As Seen In

Link to Circuit Assembly

Link to Printed Circuit Design & Fab

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FROM THE DESK OF MATT HOLZMANN

JPCA 2008 – Navigation for the Next

SANTA ANA, CA -- JPCA 2008, the annual trade show and gathering of technologists, managers, suppliers, fabricators, EMS providers and OEM's at Tokyo Big Sight was again a resounding success. Having visited a number of East Asian pcb fabricators, EMS providers, and suppliers beforehand, I was then able to establish a base line for activity at the show. With the Asian electronics interconnect industry experiencing a slowdown of 10 – 15% since the first quarter, concerns about the price of oils, basic raw materials, the U.S. economy and other factors were evident. But with an underlying optimism, managers were in the unusual position on the bare board manufacturing side of seeing orders for equipment placed at a number of exhibitor stands at the show. JPCA is typically not one where many orders are placed on the floor. Rather, specifications are discussed, the tires on the equipment side are kicked, new materials are introduced, and the exhibition of evolutionary progressions is the norm. And yet, equipment suppliers were in many cases optimistic. Orders for drilling systems, wet process equipment, fabrication systems, and other critical production tools in the millions of dollars were placed with both large and small suppliers.

Attendance was steady with last year's numbers, but with the addition of the Protec assembly show to the traditional pcb fabrication show, it is obvious that overall, companies are sending fewer, but perhaps more key personnel. With pressure on profit margins and sales down, those who attended were highly focused. With time limited by previous commitments, I was unable to get a feel for the business pulse on the pick & place equipment side.

The recent insolvency of Mania GMBH cast a pall over many companies trying to determine the effect on the data dependent part of our industry.

The UCAM Cad/Cam software package has significant market share and without this, a greater trend towards Genesis and ODB++ would tend to favor Orbotech and Valor. Such monopolies stifle innovation and competition, and a monolithic set of design rules serves no one's interest. The drama will play out over the next several months with a small but highly interested audience. However, this will affect every manufacturer in the industry and should raise red flags worldwide.

There were also a number of discussions about the effects of European Community REACH environmental regulations and the manner in which they are implemented. Exclusionary policies in the decision making process by the European Union, as well as some of the decisions made so far by the EC have chemists, industrial environmental managers, technologists and managers at the highest levels either scratching their heads or in simmering revolt. When in fact the deeper and overall environmental solution is both more hazardous to the environment and expensive than under the preexisting standards, the motivations and capabilities of those responsible for those decisions must be questioned and challenged. IPC in the United States has challenged some of these decisions together with other national standards organizations and has taken a leadership position. When politically driven decisions result in products with less reliability and greater negative environmental impact based upon premature system failures or higher overall economic and environmental cost, in some cases catastrophic, the fundamental logic and motives behind those decisions must be questioned. Is politics trumping the scientific method and good engineering practices?

R&D on basic and highly innovative technologies continues on its own track. The smart companies, as well as universities and research institutes are continuing to invest in the long term, and the future is bright. Research into nanotechnologies with direct effects on high density interconnect manufacturing is substantial, and small glimpses of products in their infancies were offered. These include new inks; metallic compounds with interesting new properties, and ultra fine line particle capability has become a focus for laminate additives. Faster and higher frequency signal speeds, lower electrical resistance processes, and improved signal integrities will all enable many other complementary features to improve package integrity and performance.

There is a trend towards using higher performance dry film photoresists for use in packaging substrate and high performance applications. In Japan, dry film has remained the preferred photoresist for many of the same properties for which it was originally developed back in 1968 by Jack Celeste at DuPont.

Because a significant percentage of the Japanese pcb manufacturing industry is involved in the packaging substrate manufacturing process, equipment that in many cases has limited applicability for general multilayer or flex circuit manufacture was featured by leading edge suppliers. Direct imaging systems with the advantages of improved overall image quality, local scaling and ultra fine line capabilities was exhibited by a number of suppliers. One of them demonstrated a system capable of producing 140 20" x 24" panels per hour in primary imaging applications. At close to US$2,000,000 per copy, the market may be limited. Special purpose lamination systems for multilayer flex circuitry and packaging substrates are also in demand.

The arena of embedded components continues to expand with new applications entering wider usage, and as the processes for both passive and active embedded devices and chip sets are refined, this will build the knowledge base that allows more widespread demand. Several OEM's in test & inspection, wireless applications, base stations, and other applications are now playing very close attention. The progression from digital watches to wireless handsets to more sophisticated applications is inexorable. In North America, much work is being done in the military and aerospace arenas, where visibility is purposely limited.

