

Semicon/ West '85

***'Split show' concept
comes to this year's
event in the form of a
pavilion that houses all
test and assembly equipment.***

Sandra Leavitt, Associate Editor

The show's the thing ... that brings thousands of curious attendees converging on San Mateo, Calif., this month. The largest, most comprehensive event in the semiconductor industry, Semicon/West convenes from May 21 through May 23 at the San Mateo County Fairgrounds and Bay Meadows.

The event consists of a major equipment and materials exhibition, a symposium and several standards meetings. Other related elements at the show are the VIP preview day, an awards banquet and spouses' day.

The theme for Semicon/West '85, "New Tech-





nology in Full Bloom," focuses on the current harvest of leading edge developments in the semiconductor industry. The newest technology is the embodiment of fabrication equipment and materials state of the art, vintage 1985. For a more in-depth report on what will be showcased, *Semiconductor International* presents an extensive Product Preview later in these pages.

Sponsored by the Semiconductor Equipment and Materials Institute (SEMI), the annual event dates back to 1971. SEMI organized the show one year after the trade group itself came into existence. At that first meeting, less than 100 exhibitors displayed their wares for almost 2000 attendees.

Today, 15 years later, a record 1000 plus companies will be exhibiting. And, attendance is expected to reach more than 45,000. These phenomenal figures belie the current condition of the industry, which has for several months been characterized by a slump in the demand for semiconductors.

Still another new building

Akin to the record numbers of interested individuals, SEMI has once again been faced with a seemingly perennial space problem. The 1985 solution has come in the form of another new building, this one temporary. Just inside Gate D on the fairgrounds, there is a sprung structure, whose balloon-like configuration houses the 1985 test and assembly exhibition.

The 100,000 ft² temporary pavilion increases available booth space by 28% over last year. Furthermore, the 2135 booths that will be occupied by the entire exhibition in 1985 represent almost double the number in the 1983 exposition. Complete floor plans of all the buildings, and their booth space numbers, at Semicon/West are displayed later in this coverage. (See the Semicon/West Exhibit Guide.) This section also contains our most recently available list of exhibitors, with their booth numbers. The exhibitors list may be cross-referenced with the floor plans to help you plan your time at the show most efficiently.

Divided into sections for test, assembly and handling equipment, the new pavilion symbolizes the inauguration of a "split show" concept. For the first time at Semicon/West, there will be a division by technology: all of the testing and all of the assembly equipment makers will

be under one roof.

Monday, the day before

For some attendees, the choice of how to allot time begins the day before Semicon/West opens. For example, the schedule for standards meetings starts Monday, May 20, and runs through Thursday, May 23.

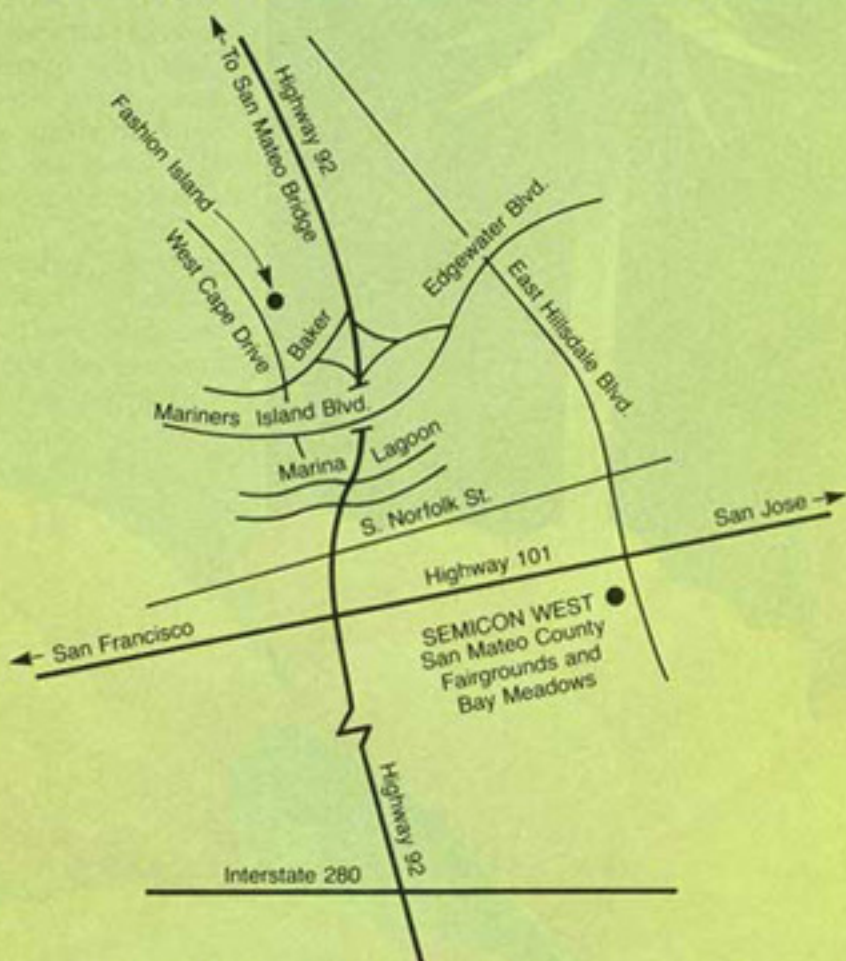
9 a.m. - 4 p.m.: Two standards groups, available to "technically qualified" individuals, meet for the full day—the Chemical Reagents and the Com-

