SSIA
Singapore Semiconductor Industry Association

SINGAPORE SEMICONDUCTOR VOICE

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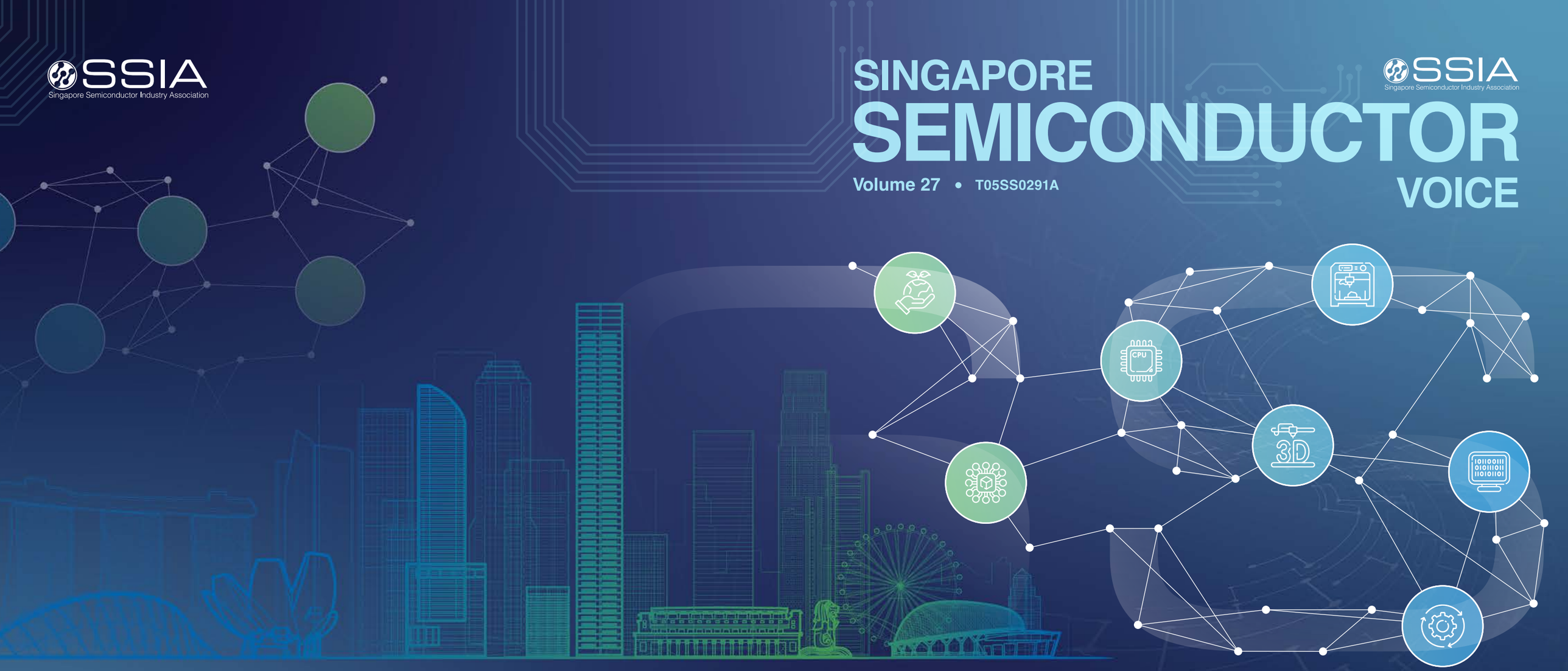

Strengthening the Ecosystem with Emerging Technologies

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Exclusive Edition #2: Collect Volumes 26-28 to reveal a special image! Find out more on p03

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PAYA LEBAR SQUARE, SINGAPORE 409051
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SFX

SG HR Services Pte Ltd

FOREWORD BY Executive Director

The semiconductor industry has long been a catalyst for technological advancements that has transformed our modern world. From the advent of 5G, Artificial Intelligence (AI), IoT to Additive Manufacturing, they have altered the very fabric of the semiconductor landscape in the recent years; unlocking infinite possibilities and growth for businesses.

In this forward-thinking edition of VOICE, we dive more into the transformative power of AI and in the realm of semiconductors. We examine how AI is revolutionizing chip design, optimising processes and how additive manufacturing can revolutionise the semiconductor industry through faster or custom prototyping and also advanced packaging to maximise cost efficiency.

To this end, SSIA is happy to present this year's Semiconductor Business Connect where the theme is "Strengthening the Ecosystem with Emerging Technologies". The focus is on the spheres of Digitalisation, Automation, Additive Manufacturing, and Sustainability. The Semiconductor Business Connect is an important platform for galvanizing support for and strengthening the semiconductor industry's ecosystem through business-matching opportunities. This platform aims to connect the semiconductor network, innovate solutions, and collaborate for success. We had successfully facilitated more than 40 business connections through this platform over the past year. This year, we hope to help more local companies, by connecting them with potential customers and partners. At SSIA, we want to further strengthen and grow this ecosystem, and we invite you to join us on our journey.

We also recognise the importance of Sustainability in the semiconductor industry in the realms of energy, water and waste management. Through Semiconductor Business Connect and VOICE, we explore how companies are championing and adopting sustainability as part of their business strategies. SSIA has also started going global, with talks with several countries to encourage business and research collaboration. We will organize business workshops, conferences, and trade missions with these countries. Our secretariat will be reaching out to you to coordinate these activities, so keep a look out for more updates!

The semiconductor industry has made significant strides in technology and sustainability in the recent years and 2023 marks the 55th anniversary of the industry. On this propitious occasion on 19 September, SSIA's Board, with support from our economic agencies have decided to organise the Singapore Semiconductor 55 Dinner, a gala dinner for 1500 guests that comprise of C-Suite, industry leaders, government agencies and institutions — this is our LARGEST event to date. The Summit and the Semiconductor 55 Dinner will also coincide with the week after the Singapore Formula 1 Grand Prix, which promises to bring even more excitement for all of us! This celebration will be a testament to our success over the past 55 years, showcasing the vibrancy and resilience of the Singapore semiconductor industry, especially over the past five years.

Finally, I will touch upon the topic closest to my heart; one that remains crucial for our industry, namely our talent pool. Our industry has been doing a lot in the past few years to attract more talents to join our industry. The Secretariat team has been working with companies and agencies on many key initiatives, ranging from elevating awareness amongst the students through World Skills Day and IC Design Summer Camp to Semiconductor Awareness Week for local universities, as well as priming the next generation of new leaders for the industry through leadership programs. We will organise our flagship Electronics Industry Day on January 2024, and companies are already signing up today to be part of the industry's largest student outreach platform. Please contact the SSIA secretariat for more information on how your company can be part of this journey.

We continue to celebrate the achievements, the resilience and the remarkable innovations for a brighter and greener future. Thank you for being a part of SSIA journey in creating a more vibrant semiconductor industry here in Singapore and the region.

I look forward to seeing you at our Semiconductor 55 Dinner in September!

ANG WEE SENG
Executive Director
Singapore Semiconductor Industry Association (SSIA)

SECRETARIAT TEAM

EXECUTIVE DIRECTOR
Ang Wee Seng
weeseng@ssia.org.sg

HEAD OF MARKETING AND COMMUNICATIONS & VOICE EDITOR-IN-CHIEF
Yvonne Perpetua Ng
yvonne@ssia.org.sg

COMMUNICATIONS EXECUTIVE & VOICE CREATIVE DESIGNER
Chan Xing Yun
xingyun@ssia.org.sg

DIRECTOR FOR BUSINESS DEVELOPMENT AND PARTNERSHIPS
Amy Ang
amy@ssia.org.sg

BUSINESS DEVELOPMENT MANAGER
Jasmine Tai
jasmine@ssia.org.sg

HUMAN CAPITAL DEVELOPMENT DIRECTOR
Velinda Wee
velinda@ssia.org.sg

HUMAN CAPITAL DEVELOPMENT SENIOR SPECIALIST
Teresa Chong
teresa@ssia.org.sg

STRATEGIC PROGRAMS DIRECTOR
Julie Koh
juliekoh@ssia.org.sg

HEAD OF PROJECTS
Rebecca Foo
rebecca@ssia.org.sg

EXECUTIVE ASSISTANT
Cindy Chong
cindy@ssia.org.sg

HUMAN RESOURCE MANAGER
Patsy Tan
patsy@ssia.org.sg

SSIA BOARD

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55TH SINGAPORE SEMICONDUCTOR INDUSTRY ANNIVERSARY
1968–2023

SSIA
Singapore Semiconductor Industry Association

SSIA Summit 2023 AND Semiconductor 55 Dinner

IN CELEBRATION OF THE INDUSTRY'S 55 YEARS OF MILESTONES

SAVE THE DATE

Tuesday, 19 September 2023 // Resorts World Sentosa

Scan to find out more

SSIA EVENTS

Mark Your Calendar

Scan the QR code or email **secretariat@ssia.org.sg** to find out more.

6 JULY 2023

Semiconductor Business Connect 2023

Electronics Industry Transformation Map 2025 is to create a faster and greater adoption of advanced technology and digital solutions into the semiconductor industry. Some companies have started to revolutionise with new and innovative solutions into their manufacture. How then do more companies stay ahead of the curve and be at the forefront of this transformational change while staying on the pulse of sustainability?

Be a part of SSIA's strong ecosystem as we delve into the sphere of collaborations and innovations.

19–21 JULY 2023

IC Design Your Future Summer Camp

IC Design Your Future Summer Camp is proudly brought to you by the IC Design Committee. This 3-Day program presents university undergraduates with an opportunity to learn more about the Semiconductor and Electronics industry, IC Design career prospects, visit leading multi-national companies like AMD, Silicon Labs, and GlobalFoundries; and most importantly, interact with various Semiconductor companies' industry leaders and members to experience the vibrancy, focus and passion of this industry.

23–25 JULY 2023

WorldSkills ASEAN 2023

For the first time, Singapore will be hosting the 13th WorldSkills ASEAN Competition in July 2023 at the Suntec Singapore Convention & Exhibition Centre. The competition will see close to 250 top youth talents from the 10 ASEAN member countries competing in 22 skills areas. Apart from the skills competition, WorldSkills ASEAN Singapore 2023 will also feature interactive activities to promote skills and a skilled career.

18–21 JULY, 15–18 AUGUST 2023

Singapore Semiconductor Leadership Accelerator

A custom programme designed to inspire emerging technical and business leaders to continue creating revolutionary possibilities with semiconductors. It was conceived as part of the Singapore Semiconductor Vision (SSV) 2020, a task force comprising the private and public sectors to increase competitiveness in Singapore's Semiconductor manufacturing industry. Delivered as two modules, the programme is an immersive hands-on learning experience designed to accelerate personal and professional growth for leaders to succeed in the increasingly volatile, uncertain, complex, and ambiguous (VUCA) global environment.

For more details, please contact **velinda@ssia.org.sg**.

29–31 AUGUST 2023

Leadership in Engineering

The SSIA Leadership in Engineering Programme aims to develop soft skills and sharpen leadership qualities for engineers in the Semiconductor and Electronics industry through talks, industry veteran sharings, and interactive workshops with case studies and discussions. This program targets exceptional engineers and engineering managers who have been in the industry for 3 years or more, identified as top talent by their organisations. Objectives include improving self reflection and awareness, interpersonal and communications skills at the workplace, and networking with peers among others.

For more details, please contact **velinda@ssia.org.sg**.

Celebrating 55 Years of Semiconductor Excellence

TUESDAY, 19 SEPTEMBER 2023 // RESORTS WORLD SENTOSA

2023 is a momentous year for the Singapore semiconductor industry, as it marks 55 years of remarkable achievements and how far the industry has evolved. Today, it is a thriving and robust sector that contributes nearly a quarter of Singapore's total manufacturing output. It is not just about the outstanding achievements we have made as an industry, but it is also a celebration of the people who have been instrumental in getting us to where we are today.

The highlight of our celebration will be the Singapore Semiconductor 55 Dinner held at Resorts World Sentosa. This dinner is a testament to the success of the industry through 55 momentous years. It will also be a showcase of resilience, connections, and the vibrancy of the semiconductor ecosystem. This is also an exclusive platform where invited partners from the various government agencies, institutions, and companies globally will convene.

For more details, please contact **amy@ssia.org.sg**.

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Singapore Semiconductor Industry Association

TRAIN, UPGRADE & RESKILL

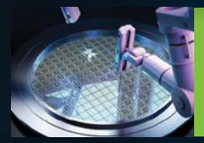
As the semiconductor and electronics sector strengthen our local ecosystem and relook at ways to attract and retain talents, training, up or re-skilling and upgrading remain critical in staying relevant and future-proofing ourselves. Check out programmes in the pipeline, brought to you by SSIA and our learning partners.

REPUBLIC POLYTECHNIC

Introduction to Vacuum and Plasma Technology (1 day)

Microscopy and Thin Film Characterization for Failure Analysis (1 day)

SP Singapore Polytechnic



Wafer Fabrication in Semiconductor Industry (3 days)

Digital Integrated Circuit (IC) Testing

Temasek POLYTECHNIC

Advanced Manufacturing Inspection Workshop (4 days)

SSIA Singapore Semiconductor Industry Association

Semiconductor Processes (2 days)

Check out SSIA website or scan the QR code for full list of events, training and courses. Or contact Teresa at *teresa@ssia.org.sg*

SSIA Singapore Semiconductor Industry Association

Singapore Semiconductor Leadership Accelerator

PROGRAMME

The Singapore Semiconductor Leadership Accelerator (SSLA) is designed to inspire emerging technical and business leaders to continue creating revolutionary possibilities with semiconductors. It was conceived as part of the Singapore Semiconductor Vision (SSV) 2020 task force – comprising members of private and public sectors – to increase competitiveness in Singapore's semiconductor manufacturing industry.

Delivered as two modules, the programme is an immersive hands-on learning experience designed to accelerate personal and professional growth for leaders to succeed in the increasingly Volatile, Uncertain, Complex and Ambiguous (VUCA) global environment.

Run 9

Programme Dates:
18–21 July & 15–18 August 2023

Run 10

Programme Dates:
First Half 2024

More info:

Theme

Thriving Through Change and Disruption: Building a Resilient Ecosystem

For Whom

Senior level managers and directors with more than 15 years of experience who are part of the company's succession plan with responsibility for strategic decision-making, including heads of business units and senior functional heads

Course Fees

Singaporean: $6,000 + GST
PR/Foreigner: $12,000 + GST

IC DESIGN YOUR FUTURE

SUMMER CAMP

19–21 JULY 2023

AMD, Silicon Labs, and GlobalFoundries campus

Summer Camp — IC Design Your Future
is proudly brought to you by the IC Design Committee. This 3-Day program provides the universities' undergraduates an opportunity to learn more about the Semiconductor and Electronics industry, IC Design career prospects, visit leading multi-national companies like AMD, Silicon Labs, and GlobalFoundries; and most importantly, interact with various Semiconductor companies' industry leaders and members to experience the vibrancy, focus and passion of this industry.