More North American companies than in several years past also sent representatives to see if the buzz on so many of these processes is in fact true. It will be interesting to gauge their impressions. DDI, TTM Technologies, M Flex, and OneSource Group all sent senior technologists to investigate advances in processes, materials and equipment. Much of the discussion is in the demand for HDI interconnect from North American OEM's and EMS providers. Wireless applications are the bedrock, but certainly not the only drivers. As demand is defined, more opportunities will become apparent.

However, without a deeper and more complete understanding of the opportunities in design, cost reduction and performance, these opportunities will continue to elude the North American manufacturing base.

Engineers, scientists, and especially the managers funding and directing R&D must be completely in tune with the advantages, pitfalls, and opportunities of new technologies. With the hollowing out of American industry, this is a critical national policy issue that is still is beyond the understanding of the political class, Wall Street, and senior management at almost every major American corporation. A deep and thorough understanding of the means of production is an absolute requirement for progress, and stagnation = death. It is the Achilles' heel of the American economy and someone at a much higher pay grade than your humble reporter had better realize that in technology there is now a very small first tier in North America who can deliver those technologies that keep an economy moving forward in the 21st Century, with the vast majority mired in the same rut churned 30 years ago by the very pioneers who built the industry, some of whom were still on the floor at JPCA trying to stem a tide of indifference. 12-18 layers multilayers and industrial circuit boards can be built anywhere in the world, in most cases at lower cost and more efficiently linked to the market. When the Taiwanese printed circuit industry moves en masse into a new market such as Vietnam, bringing with it the entire supply chain, the end is near for those building “me too” product. When names like Bergman, Holden, Weiner, and Carpenter are heard less often and at lower volume, and fewer names are added to that list of technologists who “get it”, we all lose.

Another notable trend was the participation of a greater number of the printed circuit manufacturers and assemblers themselves. In addition to the many Japanese companies exhibiting circuit boards and specialist manufacturing processes and applications, they have joined by several European, South Asian, and Chinese suppliers as well. While Ibiden, Eastern, CMK, NEC, Dai Nippon Printing and other Japanese leaders have always considered the JPCA show a critical part of their marketing and sales strategies for both pcb and EMS, companies such as Ruwel Werke from Germany and the multinational Somacis Group are also making great strides in market penetration.

Ruwel has focused on automotive and rigid/flex, while Somacis offers a wide range of services from plants throughout Europe and China. If European companies can compete on the Japanese playing field, why are there no Americans?

On the assembly side, Protec has always been the heavy equipment show, while Internepcon Japan served a wider audience of specialty markets and applications. The global supply chain was present in depth, and that side of the exhibition was very busy. Booths were crowded, and while some manufacturers held off on new product introduction until Internepcon, the more traditional site for new product introduction, Protec represented an excellent opportunity to investigate performance, price, and process compatibility. In inspection it seems the number of vendors continues to increase while there are rumblings of consolidation in the pick and place market. Maintaining profitability is the key, and with more competition this becomes ever more difficult. In materials, the rose colored glasses on the noses of users continue to interfere with a realistic assessment of true market conditions. Increases in the cost of key raw materials of 20, 30, 50, and even 200% +, while process materials and component prices remain stable are but a temporary panacea as the supply base struggles for “market share”. Fundamental economic realities dictate that this will continue on only so long before there is a major crash in the supply base and a shift in the power equation to fewer suppliers who are able to enforce a pricing structure that allows for profitability that attracts the returns on investment necessary to a healthy industry. A very few companies are now realizing that it is better to partner with suppliers and customers and provide for the good health of all participants rather than beat down on their suppliers like a cur.

Hope and despair, drama and comedy, courage and cowardice, fear and joy; the whole range of human emotion was on display. One just had to look around with a little perception and unblinkered eyes to watch the drama (or is it comedy?), unfold. Next year's edition, themed Innovation for the Next Dream, will be held from June 3-5. Same JPCA time, Same JPCA place!

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EDITORS: Mr. Holzmann is available to discuss the details of this new technology system. To arrange an interview or for additional information, please contact Lynzi Straub, 858-720-9111 ext. 206. EQUIPMENT PHOTOS also are available.