bottleneck in your current process do you believe is most overlooked? Share this with an operations team that needs to stop treating ‘enough’ as sufficient.

Newsletter replies: newsletter@sixsigmakaizen.com · X: @kaizen_6sigma

Stay curious, stay improving,

David Rodgers
SixSigmaKaizen.com

References: Manufacturing Dive: L3Harris inks deals...