

## MESSAGE FROM THE DIRECTOR

SEMICON West hybrid event wrapped up in July, and besides being a huge success, it was so great to meet everyone in person in San Francisco. This year, the Smart Manufacturing and Smart Data-AI initiatives joined forces at the Smart Manufacturing pavilion for 3 days of world-class talks by industry leaders, and the numbers speak for themselves – almost 25 talks, a great panel discussion, and over 380 attendees at the pavilion over 3 days.

Special thanks to our session co-chairs Dan Hamling (Deloitte), Anuj Mahendru (Rockwell), Dan Gamota (Jabil) and Ranjan Chatterjee (Cimetrix) as well as our very own Pushkar Apte (SEMI) for their tremendous effort to put together the line-up of talks, organizing, and moderating the sessions. Each session was specifically targeted to an important aspect of the future of manufacturing. Many thanks to Agnes Cobar & Taylor Zhao from SEMI who put in long hours and did an amazing job managing the program to make the Smart Manufacturing pavilion successful! Lastly, I would like to thank all the Smart Manufacturing pavilion sponsors for their tremendous support.

Here are some of the key takeaways from the talks.

Topic	Key Points
How SMFG can help the semiconductor supply chain crunch	<ul style="list-style-type: none"> <li>Data Visibility through improved architecture and connectivity standards</li> <li>Digital Transformation of PLM systems (including capacity &amp; resource) are absolutely necessary</li> </ul>
Best Practices for the Smart Manufacturing Ecosystem	<ul style="list-style-type: none"> <li>Industrial AR Tech can help skilled labor challenge</li> <li>Equipment interfaces need to be updated to web UI include SEMI UI standards</li> <li>Sub-fab equipment Digital Twins can positively impact fab metrics</li> <li>IT-OT Convergence Dilemma: Implement NIST CySec Framework/SEMI Standards ASAP</li> </ul>
Data Utilization & Analytics for Smart Manufacturing	<ul style="list-style-type: none"> <li>AI/ML benefits Advanced Process Control - Run-to-Run (APC-R2R)</li> <li>AI Process Control &amp; anomaly detection implementation critical but data access is a major barrier</li> </ul>
Digitization for Achieving Next Node Challenges	<ul style="list-style-type: none"> <li>No standardization across pump/platement or process equip OEMS</li> <li>Resolve legacy standards problems</li> <li>Virtual metrology needs to be silicon accurate &amp; ML enables in-situ metrology</li> </ul>
Turning the Data-AI Hype into Manufacturing Value for Microelectronics	<ul style="list-style-type: none"> <li>Data sharing and security of SW applications, equipment &amp; automation</li> <li>No-Code AI is solution for rapid deployment</li> </ul>

Additionally, many thanks to John Behnke (Inficon), Ian Bone (Broadcom), David Fried (LAM Research), Bill Pierson (KX) & Justin Weinstein (Global Foundries) for a fantastic panel discussion on the Data & AI enabling today's Smart Manufacturing Revolution. Lastly, presentations by Bobby Mitra (TI) on the SEMI Smart Manufacturing Roadmap, Andrew Seward (TEL) & Dave Gross (Siemens) on the Maturity Model, & Mike Rendon (NXP) on NextGen FDC, provided the community with a great preview and update on the combined efforts of the committees.

The Global Smart Manufacturing Conference is fast approaching. The planning committee is reviewing the abstracts and working hard on organizing a fantastic line-up of speakers. Read on for more details.



As always, please let us know how we can best support you and your company. See you at GSMC, Nov 8-10, 2022.



Mark da Silva  
Senior Director



## FEATURED ARTICLES

### SEMI Smart Manufacturing Initiative Works to Help Chip Industry Achieve Industry 4.0 Ambitions

In August 2022, the SEMI Smart Manufacturing Global Executive Committee (GEC) chaired by Dr. Bobby Mitra of Texas Instruments, comprising key industry leaders across seven global SEMI regions coalesced on a Smart Manufacturing Roadmap. Read on as Mark da Silva (SEMI Smart Manufacturing) discusses details of the roadmap.

### Collaborating to Decarbonize the Semiconductor Manufacturing Value Chain – Insights from SEMICON West

In July 2022, a panel of industry experts, executives and researchers at the Sustainability Summit discussed how the semiconductor industry needs to fundamentally change to meet the higher goal of attending to the planet as a cohesive and collaborative sector. Read on to learn about the areas of collaboration that emerged as the top five from the summit.

### Global Total Semiconductor Equipment Sales on Track to record \$118B in 2022 – SEMI Reports

Global sales of total semiconductor manufacturing equipment by original equipment manufacturers are forecast to reach a record \$117.5 billion in 2022, rising 14.7% from the previous industry high of \$102.5 billion in 2021, and increase to \$120.8 billion in 2023.

### SEMI Invites participation in new Climate Consortium

To help raise awareness of climate change challenges and accelerate the electronics industry push to decarbonize, SEMI formed the Sustainability Advisory Council (SAC). The group consists of more than 35 semiconductor companies from across the value chain that are collaborating in the new SAC Climate Working Group to organize a Climate Consortium that homes in on the industry's net zero strategy to decarbonize.

## SMART MANUFACTURING STANDARDS

The SEMI Standards Program brings together industry experts to exchange ideas and work towards developing globally accepted technical standards.

