

A fireside chat: Counterfeit components in the military

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Driven by financial gain and opportunism, counterfeiting is not new, or uncommon. Recently, counterfeited products have been appearing in the military and aeronautics marketplace as counterfeiters take advantage of profitable components.

PD&D caught up with Mark Bollinger, Vice President of Marketing at Smith & Associates, to learn more about this trend, and how distributors and design engineers can better protect themselves from counterfeit parts.

PD&D: What components or subsystems do you feel are most frequently represented with counterfeit parts in the mil/aero marketplace? What is driving this trend?

Mark Bollinger: Because counterfeiting is an illegal act based on the end goal of profiteering through opportunism, many of the counterfeit instances fall into two subtypes: (1) very common, typically lower cost items and (2) very specialized, high cost, hard to get items

The trend is driven simply by financial gain and opportunity. It is a criminal act and based on what the counterfeiter perceives to be a risk worth taking. Infiltrating large batches (high volume) components that may not receive as much scrutiny, or in which testing samples are likely to allow some components to "slip in" still offers the counterfeiter the chance to sell counterfeit items and profit. Because these types of parts are generally in ready supply, or at least in high volume supplies, the criminal sees an opportunity to infiltrate legitimate supply for incremental profit gains. In the case of highly specialized items, the chance of having a high pay off means a little more effort is worth the risk for the criminal because there is similarly the chance that full functional testing might not be available, demand may be so desperate because the part has obsolesced, or simply that the pay-off is high enough to risk the counterfeit.

To repeat, the driving force behind this trend is simply illegal financial gain. Unfortunately, it is neither new nor uncommon. In fact, the items most commonly counterfeited are not necessarily electronics. Recently there was an uncovering of counterfeit (and substandard) nuts and bolts sold to the military for widespread use

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across the armed forces. An extremely high volume, low cost item, seemingly so irrelevant yet at the end of the day, extraordinarily important in ensuring safety.

PD&D: What do you feel are some of the obstacles that distributors and their customers face in obtaining components and subsystems that meet mil/aero standards?

Mark Bollinger: Perhaps the two the biggest obstacles in obtaining components and subsystems for the mil/aero sector are:

1. Many mil/aero components must meet additional, highly ruggedized, thresholds; they must be able to withstand extreme physical conditions beyond the normal spectrum such as heat, vibration, dust, pressure, extreme climate & temperature variations, etc. These requirements are beyond the normal ranges and so these components require special manufacturing, limiting the volume that is available in the market.
2. Many replacement mil/aero components that are needed have already gone to End of Life (EOL), meaning they are obsolete and are no longer in production. This means that these components, already likely a low volume set, are no longer available off the production lines and must be sourced from distributors who have held onto stock and have stored them appropriately.

These obstacles are not insurmountable by any means. They do, however, require that a supplier understand what it means to source highly specialized components and subsystems, understand the pitfalls that exist in the market: improper storage conditions, fraudulently labeled parts (might not actually meet the functional standards or requirements needed), opportunistic counterfeiting, and the more common challenge of simply having to work very diligently to find specialized, EOL components.

PD&D: Why has this market segment become so ripe with counterfeit parts?

Mark Bollinger: At the core of counterfeit activity is opportunism and profiteering. It really is that simple. Attracted to two opposite ends of the spectrum, counterfeiters have found the most profitable components to counterfeit are either high volume with low cost or low volume with high cost. The reasons are that with high volume and low cost, there is greater opportunity for "slipping in" counterfeit product that will not be detected either because these components may be seen as more disposable, not worth the cost to put through as rigorous testing, or simply the chances are better to infiltrate batches and the cost of exposure is low since the cost of the counterfeit product was also low.

Conversely, low volume and high cost components tend to be those that are harder to locate in the market because they are either highly specialized, limited in production by only a very few manufacturers, or have obsolesced, that is, gone End of Life (EOL), and are not available for new production. In these cases, rather than

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"slipping in" counterfeit components into larger batches, there may be a higher level of demand and more pressing need for the component. In these cases, there is also likely more effort put into producing the counterfeit part to pass rudimentary testing. In the end though, both types are not only fraudulent but also illegal and will not be able to withstand the rigors of the functional uses for which they are needed.

