

Test Labs and Quality

Sometimes it takes an outsider's assistance.

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Product quality is one of the leading issues in today's electronics community. In the electronics industry, quality is measured against a standard, typically generated by the IPC, the military, or by individual customers. Regardless of which three letter acronym a product supplier or user subscribes to for quality systems (SPC, TQM, ISO, etc.), information or intelligence on product quality must be gathered either by direct measurement, process monitoring, or stress screening. With any intelligence-gathering operation it is important to decide what information to collect, and how that information should be analyzed.

In many cases, the question regarding information collection is already answered by the product user. The supplier receives procurement documentation from the customer detailing the performance and quality characteristics desired for the product. In cases where a supplier is trying to solve a problem, optimizing, or researching a new process, the decision on the collection of useful information is left up to internal engineering and quality staff.

Once the decision is made on what information is to be collected, the supplier must choose the appropriate collection process. This step involves the actual intelligence gathering on the product or process. The required properties are often easily observed or measured, but in some cases they are detected only by subjecting a product to environmental, electrical, or mechanical stresses. Once the intelligence-gathering technique is decided upon, the resources for performing the analysis must be gathered.

It is during this stage of the process that an independent test facility can begin to assist a supplier. Most manufacturing facilities have an internal test facility at their disposal, but an independent test facility provides testing and analysis services that are typically impractical to perform internally. The independent test facility should be thought of as an extension of the internal facility. It is good to have a partnership relationship with an independent test facility, as it can be a critical link in product procurement, quality assurance, and problem solving.

Independent test facilities provide qualification and conformance testing, research and development, and failure analysis to suppliers and users. In the PCB industry, independent facilities come in distinct varieties: mechanical, electrical, environmental, and physical and surface analysis, as well as circuitry verification (point-to-point, optical), and chemical analysis. While there is some overlap in these areas, most facilities select a specific area of analysis.

When selecting an independent test facility, it is important to review its capability to perform the necessary analysis. The technical staff at the facility is typically equipped to assist suppliers in choosing appropriate test plans to identify product attributes or to solve a specific problem. Often the cost or scope of a test plan is not evaluated until the product is near completion, which can cause both cost and delivery overruns. Obtaining the analysis costs and lead times during the product quoting stages can result in making or losing profit margin.

It is also important to evaluate whether the staff at the

test facility can provide technical support. Many times the test facility is a last resort to solving a problem. The independent test facility sees a large cross section of product from the industry. This gives a supplier or user the advantage of having access to technical expertise encompassing products and materials from a variety of industry segments. This knowledge can also help when it comes to process problem solving, as many items an unbiased view from the independent test facility can provide the input to identify the cause of a problem.

The independent test facility is instrumental in resolving disputes between supplier and user. Using an independent source to arbitrate can relieve tension. When all parties agree to accept the results of the independent test facility, resolution can be less adversarial in nature.

Out of necessity, the independent test facility must keep on the forefront of developments within the industry. Members of the technical staff are often involved in specification development and industry research, which they can, in turn, pass on to a supplier. In these times, when requirements are ever changing, the role of the facility can be the critical link between supplier and user.

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