Who it's for:

NTU / NUS / SIT / SUTD, Year 2 / Year 3 (AY2023/2024) undergraduates from Electrical, Electronics, Computing, or Design Engineering

Objectives:

To get to know Semiconductor industry and IC Design sector, and grow the IC Design sector

Programme Features:

- Sharing by Semiconductor and Electronics industry leaders and experts
- Panel Discussion and networking with industry leaders
- #AskMeAnything with AMD, Silicon Labs, and GlobalFoundries teams
- Line Tour and Fab Tour
- Innovation Day — Experiential learning with games

NANYANG TECHNOLOGICAL UNIVERSITY · NUS National University of Singapore · SIT SINGAPORE INSTITUTE OF TECHNOLOGY · SUTD SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Leadership in Engineering

29–31 AUGUST 2023

The SSIA Leadership in Engineering Programme aims to develop soft skills and sharpen leadership qualities for engineers in the Semiconductor and Electronics industry through talks, industry veteran sharings, and interactive workshops with case studies and discussions. This program targets exceptional and high potential individuals who have been in the industry for 3 years or more, identified as top talents by their organisations. Objectives include improving self reflection and awareness, interpersonal and communications skills at the workplace, and networking with peers among others.

Who it's for:

High potential individuals who have been in the industry for 3 years or more

Objectives:

To prime the next generation of new leaders for the semiconductor and electronics industry, by helping them develop soft skills and sharpen leadership qualities.

Course Fees:

Singaporean/PR — $4000 + GST (after subsidy)
Foreigner — $7500 + GST

Programme Features:

- Self reflection and awareness
- Importance of interpersonal and communication skills at work
- Interactive workshops with semiconductor and electronics industry case studies and discussions
- Sharing by industry veterans and leaders
- Networking with fellow participants from different sectors within the industry... and many more!

For more information, email **velinda@ssia.org.sg** or scan QR code

HR Roundtable by SSIA

On 5th May 2023, SSIA had successfully co-hosted the first HR Roundtable event of 2023 with ams OSRAM. We would like to take this opportunity to thank ams OSRAM for being a wonderful host and the insightful sharing of its best practices on people governance initiatives. This HR roundtable attracted a total of 45 participants which included representatives from Economic Development Board (EDB), e2i, Ministry of Education, Nanyang Technological University and Semiconductor HR professionals.

This HR roundtable is a half-yearly initiative conducted as part of SSIA's push for Human Capital Development. This event unites all the Semiconductor HR professionals to convene as a collective voice to discuss emerging trends, share strategies to attract, retain top talents, and share best practices and policies to cope with the challenges in managing new workforce.

This event provides the link between government agencies, institutes of higher learning, and companies as participants to openly discuss new government policies and initiatives that affect the current workforce.

With such HR Roundtable meetings, we see closer collaboration among member companies within the industry. Since the last HR roundtable in November 2022, the human resource representatives from the various companies had come together to collaborate on various industry-led events and initiatives such as SSIA's flagship Electronics Industry Day, Semiconductor Women's Forum, MINDEF recruitment, SAY Ambassador Programme get-together events, and lastly, career talks and fairs.

By working together as a group, member companies are driving towards a common goal to attract and create greater awareness among the young and mid-career professionals to the industry.

For this second HR Roundtable held in May, we were privileged to have the representatives from the Ministry of Education and Nanyang Technological university to share on:

- A-Level H3 Module by NTU on Semiconductor Physics and Devices
- Engineering & Tech Programme Scholarship (ETPS)
- Nanyang Research Programme (NRP)

Companies are now coming together to attract more young scholars to join the Semiconductor industry.

CONTRIBUTED BY

Velinda Wee
Human Capital Development Director

SSIA
Singapore Semiconductor Industry Association

Together we can shape the future of the semiconductor industry

Valerie Lee
Head of Country HR, Singapore and the Philippines, ams OSRAM

ams OSRAM Singapore was honored to host the first HR roundtable of 2023 with the Singapore Semiconductor Industry Association, bringing together key stakeholders from government agencies, institutes of higher learning, and companies. This event is a testament to the collaborative spirit within our industry, and it provides a platform to discuss the latest government policies and initiatives to support human capital.

Head of Country HR, Singapore and the Philippines, Valerie Lee shared with the participants on 'Our People Governance' initiatives that included EDB, e2i, Ministry of Education, Nanyang Technology University, and other semiconductor HR professionals.

It was a truly humbling experience. Collaboration and knowledge-sharing have been essential for the growth and success of the semiconductor industry.

The semiconductor industry thrives on collaboration and innovation. Through industry sharing and dialogue, we can foster a culture of collaboration, drive advancements, and ensure the sustained growth of our industry.

By promoting collaboration and growth within the semiconductor industry, we can harness the collective expertise and resources to overcome challenges and seize opportunities collectively. Together, we can build a strong foundation for the industry's future.

CONTRIBUTED BY

Valerie Lee
Head of Country HR
Singapore and the Philippines

ams OSRAM

SSIA Semiconductor Active Youth (SAY) Ambassador Programme GlobalFoundries Site Visit

Global Foundries (GF) Singapore is proud to have welcomed 55 student ambassadors and industry mentors who visited our premises on May 12, 2023, for an industry experiential tour as part of the Semiconductor Active Youth (SAY) Ambassador Program.

During the GF Experiential Tour, the first half of the program kicked off with a sharing by Joseph Chia, VP & GM of GIGA+ Fab, where he gave an overview on the industry outlook and highlighted the importance of semiconductor chip manufacturing in a world with new Industry 4.0 technologies including Artificial Intelligence and Machine Learning.

Alvina Seet introduced GlobalFoundries Singapore followed by a sharing on Innovation by Roy Lau from ams-OSRAM and Photonics by Dr Lennon Lee of IME.

The first half concluded with a panel discussion with mentors from GF, IME and ams-Osram answering questions curated by student ambassadors prior to the event.

The second half of the site visit consisted of four main segments: A Virtual Reality Cleanroom Tour, a Wafer & IC chips booth, Viewing of GF's Patent & Master Inventors wall and a visit to the GF Innovation Gallery.

Virtual Reality Cleanroom Tour

Participants got to experience an immersive VR tour of GF's state-of-the-art cleanroom that manufactures our semiconductor chips. Instead of donning a cleanroom smock attire, they got to experience the cleanroom up close with VR goggles.

Wafer & IC Chips Booth

Did you know that some of the patterns printed on the chips can be narrower than a human hair? Instead of just imagining the scale, participants got to marvel at the microstructures of the IC chips by looking through the microscopes and even had a chance to hold them.

Patent & Master Inventors Wall

GF engineers not only ensure that production in its 24/7 fab is smooth, but they also publish technical papers, file patents and work on ground-breaking inventions. In this segment, participants were exposed to the different avenues for growth enabled by GF. We hope that the students are inspired to file patents and work on new inventions in the future.

GF Innovation Gallery

The new GF Innovation Gallery brought participants on a journey through which they gained insights into the market segments served by GF. Instead of the typical information panels, they were greeted by interactive booths and informative videos to give an overview of what drives business in GF.

What some of the SAY Ambassadors have to say:

“It is not easy for students to be able to have the opportunity to interact with Industry leaders from many different companies, while at the same time, to be given the chance to visit their office buildings physically. Having panel discussions during the industrial visits to companies helped to keep us updated about the current trends in the industry and to understand some of the strategies companies are adopting to tackle the challenges faced by the industry.

I have always been interested in the semiconductor industry but due to the lack of exposure to companies in school, I have limited insight into what is happening in the companies. My only source of information was through online news articles which cover higher-level trends. Hence, being part of this SAY programme has benefitted me greatly and it allows me to make an informed decision on my possible career paths in the different semiconductor companies.”

Lek Yeow Sin
NUS, School of Mechanical Engineering

“The semiconductor field has always appeared to me as an industry with a high entry barrier and an air of mystery. Thanks to the enlightening speeches delivered by Joseph Chia, the Fab VP at GlobalFoundries, as well as the remarkable engineers from AMS and IME, my perception has gradually transformed. The exploration experiences provided a deeper understanding of the extensive range of semiconductor applications. This exploration has truly been eye-opening, igniting the newfound passion and desire from the bottom of my heart to devote to this industry.”

Zhao Yuankun
NTU School of Electrical and Electronic Engineering

“I personally enjoyed the site tour and interactive experiences arranged during the site visit. GlobalFoundries (GF) provided specimens of wafers to describe the manufacturing process of computer chips and a chance to immerse myself in the fab facilities through VR. Overall, I found it an enriching and enjoyable experience to have a site visit at GF.”

Kou Kai Yang Skyron
NP, Electronics and Computing Engineering

CONTRIBUTED BY

S Lawanya and Darrel Ng
GlobalFoundries SAY Mentors

GlobalFoundries

Spectra Secondary School

The Circle of Influence

For 2023, SSIA continues to build closer partnerships with the Ministry of Education and the Institutes of Higher Learning through conducting outreach activities such as career talks, fire-side chats with students, and career fairs at secondary schools, ITEs, Polytechnics and Universities.

The main objective of these student outreach initiatives is to create greater awareness about the semiconductor industry and have the students be aware of what are the available jobs and career progression in this sector. More importantly, we need to build a robust pipeline of talent in the Engineering sector to nurture the youth so that they are cognisant that the industry is equipped and is willing to train graduates from ground-up.

Since January this year, SSIA had conducted a total of 22 school talks and 1 mammoth career fair – SSIA's Electronics Industry Day, that attracted close to 3100 students from schools across Singapore.

Catholic High School, which hosted a career fair for 1200 students, invited Institutes of Higher Learning, companies from various industries, and SSIA to this event. The students had a very engaging session with SSIA. They were amazed by semiconductor's tiny little components. They had never thought semiconductors play such an integral role in our lives today and how they link up all our electronics - this was a revelation to them.

River Valley High School

Catholic High School

One of the special needs school outreach events that SSIA engaged with, was a career talk at Spectra Secondary School for about 250 students in their Secondary 3 and 4 cohorts. Most of these students would be pursuing their further education at ITE.

Mr Ang Wee Seng, Executive Director of SSIA was also invited to give a talk followed by fire-side chats with 140 new teachers at the Beginning Teachers Orientation programme on 10th May 2023. The teachers were introduced to the semiconductors industry and had a chance to learn how teachers can help to trigger an interest among the students in Engineering.

CONTRIBUTED BY

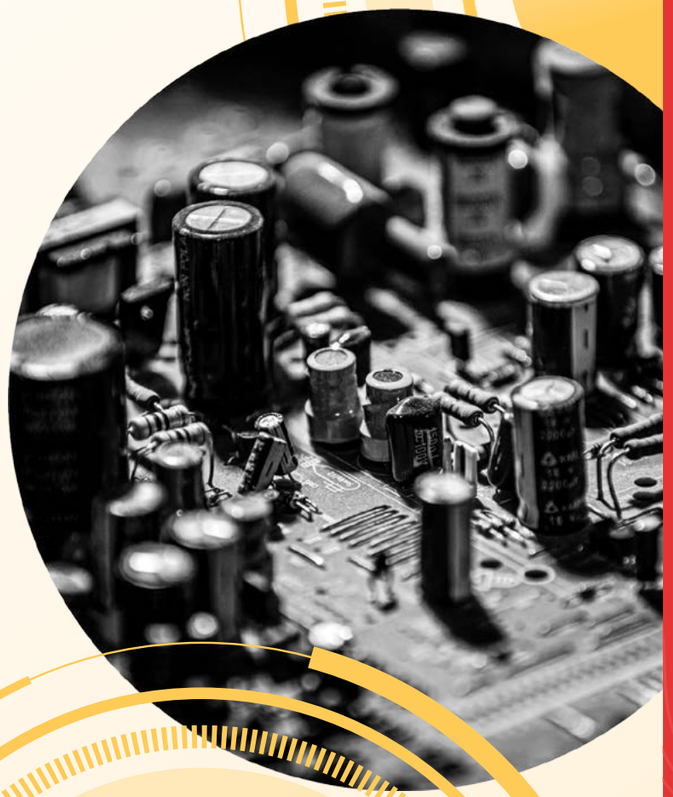
Velinda Wee
Human Capital
Development Director

SSIA
Singapore Semiconductor Industry Association

LOOKING AT MANPOWER RESOURCING FOR YOUR BUSINESS GROWTH?

Career Conversion Programme for Electronics Engineer, Assistant Engineer, and Operator

Workforce Singapore



<u>Hire and reskill</u> mid-career switchers to meet your manpower needs

<u>Reskill existing employees</u> to take on new or enhanced job roles

Tap on Government funding for salary support

SCAN ME

worldskills ASEAN Singapore2023
23-25 July

In Support of:
SKILLS FUTURE FESTIVAL

Witness over **170 ASEAN youths**
Competing across **22 different skills**
Try a skill at over **40 interactive booths**

Worldskills ASEAN 2023

OPEN TO PUBLIC
23 JULY (SUN)
9AM TO 5PM

Suntec Convention & Exhibition Centre

Sign up for **free workshops** by over 20 organisations
Visit **worldskillsasean.org/2023** for more information

Go West to Arizona

This 2023 SSIA-led mission trip is a follow-up initiative from our last collaboration with Enterprise Singapore (US Team) and Arizona State University, via a Arizona-Singapore Business Development Webinar during our Business Connect event in August 2021. During then, speakers from ACA, the Arizona State University, and NXP Semiconductors' Chandler fab highlighted opportunities in Arizona for Singapore companies.

With re-opening of the borders, SSIA is now ready to bring companies who are interested to expand into the US market to see and hear from the companies there on their experience and to understand the US business landscape. This follow-up mission was centered on the Greater Phoenix Economic Council (GPEC)'s SelectUSA Spinoff Mission that was created to highlight the vibrant semiconductor and AV/EV ecosystems in the Phoenix metro area. The US Embassy in SG (US Commercial Service SG) also attended and was represented by Commercial Officer & Digital Attaché, Christian Koschil, as well as Investment Specialist, Muhammad Masthan. On the companies front, this trip was targeted at SMEs in the SSIA's network who were keen on expanding into international markets and getting into US.

