NOVEMBER 2001

SMTA
Surface Mount Technology Association
Los Angeles / Orange County Chapter

"The Surface Mount Technology Association membership is a network of professionals who build skills, share practical experiences develop solutions in electronic assembly technologies and related business operations."

DATE

- November 15, 2001

AGENDA

- 6:00 PM, Social Hour
- 7:00 PM, Dinner/Presentation

MEETING FEES

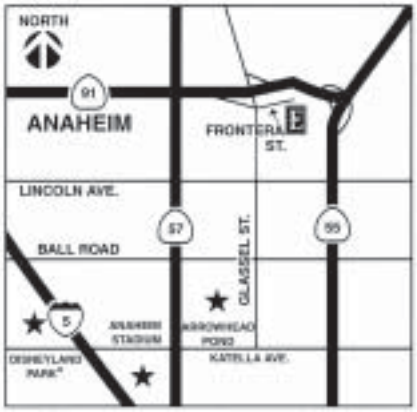
- $20, Members
- $25, Nonmembers

MENU

- Red Snapper *or* Chicken Picatta

LOCATION

- Embassy Suities
  3100 East Frontera
  Anaheim, CA
  (714) 632-1221



RESERVATIONS

- Call: Production Technology
  (714) 895-0016
- NO SHOWS WILL BE INVOICED.
  If you can not attend, please cancel your reservation by 12 Noon on Wednesday, prior to the meeting. *See you there!*

BOARD DESIGN AND ASSEMBLY PROCESS EVALUATION FOR 0201 COMPONENTS ON PCBS

Sammy Yi
Vice President, Assembly Technology Development
Flextronics, San Jose, California

ABSTRACT

As 0402 has become a common package for printed circuit board (PCB) assembly, research and development on mounting 0201 components is emerging as an important topic in the field of surface mount technology for PWB miniaturization. In this work, a test vehicle for 0201 packages was designed to investigate board design and assembly issues. Design of experiment (DOE) was utilized, using the test vehicle, to explore the influence of key parameters in printing, pick & place, and reflow processes, on the assembly process, as well as the relationship between pad design parameters and the assembly process. These key parameters include printing parameters, mounting height or placement pressure, reflow ramping rate, soak time and peak temperature. Pad designs consist of rectangular pad shape, round pad shape, and home-based pad shape, with various spacings. For each pad design, several different aperture openings on the stencil were included. The performance parameters from this experiment include solder paste height, solder paste volume, and the number of post-reflow defects. By analyzing the DOE results, optimized pad design for PCB and assembly process parameters will be determined. Other related topics, such as stencil thickness, solder paste characteristics, pick & place machine capability, rework, and inspection, will also be discussed.

Speaker

Sammy Yi is currently responsible for company wide advanced assembly and interconnect technology development and implementation.

Prior to Flextronics, Sammy had over 10 years experience in electronics manufacturing. He has worked in both OEM and EMS companies. He had wide range of responsibilities in engineering management, quality system, technology development and operations management.

Sammy poses BS and MS in Mechanical Engineering and MS in Industrial Engineering.

Sammy has been author and co-author of numerals technical papers in international conferences and technical publications.

Sammy has been the president of SMTA for Silicon Valley Chapter from 1997 to 1999. He is currently on board of directors of SMTA.

Message From the President

by Joanne DeBlis

We are quickly approaching year end with just two more Chapter events scheduled. Hopefully you will be able to attend both Sammy Yi's presentation this month as well as the Christmas party scheduled for Friday, December 7th. This will be held aboard the U.S. Spirit departing from Ports O'Call in San Pedro. The ships title seems particularly appropriate this year, and we look forward to celebrating the holidays with you.

Going into next year the Board would appreciate your recommendations for topics and speakers. National has again scheduled the Pan Pacific Symposium which will be held in Maui, Hawaii, on February 5-7, 2002. This is the Seventh Annual Symposium and promotes a technical dialogue with professional and business leaders throughout the Pacific Basin. Additional information is available at www.smta.org on this exciting conference.

I would also like to take this opportunity to recognize our Corporate Members. They help to sustain many of our activities throughout the year and we appreciate their dedication to the SMTA. A special thanks is extended to C.P. Chin at Express Manufacturing for hosting our factory tour, and to Bob Warren at Conexant for hosting the Chapter Training event in October. We hope to see you all on the 15th for what promises to be a dynamic program!

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Corlund Electronics Corporation
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Member Profile on...

Vic Graninger

VR Enterprises, a consulting firm that bridges the gap between product design ad manufacturing, was started four years ago by Vic Graninger and Susan Gaylord in Murrieta, CA.

