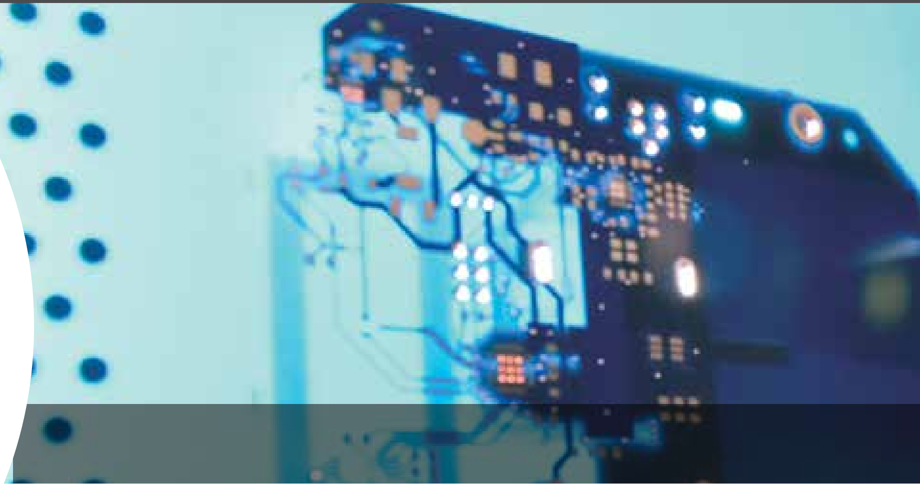
PROJECTS IN PROGRESS

Eugene Dolweni examining some of the printed circuit boards



PROJECT AT A GLANCE

TraX Interconnect (Pty) Ltd has selected the appropriate equipment best suited to its processes, factory capacity and capability requirements to address the challenge of multilayer printed circuit board manufacturing, particularly the need to fill so-called blind vertical interconnect access (vias). As the equipment required is custom built to order, with lead times of up to six months, it was critically important to order the equipment at the outset of the project to meet the project completion date. Operating and environmental requirements were also used as criteria against which to evaluate the selected equipment.

Resin-filled Via

Enhanced manufacturing for multilayer printed circuit boards

During a workshop with the AISI as part of a roadmapping exercise for TraX Interconnect, the relevance of multilayer printed circuit boards for the aerospace industry was emphasised. TraX Interconnect identified a skills gap and an equipment gap in the resin filling of vias; both these gaps have become stumbling blocks to manufacturing multilayer printed circuit boards.

Subsequently, TraX Interconnect submitted a proposal to the AISI for the acquisition of a machine to fill vias with resin. The proposal was successful.

More about multilayers and vias

Multilayer printed circuit boards have more than two layers; in some cases, 18 layers can be stacked up in a sandwich formation. The weight and space benefits of multilayers are especially valuable for aerospace printed circuit boards. With previous support from the AISI, TraX Interconnect has built the capability to supply printed circuit boards to meet local demand, replacing the prior need of local clients to source such circuit boards offshore. TraX Interconnect has been introduced to a

In process inspection of printed circuit boards

Local production of multi-layer printed circuit boards

number of clients through the AISI network, thus creating an environment for an emerging industrial ecosystem.

Vias are the copper-plated holes in the printed circuit board, which allow the layers to connect. Blind and buried vias are used to connect between layers of a printed circuit board where space is at a premium. A blind via connects an outer layer to one or more inner layers but does not go through the entire board.

Ever-shrinking component pads has meant that vias need to be placed inside the component pads due to space constraints. The problem with this is that solder pastes wicks into these via holes during component assembly, causing bad solder joints. This problem is overcome by filling the vias with resin. Daniel Dock, Managing Director of TraX Interconnect explains, “This is a known problem in manufacturing circuit boards with ball grid array components, for which a solution exists. We were keen to look into getting the best equipment for resin filling of blind vias to increase our capability and competitiveness.”

Finding the best machine for the job

“Through the support of the AISI, we were able to identify the best equipment for resin filling of vias, the MASS VHF300 V machine, which will fit our processing needs and can process our largest factory panels of 18” by 12” in size,” Dock confirms. “This machine is available with vacuum to fill blind vias.”

With all the preplanning and specifications in place, the order has gone out timeously. TraX Interconnect is looking to execute this project by the project completion date. Once the machine arrives, it will be commissioned.

Dock comments, “This additional equipment and skills will help us scale up our offerings to meet our customers’ expectations as identified by our customer audits.”

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Highlights

- Enhanced capacity to produce multilayer printed circuit board manufacturing
- Equipment for filling so-called blind vertical interconnect access on order

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