There was a total of 9 companies that joined the mission trip from Singapore. And the objectives of this trip was:

- Enable the companies to gather business and market information about the Arizona semiconductor and electric/autonomous industry and ecosystem through the organised sessions.
- Position companies to better understand policy direction, regulatory drivers, federal/ state support in place to promote the growth of the US/Arizona semiconductor and electric/autonomous industry supply chain, including relevant policies relating to foreign investments and participation in grant funding for example, CHIPS Act funding.
- Introduce Singapore companies to US semiconductor and electric/autonomous vehicles value chain companies for potential business matching and collaboration, supplier qualification, or subcontracting opportunities.
- To explore opportunities of working with local universities for R&D and hiring

The Singapore delegates who joined this trip are happy with the contacts established and the networking opportunities created by both GPEC Team and SSIA. The sharing of the Arizona ecosystem, expansion on how-to and community networking and sharing by key representatives of the various cities in Arizona were also well received by the delegates. NexGen in particular shared that the ability to increase their presence in Arizona is likely a success based on conversations he had there.

"I recently had the benefit and privilege to attend the Semiconductor & EV/AV Ecosystem Exploration in Phoenix, Arizona. While I recently moved to Phoenix area to start up our US business within the state of AZ, I was pleasantly surprised to find the strong economic and logistic support of the Greater Phoenix Economic council for all things Semiconductor.

It is no secret the tens of billions of dollars being brought to this area by the large investments by companies like TSMC and Intel, but the welcome mat has been extended to the many tentacles of the industry, large and small. The efforts of SSIA and strong interactions with federal, state, and local business has led to a focused effort to make Arizona the "Silicon Desert".

The couple days of discussion were helpful to see the general message of "Arizona is open and friendly to all business", but the times encouraged for mingling were invaluable, allowing us to form relationships with municipalities, potential partners, universities, and key market leaders. I was thankful for the time to interact with several local entities which will allow us to grow smartly and with purpose. I was also able to meet others growing businesses in the area, collaborating to share resources, when possible, to better take advantage of the parallel needs and to align with programs to find and cultivate industry specific talent. All in all, the two days of programs and tours were quite valuable."

Mr Jim DeBoer
Director of US Product and Operations for
NexGen Wafer Systems America LLC,
a subsidiary of NexGen Wafer Systems Pte Ltd.

D-SIMLAB Technologies is also one of the 9 companies that went on the trip. The company provides a Digital-Twin enabled software solution suite for capacity planning and WIP flow optimisation in Semiconductor Manufacturing with a strong customer base in Europe, Southeast Asia and Japan. As their business in US is growing, they are looking to grow their physical presence in North America to further strengthen their marketing and sales efforts and eventually enable customer support as well.

Said Mr Peter Lendermann, Chief Business Development Officer of D-SIMLAB Technologies, “The mission trip to Arizona organised by SSIA to participate in the Greater Phoenix Spinoff Mission, comprising a 2-days series of presentations and networking events, helped us to generate a number of relevant new contacts to Semiconductor Manufacturing companies in Arizona. Even though we have not yet decided where to establish our intended US office, during my interaction with representatives from the Greater Phoenix Economic Council as well as institutions of higher learning such as Arizona State University, it turned out that Arizona will be the first location to be considered because of a local ecosystem that appears to be advantageous from an operational standpoint, availability of talent and collaboration opportunities for joint R&D activities. Enterprise Singapore was also represented at the event and assured us of their support which will definitely be required when the time comes for us to establish a physical representation in the US.”

The US$60B investment by Intel and TSMC in Phoenix, Arizona area was also definitely a pull factor in attracting the delegates to explore opportunities there. From the sharing session from the various universities and institutions in Phoenix, the delegates were also shown the efforts made by the state in growing and attracting a young and technology-savvy workforce.

The Phoenix region is aggressively working to attract international businesses and has extensive programs aimed at facilitating companies to invest with more ease:

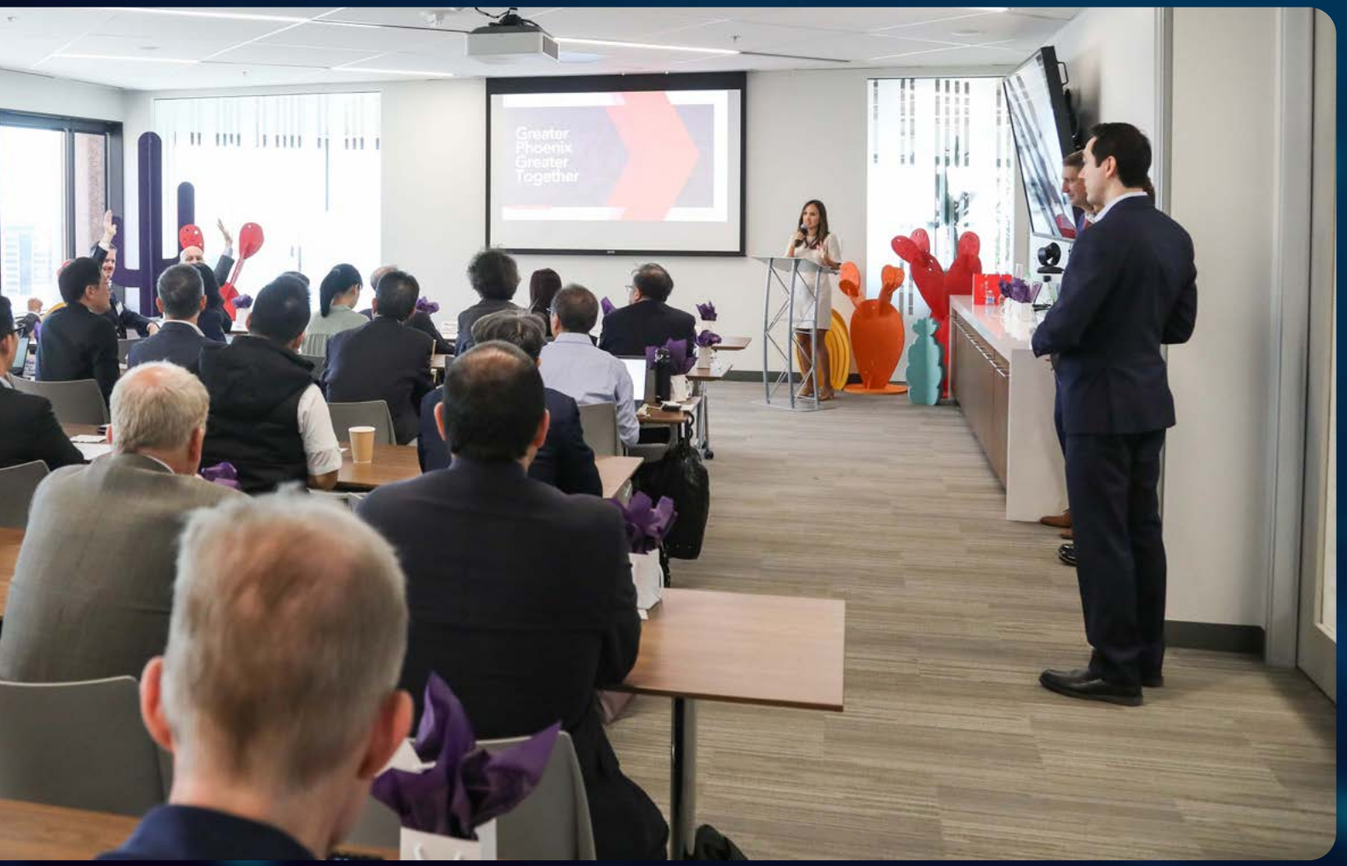
1. Programs like the Global Growth Accelerator Programme, organized by the Arizona State University (ASU) and Greater Phoenix Economic Council, are a great way for Singapore companies to expand into the US market by way of Phoenix. Singapore companies will be able to receive free office space at ASU’s Skysong campus and gain access to ASU’s resources, including connections to university partners, professional and industry insiders, workforce partners, and state/local authorities.

2. Grand Canyon University’s (GCU) Canyon Ventures program is another option that Singapore companies with limited resources may be able to tap on to set up a presence in the US. In exchange for agreeing to hire GCU students, selected companies are given indefinite free rent and access to local resources. The program is sector agnostic and has a range of companies including medical device, food and beverage, consumer products, media companies and more.

3. The Arizona State University (ASU) Macrotechnology Works building is an interesting option for Singapore companies to setup a pilot operation in the US with cheap access to cleanroom space, access to large local players and talent, as well as tap on resources from ASU and GPEC.

With its mix of major corporates, research institutes and government enablers, Phoenix is quickly establishing itself as a key state for the fast-growing semiconductor industry within the US. Investment into the region to scale up manufacturing has also created a significant window of opportunity that Singapore companies can take advantage of. Business missions allow Singapore companies looking to venture into new markets to form important in-market connections, as well as better understand the local business and regulatory landscape, to refine their market entry strategy. Together with industry partners like SSIA, EnterpriseSG will continue to support Singapore companies through such efforts to enable them to capitalise on these opportunities.

Ms Lim Seow Hui
Director, Americas, Enterprise Singapore



The Phoenix market is rapidly becoming a leading global semiconductor hub. The robust resources and programs offered to international companies setting up in the region lower the barriers to entering Phoenix. This is underscored by Ms Lim of Enterprise Singapore.

This is the first time SSIA is organising such international mission trips for our members, the learnings are definitely helpful and insightful for us to plan for more of such internationalisation trips in future. If you would like to be a part of this ecosystem, please feel free to reach out to the secretariat team.

Jim DeBoer, Director of US Product and Operations for NexGen Wafer Systems America LLC, a subsidiary of NexGen Wafer Systems Pte Ltd caps this off very succinctly: “As a part of the SSIA group, I was thankful for the evening meal to relax and have free discussion for those who joined on this trip. SSIA did a great job to help keep our group headed in the right direction and to foster a team gathering. We all participated in relaxed conversation about our experience and the importance of the SSIA exploration and ended the night with additional connections as well as budding friendships. All in all, the SSIA efforts were fruitful and appreciated! I look forward to continuing joint efforts.”

CONTRIBUTED BY

Amy Ang
Business Development Director

SSIA
Singapore Semiconductor Industry Association

CIOE

The Application of Optoelectronic Technology in The Semiconductor Industry

Currently, China has made great efforts to facilitate the development of the semiconductor industry. With the development of Internet of Vehicles (IOV), 5G, data center and IoT, the demand for chips is supposed to increase. The semiconductor industry is now in a new phase of booms.

CIOE 2023, a professional photonics platform that covers the entire optoelectronic industry chain, will showcase core technologies in semiconductor materials, chip manufacturing, circuit design, packaging and testing, semiconductor equipment, etc. It is a one-stop solution platform for sourcing products, innovative technologies and solutions.

CIOE 2023

The 24th China International Optoelectronic Exposition

September 6-8, 2023

Shenzhen World Exhibition & Convention Center

240,000M²	Exhibition Area
100,000+	Visitors
3,000+	Exhibitors

Exhibit Profile

Optoelectronic Chips
- Optical Detector Chips
- Optical Splitter Chips
- Optical Transceiver Chips
- VCSEL (Laser) Chips
- Sensor Chips
- Elecronic Chips

Semiconductor Materials
- Wafers
- Silicon Substrates
- Target Materials
- Polishing Liquids
- Grinding Wheels
- UV Anti-stick Films
- Scribing Blades
- Grinding Materials
- Photo Resist
- Solder
- Adhesives

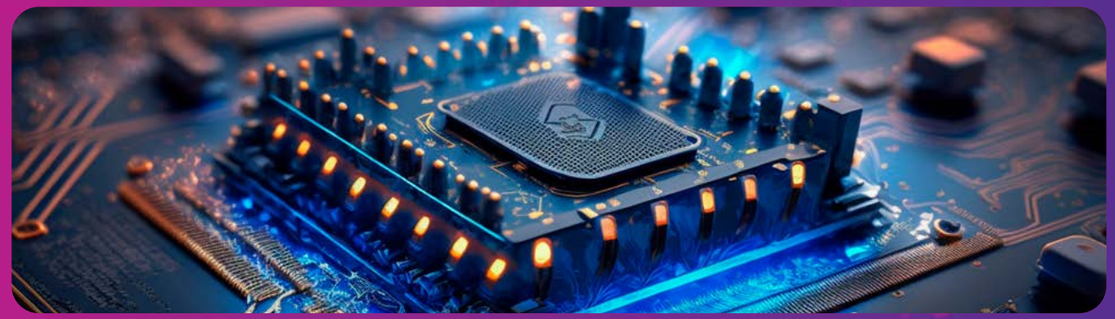
Semiconductor Manufacturing Equipment
- Lithography Equipment
- Alignment Equipment
- Packaging and Testing Equipment
- Polishing Equipment
- Grinding Equipment
- Annealing Equipment
- Scribing Equipment
- Etching Equipment
- Curing Equipment
- Laser Equipment
- Inspection Equipment

Sensors
- MEMS Sensors
- Ultrasonic Sensors
- Image Sensors
- Infrared Sensors
- Laser Sensors

Register to get your Free Pass to CIOE 2023

WWW.CIOE.CN/EN

Fast Track into China's Optoelectronic Market



CIOE 2023 (China International Optoelectronic Exposition), a comprehensive optoelectronic exhibition with large scale and influence in the world, will be held from September 6 to 8, 2023 at Shenzhen World Exhibition and Convention Center. Its seven sub-expos, namely information and communication expo, optics expo, laser expo, infrared expo, sensing expo, photonics innovation expo, and display expo, will showcase cutting-edge innovative technologies, products, and comprehensive solutions for the industry and various application fields. It is estimated that over 3,000 leading enterprises and 100,000 professional visitors will gather here.

As an essential part of the optoelectronic industry, semiconductor enterprises can acquire optoelectronic products and solutions at CIOE, such as **semiconductor materials, semiconductor equipment, optoelectronic chips, sensors, semiconductor processing, manufacturing, and test products.**

Learn more

WWW.CIOE.CN/EN

1. **Semiconductor Materials**
   Wafers, Polishing Materials, Silicon Wafers, Targets, Grinding Materials, Photoresist, Optical Lenses
2. **Chips**
   Photodetector Chips, Optical Chips, VCSEL Chips, Semiconductor Laser Chips, Spectral Imaging Chips, Infrared Chips
3. **Semiconductor Processing and Manufacturing**
   Photolithography Technology, Coupling Machines, Mounters, Bonding Machines, Chip Intelligent Placement Equipment, Chip Testing Machines, Testing Machines, Spectrometers, Lasers, Robots, Laser Welding/Marking/Cutting/Cleaning/Drilling Equipment, Jointing Machines, Scribers, Grinding Machines, Optical Profilers, Vacuum Coating Equipment

Register now for your free pass to CIOE 2023

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CIOE

Analog Devices Singapore Office Functional Leaders Group Photo
Back row, left to right: Huam Chin Boon, Mike Eng, Sonny Ong, Jerry Fan, Cindy Palar, Daryl Wan, Irwin Chung, Saro Annamalai;
Front Row, left to right: Yue Ai Ping, Lim Jew Ling, Grace Lin, Sia Hui Ping, Marc Salarda, Elvira Castillo, James Yang, Michael Tan

Analog Devices Further Strengthens its South-East Asia Operations with New Singapore Facility

Singapore Office Opening Ceremony

Analog Devices, a global semiconductor leader, today announced the launch of a new state-of-the-art, environmentally friendly, 38,951 sq. ft. facility in Singapore. Located within the Kallang Industrial Park, the facility is planned to serve as a central hub for the more than 200 employees working in Singapore in key divisions of the company, including research and development, test engineering, sales, and manufacturing. ADI established its first location in Singapore in 1995 and has steadily grown its operations and workforce since then. This new strategic investment aligns with the company's global expansion plans, which include enhancing its capabilities in the Asia Pacific region.

