STRATEGIES FOR HEDGING RISK IN OBsolescence MANAGEMENT

HARRY KRANTZ company
Strategies for Hedging Risk in Obsolescence Management

Introduction: Balancing product and program life–cycles

For the foreseeable future product obsolescence will stand as the primary obstacle to maintaining reliable production for Department of Defense (DOD) programs and the defense sector. The root cause of the problem has been long identified and well documented.

Briefly stated, it is desynchronization between the relatively short lifecycle of semiconductor product – particularly integrated circuits (ICs) – which can generally be measured in years, and the typically longer and lengthening product lifecycle of legacy defense programs, which is measured in decades.

The business models of these two foundational industries were once highly intertwined and symbiotic, both economically and with respect to innovation. However, they have become irrevocably out of balance and
the economic imperative of each industry now stands in almost direct opposition to other.

**Looking beyond quality to manage supply chain risk**

The proliferation of either counterfeit or inauthentic ICs entering the supply chain only exacerbates the baseline inequity between current and ongoing supply and long-term IC demand. The negative impact of this growing phenomenon cannot be overstated and, at worst, can have material impact on national security and result in the loss of life. Inauthentic product that gets used in production can result in enormous cost liabilities to the program it impacts, compromise mission objectives and place in harm’s way those service people affiliated with the affected operation.

At this point in time, having an effective quality system cannot be a business differentiator for a company in the electronic component supply chain. Robust, effective quality systems buy you a seat at the table, nothing more. Quality, in and of itself, is not a solution: it is a requirement necessary for solving complex and difficult supply chain challenges.

At the other end of the spectrum, visibility in the marketplace of potentially suspect and inauthentic components can distort the reality of product supply, masking what may be a severe and existing shortage of product that is ineligible for use. Program managers and supply chain professionals, who are responsible for ensuring production for contract fulfillment, are using an ever greater percentage of their resources to
address the challenge of determining supply continuity and authenticity for the programs they are charged with bringing to fruition.

Many suppliers serving the defense sector, particularly independent distributors of electronic components, are aware of the extreme stakes involved in supplying obsolete semiconductors to DOD contractors, and will tout their company’s quality management and counterfeit mitigation programs. However, companies looking to align themselves with a supplier who specializes in obsolescence should be wary of generic claims with regard to quality. Instead, they need to look specifically at a vendor’s certifications, as well as industry organizations and standards with which they are affiliated and to which they are certified.

Suppliers of electronic components to the defense industry should be certified by a qualified third party, such as UL or SAI–QMI, to the most recent revisions of both ISO2001 and AS9120 Standards. Additionally, companies handling and/or processing semiconductor product, which is sensitive to electro-static discharge, should be certified by a qualified third party to the ESD STD20.20A. Finally, an independent distributor should be a member in good standing of the IDEA, ERAI and GIDEP, all of which provide contemporary best practices guidelines and standards for counterfeit detection and part authentication. In addition, they offer updated reporting on known parties engaged in the intentional or unintentional proliferation of counterfeit electronic components.

However, DOD program and production risks are simply too great to rely on quality systems alone.
Strategic Excess Inventory: Reducing the risk of supply chain volatility

Large multi-facility tier one defense contractors that are maintaining hundreds of programs simultaneously are most likely not making efficient use of the full scope of inventory that they have on hand. Depending upon how accounting and costs for those companies are structured, it may be that inventory with imminent demand for a program with little or no market supply is dispositioned as excess on a parallel program, either at the same or another corporate facility.

With no internal instrument, i.e., no visibility, to allow for the available inventory to be used to meet demand, unnecessary costs may be realized in attempting to acquire product that is already owned by the facility. Similarly, inventory purchased for and dedicated to a program that has subsequently been put on indefinite hold will create a Hobbsian choice of whether and when to excess that inventory.
Two methods to smooth market and internal supply volatility are internal distribution and inventory buffering: utilizing a third party that can provide both cross-program/facility visibility and flexibility, in order to adapt and re-purpose inventory to where demand is most imminent.