One other point is that in this market segment, there are instances of sub-contracting to companies who are more interested in ensuring "winning the bid" and may not have the professional and technical expertise to understand the pitfalls and exposure to counterfeiters in the semiconductor and electronics industry. As a result, while it may seem to be quite easy to secure a component in the market, understanding the vetting and auditing process, and having the technical knowledge and experience as well as industry accredited testing facilities to verify and validate components purchased is a capability that requires long-standing expertise and daily, hands-on relationships and knowledge of the semiconductor and electronics industry.

That is not to say that it is not possible to provide a good pricing and best in class quality. Rather, it means that deep semiconductor and electronics knowledge and experience in the market are essential to safe-guarding against counterfeiters.

PD&D: What are some steps distributors and design engineers can take to protect themselves from counterfeit parts?

Mark Bollinger: Actually this is perhaps the easiest part of the counterfeit problem to tackle. It is not realistically possible to stop counterfeiting itself, this illegal act has been around since the first trade occurred and will likely persist. What we can successfully do is ensure that we stop counterfeit goods from moving through the supply chain. There are a few simple steps to follow, yet behind their simplicity is the requirement of knowledge, standards, professional testing, and supply chain cooperation.

First, there is the mantra: "Know thy supplier." This is important for everyone, regardless of whether they are a franchised or open market distributor. No one along any supply chain is off limits from counterfeit acts. Even franchised distributors may receive return shipments of their own product that has been illegally swapped with counterfeit components as a "return" and thus their inventory can become compromised.

Additionally, there continue to be instances of manufacturers' lines run at other times by criminal plant managers, or defective components that were discarded taken and sold as quality parts. The open market too has its pitfalls, with opportunists seeking to represent themselves as qualified professionals when they may have no facilities nor interest in selling quality parts, only in making a quick profit illegally.

The action required to fulfill "know thy supplier" is simply auditing and vetting through on-site visits to all facilities, requiring that industry standards be met and

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demonstrated through industry recognized accreditations and certifications that speak to the internal business processes, facilities, and technical professional qualifications that are relevant to the business functions at hand.

Second, testing and traceability. It is imperative that proper documentation, also called flow-down, be maintained on parts of all types. This process creates traceability which is the best means to pinpointing and averting fraud or counterfeit because there is a documented path along with the items followed and the ability to locate and trace back to any improper or illegal acts can be exposed. There is also an increased level of responsibility held through a traceable supply chain. However, this also requires collaboration and visibility across businesses along the supply chain in that they must cooperate and share the information that is to be passed to the end client.

Testing is part of this process in that it ensures that the items are verified through appropriate technical testing in accredited technical labs. Not only does this ensure that counterfeits, fraudulent, and substandard parts can be identified, it also ensures that compliance to standards (e.g., RoHS 2 is a good example) is met by the distributor and that distributor is able to certify that compliance prior to the items leaving the dock.

Finally, cooperation and visibility are essential. It is not enough in today's rapid, global market place to simply claim immunity from counterfeiting or fraud. Working together and recognizing that criminals do not discriminate between franchised and open market suppliers, is critical. When the semiconductor and electronics supply chain can truly work together and recognize then we will accomplish more in the way of anti-counterfeiting.

PD&D: What are some future trends to be aware as the market looks to confront counterfeiting?

Mark Bollinger: Perhaps the most unfortunate truth about counterfeiters and the future is that these criminals continue to get better at what they do. That means as we improve our sophistication in anti-counterfeit measures, from highly complex markings, traceability, testing procedures, and even the complexity and sophistication of today's integrated chips themselves which are much harder to replicate than a simple, rudimentary circuit, these criminals maintain a close distance behind us.

As stated, counterfeiting is as old as business and we should be realists and understand that there will be criminals seeking to do what they can to illegally profit. What we need to do is to increase our supply chain collaboration, recognize that both franchised and open market distributors are and always will be part of the global semiconductor and electronics industry and that together, we can continue to set the standards higher and higher such that it becomes impossible for counterfeiters to profit in our industry.

We will continue to innovate in complex chip identification methods, but we cannot rest for long as counterfeiters are driven by opportunity and profit and those are

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fierce motivators for a criminal. It is not a dystopian vision, rather a realistic one and in recognizing the strength of visibility and collaboration, the expertise we have in the franchised and open market among the top quality, long-standing distributors, we will continue to develop and deliver the best testing and supply chain standards to ensure our respective customers receive only quality items. It is, however, also incumbent upon customers to require these high standards of their vendors and not seek quick and easy solutions. After all, if it seems like too good of a deal to be true, it probably is not legitimate.

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