

Special Report: Dissecting the Counterfeit electronic Component Problem

Third part of a series by Tom Valliere
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Welcome to part three of our series on counterfeit components. In December, to kick-off the series [we discussed](#) the scope of the problem with counterfeit electronic components, the geographic and financial drivers, and the contributing factors that make our industry vulnerable to unscrupulous operators and purveyors of bogus parts.

In the second part of the series in February, [we examined](#) the origins of these components, classified them, and defined the risks associated with these counterfeit component classes.

In this installment, we will talk about prevention and actions you can take to lessen the chances of becoming a victim.

What can I do?

“The best protection against counterfeit parts is to take aggressive preventive actions”

It is relatively safe to say that every manufacturer of electronic products has been victimized by counterfeit components. The electronics industry’s own numbers identify this problem as costing them more than \$100 Billion dollars annually. If huge companies such as Hewlett Packard and Cisco with all of their resources acknowledge the problem and have been victimized, then prevention is seemingly a formidable, if not impossible, task for smaller companies – and it is. However much can be done to mitigate the risks

Provenance: – the proactive approach

Provenance is a noun derived from the verb *to prove* and generally used to describe traceability to source. More used in arts and antiques than electronics, it is nevertheless a good word for our business. ***Traceability to source is the key to prevention.*** Most counterfeit material enters the supply stream through indirect means. The shortest and most direct line to the source is always the best. This is the best model for traceability but is not universally available. Unfortunately, not all companies can be tier 1 customers and deal directly with the component manufacturers. Most of us are forced to use distributors or rely on our third party EMS providers for material needs. This is where the problem begins. (Although the component manufacturers themselves have been victimized by bogus chemicals and materials used in their own manufacturing processes)

Component Manufacturers:

While slow to react or even fully acknowledge the problem, component manufacturers are now at the forefront of the battle against counterfeit components. Industry organizations such as the [Semiconductor Industry Association](#) (SIA) and their members are taking aggressive anti counterfeiting actions. SIA’s Anti Counterfeiting Task Force (ACTF) has several activities currently underway including

- Reliable Electronic Supplier Program (RECS) – Working with China’s Ministry of Information Industry, China Quality Management Association for Electronics Industry (CQAE) and the China Electronics Purchasing Association (CEPA), this program is issuing certificates to suppliers certified as reliable

- Quality Brands Protection Committee – composed of 26 companies works cooperatively with the Chinese governments, local industry and other organizations to make positive contributions to anti-counterfeiting efforts in China
- Publishing a directory of authorized distributors in book and website
- Laying groundwork for cooperation with the [World Semiconductor Council](#), which consists of US, Japan, Korea, China, and Taipei semiconductor industries.
- Working with manufacturers on development and implementation of an authentication service provider standard.

Component Manufacturers are also taking more direct actions to protect their customers and their intellectual property. Most now readily acknowledge the problem and will work aggressively with their customers on identification and remedy of specific problems. Many suppliers offer information directly on their websites regarding bogus lots that have been detected and other alerts and updates.

Franchised Distributors:

While the likelihood of receiving bogus material from franchised distributors is low, it is not zero. Counterfeiters have been known to buy legitimate products, mark counterfeits with the same markings and date codes and then send the counterfeits back to the distributor as customer returns.

Franchised distributors working through their industry association [National Electrical Distributors Association](#) (NEDA) have acknowledged these problems (largely coming from customer returns) and are aggressively closing the gap. Franchised distributors are one step removed from the manufacturer but should be able to provide documentation back to the source for the material they ship to you. DCA recommends that you ask the question and understand their tracking capabilities. Qualify them as you would any other supplier.

