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Q&A with Nicholas Brathwaite, Chief Technology Officer, Flextronics Corp.

Circuits Assembly: Explain your top three goals, technology-wise, for Flextronics in 2004?

Nicholas Brathwaite: I can probably summarize our goals into one statement: To leverage our capabilities, technical and operational, and to provide increased value to our customers and improved profits for Flextronics.

More specifically, these goals include:

1. increasing value add to customers through the integration of current technical and operational capabilities, as well as identifying and developing additional areas for increased value add and improved profits.

2. demonstrating leadership in addressing the new environmental requirements being placed on OEMs and ourselves, as exemplified by the RoHS [Restriction of Hazardous Substances in Electrical and Electronic Equipment] and WEEE [Waste Electrical and Electronic Equipment] initiatives.

3. the implementation of leading processes for high-density assemblies. These include large area array packages with high pin-counts for large, complex systems and small component assemblies with fine pitches and tight component spacing for miniaturized assemblies.

CA: "Environmentally friendly" processes seem to be a major push for Flextronics these days. What's your current focus in this area?

NB: We have been providing lead-free manufacturing services for customers for about seven or eight years. The recent increased efforts by Flextronics and other EMS companies to ensure environmental compliance is primarily a result of the pending implementation dates for the RoHS and WEEE directives in Europe.

Several challenges are associated with the implementation of these initiatives. Some are technical in nature—for example, understanding the process implications; developing the necessary processes, specifications and documentation; and the implementation of these new processes across factories worldwide. Other challenges are more operational or logistical. These include supply chain management issues, managing customer requirements and understanding contractual obligations and their impact on cost. These are not trivial issues and are at least as complex, if not more so, than implementing ISO 9000 or other such systems across dozens of factories worldwide.

Designing for environmental is already a major focus because these initiatives apply to products that will be launched into the market in 2006. So, while manufacturing may have several months still to implement the processes, we are currently designing products that must meet these requirements.

CA: Explain your concept of "experimental technologies."

NB: We use experimental technologies to understand product and process issues, validate performance and/or process/product integrity, and demonstrate competence. Primarily, these include manufacturing process-related issues such as advanced package assembly and rework, new en-

sure manufacturing techniques such as thixotropic molding or deep drawn aluminum, new PCB fabrication technologies or plastic molding or decoration techniques.

These are not, however, limited only to manufacturing processes. In an increasing number of cases, these include hardware design techniques, semiconductor IP or other design-related ideas.

Some current areas of focus include:

- high-speed backplane design, simulation, fabrication and test. We have developed a design flow and techniques for very high-speed backplanes with performance levels of up to 10Gbps and 54TB.
- very high-density packaging, including 3-D packaging and large form-factor components with high I/Os.

Previous experimental technologies, such as high yielding camera module design and assembly, 0201 component assembly, thin-walled and triple-shot molding, are technologies that have been successfully developed and implemented into products.

The successful implementation of lead-free assembly is another example. It's one I am particularly proud of because, not only have we successfully developed, optimized and implemented

lead-free assembly processes, but we have also successfully designed and launched a lead-free product into manufacturing.

We are currently working on high pin-count, lead-free area array packages, 01005 components and 0.4 mm CSPs. These are all beyond early experimentation. In some cases we have started factory qualification.

CA: Finally, what makes you excited about the future of electronics manufacturing technology—at Flextronics and in general?

NB: I am excited about the EMS industry because I believe the industry as a whole is realizing additional ways to maximize the benefits of the EMS partnership. And I have always been excited about our company. I think our leadership, vision, strategy and culture helped us to become the company we are today—the leading EMS provider.

It is exciting to be in a position and have the ability to help influence an entire industry by figuring out how to change the value proposition in the EMS-OEM relationship. We spend a lot of time with customers. Our strategy is in response to our customers' need for lower total costs, increased value and expanded services.

—Lisa Hamburg Bastin, Editor-in-Chief



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