

South African CEM uses AOI to Drive New Business

The contract assembly marketplace in South Africa exhibits some unusual dynamics. The sector is hotly contested by competitive firms but typically only on a provincial basis. However, some of the more progressive companies find that their resources and pricing structure makes their service viable in mainland Europe. None more so than Production Logix, based in Durban. . But to deliver a tangible competitive edge and boost customer confidence in quality, Production Logix has deployed AOI to excellent effect. Industry observer David Hughes took a look and spoke to the proprietors.

Production Logix is strictly a contract manufacturer, in the original purest sense. No in-house or own-brand products are assembled by the company, only boards for external OEM customers. Business has flourished since Dave Elston and John Goncalves started out ten years ago, seeing the company grow from seven employees to over 100 today. While the biggest customer is satellite and GPS specialist Digicore, Production Logix also assembles boards for companies across a diverse range of industry sectors including military radio, industrial axis control and annunciators, water meters typically featuring timers and volume cut-offs, and digital liquor 'tot' dispensing for a global customer. The contract manufacturer also builds looms and wiring harnesses.

The company runs three SMT assembly lines – one for high volume runs comprising an I-Pulse M7-3L multiflex mounter and 2 x I-Pulse M4s flexible mounters integrated into a Vitronics Soltec XMP3 oven, and two stand-alone lines with one of them featuring I-Pulse M4e placement machine.. The M7 line recently replaced a Fuji line for capacity and capability reasons, as Elston explains: “We needed more throughput and increasingly see customer requirements for 2008 that include placing 0201 devices. The Fuji CP6 can't handle these chips.”

Digicore products account for almost 60% of Production Logix's SMT assembly workload, and the contract manufacturer is an official Digicore Strategic Partner – a status that helps ensure parallel growth. Elston sees the company as a logical extension of its customers' businesses, to the extent that Digicore's Technical Director briefs ahead on upcoming projects. This customer commitment was the driver behind Production Logix's decision to implement AOI. “Given the nature of Digicore's advanced satellite technologies, we can't implement an effective system test for these

products at the end of the line, so we needed a way to prove to the customer that our manufacturing process was in absolute control, thereby validating the quality of the final assembly,” claims Elston. “It wasn’t about a need to improve our assembly process – internally we were totally confident about this – but sometimes you need to be able to qualify your claims. Inspection was clearly the best way to demonstrate this.”

The impetus behind such a decision is based firmly in commercial reality, as Goncalves points out: “Digicore used another manufacturer in the region to assemble high volume products but apparently became dissatisfied with some aspects of quality. We were able to pick up that business in addition to the lower volume high mix contracts we already had, thanks in part to our commitment to demonstrating our quality capability.”

Inspection as a philosophy is all very well, but how does a busy company go about selecting the best solution? Production Logix researched the market using the media and online resources in the usual way, and then settled on a very short list to evaluate more closely. “We wanted to benchmark on-site, as only this would reflect the real-life situation we face,” claims Goncalves. “And this proved to be an excellent decision, as we were amazed at the contrast between systems and vendors that you would otherwise struggle to identify.”

In one instance, a vendor delivered a well-known AOI system for a two-week trial. “At the end of the two-week period, we still couldn’t use it and hadn’t successfully tested anything! Setup and programming was arduous, to say the least,” says Goncalves. In contrast, the company’s experience with the Marantz product was one of simplicity and effectiveness. “The local Marantz distributor, Zalman Orlianski, Zetech visited with Henk Biemans, head of Marantz Business Electronics for Europe,” he explains. “We got the initial Marantz contact from Zalman, whom we have dealt with before. Local support, service and product knowledge is important to us here in South Africa, and this was evidenced by Zalman and Marantz. They brought an AOI machine with them and within two days had the system programmed and provided training – still with plenty of time to run through a batch of 1000 Digicore boards.”

The Production Logix evaluation team was surprised by the initial results. “Despite years in a business where you think you’ve seen it all, it seems you can still have your expectations exceeded,” Elston proclaims. “Just a few years back we didn’t have today’s process sophistication. It would have taken a week to manually inspect these 1000 boards. Each is densely populated and features almost 500 SMT devices. As it was, the Marantz M22XCL-350 found some unexpected defects, which allowed us to immediately refine our process. I suspect that in other circumstances, these defects would have ended up with the customer.”

Marantz won the order and Production Logix set about making AOI the pivotal point in the assembly process. The company now has two Marantz AOI systems: M22XCL-350 and M22XDL-350, both of which are deployed in stand-alone mode rather than in line. “Even at 100% inspection, they’ve kept up with the high volume assembly line so still allow us to react rapidly to failure data,” explains Elston. The company has two production engineers who develop the inspection programs, but Elston says that the most experienced team member is a senior operator. “She also works on the repair station and so has detailed knowledge of the failures. And she trains other operators,” he explains.

More surprising is the commanding authority that Production Logix gives its operators. “They are also charged with immediately feeding back failure data to the assembly lines, and are empowered to stop the pick & place equipment if necessary,” says Elston. “Customers find that quite impressive, and I think it underscores our commitment to quality – which in turn is precipitated by our belief in our inspection equipment which has a proven ability to keep tabs on process consistency.”

Unusually for a contract manufacturer, Production Logix does not charge its customers or factor-in the overhead cost for its inspection process. The owners see it as a way to underwrite confidence in its quality – both internally and externally.

So what of the future for Production Logix? With volumes ramping up across the business, Goncalves admits that they are now implementing a selective inspection strategy and intend to use the Marantz Watchdog software to help define the most critical areas of each board to focus the AOI where it’s needed most. “Thanks to continuous refinement, our assembly process is now very stable. So our QC department will randomly pull samples from each batch that will be subjected to 100% coverage inspection.”

In the short term, the company is also gearing up to deal with more complex devices coming its way, including microBGAs, and to accommodate an increased volume and product mix typically of 15,000 boards per month of seven or eight different types. At the end of 2007, Production Logix was placing 3 million components per month. Now this is approaching 5 million – hence the need for extra capacity. “As a contractor, we cannot operate 24/7,” explains Elston. “We must retain spare capacity to cope with peaks from our existing customers and to add new customers to deliver growth. That means we keep the second shift free – and that’s the real driver behind specifying new lines and integrating new productivity-enhancing solutions like the Marantz AOI.

In the medium term, Production Logix is targeting Europe. "Today's global logistics are straightforward, our efficiency is high, quality exemplary and costs highly competitive. Hence we are viable in Europe," Elston claims.

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