Non-Franchised Distribution:

Non-franchised distributors are a different problem. They range from large and highly reputable companies like Smith and Associates in Houston to small web-based boiler rooms that spring up opportunistically in times of constraint. While few companies utilize non-franchised distributors as a primary source of material, most if not all companies utilize them to fill spot shortages and to dispose of excess inventory. Non-franchised distribution is therefore a legitimate business model and fulfills a genuine need. Unfortunately, it is also an entry point for much bogus material - sometimes intentionally. Traceability (provenance) through this channel is difficult as the material comes from many sources and in the case of excess inventory, may already be three or more steps removed from the original manufacture. Working through online auction sites or brokers only compounds the problem as these sites come and go and offer no traceability.

There is no way today to eliminate the inherent danger in this channel. There are ways however, to mitigate and minimize the dangers. Legitimate non-franchised distributors have formed an industry alliance [Independent Distributors of Electronics Association](#). IDEA has developed best business practices subscribed to by their members that include aggressive anti-counterfeiting programs. We suggest this organization as a starting point for developing a network of trusted non-franchised distributors before an emergency compels you to use this channel. As always, use supply chain management best practices and qualify these distributors as you would any other supplier. It is essential that you understand their internal business processes and how they maintain provenance and integrity in their own supply chains.

Mostly, however, trust, but always verify!



Electronic Manufacturing Service Providers (EMS)

Most companies utilize third-party manufacturing and service providers for portions or all of their actual product manufacturing and customer fulfillment functions. Like any other business, these providers vary in quality and integrity. Many times these large multinational companies are inconsistent across divisions and geographic areas. An understanding of the consolidation that has taken place over the past several years gives insight into the huge integration issues arising from dissimilar business processes, systems and employee cultures. It is no wonder their performance can be spotty!

Even the most honorable and honest companies can have dishonest or maverick employees or departments operating within. Dishonest buyers and materials managers can be found everywhere. North America certainly does not have a monopoly on morality, but some countries and cultures are seemingly more prone to corruption and graft than others. That appears to be the case with China and some of the other developing countries. You may take all the precautions humanly possible in securing your supply chain and they may be completely undone by one unscrupulous buyer at an EMS location (or distributor location). It only takes one time and one lot of bogus material to cause you untold expense and customer satisfaction headaches.

Consider for a moment Fisher – Price (or Mattel). Certainly a company this large that derives its revenue from the trust that parents have in the safety of its products, would have robust specifications and requirements regarding toxic material usage. Yet they somehow managed to ship toys with high concentrations of lead in the paint. How did this happen? How do you control a highly fragmented and geographically diverse supply chain? This breakdown that allowed for leaded paint to enter the system could have happened anywhere along that chain from the pigment supplier to the paint manufacture, through distribution or at the buyer's desk inside the EMS.

Essentially the same thing happened with electrolytic capacitors. Bogus chemicals were sold to several capacitor manufactures that then sold defective capacitors to several very large electronics product companies causing massive problems. How do you prevent this from happening? The capacitors were legitimate and had "provenance", but the capacitor producer's supply chain was corrupted. How can you possibly trace every component back to the "sand on the beach"? How do you detect this early in the cycle?

We will talk in the next chapter about detection but suffice to say this toxic paint was not discovered through their normal quality processes and the hazardous products made it to their customers causing them great expense and embarrassment – and it happened more than once!

Are they a bad company or simply overwhelmed by the complexities of modern manufacturing? How could this have been prevented? Do we need to deploy armies of auditors? Move manufacturing back to North America? Develop better tools? What help is available? Stay tuned as we continue our series and examine these and other questions.

The Design Chain Associates Mission Statement

Design Chain Associates, LLC (DCA) provides services that help Electronics OEMs and other product manufacturers increase engineering, procurement, and production efficiency, product and operational environmental performance, and corporate profitability by ensuring that the right decisions about supply base and the environment are made during the earliest stages of the product lifecycle, and are built-in to corporate strategies and tactics.

Contact Tom Valliere at +1-866-DCA-7676 x5, or email him at tom (at) designchainassociates.com to find out more about how we can help you increase the integrity of your supply chain.