"Our new facility is an important milestone in ADI's global growth strategy," said Jerry Fan, President of Asia for ADI. "Enhancing our capabilities in Singapore is vital to leveraging the country's superb talent pool and advanced manufacturing capabilities to serve our regional and global customers' needs. Our investment reinforces ADI's presence within Singapore's thriving semiconductor ecosystem, which is supported by the nation's digital growth initiatives."

The new facility features a more spacious and advanced laboratory to foster interaction between the research and development team as well as customers in the region. Through this forum for the exchange of ideas, ADI and its customers plan to deepen their collaboration and deliver innovative products for the Intelligent Edge. In addition, a dedicated space has been allocated for test development purposes within the new facility, custom-tailored to accommodate multiple automated test equipment (ATE) stations. These on-site testing stations are designed to enable faster initial testing of ADI's state-of-the-art products and accelerate the timeline of ADI engineering's ability to meet customers' toughest challenges.

Fan continued, "Customer intimacy, business strategy, engineering processes, manufacturing capabilities, and problem-solving are essential for creating long-term value for our customers. We are confident the environment within our new facility will help us deliver the kind of innovation that leads to breakthrough products and services, and we believe it will have a lasting impact on the region's ongoing digital transformation journey."

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ANALOG DEVICES
AHEAD OF WHAT'S POSSIBLE™

Giving Back to Society with North East CDC

During the pandemic, many corporates stepped up to support the needy and vulnerable in the local communities through North East CDC in their own ways, either through monetary or in-kind donations.

Here are some of the companies that have been working with North East CDC on their initiatives:

Systems on Silicon Manufacturing Company Pte Ltd (SSMC)

SSMC believes in taking on corporate social responsibility initiatives and giving back to the community. SSMC hopes to continue to bring positive impact and touch the lives of beneficiaries in the North East Community:

[2020, 2023] 'Thank You Hampers' for Medical Frontline Workers and Donation to North East Growth Fund

SSMC contributed 'Thank You Hampers' which were distributed to the frontline healthcare workers at Changi General Hospital and Sengkang General hospital to show our appreciation for their dedication in caring for the patients and our community during the pandemic. The hamper included cookies made by stay-home mothers supported by the Heart Bakers @ North East programme, which equips lower income stay-home mothers and aspiring home bakers with baking, business and marketing skills to start their own home baking business. Upon completing the training, bakers will bake cookies for sale to supplement their household income and support them in starting their own business.

SSMC donated $5,000 towards the North East Growth Fund in 2020 which supports milk and diaper needs of children up to 6 years old from low-income families. In 2023, SSMC continued their support for the programme by donating another $5,000 towards the cause.

[2021] Donation to Online Fundraising for Dedicated North East Ambulance Service

SSMC donated towards the online fundraising campaign which raised funds for the North East Dedicated Ambulance Service to support medical transport for the needy and immobile residents in the North East. The cheque was presented to NECDC by SSMC via a virtual presentation ceremony on 25 May 2021.

Dedicated North East Ambulance Service helps seniors with chronic ailments and mobility issues travel safely, with the right care, to their treatment destinations.

Applied Materials SEA Pte Ltd

[June 2020] Grocery Support for Vulnerable Seniors During Circuit Breaker

Applied Materials donated an amount of $5,000 to purchase essential household items for 46 isolated seniors during the Circuit Breaker.

[Sep 2021] Phase 2HA Grocery Support

Inspired to do their part for the community during the Phase 2HA period, Applied Materials collaborated with NECDC to put together 375 care packs that were distributed to beneficiaries across 11 Family Service Centres within the North East district. In addition to the care packs, beneficiaries were also gifted mooncakes purchased from Bizlink. This provided a source of income for persons with disabilities employed through Bizlink, and an opportunity for Applied Materials to give back to the community through other means at the same time.

[Aug 2022, May 2023] Project Refresh

Staff volunteers from Applied Materials actively participated in Project Refresh, which involved the cleaning and refreshing of 33 homes in Kaki Bukit division. $1,300 worth of sponsored furniture/ electrical appliances and 33 Vitality Care Packs were also donated by Applied Materials as part of gifting towards the beneficiaries onboard for this edition of Project Refresh. In the latest (20th) edition of Project Refresh, staff volunteers from Applied Materials participated in the refreshing of units in Tampines GRC.

[Dec 2022] Laptop Donation for Education

Through North East CDC's link-up, Applied Materials donated used laptops to SBL Vision Family Service Centre and Methodist Welfare Services Family Service Centre (Tampines). These laptops were put to good use for educational purposes when children from low-income and at-risk families visit the centres for activities.

United Test and Assembly Center Ltd (UTAC)

[Nov 2020, May 2022, May 2023] North East Growth Fund

The North East Growth Fund (NEGF) is a fund which supports milk and diaper needs of children up to 6 years old. UTAC contributed to the NEGF with an internal fundraising campaign in Nov 2020, and raised a total of $4,200. Dr John Nelson, CEO, further matched the amount with another $4,200, increasing the total amount to a total $8,400 from UTAC. In 2022, UTAC employees raised a total amount of $4,688 towards the cause, while the balance $5,312 was contributed by the company, amounting to a total of $10,000 raised from UTAC. And then again in 2023, UTAC's employees contributed to the NEGF with an internal fundraising amount of $6,923 and the company topped up another $5,077, bringing the total to $12,000 donated by UTAC.

[Nov 2021] Shaping Hearts 2021

UTAC donated a total of $10,000 towards Shaping Hearts 2021, showing their support for the inclusive platform provided by North East CDC to showcase the talents of the special needs community.

[Dec 2022] Project Refresh

UTAC had 19 staff volunteers who participated in the cleaning and refreshing of homes in Punggol divisions. 26 units benefitted from Project Refresh for this edition.

Singapore Semiconductor Industry Association

[2019] Silicon Classics

The Silicon Classics is a charity fundraising event organised by Singapore's Semiconductor Industry Association (SSIA). Proceeds from the fundraising event over the past years went towards the North East Community Give Back Golf & Appreciation Dinner. The North East Community Give Back Golf & Appreciation Dinner is an annual fundraising event organised by North East CDC to support the local assistance programmes administered by the CDC itself, such as:
a) Heart Bakers
b) North East School Meal Fund
c) Tuition Subsidy
d) Community Employment Program
e) Young NTUC - North East CDC Project Refresh

SSIA has raised a total of $459,000 from 2014 - 2019.

In 2023, NECDC is privileged to be collaborating with SSIA for the celebration of the semiconductor industry's 55th on 19 September. Stay tuned for more details to be unveiled along the way.

About North East CDC
Established in 1997, the North East Community Development Council (CDC) is driven by its mission to build a caring and inclusive community. It serves a population of over 964,000 residents in four Group Representation Constituencies (GRCs) and two Single Member Constituencies (SMCs). They are: Aljunied, Pasir Ris – Punggol, Sengkang, Tampines GRCs, Hougang and Punggol West SMCs.

Headed by Mayor Desmond Choo, the North East CDC plays a vital role in administering financial and employment assistance to residents in need. In close collaboration with community and corporate partners, the CDC strategically plans outreach programs that aim to foster strong bonds and promote social cohesion within the community.

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NORTH EAST
community development council

SSIA
Singapore Semiconductor Industry Association

Semiconductor Business Connect 2023

Thursday, 6 July

Strengthening The Ecosystem With Emerging Technologies

The Semiconductor Business Connect is an initiative to grow and strengthen Singapore's semiconductor ecosystem, and this platform is strongly supported by the multinational companies in the sector. With a focus on growing businesses and collaborations through business matching opportunities, Semiconductor Business Connect aims to connect the semiconductor network, to innovate solutions and collaborate for success for all players in the industry.

This year's theme will be **Strengthening the Ecosystem with Emerging Technologies** with a focus on digitalisation, automation, additive manufacturing, and sustainability. This will be the first year that SSIA is emphasising additive manufacturing to support the semiconductor industry.

Scan for more info:

Subfab Monitoring and Control

Providing Smart Control for Optimized Energy Savings

INFICON takes the commitment to sustainability and process control seriously by providing FabGuard® for subfab and facilities. FabGuard® is the benchmark for process tool Fault Detection Control (FDC) and broad-based sensor integration. With FabGuard, INFICON enables engineers like no other application in the industry. FabGuard® takes advantage of Smart tool-based integration to predict excursions and provide significant opportunities for cost savings.

The extension of the INFICON FabGuard® monitoring and control product line to subfab and facilities components provides engineers clarity regarding process impacts and methods for precisely controlling subfab equipment. Tool-state aware control of subfab equipment provides significant sustainability benefits, including controlling burners for abatement systems to save energy and natural gas, and idling pumps to reduce electricity consumption and purge gas usage. The subfab implementation of FabGuard® actively supports: abatement/scrubbers, power supplies, pump, chemical dispenser/delivery systems, chillers, heat trace and more.

Smart control of subfab systems with an IDM customer has successfully generated cost savings of a staggering 28% on the resources such as natural gas (fuel), water, gases, and other consumable materials. This was done by using condition-based consumption methods in FabGuard® to control the operation of the subfab components. FabGuard® was able to reduce power consumption through the smart control using communication between the Process Tools and facilities/subfab equipment. This simple connectivity between the fab and subfab results in precise control to enable significant reductions in consumables and costs.

In addition, by adding facilities and subfab data into the same monitoring platform as the process tool allows better coverage in terms of FDC and maintenance. With the use of Smart and Predictive Maintenance capability within FabGuard®, using Artificial Intelligence / Machine Learning (AI/ML) – engineers can better predict maintenance needs and schedule them to minimize unscheduled downtime.

In strong support to SSIA's commitment towards sustainability, INFICON strives to assist customers to responsibly manage Earth's finite resources and protect its ecosystems. Together, we can build a satisfactory relationship between our society and the environment.

Excursion Detection

Consumption Monitoring

Green Operations

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INFICON

Advancing High-Tech Ecosystems:

Fueling Progress through DoE-Driven Recipe Auto Generation from Active Golden Recipes

The recipe development process, from Research and Development (R&D) experiments to mass production and continuous R&D advancements, is critical in speeding up time-to-market. High-tech industries are now seeking ways to increase the efficiency of recipe development processes. The answer lies in adopting Design of Experiment (DoE) methodology into the recipe management system, creating experimental recipes through automation.

The Role of Recipe Management in Cooperation with DoE Methodology

Recipe creation is a critical aspect of the semiconductor and electronics industry. LineWorks RM is a unique recipe management solution that offers a recipe creation approach that incorporates DoE methodology.

Benefits of DoE Recipe Creation

Enhance product quality

DoE enables systematic exploration of recipe parameters, leading to improved product quality and performance. By identifying the key factors and their optimal ranges, DoE helps achieve tighter process control and reduced variability.

Reduce costs

By optimizing recipes, DoE can lead to cost reduction through improved yield, reduced rework, and enhanced process efficiency. The solution helps identify cost-effective combinations of factors while ensuring desired product outcomes.

Increase yield and process efficiency

DoE enables the identification of process conditions to maximize yield and efficiency. Through systematic experimentation and analysis, it helps to optimize parameters such as equipment settings, material specifications, and process timings.

Reduce time-to-market

The systematic and efficient approach of DoE reduces the time required for recipe development and optimization. By minimizing the number of experiments needed, it accelerates the identification of optimal conditions for production.

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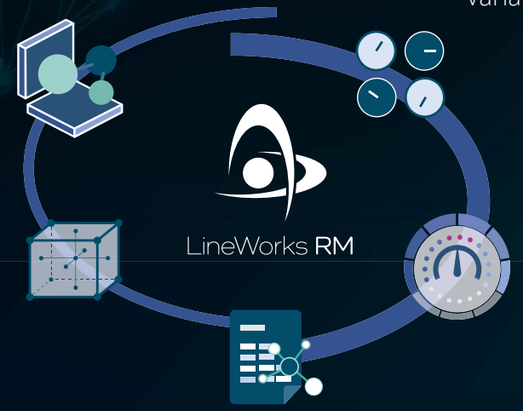
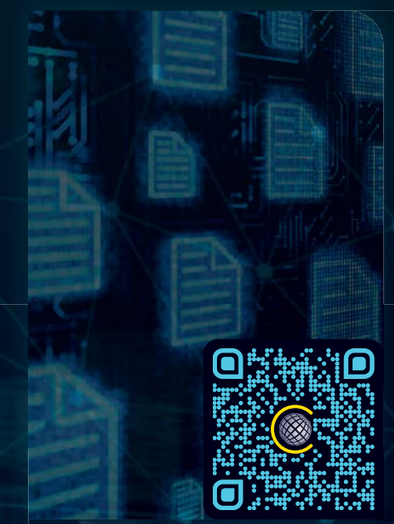
- **Standardize product definition**
  Bill of Process (BoP) Management
- **Better reliability**
  Equipment Constant and Variable (ECV) Management
- **Shorter time-to-market**
  Design of Experiment (DoE) Management
- **Improve transparency and control**
  Adjustable Parameters (AdP) Management
- **Reduce amount of recipes**
  Recipe Body Management



Recipe Creation Made Easier

Implementing LineWorks RM will address the challenges that come with DoE recipe creation such as the time required for equipment and engineers can be significantly reduced. The recipe creation process can also be automated using DoE recipe runs. The solution replicates a set of golden recipes or Process of Record (POR) recipes and generates a complete set of experimental recipes according to the DoE matrix values and DoE setup in the recipe management. As a result, engineers can achieve total traceability of recipes, enhanced collaboration, increased efficiency, and gain precise parameter control.