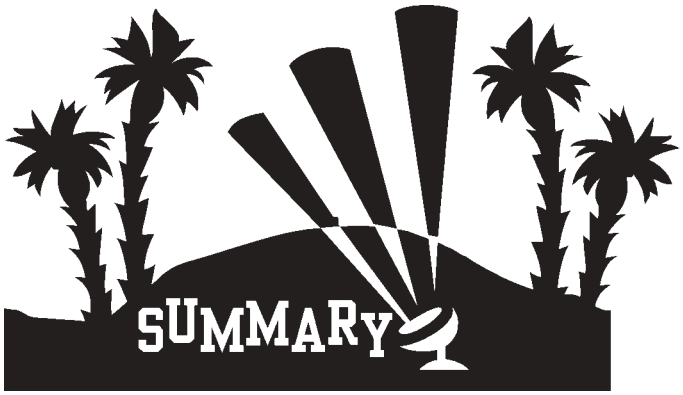
Vic is a graduated of the University of Arizona. He has worked in the Electronics industry for the past 13 years as a process Engineer until four years ago. His last position before starting VR Enterprises in Murrieta was with Lantronics in Irvine.

Susan Gaylord, Vic's wife is also his partner in VE Enterprises. Vic and Susan have a 16 year old daughter. They are new members in the SMTA.

Let's Welcome Vic and Susan!

October 2001 Meeting Summary

By Atul Mehta



LA/OC SMTA Chapter organized annual chapter training program for the month of October at Conexant Corp., Newport Beach, CA.

Jim Blankenhorn, President of SMT Plus, conducted the training. The topic was "Fast Dense and Wireless" design and manufacturing. The presentation was broken down in several segments.

1. Components
2. Design considerations
3. PC Boards
4. Dense assembly requirements and
5. Implementation

As the products such as wireless phones, camcorders, PDAs, sub-notebook computers etc. are getting smaller and lighter, components and pc boards are also getting smaller and denser. To accomplish very high-density assemblies requires knowledge and close cooperation between design and manufacturing. Up front work has to be done to establish information for components, boards and the process such that components can be placed as closely as possible without experiencing degradation in yield or reliability.

There are industry standards for component packages published by Electronic Industries Alliance (EIA). This includes the package size and plating type. As far as the package size is concerned, English units are still being followed, however, metric units are slowly making their way in, as the components get smaller. It is important to know what units are specified. Especially, in case of pitch size of fine pitch QFP. The footprint design must match the component design units; otherwise the part may not fit properly on the board. The creation of land patterns is critical to process and assembly yields and product reliability. To meet the demands of high-density designs the size of the land patterns need to be reduced. To achieve very dense assemblies using surface mount technology requires keen insight and knowledge about components, equipment and processes.

The type of plating on component termination will affect final package dimensions. Some of the common plating used are – Gold plating, Solder plating and solder dip.

In a high-speed design it is apparent that speed and density go hand in hand. To achieve higher speed typically means increased power dissipation, which is an enemy of density. Advancement in semiconductor technology coupled with smarter circuit design alleviates the situation enabling design of both high-speed high-density circuits.

Fabrication of Printed Circuit Board (PCB) is a key part of making high-speed high-density products. Flexible substrates have been used for sometime, however with advent of area array packaging its use as an interposer is on rise. Due to lightweight, both flex and flex rigid circuits are gaining popularity in the electronics industry. Some of the fabrication challenges are keeping the cost relatively higher.

Trace width and trace spacing is constantly decreasing for achieving high density. An increasing number of fabricators are offering 3 mil lines. To achieve this small line width typically requires a fabricator using additive processing. Another technology that is rapidly growing is called Microvia and High Density Interconnect (HDI). These are plated through holes 6 mil diameter or smaller in size and are created in layers added to the outer surfaces of an otherwise finished board. New materials and processes have evolved permitting the design of HDI multiplayer boards that are thinner, lighter and less expensive.

The assembly equipment used to print, place, reflow, clean and test is all key factors in very high-density designs.

Jim cautioned that the use of very high-density design rule is not for everyone. The need must be identified followed closely by the equipment to support the assembly of such products. The steps recommended for successful implementation of very high-density design include the following –

- Product Analysis
- Test Vehicle Design
- Process Analysis and Specification
- Product Design
- Process and reliability review

Jim discussed above topics in depth providing an excellent insight into high-density design.

The chapter appreciates the efforts put forth by Jim for conducting a state of the art presentation.

