



PRESS RELEASE

Tellumat

February 02 2007

Page 1 of 2

The importance of testing in Contract Manufacturing

A true turnkey contract manufacturer offers its customers a range of services that cover the entire lifecycle of the products it makes – from conception through design, sourcing, manufacturing, testing, distribution, long-term support and repair. The value of outsourced manufacturing is that it allows customers to create and manufacture a high-quality product without incurring the significant costs of obtaining the necessary skills and equipment themselves. This, in turn, allows them to concentrate on their core capabilities – designing and marketing their products.

But in order for the contracting company to manufacture to excellent quality standards, thereby not disappointing end-users, testing is a crucial part of the process. “Customers must avoid the temptation of focusing solely on cost containment during the manufacturing phase, and specifying too-low testing levels. Testing does add some cost to the manufacturing process, but in the long term significantly reduces the customers’ operational costs by reducing out-of-box and field failures,” says Murison Kotzé, head of the Electronic Contract Manufacturing business at Tellumat, a developer, manufacturer and supplier of technology solutions in the communications and defence industries. “A good manufacturer fosters a close working relationship with its customers, not just to afford them insight into the process, but also to give advice that informs good decisions about matters like testing.”

Kotzé believes it is ideal for the manufacturer to be involved from the outset. “The earlier that happens, the more value one can add in assisting customers with the appropriate test choices and design for manufacturability and testing – which will in turn reduce cost for both the contractor and customer. Each customer has unique requirements that are best understood when the contracting partner is involved right from the start.”

Specifically, he says a manufacturer should advise customers on the level of testing required for a specific product, its cost implications and the advantages and risks of the various options. To back that up, it must offer a wide variety of test solutions, any combination of which might be appropriate to the customer’s needs. These range from simple, low-cost pass-or-fail testing of high-volume or price-sensitive products, to full systems functionality testing, including limit testing and stress screening for customers who require it.

“Ask your manufacturer if it does test jigs at Printed Circuit Board (PCB) level; custom-developed, PC-based automated test systems; fault-finding at PCB and component level; soak testing; burn-in and ESS (environmental stress screening), both for production and qualification purposes; as well as final functional system testing.”

Grant Emandien, operations manager at Tellumat Electronic Contract Manufacturing, says not all local manufacturers offer testing, given the high levels of expertise and investment required. “Final testing by the contract manufacturer further offers the customer the option to have the product delivered to the end user straight from the factory, reducing costs by eliminating one more step in the supply chain.”

Greg Chin, testing manager at the unit, adds that a customer may specify the testing level and even supply test equipment, or leave it up to the manufacturer to design a test solution: “Some tests may be manual and be as simple as taking a voltage measurement and logging results, while others are fully



PRESS RELEASE

Tellumat

February 02 2007

Page 2 of 2

automated and/or highly complex in nature.” He says test results are fed back into the production line, and alterations made as necessary, for instance in the surface mount placement of components, or to designers for the possible improvement of their designs, including PCB layout.

Specialised testing skills, for instance in the field of RF (radio frequency) products, is further a rare but important differentiator, because of the level of intricacy involved (especially at the higher frequencies), as well as the cost of the test equipment required, Kotzé adds. This is an area that Tellumat is especially strong in, having invested heavily in skills and equipment to address customer test needs in the RF field.

Tellumat Contract Manufacturing’s inspection/testing sequence is as follows:

- Surface mount machine testing – a simple online passive test to ensure that correct value resistors and capacitors are placed by the machine at the correct PCB location. Typically, resistors and capacitors cover in excess of 90% of all components placed on PCB, and serve to reduce downstream test time and costs.
- Visual inspection of all assemblies is performed using optical equipment at both SMT-level and THT-level assembly, for correctness of component placement and solder-joint integrity.
- Inspected assemblies are then subjected to various levels of functional testing before integration into sub-systems and systems.
- Sample inspection and testing in accordance with defined inspection level criteria is performed by quality assurance staff at various intermediate production stages as well as the final stage prior to delivery.
- Test results from all levels of testing are analysed and fed back not only to the production line for the continuous improvement of production processes but also where necessary to the customer to aid future design improvements.