To sum it up, a capable recipe management system helps high-tech manufacturers to strengthen their ecosystem by streamlining the recipe creation process, and ensuring the highest standards of quality and consistency are not just achieved, but also maintained. All this translates to higher efficiency, enhanced productivity, and most importantly, increased speed of time-to-market.



linkedin.com/company/camline

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Singapore Semiconductor Industry Association

Hirata

Ever since our founding, we have designed and manufactured a variety of manufacturing solutions in a wide range of industrial fields. With our long history, Hirata can provide the know-how and unique perspectives needed to help our customers meet the needs of the fast-paced manufacturing industry.

For years to come, Hirata will continue to create greater value for our customers based on innovative technologies and creative engineering solutions. We will also contribute to a more sustainable society for a better future by our manufacturing solutions.

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Loader / Unloader

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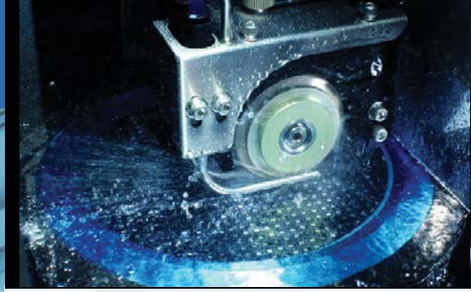

Dicing and Grinding Services at DISCO

At DISCO, we believe that what our customers really want is not just the product itself, but the processing results that are derived from using our products as a means. With this in mind, we provide our customers with the best processing results through our cumulated knowledge of Kiru (cutting), Kezuru (grinding) and Migaku (polishing) technologies.

Customizable Dicing and Grinding Services are available at DISCO HI-TEC SINGAPORE (Singapore), DISCO HI-TEC EUROPE (Munich), DISCO HI-TEC CHINA (Shanghai), DISCO HI-TEC TAIWAN (Taipei) and DISCO HI-TEC AMERICA (San Jose).

Trial Processing

We offer trial processing of new materials and products that have not been processed before. This helps customers to see how the process works in the start-up stage, enabling the launch of new products in this stage. If market demand is ramping up, they can gain enough knowledge about their product manufacturing costs to make critical investment decisions. In this sense, DISCO's Dicing and Grinding Services can also serve as an "incubator" for new businesses.

Supporting Customer's Businesses

DISCO's Dicing and Grinding Services can support customers' businesses when their production capacity is tight during periods of high demand or economy boom, allowing customers to flexibly adapt to market demand. It will also be useful for companies that currently do not own DISCO machines, but are interested to utilize the relevant processes for product checks — guiding decisions for future investments.

Available Equipment for Dicing and Grinding Services	
Laser Saws	DFL7360, DFL7361
Dicing Saws	DFD6341, DFD6361, DFD6362
Grinders/Polishers	DGP8761 + DFM2800
Related Equipment	DWR1721, DDS2300

We also offer die inspection services with **DIS100** — an equipment which measures die thickness, chipping, backside surface roughness and die strength.

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DISCO

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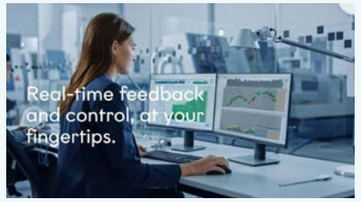

Equipment connectivity is the fundamental building block in a digital infrastructure for smart manufacturing initiatives to achieve data integration and break data silos but after achieving connectivity, what is next?

While equipment connectivity forms the infrastructure for data acquisition, it is only the first step towards unlocking the true potential of your manufacturing operations. The real value lies in what you do with the equipment performance data, production metrics, quality parameters captured.

Beyond basic equipment connectivity is factory unification – a harmonized and interconnected ecosystem of processes, systems and equipment. By integrating different processes, systems, and equipment, factories can streamline workflows, reduce errors and downtime, and improve productivity, quality, and safety.

Reach new heights of equipment data management to achieve an increase in overall equipment effectiveness (OEE). It is time to embrace Sapience® Smart Factory Platform from Cimetrix ® - the platform that transforms raw data into actionable insights and empowers you to optimize your operations like never before.

A platform ready for the future

Sapience is an extensive platform with high throughput for seamless control, communication and management of high-performance data pipelines from manufacturing equipment. Ideal for streaming analytics, machine learning, and artificial intelligence applications requiring data directly from the production equipment. Built on Kubernetes, Sapience offers equipment and data interoperability, deployment flexibility and application scalability. The Sapience APIs abstract away the intricate details of tool communications and provide your application developers a mechanism to innovate using all the latest tools in the fastest means possible.

Ultimately, factory unification leads to improved profitability and growth. With a greater focus on collaboration and communication between IT/OT departments and machines, it allows for a more agile and responsive manufacturing environment.

Your factory unification partner

Thousands of equipment operate today with Cimetrix ®, utilize a trusted name in the front and back-end assembly space to implement your next-generation solutions that gives users a holistic view of your production processes, enable the identification of inefficiencies, uncover hidden patterns, and make data-driven decisions.

A trusted local partner like Electrotek is critical for your smart factory transformation journey with Sapience® Smart Factory Platform from Cimetrix®.

Visit us at *ww.electrotek.io* to start your factory unification journey.

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at 30 Tampines Industrial Ave 3

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Total NLA of approx. 9,500 sqm with potential built-up area of approx. 38,000 sqm

Available for single-tenant occupancy with option for customisation


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CapitaLand

Transforming the Semiconductor Industry with Decision Intelligence

By Shireen ONG Hsiang Leng

The semiconductor industry operates in a highly competitive landscape where efficiency, cost-effectiveness, and innovation are paramount. To address the industry's complex challenges and unlock its true potential, decision intelligence solutions have emerged as a game-changer. By tackling pain points such as supply chain logistics, production inefficiencies, yield optimization, equipment maintenance, and resource allocation, Gurobi empowers semiconductor companies to revolutionize their operations and drive profitability.

Streamlining Supply Chain Logistics

Supply chain logistics play a crucial role in the semiconductor industry, with intricate networks of suppliers, manufacturers, and distributors. With decision intelligence, you can optimize procurement, production, and distribution processes, enabling streamlined operations, improved inventory management, reduced costs, and enhanced customer responsiveness.

Enhancing Production Efficiency

By considering factors such as resource availability, machine setup times, and production capacity, you can apply decision intelligence techniques to maximize production efficiency, reduce cycle times, and ensure optimal resource utilization.

Boosting Yield Rates

Semiconductor yield optimization is a critical factor in achieving profitability. Decision intelligence techniques assist in fine-tuning process parameters, equipment settings, and defect detection strategies to maximize yield rates—minimizing scrap and improving product quality.

Optimizing Equipment Maintenance

Equipment downtime and maintenance costs can significantly impact semiconductor operations. Decision intelligence technology enables you to optimize equipment maintenance schedules and strategies, considering factors such as preventive and predictive maintenance, resource allocation, and equipment reliability.

Efficient Resource Allocation

Optimize your resource allocation by considering capacity constraints, skill requirements, and cost considerations. This leads to improved resource utilization, reduced waste, and increased productivity—contributing to bottom-line growth.

Gurobi's decision intelligence technology, combined with expert services from Optimization Analytics Technology, offers a transformative approach to address the pain points faced by the semiconductor industry. By streamlining supply chain logistics, enhancing production efficiency, boosting yield rates, optimizing equipment maintenance, and enabling efficient resource allocation, you can unlock unprecedented levels of efficiency, productivity, and profitability.

Discover why 60% of the world's largest semiconductor companies trust Gurobi for optimal decision-making.
Visit *Gurobi.com* to learn more.

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Shireen Ong
Account Director,
ASEAN & Taiwan
shireen.ong@gurobi.com

GUROBI OPTIMIZATION

GUROBI OPTIMIZATION

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Technology Enabling Life

Technology for creating semiconductors is technology that makes dream products real

Shockingly groundbreaking products –
this is what semiconductor advancements bring.
Our technology produces equipment to
manufacture semiconductors,
and it makes wonders real.

TEL TOKYO ELECTRON 60 years

Tokyo Electron will celebrate its 60th anniversary on November 11, 2023.

INNOWAVETECH®

Our Offerings

InnoSense
Innosense consist of computer vision wafer inspection system, sensor-packed AMR for environment monitoring and abnormality detection, and AIoT sensors surpassing human sensing abilities.

Innoconnect
Non-intrusive 2-way connection for autonomous control of equipment and system

WavelengthAI
An AI platform that provides Automatic Defect Classification, Root Cause Mapping, predictive intelligence and insights such as Equipment Health Analysis to anticipate risks, reduce incidents, and decrease defects in the manufacturing process.

AI@Line
AI-based ecosystems for real-time execution and AI automation using generative knowledge discovery

INNOWAVE TECH

Your Comprehensive AI Solutions Partner

About Us

Innowave Tech provides comprehensive solutions for companies aiming to achieve Zero-Defect and Smart Factory Transformation. By leveraging A.I, AIoT, Machine Vision, and Data Digitization, we empower businesses to enhance quality control, optimize manufacturing processes, and embrace the benefits of Industry 4.0 technologies.

Contact Us

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+65 88313613 innowave.com.sg hello@innowave.com.sg

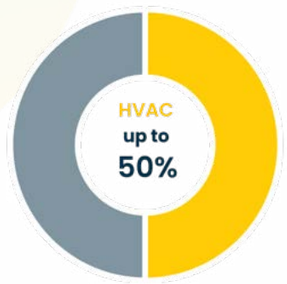
80 Marine Parade Road, #10-05, Singapore 449269 / 140 Paya Lebar Road, #06-15, #10-02, Singapore 409015

bbp's Patented Energy Efficiency Solution

Steering Sustainability Forward

The pressure to curb CO2 emissions and energy consumption is ever increasing. With Singapore's push towards Net-Zero through regulations like Minimum Energy Efficiency Standards (MEES) and progressively increasing Carbon Tax, companies are actively seeking solutions to reduce their carbon footprint.

Energy Consumption for Semiconductor Manufacturing[1]:



Many sectors are increasingly looking into their Heating, Ventilation, and Air Conditioning (HVAC) systems as a means of going green. Energy optimisation, particularly for mission-critical sites where operational disruptions are unacceptable, is challenging, especially without in-house expertise or a clear roadmap for sustaining long-term savings.

There's where bbp steps in. bbp is an award-winning energy efficiency firm that provides energy s avings as a service to blue-chip and Fortune 500 companies across nine markets. Within the semiconductor industry, bbp serves three of the world's top ten semiconductor manufacturers and has enabled a cluster of blue-chip semiconductor manufacturers in Asia to save over S$ 5 million annually. All these were made possible through bbp's patented HVAC optimization technologies, utilizing Internet of Things (IoT), proprietary software algorithms and machine learning.

A standout feature of bbp is its unique $0 CapEx model, where asset operators come up with zero investment and pay bbp based on actual savings delivered. bbp assumes all costs related to the implementation and delivery of energy-saving solutions, equipment maintenance, along with energy performance tracking. **This eliminates all financial risks for asset operators and owners** while aligning mutual interests through a shared savings business model.

bbp is also committed to transparency and accountability. Cost savings across all client sites are independently verified by third-party auditors like TUV annually, assuring accountability and creditability behind the savings delivered. Reporting of energy savings is clear cut too, and readily available via bbp's dashboard.

[1] Zhao, Y., Li, N., Tao, C., Chen, Q., Jiang, M., 2021, "A Comparative Study on Energy Performance Assessment for HVAC Systems in High-Tech Fabs," Journal of Building Engineering, Vol. 39, p. 102188.

"With our innovative technologies and proven track record across nine markets, bbp is here to support communities towards a sustainable future, empowering businesses to meet their sustainability KPIs while achieving significant energy and cost savings. Collectively we could build a better planet together."

Mr. Hoe Boon Chye,
CEO of bbp and member of Singapore Semiconductor Sustainability Committee.

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bbp
revolutionising energy efficiency

FRUSTRATED WITH HEAT?

Over the past decades, 3c Products sought to solve overheating through conduction. However, this method has reached its limits.

Solutions such as heatsinks or aluminium foil thermal storages are only able to increase its cooling capacity by either increasing the thickness or surface area of the product.

Currently, such solutions are no longer feasible as we strive to build smaller, lighter, and more efficient products.

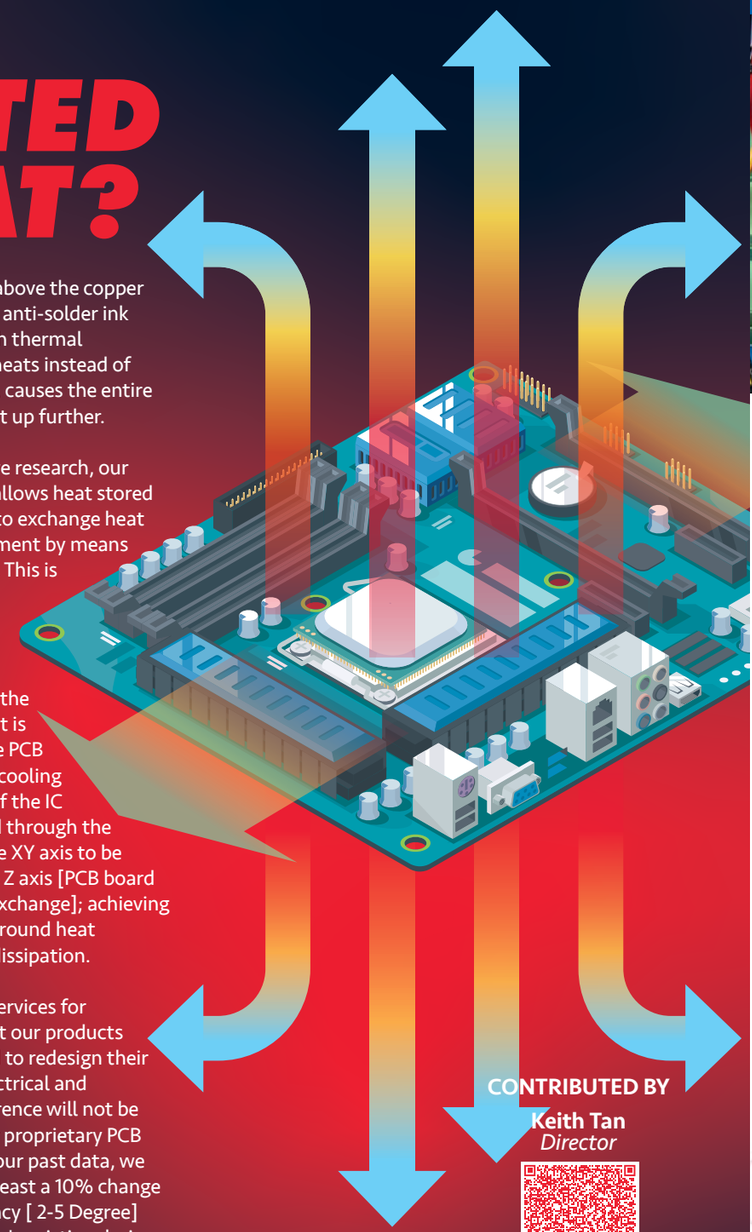
Our solution to today's problem is our proprietary product that allows heat dissipation through radiation. Radiation heat dissipation is applied in many ways and can be experimented with different carriers such as paint, ink, plastic pellets, and semiconductor packaging materials.