munications subcommittees. To attend, call SEMI's Standards Dept. at (415) 964-5111. All subcommittees and task forces assemble at the Dunfey Hotel. (A more detailed discussion of the meetings, as well as the entire schedule, is available in the following pages.)

9 a.m. - Noon: Two standards groups meeting for the morning only are the Lead Finishes and the Silicon Wafer subcommittees. *Dunfey Hotel*

1 p.m. - 4 p.m.: The Plastic Packaging Leadframe and Silicon Epitaxial

Traffic Map of San Mateo County Fairgrounds



From the South Bay, take Highway 101 north. Exit at East Hillsdale Blvd. and go to Edgewater Blvd.

Turn left onto Edgewater, which becomes Mariner's Island Blvd., and follow to West Cape Dr. Turn right onto West Cape and follow to the main entrance of San Mateo Fashion Island.

From San Francisco, take Highway 101

to Highway 92 and go east to the Mariner's Island Blvd. exit. At the light, turn right onto Mariner's Island Blvd. and proceed as above.

From Interstate 280, exit at Highway 92 and follow the directions above.

Parking is available at Fashion Island, where a free, express shuttle takes passengers to and from the fairgrounds.

Wafer subcommittees hold standards meetings for the afternoon. *Dunfey Hotel*

1 p.m. - 6 p.m.: For several others, Semicon/West will begin one day early as well. SEMI once again presents a VIP day, scheduled for Monday, May 20. The event is by invitation only, and offers a preview of the exposition to exhibitors and preferred customers.

Tuesday, opening day

Before setting out for the fairgrounds, you might want to glance at the area map included here for your convenience. It details several approaches to the always crowded grounds, and explains alternate routes.

Both the technical program and the standards meetings begin at 9 a.m. every morning. For those of you who have not registered in advance, the registration office will open at 8 a.m. You will need that badge to enter the show.

If you plan to begin by attending a technical session and do not have your badge yet, arrive at 8:45 a.m. at the main exhibit entrance to Bay Meadows (where sessions are held). You will receive a temporary badge, good for technical session attendance only. When you leave the session, a registration form will be provided so that you may obtain general admittance.

Exhibition Hours

Tuesday, May 21: 10 a.m.-6 p.m.

Wednesday, May 22: 10 a.m.-6 p.m.

Thursday, May 23: 10 a.m.-5 p.m.

Here are the options available to attendees on the official opening day of the show:

9 a.m. - 11:45 p.m.: The Gallium Arsenide subcommittee holds its standards meeting. *Dunfey Hotel*

9 a.m. - Noon: The initial seminar, **Packaging Automation**, is open to anyone who wants to attend (as are all technical sessions). An in-depth report and complete schedule of the program are available directly following these pages. *Bay Meadows*

9 a.m. - Noon: The other morning standards meetings are the **Equipment Automation** subcommittee and the **Analytical Procedures** task force. *Dunfey Hotel*

10 a.m.: The show begins! Once inside, refer to your SEMI program or pick up a pocket-sized *Semiconductor International Show Guide*—new with Semicon/West '85—at the SI booth. The



John Naisbitt, author of "Megatrends," is guest speaker at SEMI's annual banquet.

guide, which will also be available at most area hotels, contains a map of all of the buildings, an exhibitors list with booth numbers, complete show coverage, a preview of many of the products you will be seeing, and tourist information on what to do and where to dine when you're not at the fairgrounds.

