



How Source Inspection Creates Risk In Manufacturing Operations

Source inspection has been around as a method of quality control for some time. Companies have estimated that they can save as much as 50% of the cost in outsourced manufacturing. But they underestimated the cost of logistics, poor quality and customer returns. There are numerous implementations of source inspection throughout industry all having their own specific details for compliance. In the DOD environment source inspection has not realized the promised results; and in fact, many quality problems can be directly traced to escapes from this process. Many of its problems stem from its implementation and goals within the overall DOD acquisition process.

Even in the current ISO and ANSI quality environments most of our source inspection criteria grew out of MIL-Q-9858 and other contractual requirements, or better said were meant to fulfill the contractual requirements levied on the program. Consequently, they are meant to fulfill a documentation and audit process for legal sufficiency more so than to ensure defects are detected at the lowest level in the supply chain. There is always a conflict of interest between purchasing and doing quality control that must be managed.

With most defense contractors, most of their quality escapes are from supplier fabricated assemblies and highlight the failure of the concept of source inspection as generally implemented.

It is not the concept of inspecting on sight that is the problem but the lack of independent review by the prime and for small lots such as in the missile business the lack of 100% inspection that is leading to quality escapes. This is not to say that vendor QA is not needed, vendor QA is the first defense in a multilayer quality control process.

Many companies have grown to rely on the legal sufficiency of the source inspection documents to have a corollary to product quality. Typically, nothing could be further from the truth. Source inspection by the vendors has an inherent conflict of interest and source inspection by third party independent inspectors is typically done on a sampling basis by personnel who visit the vendor on a rotating basis and have little or no true understanding of the product.

Low volumes provide another challenge to source inspection and any statistical quality process. There is also always a change of key and experienced workers and personnel in a factory approximately every 6 months. This can lead to little consistency in manufacturing processes and quality control. All of this leads to the need for a 100% incoming inspection of supplied parts and fabrications.



"Understanding the Future Effects of Today's Decisions"

When source inspection was first implemented it became in vogue to the MBA community. It provided a method to lower the cost of providing legal quality documentation. However, it did not address, nor did management typically understand the cost of quality and quality escapes on the product customer and business franchise. The problem is these things are measured in arrears and were not properly quantified in advance.

Numerous studies have been done to address the cost of finding defects at different levels of the supply chain and assembly process. WILLCOR has done several of these studies over the years to document the costs at each level. While studies vary slightly, in general it costs about 10 times or an order of magnitude in cost to find a defective part or assembly at each higher-level of integration. So while there is a cost associated with incoming inspection, and more specifically 100% incoming inspection the leverage is somewhere between 10 and 1000 to 1 in savings depending on how many levels of assembly the part will proceed through.

It is important that inspection parameters be identified early, in many cases coupons, pictures, etc. may be necessary to "inspect" for blind assemblies or process controls. In many cases specific design attributes will need to be added purely to ensure inspection can be done adequately.

The flow down of quality requirements and incoming inspection is only one part of an overall subcontractor control process and needs to be implemented considering the overall program. An important part of this program is customer confidence in Raytheon's overall program control.

Consequently, it is recommended that prime contractors establish a timeline in concert with the customer to review their overall inspection and certification process and move expediently to a process based on 100% incoming inspection to the maximum extent practical.

To learn more about implementing an effective source inspection plan please contact Brian Willoughby at brian@willcor.com for more information.