In application, we look at the issues currently affecting general printed circuit board (PCB). Heat, that is generated by the IC, is generally the limiting factor for PCB designers. Currently, heat sink above the IC or the copper lines underneath the heat conduction to the PCB is used to dissipate heat from the IC.

However, there will be a time when the thickness of the copper line space can no longer store more heat due to design limitation and the original PCB above the copper line covered with anti-solder ink (green paint) such thermal resistance store heats instead of dissipating them, causes the entire PCB board to heat up further.

Through extensive research, our proprietary PCB allows heat stored inside the board to exchange heat with the environment by means of radiating heat. This is done through a custom-made anti-solder ink layer, which greatly improves the rate at which heat is released from the PCB itself. This active cooling allows the heat of the IC that is conducted through the copper line on the XY axis to be dissipated on the Z axis [PCB board as a medium of exchange]; achieving a 3D effect of all-round heat conduction and dissipation.

We can provide services for companies to test our products without the need to redesign their circuit board. Electrical and magnetic interference will not be able to affect our proprietary PCB board. Based on our past data, we are expecting at least a 10% change in cooling efficiency [2-5 Degree] within a customer's existing design. This increases the stability and lifespan of the chipset by being more efficient in heat dissipation against their competitors.



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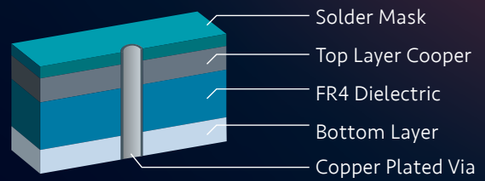
Keith Tan

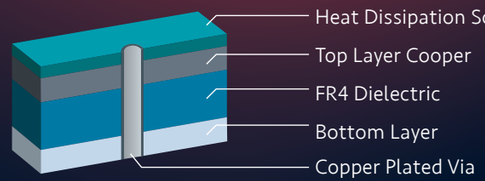
Director

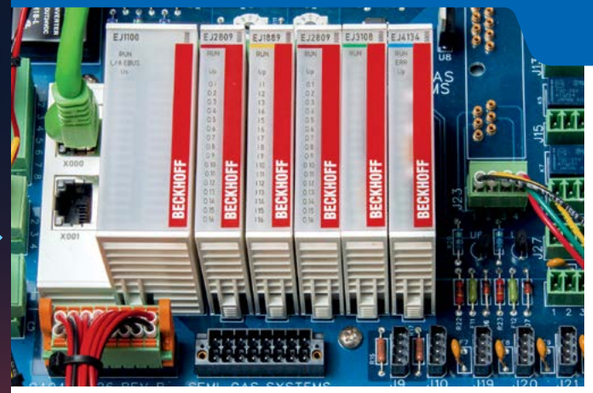
VINTAGE VENTURE

Normal FR4



Heat Dissipation Circuit Board





EJ-series EtherCAT plug-in I/O modules fit inside the 8" tall, 10" wide and 12" deep enclosure

EtherCAT Plug-in Modules and A Compact Panel PC Expand Controller Functionality in High Purity Industrial Gas Applications

Applied Energy Systems (AES), a U.S. company specializing in high-purity gas systems, has upgraded their existing systems to incorporate advanced Industry 4.0 solutions. AES selected Beckhoff's components to enhance device functionality while maintaining the same small form factor as the previous model.

High-purity gases are critical for electronics manufacturing and research, but their combustibility and toxicity pose challenges for system design.

AES prioritizes safety while meeting the demanding requirements of semiconductor manufacturers, such as high-speed throughput, precision, and accuracy in the submicron range.

AES serves various industries, including manufacturing, research, solar, pharmaceuticals, aerospace, semiconductors and other electronics. To keep up with the demands of Industry 4.0 and IoT technologies, AES focuses on research, development, and modernizing its equipment. The GigaGuard™ GSM-V™ controller, designed specifically to replace the non-Industry 4.0 capable GSM-5™ predecessor, has been a significant innovation in the field of ultra-high purity gases. The new GSM-V had to meet stringent requirements, including maintaining ultra-high purity levels, ensuring safe working conditions, and offering a competitive price-performance ratio. The solution had to fit within the existing enclosure dimensions to maintain drop-in replacement capability.

Beckhoff's PC-based control portfolio, specifically the CP6606 Panel PC, features a 7-inch touchscreen, eliminating the need for an additional hardware PLC and reducing cabinet space. The system runs on TwinCAT 3 automation software, integrating PLC and HMI functions into one platform. It supports communication with SCADA systems and data transmission to the cloud using OPC UA.

For data communication and I/O functions, AES utilized EtherCAT technology. The GSM-V controller employed EtherCAT plug-in modules, minimizing space requirements and simplifying installation by eliminating point-to-point I/O wiring. The EtherCAT-based solution provided flexibility and reduced the potential for wiring errors. The new system reduced installation time by 50%, thanks to its plug-and-play nature and network connection via EtherCAT.

CP6606 Panel PCs provide a compact solution for control and HMI via the 7-inch touchscreen

David Stetz, chief engineer of R&D controls technology at AES (right) and Tim Beckel, regional sales engineer for Beckhoff USA (left)

To find out more:

www.appliedenergysystems.com

www.beckhoff.com/ejxxxx

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BECKHOFF

Servicing the Semiconductor Industry: Sin Chew Woodpaq's One-Stop Logistics Solutions

With over 50 years of experience, we have established ourselves as a leading provider of comprehensive logistics solutions, particularly catering to the unique needs of semiconductor industry. At Sin Chew Woodpaq, we prioritize safety and customer satisfaction, at the same time ensuring a seamless and efficient logistics experience.

Our services include:

Cleanroom Packing Solution

Our in-house team has a deep understanding of semiconductor industry's requirements. We provide packaging materials, such as desiccants and moisture vapour barrier bags, along with vacuum sealing to prevent moisture absorption and damage during transport. Impact indicators are used to track the impact on transit.

Cleanroom Machinery Moving

Moving heavy and sensitive machinery within cleanroom facilities or relocations requires expertise and specialized equipment. Our team is also equipped with cleanroom attire, chrome-plated tools to operate in a cleanroom environment. Leveraging equipment such as the air float system and hydraulic lifters, we move sensitive equipment efficiently and safely.

Air Ride Transportation

For semiconductor equipment that are impact sensitive, our air-ride transportation with climate control ensures a smooth and vibration-free journey, giving your valuable cargoes optimum protection during the transport. Sin Chew Woodpaq guarantees reliable and on-time delivery, providing you with peace of mind.

Air Conditioned Warehousing

We offer air conditioned warehousing with meticulous temperature, humidity, and air quality management. Ideal for industries such as Semiconductors, we provide a controlled environment to safeguard the quality and integrity of your valuable products during storage and distribution.

Engineered cases for semiconductor machineries

Semiconductor machines are highly sensitive to various external factors such as dust, moisture, vibration, and impact. Protecting them during transport or storage is crucial. That's where engineered cases come in.

Unlike the conventional wooden, engineered cases are designed specifically for each machine using CAD drawings and finite element analysis to ensure a precise fit and maximum protection. Additionally, vibration reading recording also further optimize the design to mitigate any potential damage from movement during transport. We offer ISPM15 material treatment service such as heat treatment for your international packing requirement.

Benefits of using Engineered Cases for Semiconductor Machineries

1. Enhanced Protection and Safer Work Process

Engineered cases are custom-designed to fit the specific dimensions and requirements of the equipment, ensuring a secure hold and minimizing potential damage with customized internal structures and shock absorbing protection. Using engineered cases will result in a safer working environment due to less shifting and jostling during the loading and packing process of the machine due to the precise fit of the machine to the engineered case.

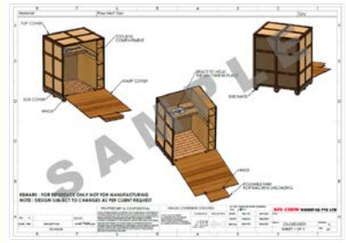
2. Sustainability

These engineered cases are made from high-quality materials that offer exceptional durability and resistance to wear and tear, and the engineered cases are also reusable without compromising their protective capabilities. The reusability of the engineered case contributes to sustainability aspects of the business.

OUR ENGINEERING CAPABILITIES

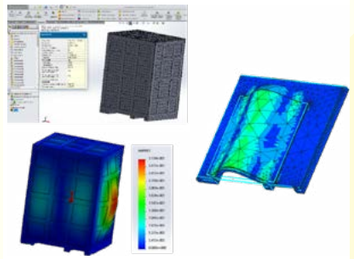
3D CAD Design

Our Engineering Cases are designed using 3D CAD software, and we can produce proof of durability for the protection of your sensitive semiconductor equipment. This helps to reduce errors and ensure that the final product meets the exact specifications and the protection required.



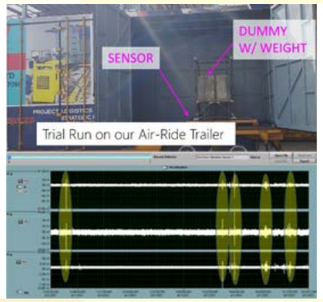
Finite Element Analysis

Finite element analysis simulate how an engineered case will perform under different conditions. We are able to perform analysis and calculations with the 3D CAD design to simulate how the engineered cases would react to real-world impacts, vibration and other physical effects.



Vibration Reading Recording

Vibration reading recording plays a vital role in identifying potential issues and facilitating preventive measures during transport. Engineers able to calculate and select appropriate dampening devices and cushion foams by utilizing vibration sensors to test and analyse the impact of vibrations on the cargoes during transportation.



For further information, please don't hesitate to contact us.

We are dedicated to providing you with a comprehensive, one-stop logistics solution that ensures your peace of mind.

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SIN CHEW
Sin Chew Woodpaq Pte Ltd
Protecting & Positioning Businesses

Supercharging Industries Through Dynamic R&D Collaborations

As the world increasingly relies on semiconductors to power industries, the need for continuous innovation has never been more pronounced.

Applied Materials has long been a pioneer of continuous research and development (R&D) in the semiconductor industry through its focus on enhancing chip power, performance, area, cost, and time-to-market (PPACt). The company believes that R&D fuels passion to unlock new frontiers, elevate technological capabilities, and make possible a better future.

'Singapore 2030' Plan

Applied Materials Singapore 2030 plan launch, groundbreaking by (from L-R) Mr KC Ong, Corporate Vice President, Worldwide Manufacturing, Applied Materials; Dr Beh Swan Gin, Former Chairman, Economic Development Board (EDB); Mr Gan Kim Yong, Minister for Trade & Industry; Mr Gary Dickerson, President & CEO, Applied Materials; Mr. Brian Tan, Regional President (SEA), Applied Materials

In December 2022, Applied Materials announced the multi-faceted 'Singapore 2030' plan, a strategy aimed at continuing the expansion of the company's operations in the country. It is poised to revolutionize the semiconductor industry by further accelerating the commercialization of new technologies and strengthening the company's R&D, manufacturing capacity, ecosystem partnerships and workforce development.

As part of 'Singapore 2030', Applied Materials will be opening a new greenfield facility next year, signifying a significant first step in ensuring that the company remains at the cutting edge of breakthroughs.

Brian Tan, Regional President of Applied Materials SEA

"Over the last 30 years, we have worked with local partners to create tremendous value for the Singapore manufacturing and R&D ecosystems. This has created a platform for Applied Materials to deliver innovations for the global semiconductor industry.

Today, some of our most sophisticated technologies are ideated, designed, and developed here. The 'Singapore 2030' plan aims to establish our country as a robust Asian platform and innovation engine for Applied Materials. We will be working with local academia and research institutes to bolster our R&D capabilities and accelerate the commercialization of new semiconductor technologies," said Brian Tan, Regional President of Applied Materials SEA.

Multibillion-dollar R&D platform in Silicon Valley

In May 2023, Applied Materials unveiled the world's biggest and most advanced facility for collaborative semiconductor process technology and manufacturing equipment R&D. Set to open by 2026 in the heart of Silicon Valley, the groundbreaking 180,000 square-foot Equipment and Process Innovation and Commercialization (EPIC) Center will bring chipmakers, academics, and ecosystem partners to create innovations together. The center will also create 2,000 engineering roles and provide the resources and tools for them to accelerate development and commercialization of the foundational technologies needed by the global semiconductor and computing industries.

"THIS CENTER IS ALL ABOUT ACCELERATING THE SPEED OF INNOVATION. WE DO THAT BY COLLABORATING AND BRINGING OUR CUSTOMERS, OUR INDUSTRY PARTNERS, THE BEST ACADEMICS, THE BRIGHTEST MINDS, AND THE MOST PROMISING TALENT TOGETHER."

At the heart of the EPIC Center's mission lies the opportunity to propel chipmakers and university researchers forward, providing them with a dedicated space within an equipment company's R&D fab, providing early access to next-generation processes and equipment to accelerate product roadmaps.

The tremendous growth in the number of connected devices and the rise of artificial intelligence are driving an increased demand for chips. This is creating an opportunity for a $1 trillion semiconductor market. However, chipmakers face challenges in sustaining the pace of innovation required to meet this demand. The EPIC Center hopes to address these and will signify yet another game-changing milestone for Applied Materials, facilitating and accelerating the development of tailored tools and equipment for the evolving semiconductor landscape by an unprecedented 30%, significantly increasing the current pace of innovation.

Applied Materials' commitment to pushing boundaries through R&D

The 'Singapore 2030' plan and EPIC Center represent a symphony of progress that will unlock boundless R&D opportunities for semiconductor ecosystem. Where 'Singapore 2030' aims to increase manufacturing capacity and deepen partnerships, the EPIC Center will serve as a crucible for imagination, birthing findings and solutions attuned to the ever-shifting market.

Applied Materials aims to shape the future by continuously creating opportunities to reimagine the very limits of what is possible to create a supercharged, more innovative tomorrow.

For more information, please visit www.appliedmaterials.com

From Sand to Success: Guiding Your Digital Transformation Journey

CAD-IT is a Singapore headquartered company, in business for 32 years and serving clients through 14 global offices located in APAC, Europe & North America.CAD-IT provides Industry 4.0 consulting and end-to-end project deployments to the semiconductor industry spanning across demand management, design and manufacturing.