Noon - 2 p.m.: The standards task force on **Gases Specifications** meets. *Dunfey Hotel*

12:15 p.m. - 2:15 p.m.: Standards meeting takes place by the **Solar Grade Substrates** subcommittee. *Dunfey Hotel*

1 p.m. - 4 p.m.: The **Wafer Carriers** subcommittee holds its standards meeting. *Dunfey Hotel*

1:30 p.m. - 4 p.m.: The only afternoon technical session is **Process and Equipment Automation**. *Bay Meadows*

2:15 p.m. - 4 p.m.: The subcommittee on **Gases** holds its standards meeting. *Dunfey Hotel*

2:30 p.m. - 4 p.m.: The standards subcommittee on **Gadolinium, Gallium, Garnet Substrates** meets. *Dunfey Hotel*

6 p.m.: Opening day is over. Time to soak your sore feet.

Wednesday, the second day

Those spouses who registered in ad-

vance (deadline: May 6) will spend this day on a grand tour of Muir Woods, home of the giant redwoods, and picturesque Sausalito on San Francisco Bay.

9 a.m.-Noon: The technical session on **Contamination Control** begins the day's planned events. *Bay Meadows*

9 a.m.-Noon: The two standards meetings scheduled are the **Plastic Packaging** and the **Photolithographic Chemicals** subcommittees. *Dunfey Hotel*

10 a.m.: The exhibition opens to registered visitors again.

1 p.m.-4 p.m.: Standards meetings will be held by the **Photomask** and **Molding Compounds** subcommittees. *Dunfey Hotel*

1:30 p.m.-4 p.m.: The **Effluent Handling** task force holds its standards meeting. *Dunfey Hotel*

6 p.m.: The exhibit closes for the day. Time to soak your tired feet.

7 p.m.: SEMI's awards banquet begins with a cocktail hour at the St. Francis Hotel in San Francisco's Union Square. Tickets are \$75 per person.

8 p.m.: Dinner is served at the awards banquet. The spotlight is on the winners of the SEMMY awards, presented annually to individuals who have made significant contributions to materials, wafer fab and assembly/testing areas.

Guest speaker at the affair is best-selling author John Naisbitt, well known for his book, "Megatrends". The social forecaster heads The Naisbitt Group, a company that advises the government and private firms of changing trends.

Thursday, the last day

On the final day of the show, there is a full schedule of events.

9 a.m. - Noon: Session IV of the technical program deals with **Automation Systems Experiences**. *Bay Meadows*

9 a.m. - 3 p.m.: The **Ceramic Packaging** subcommittee holds a lengthy standards meeting. *Dunfey Hotel*

9 a.m. - 11 a.m.: The subcommittee of **Rigid Disks** meets to discuss standards. *Dunfey Hotel*

9 a.m. - Noon: The standards meeting of the **Gases Safety** subcommittee is scheduled. *Dunfey Hotel*

10 a.m.: The exhibit opens to all registered attendees.

1 p.m. - 4 p.m.: The final standards meeting will be held by the **Equipment Safety** subcommittee. *Dunfey Hotel*

5 p.m.: The show closes. Take your tired feet and fatigued limbs home. □

Seminars Address Automation Again

Chuck Murray, Associate Editor

The theme for the Semicon/West '85 technical program, "Wafer Fab to Packaging Automation," will be a familiar one for past participants. Semiconductor automation was also emphasized in the 1984 program, though this year's sessions add two new dimensions to the annual symposiums: panel discussions and a broader spectrum of topics. The three day program includes sessions in packaging automation, process and equipment automation, contamination control and software systems experiences.

"The driving force toward more automation continues to be a very significant one," said Program Chairman C. Richard Deininger. "As a result, we again selected that theme for the '85 Semicon/West technical program."