To effectively hedge against new demand, companies need to establish a centralized clearing house for inventory that has no immediate usage requirement and that can be consigned or excessed outright. All or a portion of it can then remain dedicated to a specific program, facility or operation in anticipation of both foreseeable and unexpected demand.

A distributor that can provide online visibility of excess stock, held in anticipation of future use across the relevant and participating programs and/or facilities, can respond to the owing facility in a fluid and collaborative manner. It can ensure that an appropriate level of inventory is maintained, and simultaneously generate positive cash flow by selling stock into the market that has zero projected internal demand. By utilizing active inventory buffering for either a given line item or an entire bill of material (BOM), the distributor and manufacturer can work in concert to ensure that future production requirements are supported.
At the time that a critical component goes End−of−Life (EOL) and becomes obsolete, the options available to the management team are difficult and costly. When there is awareness of a part becoming obsolete for a program with an ongoing lifecycle, maintaining cost stability and supply reliability for the remainder of a program’s lifespan – potentially exceeding five years – can seem untenable.

From this perspective, the supply professional charged with reconciling product obsolescence and program continuity has one of two unappealing choices:

1. **Make a one-time EOL purchase from the OCM to ensure program viability for the projected lifespan of the program.**

   This purchase may include supply in support of production, as well as additional product for repair and replacement.

   While providing supply and price stability, this solution requires a full, up−front capital investment by the manufacturer. The immediate impact is cash tied up for an extended timeframe, and possibly additional expenses for cost of money and carry. This problem becomes amplified as more programs experience product obsolescence. Ultimately, the amplification can have material, negative impact on a company’s financial statement, balance sheet and ability to fund day−to−day operations. Greater vulnerability exists if a program is canceled or delayed indefinitely, further exacerbating the issues noted above.

   A one−time EOL purchase may make sense as a solution for a contract that has been awarded. However, it may not be practical or even possible to execute these strategies for anticipated, but as of yet un−awarded, contracts.
2. **Manage the market and purchase necessary product at the time of demand.**

While this solution does not expose the manufacturer to the vulnerabilities shown in the first scenario, it has at least as many if not greater pitfalls, particularly as more time passes from the moment of obsolescence.

By entering into the market each and every time that demand arises, the manufacturer is exposed to cost increases both in the acquisition and qualification of the product, in every instance in which it makes a purchase. Additional cost and delays may arise from difficulty in acquiring qualified product as well as from long test lead times.

As with the first scenario, the problem for the program only gets more intractable as more product on the BOM becomes obsolete.

An alternate solution is to engage a third party that has the capabilities and market flexibility to assume the risks outlined above. They would use analytic tools and hedging strategies to deliver long-term product, as well as the price stability required by the manufacturer to mitigate financial turbulence.
The risk calculus

All of these challenges have associated costs that may seem prohibitively high, particularly in comparison to what may have been the initial cost for a given component during active production. The optimum and least costly solution of purchasing product at or about the time the demand is imminent, either directly from the OCM or from one of their authorized distributors, becomes moot when the component goes EOL and becomes obsolete.

When a manufacturer needs to secure obsolete product for long–term production, while ostensibly the issue appears to be one of supply, in truth the problem that is being addressed is actually one of risk, and to whom and how that risk will be assigned.

Once the problem is redefined as and viewed through the prism of risk, the question of price is no longer tied solely to a commodity’s value in a given marketplace at a given time. Instead, the issue becomes the escalation of cost over the life of a program if no mitigation strategies are employed. This far higher cost can be managed with price stability and purchasing supply at the time that tightening supply appears to threaten long–term production.

The question to ask in managing supply chain risk: what is the cost differential over a given period of time between the price of risk mitigation and that of normal price escalation managed on a purely demand basis?

A third party that understands and can perform this risk analysis can help companies answer this question in definitive financial terms so that they can make the most responsible decisions to balance long–term supply requirements with financial stability.