We have successfully delivered semiconductor demand forecasting projects by leveraging machine learning techniques on historical customer forecasts, customer orders, multi-plant capacity, and actual order fulfillment. Boosting our clients' order management efficiency.

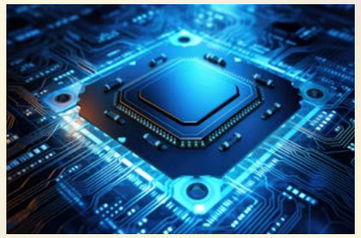
Our expertise extends to providing engineering simulation tools and services for R&D departments, covering a wide range of processes such as oxidation, coating, etching, doping, layering, dicing, wire bonding, moulding, and forming.

We have played a pivotal role in assisting frontend semiconductor fabs with yield improvement initiatives. By harnessing backend compute and machine learning methods, we have leveraged data obtained from equipment through the SECS/GEM protocol and event log files. This is achieved via connecting to equipment such as Etchers, Ovens and Metrology.

We have elevated backend semiconductor operations at OSATS, with our expertise in developing Digital Transformation Blueprints for Assembly & Test Cells. We seamlessly integrate upstream equipment, like Back Grinding, Dicers, and Tape & Reel, for Equipment Condition Monitoring. Collaborating closely with client engineers, we optimize uptime, yield, and throughput by connecting downstream equipment such as Die Attach, Wire Bonding, Moulding, Plating, and more. Our real-time equipment data analysis obtained via communication protocols and parsing of the production logs and event logs has reduced unscheduled downtime and enhanced yield for Handlers in Test Cells.

We empower semiconductor equipment manufacturers by implementing IoT, AI/ML, and AR technologies for remote monitoring, predictive maintenance, and guided diagnostics.

CAD-IT offers tailored Digital Transformation consulting services to the semiconductor industry. Our global team of industry experts and consultants delivers comprehensive Blueprints and Roadmaps through a Technical Project Team comprising skilled Engineers with expertise in solution architecture, equipment data analysis, big data processing, backend computation, machine learning, computer vision, engineering simulation, augmented reality, and web/mobile application development.



Get in touch with us at *consulting@caditglobal.com* for your Semiconductor Digital Transformation consulting and end-to-end project deployment needs.

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CAD-IT CONSULTANTS

CapitaLand

HIGH-SPEC INDUSTRIAL PROPERTIES
Vertical corporate campuses with higher business space content combined with high-specification mixed-used industrial space

BUSINESS & SCIENCE PARK PROPERTIES
Clusters of suburban business space, corporate HQ and R&D space
Singapore Science Park, one-north, International Business Park and Changi Business Park

LIGHT INDUSTRIAL PROPERTIES
Light industrial properties comprising manufacturing space with low business space content

PARTNER WITH ONE OF
ASIA'S LARGEST
DIVERSIFIED REAL ESTATE GROUPS

LOGISTICS
Warehouses and distribution centres with high floor loading and ceiling height

A TRUSTED PARTNER FOR YOUR END-TO-END WORKSPACE SOLUTIONS
CapitaLand Singapore workspace portfolio comprises over 120 developments spanning across the island. Our diversified workspace portfolio caters to businesses in various key industry verticals, offering a comprehensive full suite of end-to-end solutions for a range of real estate classes enabling us to support and accommodate the unique needs of businesses.

WORKSPACE LEASING ENQUIRIES
6508 8686
sg.marketing@capitaland.com

WhatsApp Leasing Live Chat
Telegram Leasing Live Chat
24/7 Telegram Bot

* Live chat is a message-only service that is available on weekdays from 8.30am to 6pm.
For assistance after office hours, please use the 24/7 Telegram Bot.

New Frontiers in New Developments

Meridionale Impianti (MI), was founded in 1981 and now is a multinational with a qualified workforce of more than 500 operating in 6 countries.

MI operates as OEM, EPC company, System Integrator and Global Maintenance Provider.

Some of our solutions have received important awards from customers that achieved excellent ROIs with improved plant performances and zero ITP.

Thanks to continuous R&D, the company has diversified its offering of innovative solutions to serve various hi-tech industrial sectors such as micro-electronics, pharmaceutical, chemical, energy and renewables.

MI is able to provide solution for in-situ DRE monitoring with the standard application which involves both an FTIR and Quadrupole mass spec.

MI is able to provide abatement systems for the said gases. The systems are built on the new plasma system like PCS TROPO / PCS STRATO and downstream a dry bed absorber or a central wet scrubber. However more information is required to tailor the system around the customer needs.

MI can provide customized turn-key solutions, from the design phase to production, from project management to installation, and from operations to maintenance. MI's portfolio ranges from specialty gases to process chemicals distribution, mixing systems to tool hook-up, clean rooms to water treatment, from fab facilities to SCADA / FMCS, from wafer handling to robotic systems, from Back End Burn-in tools to pedestal platforms, spare and refurbished parts. The company is active in the design and construction of traditional power plants, with high, medium and low voltage electrical installations, equipped with instrumentation for regulation, automation and monitoring.

MI also designs and manufactures sophisticated electronic components for energy saving, IOT, smart cities, vibrational controls, home automation, solar panels performance devices.

MI is leading the Etna Valley High Technology District which brings together about 150 ICT companies in Sicily and is also a mentor of the SEVEN business network. It is active in energy technology and innovation and certified to work with Energy Service Companies via its ESCO division.

MI is making important steps in Micro Devices and SiC testing tools, Digital Twin solutions, Artificial Intelligence, Hydrogen and Energy Storage and gas recovery systems in the near future.

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MERIDIONALE IMPIANTI

Robot Automation as a Material Handling Solution

When TAG Industrial was established in 2016, the concept of implementing smarter in-house material handling solutions to improve productivity and efficiency was relatively new. While businesses were keen to tap on technologies, trolleys and manual labour were still largely the go-to choice. Our team saw the niche and sought to become that leading company to support the growing demand, offering a good stable of products, spanning across power-assisted to fully autonomous solutions.

Today, we are proud to be partners with some of the biggest brands in hospitality, healthcare, manufacturing and many other market sectors.

One such manufacturing partner is Company L. Since 2019, we have been working with them to commission our collaborative robots in their manufacturing facility. One-of-its-kind to feature Autonomous, Follow-me and Precede-me modes, the Effibot has supported Company L in daily transfers across various manufacturing stations and last mile transfer from store to ship out. Company L has been gradually expanding the fleet and we continue to work closely as they plan their move to bigger premises.

Another company that has implemented smarter solutions is Company S. As their premises span across several blocks, Effibot's ability to travel on paved road across long distances became a winning feature for the company as manpower is no longer required to fulfil the laborious and time-consuming task of parts transfer, sometimes up to 300kg in a trip. Staff can now focus on fulfilling their roles and improving productivity.

TAG Industrial is also mindful of companies who are keen to hop on-board the productivity ride but have limited budget or have operational constraints. Company A is one such company and they are considering the possibility to implement the eSense sensor-driven powered wheel. The only powered wheel in Singapore to activate using sensor-touch, users can move trolley payload of up to 500kg, simply by squeezing the handles. Staff can move payloads more efficiently and time saved from heaving can be injected instead into the assembly processes. Or consider our power-assisted pedestrian tugs where loads from 1ton to 10tons can be moved by just one person.

The possibilities are endless with TAG Industrial.

Come visit our website *https://www.tagindustrial.com.sg* to find out more!

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TAG INDUSTRIAL PTE LTD

Embrace the future of Manufacturing with advanced technologies

Digital transformation is sweeping across industries and reshaping the way manufacturers operate. The highly volatile semiconductor industry needs to adapt to these changes to gain a competitive edge. Semicon manufacturers need to find reliable technology partners who can provide comprehensive solutions to meet their unique business requirements.

JOS offers manufacturers an extensive range of tailored solutions. By leveraging the right technology and integrating disparate systems into cohesive solutions, organisations can streamline operations, enhance efficiency and achieve their business objectives.

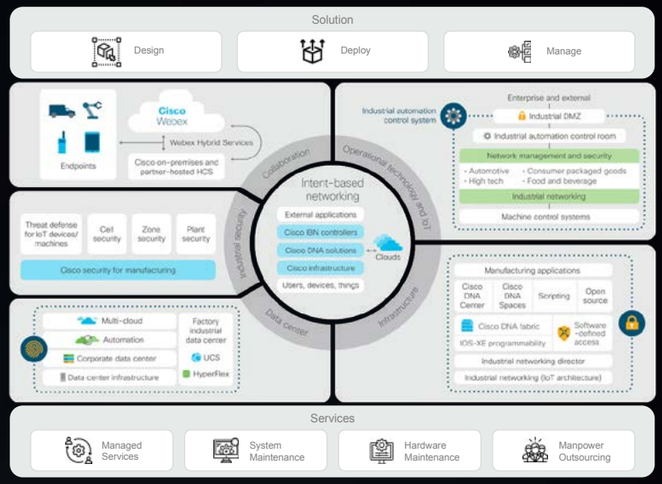
Manufacturers are seeking ways to embed artificial intelligence (AI), blockchain and robotics into their operations to stay ahead of the curve. A robust IT backbone is essential to realise these goals. These involve a foundation of infrastructure, technologies and systems that support manufacturing processes and operations.

With a focus on the **future of manufacturing**, JOS understands the increasing need for innovation in production lines.

Positioned as the go-to **systems integrator partner** for all industries, JOS Singapore offers a wide range of services from Security, Cloud and Infrastructure to End-user computing, Application development and Big data analytics.

What sets JOS apart is its strategic partnership with renowned technology leader Cisco. As Cisco's **gold partner**, JOS has Cisco **expert-level certification (CCIE) professionals** to execute even the most complex project. CCIE is widely recognised as the mosprestigious networking certification in the industry, instilling confidence in JOS' ability to handle complex projects involving Cisco products.

Cisco Partner
Gold Certified



Collaboration with Cisco

Together with Cisco, JOS delivers an **extensive umbrella of solutions** that address evolving needs in the manufacturing industry.

Cisco's advanced manufacturing operations solutions connect machines and control systems with secure and standards-based industrial networks to improve operations, margins, quality, and safety.

Tapping on the combination of **Cisco's cutting-edge technologies with JOS's expertise in system integration** will enable semicon manufacturers to embrace the future of manufacturing seamlessly.

From designing and implementing complex systems to ensuring efficient communication among different technologies, vendors and stakeholders, the partners provide a holistic approach to transform manufacturing operations.

Some of the world's leading manufacturers are relying on these solutions to drive their operations.

"Japanese automaker Nissan Motor Corporation employs cutting-edge technology so it can continue to define the future of the automobile manufacturing. It has deployed Cisco IoT solutions for a network that controls and manages its IoT ecosystem and helps enable remote communication in the manufacturing operations. This has made the automated production line more reliable and stable.

Cisco leads the industry as one of the most prominent global network device vendors. Cisco also offers a wealth of different manufacturing solutions that support smart factories. Furthermore, it offers highly advanced technology, and we can be assured that its offerings reflect global best practices," said Yuichi Murai, Supervisor of the Powertrain Production Engineering Department at Nissan."

"India-based Armstrong International serves clients in the hospitality, petroleum and food-and-beverage industries. It needed a robust IT system at the backend that can run on autopilot mode and be managed with minimal resources to ensure that their core think tank can focus on creating cutting-edge solutions and continually innovating to keep up with the times.

Adopting Cisco's Hyperflex hyperconvergence platform has made its IT infrastructure secure, simple, and easy to manage."

Count on a strong technology partnership – JOS Singapore and Cisco

As the demand for advanced manufacturing solutions grows and the quest for innovation continues, JOS's partnership with Cisco positions it as the ideal technology partner for manufacturers.

With a focus on delivering tailored solutions, backed by industry-leading certifications and expertise, JOS empowers manufacturers to embrace the future of manufacturing with confidence and drive sustainable growth in their operations.

Contact us for more information: www.jos.com.sg sg-enquiry@jos.com.sg

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"Chip Hospital" a Third-Party Laboratory Complements The In-House Laboratory

The semiconductor analysis laboratory provides important support to the research and development functions such as failure analysis, material characterization, product diagnostic, and process monitoring, stretching across the entire industry chain from semiconductor materials, equipment, chip design, wafer manufacturing, and packaging and testing. Through professional analysis and testing technology, it is necessary to diagnose, and identify the root cause of chip failure, and assist in the implementation of improvement solutions, which are crucial to support the high-quality development of the semiconductor industry. However, this sort of work is seldom mentioned in the main sector by the semiconductor industry chain, and there's no clear definition of this type of branch of industry. Mr. Li Xiaomin, President of Wintech Nano Group distinctly compares this industry to a "Chip Hospital".

Before the rise of commercial third-party analytical laboratories, semiconductor companies had to outsource to government-backed scientific research institutions if they were unwilling to build a complete in-house laboratory. For a specific period, the analytical laboratories of scientific research institutions supported the necessary analytical and testing service but, due to priorities neither the timeliness nor the depth of understanding of industrial products in the laboratories of scientific research institutions can fully meet the needs of the industry.

In 2004, Mr. Li founded Wintech Nano-Technology Services Singapore, which is the first commercial laboratory in Singapore to provide high-end analytical services as its core business. Wintech's business developed rapidly, and by 2011, it had grown into the largest semiconductor third-party analysis and testing as well R&D platform in Southeast Asia.

But to be a "chip hospital", it is definitely not a stack of a large number of high-end instruments and equipment. The ability to control equipment, the understanding of industrial product needs, and the continuous development of analysis techniques are more important than the equipment itself, and can even form an interactive iteration between equipment and testing technology.

Mr. Li summed up the four essential elements of a commercial semiconductor third-party laboratory:

1. Advanced equipment
2. Top technical talents
3. High-intensity R&D investment
4. Neutral industry status and mutual business trust

If Fabless differentiated the manufacturing industry from the semiconductor industry, so created TSMC and NVIDIA, then the essence of the Lableess business concept proposed by Mr. Li is the separation of "necessary and non-core" R&D activities from the industry, becoming an independent new industry direction. In recent years, the Lableess business model has benefited many semiconductor companies. However, larger semiconductor companies, are more inclined to the Lab-Lite business model which will retain part of the in-house laboratory capability, especially their most core and information security-sensitive R&D activities. For the continuous improvement of mature products, they will choose to outsource analysis services. Regarding this point, TSMC has achieved the utmost. They have a complete in-house laboratory, which serves the most advanced process, products of their R&D, whereas the analysis services required by mature process, production lines will be outsourced to a neutral third-party laboratory. This sort of arrangement complements the in-house laboratory and the third-party analysis laboratory, which has been proven to be the most efficient and economical industrial development model.