Deininger, who is president of Automation Systems Associates in San Jose, Calif., believes this year's program gives a balanced view of the automation area, which is a primary concern in the semiconductor industry. "People are asking, 'What do I do? How do I automate? Where should I be going with my automation program? What are the benefits to automation?'" he said. "I think it is important to have participants who have implemented various automation programs. Talking about it openly makes a significant difference. It motivates more people to pick up the theme and implement automated work in a factory."

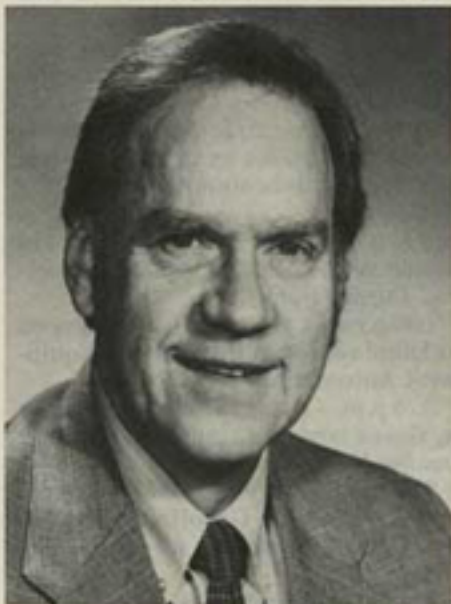
Another point Deininger hopes the sessions will emphasize is the need for sensible, step-by-step, "evolutionary" automation. "By that I mean, automating a line doesn't need to be done all at once," he explained. "A company may want to grow into it. Trying to force everything to work all at once gives a level of inflexibility. Most manufacturers would rather not take that chance."

Packaging Automation

The first of the sessions, Packaging Automation, will be held Tuesday, May 21, at 9:00 a.m. This is an area, Deininger said, that is often overlooked when discussing automation.



C. Richard Deininger, president of Automation Systems Associates, is program chairman for the '85 symposium.



Phillip A. Lutz, supervisor of IC packaging technology at Delco Electronics Div., GMC, chairs the session on Packaging Automation.

The focus of the sessions will be on TAB aspects of assembly and automation of TAB assembly work. Presentations include "Packaging Automation with TAB Interconnects," "Issues Concerning High Lead Count TAB," "Thermal Characteristics of TAB Bonded ICs," "Characteristics for TAB Interconnect Tape," "Automated Manufacturing of TAB," and an "Overview of TAB Equipment Requirements." The technical session chairman, Phil Lutz, supervisor of IC Packaging Technology with Delco Electronics in Kokomo, Ind., was unavailable for comment.

Process and Equipment Automation

The program's second session, Process and Equipment Automation, will be held Tuesday, May 21, at 1:30 p.m. Session Chairman Dr. Richard Blanchard, vice president, Design and Advanced Technology Development for Siliconix, Inc. in Santa Clara, Calif., says that the main purpose of the session is to make process engineers aware that complete automation is no longer a hypothetical case. "Automation should be an industrywide standard within five to 10 years," Blanchard explained.

Blanchard identifies two distinct focuses for the Process and Equipment Automation session. The first, he said, addresses automation of equipment and the second looks at the impact of automation on the engineer. "If the automation is taking place at the front end and the flows are automated mechanically, then the information flow must parallel that," he explained.

The session leads off with the presentation of "Automation of Plasma Etching in 150 mm Wafers," which Program Chairman Deininger and Session Chairman Blanchard stress as important for two reasons: 1) the automation of plasma etching, and 2) the implementation of larger wafers. The next two presentations, "Designing Projection Mask Aligners to Address Automation" and "Features of Process Automation in Sputtering" round out a trio of presentations that Blanchard referred to as "three key processes — etching, align-

Semicon/West '85 Technical Sessions

Program Theme: *Wafer Fab to Packaging Automation*

Program Chairman: C. Richard Deininger, Automation Systems Associates, San Jose, Calif.

Packaging Automation

Session 1: Tuesday, May 21, 1985
9:00 a.m.

Session Chairman: Phil Lutz, Delco Electronics, Kokomo, Ind.

9:00 a.m. — *Packaging Automation with TAB Interconnects*, M. Petraitis, National Semiconductor, Sunnyvale, Calif.