TECHNICAL EXCHANGE

"Managing the Downturn"

As the nation and the world slip in to recession we are often reminded of the "good o'l days" not so long ago. In our tech sector for instance, were the sky rocketing stock prices, high salaries, too much demand, not enough supply, parts shortages, not enough talent to go around, low unemployment, etc. These were the daily topics being discussed in round table managers meetings. We now face a different problem, the exact opposite.

What to do during these tough times?

For one, it is out of most people's control to really have any significant impact on this slumping economy with the exception of being positive and spending more. A correction was inevitable. To make matters worst, the September 11th attacks speeded up this correction and has now made the entire world economy uncertain. Jitters and uncertainty are enemies of the economy and stock market. Nervousness that now exists amongst us makes consumers hold back on spending. If consumer confidence drops, demand for goods drop, making a bad economy, worst.

Young new-faced managers are now faced with tough decisions to make. Managers meetings about overdue shipping dates, increasing capacities and facility expansions have been replaced by cutting costs, layoffs, and unfortunately, shutdowns. A rude awakening for young managers is an understatement. Being a manager the past few years during the boom must have been a challenge and fun. Being a manager when times are slow is tough, and at times, painful. It is also what will characterize the future of these young management professionals. Most businesses are able to cope with a 10% or even 20% drop in business. To cope when demand drops by half is a different story, and many will not manage it. The steps taken by many will define the future growth pattern of this nation.

The question many managers face today is; Where and how to cut costs in order to keep the doors open?

These are times when seasoned and experienced managers should be consulted. One must not underestimate their valuable and prior experiences during previous downturns. What they did? What was learned? What they could have done differently? Are all essential brainstorming session questions that should be answered. Many of the inexperienced managers will have to set aside their ego, get advice, and thoroughly evaluate possible solutions. Simply cutting back on personnel may not always be the best quick and easy fix. In the previous downturn managers were quick to hand out pink slips to good talent only to regret it when the economy bounced back in the mid-90's. Something should be learned from this prior experience, and eager young managers must resist the temptation of simply cutting back for the sake of the shareholders. Consolidated work schedules, voluntary time off, vacation, early retirements and shared off time are all good layoff alternative methods. Some companies are offering partial pay packages coupled with unemployment benefits, which at times may equal up to 50-75% of a person's regular wage. The unemployment agency has many layoff alternative methods, which benefit the employee and employer equally alike.

Is there light at the end of the tunnel--YES!

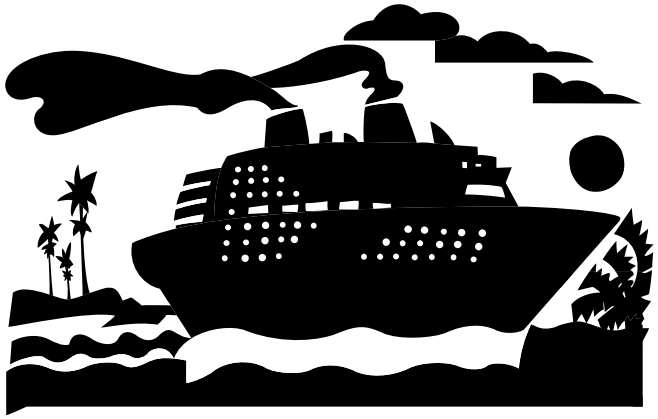
Managers who do well over the coming months will become the stars of the coming years. It is in the early stages of an upturn that fortunes are most easily made. This is the moment when companies should be preparing to make them.

Written By:
Deonisio Nungaray
General Monitors USA

LA/OC SMTA Chapter

Mark Your Calendars for our Christams Party!

December 7, 2001
Aboard 90' sailing ship
"U.S. Spirit"
Ports O'Call, San Pedro, CA



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Surface Mount Technology Association

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Schedule
Ads should be submitted at least one week prior to the end of the month proceeding the first month of desired publication.

Vendor Tables
Display your products and literature at a Chapter Meeting. Price $ 100.00, with a bonus of a free 1/4 page ad for one month.

Contact: RIKI BROWN
CALL (714) 738-3775 / FAX (714) 738-7727 E-MAIL: RikiGB@aol.com

SMTA
Surface Mount Technology Association

c/o Riki Brown
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Corona, CA 92882

Address Correction Requested

LA/OC Chapter Meeting
November 15, 2001 • 7:00 PM
Embassy Suities
Anaheim, CA

"Board Design and Assembly Process Evaluation for 0201 Components on PCBS"
by
Sammy Yi, Vice President
Flextronics, San Jose, California