The Smart Manufacturing Initiative has identified important standards in critical areas such as communication, equipment control, equipment data acquisition & process diagnostic, and analytics, among other Smart Manufacturing Standards.

Recently, two new cybersecurity standards that are very important for Fab and Equipment Information security were released.

### SEMI E187 - Specification for Cybersecurity of Fab equipment

Fab & Equipment Information Security Task Force

- Address software end of service (EOS) issues in order to prevent virus attacks
- Build up security and surveillance systems so device makers can monitor, control, and manage the status of all equipment inside the fab

### SEMI E188 - Specification for Malware Free Equipment Integration

Fab & Equipment Computer and Device Security (CDS) Task Force

- Ensure computer and device security both inside and outside of the fab, including requirements for malware scanning on devices prior to shipment or while undergoing field service work
- Develop a protocol for computer system hardening
- Establish requirements for secure equipment communication to the factory network

### New China Advanced Backend Factory Integration Standards Activity

Claire Liu (KXWare), leader of the SEMI information and Control China Advanced Backend Factory Integration Task Force discusses the new China advanced backend factory integration standards activity.

## REGIONAL CHAPTER NEWS

### Global

The Global Executive Committee (GEC) held its bi-monthly meeting on August 6th, 2022, with a major focus on roadmap items for the future of assembly and test within the manufacturing flow. Additionally, discussions on the skill transitions required (WFD) for Autonomous Factory of the Future, and the impact of deploying specific Smart Manufacturing technologies on sustainability goals have led to a more cross-functional review with SEMI's efforts in WFD and Sustainability to identify areas where joint effort may lead to better outcomes.

The next meeting will be held on October 13th, 2022.

### Americas

The Americas Chapter of the Smart Manufacturing Initiative welcomes Nantronics, Tignis, & SCSolutions.

At the September 8th chapter meeting a few weeks ago, Andrew Seward (TEL) and David Gross (Siemens), co-chairs of the Smart Manufacturing Guidelines committee provided an update on the status of the Maturity Assessment Model. Currently the draft model has been released for review at select pilot sites and the committee has requested additional pilot sites from 200mm & 300mm fabs, AFS/test, MEMS/sensors, and equipment/OEM manufacturing members.

Also at this meeting, Melissa Grupen-Shemansky (SEMI CTO & VP Technology Programs) provided the latest updates on the CHIPS Act. SEMI Smart Manufacturing is forming an interest group to stay involved in funding priorities and also to discuss current Manufacturing Innovation Institute (MII) interactions.

Please contact Mark da Silva ([mdasilva@semi.org](mailto:mdasilva@semi.org)) for more information.

## RECENT EVENTS

### SMART MANUFACTURING EXPO TAIWAN AT SEMICON TAIWAN | September 14-16, 2022 | TaiNEX 1, Taipei



SEMICON Taiwan 2022 successfully came to an end on September 16. This year, the number of exhibitors and visitors reached a record high. During the three-day period, a total of 707 international exhibitors were assembled and exhibited at 2,450 booths, attracting more than 45,000 people! Thank you to everyone who attended and supported the event. Here is a quick event recap and an article that captures key highlights from the event.

### Modern Galvanometer Scanner Technologies Enabling Advanced Laser Processes



Did you know? By deflecting and guiding the laser beam, galvo scanners turn lasers into precise and highly flexible tools that can perform countless processing tasks in industrial materials processing.

[Register for On-demand Access](#)

### From Wafer to Chip: Next Generation Inspection and Metrology Solutions for the Semiconductor Industry



Discover how advances in inspection and metrology for the semiconductor industry can help your organization to achieve greener, more sustainable, cost-efficient high-volume production ahead of global competition.

[Register for On-demand Access](#)

## UPCOMING EVENTS

### SMART MANUFACTURING FORUM | NOVEMBER 1, 2022 | SHANGHAI NEW INTERNATIONAL CONVENTION CENTER, CHINA



Major semiconductor manufacturers and their suppliers will showcase their latest capabilities in this forum, as well as their best practices in the smart manufacturing ecosystem, to make your smart factory journey successful, efficient, and future-ready.

### GLOBAL SMART MANUFACTURING CONFERENCE | NOVEMBER 8-12, 2022 | VIRTUAL



Themed "Autonomous Factory of the Future", the virtual event is returning for the third year with keynotes, tutorials, case studies, and intriguing panel discussions to spotlight the use of data to trim costs, increase yield and improve manufacturing flow. Attendees can expect interactive talks from key players such as Micron, TI, D-SIMLAB, Cimetrix, Tignis, PDF, TEL, Siemens and more. Friendly to a time-zones in all electronics manufacturing regions, this event is a don't-miss. Register today!

### FAB MANAGEMENT FORUM @ SEMICON Europa 2022 | NOVEMBER 15-18, 2022 | MUNICH, GERMANY



SEMICON Europa 2022 is co-located with **electronica** in Munich, Germany creating the strongest single event for electronics manufacturing in Europe, and broadening the range of attendees across the electronics chain.

### SMART MANUFACTURING FORUM | DECEMBER 14-16, 2022 | TOKYO, JAPAN



A must-attend show that connects technologies in the digital transformation era. SEMICON Japan brings together not only the whole semiconductor manufacturing supply chain, but also the "SMART" applications powered by semiconductor technology, such as automotive and IoT.

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