9:30 a.m. — *Issues Concerning High Lead Count TAB*, D. Hallowell, Digital Equipment Corp., Andover, Mass.

10:00 a.m. — *Thermal Characteristics of TAB Bonded Integrated Circuits*, M. Koors, Delco Electronics, Kokomo, Ind.

10:30 a.m. — *Characteristics for TAB Interconnect Tape*, L. Dries, Micro Bond Technology, San Jose, Calif.

10:45 a.m. — *Automated Manufacturing of TAB*, J. Hullmann, MESA Technology, Mountain View, Calif.

11:00 a.m. — *Overview of TAB Equipment Requirements*, D. Brown and M.G. Freedman, D. Brown Associates, Inc., Fort Washington, Pa.

11:20 a.m. — Panel discussion

Process and Equipment Automation

Session 2: Tuesday, May 21

1:30 p.m.

Session Chairman: Dr. Richard Blanchard, Siliconix, Santa Clara, Calif.

1:30 p.m. — *Automation of Plasma Etching in 150 mm Wafers*, S. DeOrnellas, Lam Research Corp., Fremont, Calif.

1:50 p.m. — *Designing Projection Mask Aligners to Address Automation*, F.M. Kraus, Perkin-Elmer, Wilton, Conn.

2:10 p.m. — *Features of Process Automation in Sputtering*, M. Felchek and R. Stander, Materials Research Corp., Orangeburg, N.Y.

2:30 p.m. — *Wafer Transport Innovations for Multi-Process Integration*, B. Hardegan and E. Jaye, Brooks Automation, No. Billerica, Mass.

2:50 p.m. — *Improving Process Performance Through Desktop Computer Control*, M. Brain, Hewlett-Packard, Palo Alto, Calif.

3:10 p.m. — *Improving Wafer Throughput and Yield by Simulating Wafer Flow*, R. Atherton and Dr. J.E. Dayhoff, Incyte/a Schlumberger Co., Los Altos, Calif.

3:30 p.m. — Panel discussion

Contamination Control

Session 3: Wednesday, May 22

9:00 a.m.

Session Chairman: Dr. Jack Solomon, Union Carbide Corp., Tarrytown, N.Y.

9:00 a.m. — *Clean Room Designs for VLSI Semiconductor Manufacturing*, A. Rapa, IBM, Hopewell Junction, East Fishkill, N.Y.

9:30 a.m. — *Materials for High Purity Gas Distribution Systems*, R. Zawier-

ucha, Union Carbide Corp., Tonawanda, N.Y.

10:00 a.m. — *Contamination in Liquids Used in VLSI Manufacturing*, J. Imbalzano, Du Pont, Wilmington, Del.

10:30 a.m. — *Particle Control via Cassette Handling Automation*, Dr. M. Parikh, Asyst Technologies Inc., Fremont, Calif.

11:00 a.m. — *Particulate Retention and Shedding Characteristics from Point-of-Use Process Gas Filters*, M. Accomazzo, Millipore Corp., Bedford, Mass.

11:30 a.m. — Panel discussion

Automation Systems Experiences

Session 4: Thursday, May 23,

9:00 a.m.

Session Chairman: Wayne Murakami, CTX International, Sunnyvale, Calif.

9:00 a.m. — *Dynamic Production Scheduling in Computer Aided Fabrication*, S. Gershwin, MIT, Cambridge, Mass.

9:30 a.m. — Title to be announced, J. Sura, Signetics, Sunnyvale, Calif.

10:00 a.m. — *Approach to Worldwide Systems Implementation*, R. Clifford, Intel, Santa Clara, Calif.

10:30 a.m. — *An Approach to Process Automation*, M. Nakamura, Toshiba Electric Co., Kanagawa Prefecture, Japan

11:00 a.m. — *Implementation Experience and FAB Control Systems*, H. Kato, NEC-Japan, Kanagawa Prefecture, Japan

ing and automated metalization."

The fourth presentation, "Wafer Transport Innovations for Multi-Process Integration," addresses an area that, according to Blanchard, needs to be approached. "At the present time, there is no standard of how one should move wafers from place to place," he said. "It looks as though there are several possibilities. But it really is a problem. We are not at the point yet where we can put a raw wafer in at one end and it flows out the other. This addresses the question of wafer transport in a mixed vendor environment."

Following the wafer transport presen-

tation will be a paper on "Improving Process Performance Through Desktop Computer Control." "The questions that an engineer has are: 'What can I do? How can I keep in touch with process performance?'" Blanchard said. "This presentation addresses that. The key here is 'desktop.' It's what an engineer has on his or her desk to help accomplish this goal."

The session's final presentation, "Improving Wafer Throughput and Yield by Simulating Wafer Flow," looks at the use of computing power in what Blanchard describes as a "more encompassing sense." "Here, we are using the

computer for more than just access to information and short term control. Here we are saying, 'With the database available, how does one use this information to improve throughput and yield, or to smooth wafer flows, or to identify trouble spots by simulations of wafer flow?'"

Contamination Control

The Contamination Control session, which begins Wednesday, May 22, at 9:00 a.m., will be chaired by Dr. Jack Solomon of Union Carbide Corp. in Tarrytown, N.Y. Solomon, a product manager in charge of new applications of



Dr. Richard A. Blanchard, vice president of design and advanced technology development for Siliconix, Inc., heads the Process and Equipment Automation session.



Jack Solomon, a product manager for Union Carbide's Linde Div., is chairman of the Contamination Control session.



Wayne Murakami, executive vice president and founder of CTX International, heads the session on Automation Systems experiences.

gases for Carbide's Linde Div., says that the focus for this year's session will differ slightly from past years. "In the past, we have worried more about contamination," he said. "But much of the focus this year will be on particle control."

Solomon expects particle control to be the central theme for three of the presentations: "Contamination in Liquids Used in VLSI Manufacturing," "Particle Control via Cassette Handling Automation," and "Particulate Retention and Shedding Characteristics from Point-of-Use Process Gas Filters." It also will be a part of the theme for a fourth presentation, "Materials for High Purity Gas Distribution Systems."

"What we are trying to do is talk about contamination that enters the process," Solomon told *Semiconductor International*. "Imbalzano of Du Pont (Contamination in Liquids Used in VLSI Manufacturing) discusses the liquids going into the process. Zawierucha of Union Carbide Corp. (Materials for High Purity Gas Distribution Systems) discusses the gases going into the process. Parikh of Asyst Technologies Inc. (Particle Control via Cassette Handling Automation) talks about the wafers. And Rapa of IBM (Clean Room Designs for VLSI Semiconductor Manufacturing) talks about the clean room itself, its

air and environment. In the panel discussion, we put all of that together and discuss the actual contamination inside the operating process."

The subject of that panel discussion, contamination in process equipment, is one that Solomon says has not been approached in similar sessions.

Automation Systems Experiences

The program's final session, Automation Systems Experiences, will be held on Thursday, May 23, at 9:00 a.m. Session Chairman Wayne Murakami is executive vice president and founder of CTX International in Sunnyvale, Calif.

The session leads off with a detailed look at "Dynamic Production Scheduling in Computer Aided Fabrication." Murakami said that the presentation would give an academic perspective of semiconductor machine scheduling problems. "The presentation will be made by Prof. Gershwin at MIT who has been working in the area of detailed scheduling, in particular semiconductor machine modeling," Murakami said.

The second presentation (title to be announced) will be a case study of one company's effort to automate its factory. Following that will be an "Approach to Worldwide Systems Implementation," which will be a presentation of one company's (Intel) experience in in-

stalling a worldwide production control-factory management system. The talk will focus on the issues, problems and successes that Intel encountered.

Another of the five topics, "An Approach to Process Automation" will again draw on corporate experience in automation. In this case, Toshiba's experience in the area will be explored. "Toshiba probably had one of the earliest ventures into real automation," Murakami explained. "This talk discusses its approach to process automation, what they have done, what they have learned, some of the issues that they have come up against."

In the final presentation, NEC — Japan will share its experiences in the implementation of FAB control systems. "They have installed computer systems to control fabrication," Murakami explained. "In some cases, their lines are on 24 hours a day. The focus is going to be around the procedures and the policies used to get around that problem."

Finally, the session will wind down with a panel discussion. The discussion, Murakami says, will afford participants the chance to discuss realistic solutions to automation problems. "The main focus of this group of speakers is real experiences and scheduling: issues, how people have approached problems, what works and what doesn't." □