CONTRIBUTED BY

Mr. Li Xiaomin
President WinTech Nano

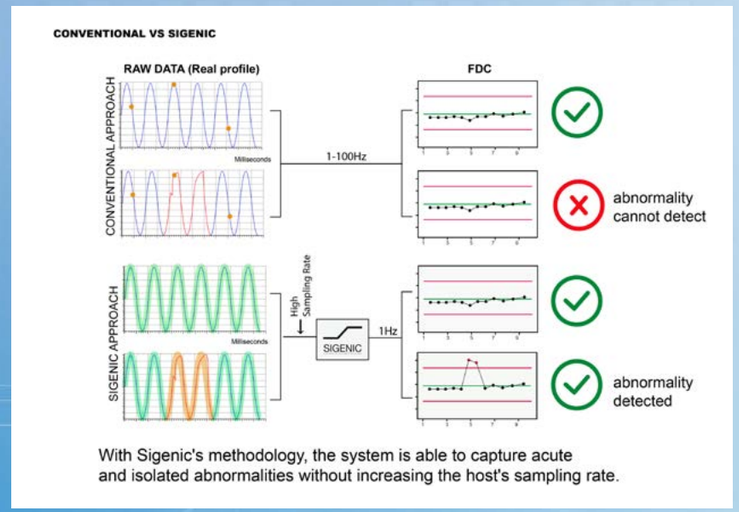
Revolutionizing Machine Condition Monitoring: SIGENIC's Solutions — The Excursion Enemy

SIGENIC provides enhanced real-time machine condition monitoring solutions to factories. SIGENIC's solutions utilise proprietary software, that is entirely developed in-house, it has the capability to run high resolution multi-dimensional in-depth analysis of real-time data, thereby enabling engineers to optimise their machine condition monitoring requirements.

SIGENIC solution is like a real-time ECG for machines: it listens to the heartbeat and models the rhythms through software algorithms to achieve early prediction of both "acute" and "chronic" machinery problems

SIGENIC's solutions act as a crucial bridge connecting the host and the machine, functioning as an intermediary layer that precedes data modelling at the edge, in close proximity to the sensors. This enables big data to be effectively processed at a magnitude that was previously unattainable before sending the light yet concise information to the host, opening up a new dimension for comprehending machine performance and addressing long-standing issues that were previously unsolvable.

The conventional approach to machine performance monitoring often centers around increasing the data sampling rate, typically ranging from 1 Hz to 100 Hz. However, such an approach is costly, and can result in higher network traffic, leading to latency issues, and may not effectively address some persistent problems.



With Sigenic's methodology, the system is able to capture acute and isolated abnormalities without increasing the host's sampling rate.

SIGENIC's solutions, on the other hand, is a think-out-of-the-box methodology that can handle vast amounts of real-time data and provide highly accurate analyzed data to the host without requiring the host to increase sampling rate. This combination reduces capital expenditure, provides more meaningful data and enhances real-time machine quality control.

Notably, SIGENIC's solutions have been successfully adopted by numerous chip manufacturers and has demonstrated its potential to enhance process control systems, including E3, Bistel, Camline Space and etc. This superior capability provides users with a significant number of additional options to improve overall machine performance by preventing excursions as well as predict failure that have the potential to lead to production losses. Some have recognised SIGEINC system as their Best Known Method (BKM) for machine condition monitoring.

To learn more about SIGENIC system, log on to www.sigenic.com

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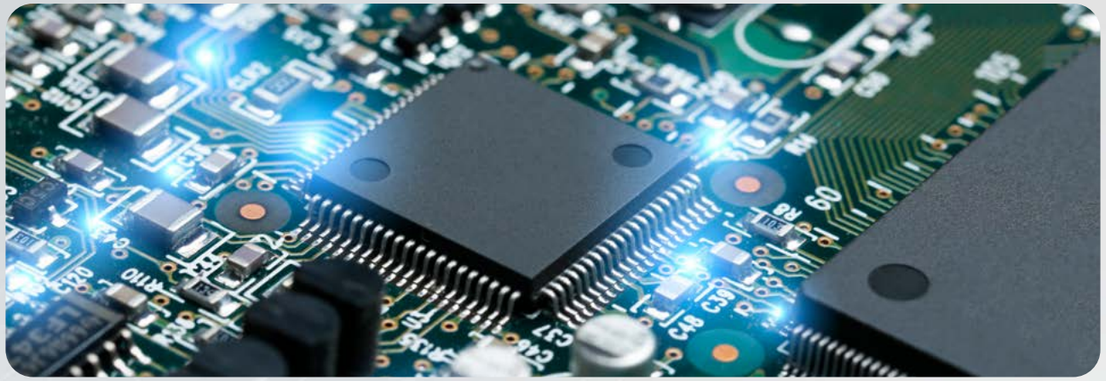
SIGENIC
ENGINEERING INTELLIGENT SOLUTIONS

Semiconductor Tradewinds June 2023

We are reaching the halfway point in 2023 and so far, there is no sign of recovery in the semiconductor market for the 2nd half of 2023. It seems we reached the bottom in 1st half 2023 and the outlook for Q3 is flat, so it looks like a U-shaped recovery is on the cards.



General Trends

The latest global semiconductor market forecasts indicate a decline of around -10% in sales for 2023 before a recovery in 2024. Whilst there may be some growth in 2023 in specific segments like automotive or AI chips, the major market segments like smartphone, PC and notebooks, and consumer electronics are all projecting declines for 2023. In Q1'23 the smartphone market saw its 5th consecutive quarter of decline to its lowest level in 10 years of around 250-280 million units.

The foundry and OSAT market outlook shows similar trends as well. In Q1 the top 10 foundries reported a drop in revenue of almost -19% quarter on quarter. The latest data from Taiwan foundries indicates that whilst TSMC is faring slightly better than its competitors with revenue for the first 5 months of 2023 down only -2% year on year, while the other leading Taiwan foundries are reporting declines of -17% to -50% YoY for the year to date. There is a similar picture for the OSAT's, with Q1 revenue down around -22% quarter on quarter for the leading OSAT's.

The semiconductor equipment market is also expected to decline this year as semiconductor manufacturers push out or slow down orders due to the sluggish market. SEMI is predicting that the global 300mm Fab equipment market will drop -18% YoY this year to US$74 billion before recovering next year.

With the widespread trend for digitalization and automation being adopted globally, the long-term trend for semiconductors is very positive and it is a question of when rather than if the recovery will come. Digitalization and automation are being adopted in every facet of life, at work with Industry 4.0 being implemented to optimize production and reduce costs for the goods we buy, automation in the home with smart appliances, digitalization of medical systems and wearable health monitors, to autonomous cars and electric vehicles; and who can live without a smartphone these days. All these will drive significant demand of semiconductor chips in the coming years.

Company Moves

With this in mind, companies globally are still investing significant amounts in new capacity with new announcements monthly. Here are some of the significant announcements from the last months.

Intel have announced new facilities in Germany, Poland and Israel, and they will invest US$33 billion to build 2 new 300mm Fabs in Magdeburg, Germany, after the German government promised nearly US$11 billion in subsidies. They also announced they will invest US$4.6 billion to build a new test and assembly plant in Wroclaw, Poland, and are also reported to have agreed "in principle" to invest approximately $25 billion in a new chipmaking factory in Kiryat Gat, Israel, according to the Israeli prime minister.

GlobalFoundries & STMicroelectronics finalised their agreement, first announced last year, to invest up to US$8 billion build a new 300mm Fab located in Crolles, France after receiving US$3.1 billion in state subsidies from the French Government.

STMicroelectronics and Sanan agreed to form a new JV to manufacture SiC devices in Chongqing, China. The 200mm Fab will start production in Q4 2025 with full capacity by 2028. Sanan will also build 200mm SiC substrate manufacturing facility to fulfil JV needs.

TSMC opened its largest BE packaging and test facility to date to manufacture 3DFabric process technology in Miaoli, Taiwan. The new facility is fully automated with the capacity to produce more than 1 million 12-inch wafer equivalent 3DFabric process technology, and more than 10 million hours of testing services.

TSMC also confirmed its intention to a new 300mm Fab in Germany focused on automotive technology. It intends to hold majority ownership and will most likely partner with NXP, Infineon and Bosch in the JV, though discussions are still ongoing. It is also still evaluating the feasibility of a 2nd Fab in Japan.

Bosch agreed to buy the Fab of US based TSI Semiconductors and intends to invest US$1.5 billion to convert and expand the current 0.18µm CMOS line to manufacture SiC Chips for electric vehicles by 2026.

Equipment manufacturer, **Applied Materials** has announced plans to invest US$4 billion on a research and development centre called the "Equipment and Process Innovation and Commercialization" (EPIC) Centre in Sunnyvale, California, that could, contingent on receiving Chips Act incentives, be the largest facility of its kind in the world.

Analog Devices announced in May it will invest around US$680 million in a new 45,000 sq-ft Research & Development and manufacturing facility in Limerick, Ireland focused on the development of signal processing solutions to support the digital transformation of industrial, automotive, and healthcare sectors. Whilst in Singapore, Analog Devices opened their new facility in Kallang to serve as central hub for the more than 200 employees working in Singapore including research and development, test engineering, sales and manufacturing.

In Japan, the Japanese government pledged US$2 billion more in support for the government backed chipmaker **Rapidus** which plans to build a new 2nm semiconductor Fab in Hokkaido Japan, expected to open a prototype line in 2025.

Let's end this update respecting semiconductor legend, Intel co-founder, and Moore's Law creator Gordon Moore who passed away in March. His ubiquitous Law that predicted that the number of transistors on a microchip would double approximately every two years, was formulated in 1965, and has held true for over 50 years.

CONTRIBUTED BY

Mark Dyson
Foundry Account Director
AMS-OSRAM
Asia Pacific Pte Ltd

Collaborate and Innovate Towards a More Sustainable, Greener Semiconductor Industry

The semiconductor industry is expanding and is expected to grow further in the coming years. However, chip manufacturing creates a huge carbon footprint, and will significantly impact the environment. On the other hand, semiconductor devices power advanced technologies that support global climate goals, such as digitalisation, IoT, electric vehicles, so lar panels and more. This creates a paradox between what the industry can achieve and what it should achieve, for business and the environment. Companies are looking at balancing these two ambitions as we gear towards our dream of a greener, larger industry footprint in the future.

Companies, especially manufacturing Fabs, are putting great emphasis on addressing environmental sustainability, namely - energy, emission, water and waste management. These goals are aggressive, with no straightforward solutions. There are significant opportunities to explore for innovation and improvement, while trying to reduce, reuse, and recycle.

We would like to encourage companies and innovators to come forward, combine efforts, and collaborate for solutioning; to slow down climate change.

Some of these problem statements may require "think out of the box" solutions and collaborations across and between industries. A case-in-point is hydrofluoric waste sludge, which instead of filling up landfills, can be used in collaboration with the construction industry to be a cement strengthener. Such repurposing of waste not only frees up landfills but also adds value to other processes.

We encourage industry partners to come forward, be it as sustainability collaborators or sustainability innovators, for solutioning. In order to transform the entire value chain and eco-system, it is critical that industry players, policy makers and academia develop solutions collectively for our future.

Some problem statements by the industry which require attention:

Emission	• Near 100% Abatement Destruction and Removal Efficiency (DRE) of HFCs/GHGs/PFC • Hard-to-abate gases reuse technology • Near-zero Global Warming Potential (GWP) Heat Transfer Fluid (HTFs) • Real-time In-situ Destruction and Removal Efficiency (DRE) measurement
Energy	• End-to-end wasted energy diagnostic • Energy recapture technologies
Water	• UPW-grade water treatment technology with low energy requirement • Cooling tower vapor recapture with low energy requirement
Waste	• Non-RRR waste concentration/treatment technology with low energy requirement • Recycle/Reuse/Repurpose chemical waste (e.g H3PO4, H2SO4, CHF to fluorspar)

List of organisations participating in the Singapore Semiconductor Sustainability Committee that was set up in 2023:

- bbp
- Carbon Trust
- GlobalFoundries
- Infineon Technologies
- Micron Technology
- Schneider Electric
- Soitec
- STMicroelectronics
- Singapore Semiconductor Industry Association

CONTRIBUTED BY

Julie Koh
Strategic Programs Director

SSIA
Singapore Semiconductor Industry Association

SOITEC CELEBRATES ISO 50001 CERTIFICATION

As a company which has enshrined sustainability as one of its core corporate strategies, Soitec has taken another concrete step towards incorporating sustainability in its operations in Singapore. On 5 May, the company celebrated its ongoing sustainability journey with a ceremony to mark the awarding of ISO 50001 certification for sustainable energy management in Singapore.

The ISO 50001 certification complements Soitec's ongoing water recycling and conservation efforts, affirming its corporate sustainability commitment which states "We are the innovative soil from which smart and energy efficient electronics grow into amazing and sustainable life experiences."

The event, held in Soitec's Pasir Ris building, was graced by Mr Chang Chin Nam, Senior VP and Head, Semiconductors, Singapore Economic Development Board.

Mr Cyril Menon, Soitec's Senior EVP of Operations Excellence & Quality and Chief Operations Officer said, "Soitec manufactures wafers which enable our customers to incorporate enhanced performance and energy efficiency into microchip circuits. Hence, the more we deploy Soitec technologies around the world, the more we help to reduce the energy consumption of mobile phones, thanks to our SOI technology or electric vehicles using our Smart SiCTM products. By expanding this virtuous cycle along the value chain, we involve our customers and end-users in our collective effort to make the world more sustainable."

Mr Menon affirmed Soitec's vision of making its growth sustainable by operating sustainable fab facilities. He said this will be achieved adopting a series of integrated measures. These include reducing water consumption, increasing usage of renewal energy through the installation of solar panels, adopting passive design features such as green wall, purchasing more green energy, and deploying advanced digital twins to simulate operations in order to optimise energy consumption.

From left to right: Travers Lim, Program & Development Senior Manager, SEMI SEA; Goh Jong-Aik, VP, Global Sourcing & Procurement, Soitec; Cyril Menon, Senior EVP, Operations Excellence & Quality and COO, Soitec; Chang Chin Nam, Senior VP and Head, Semiconductors, EDB; Linda Tan, President, SEMI SEA and Ang Wee Seng, Executive Director, SSIA

From left to right: Cyrl Menon, Senior EVP, Operations Excellence & Quality and COO, Soitec; Chang Chin Nam, Senior VP and Head, Semiconductors, EDB and Goh Jong-Aik, VP, Global Sourcing & Procurement, Soitec, launching Soitec's ISO 50001 certification

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soitec

Powering the Semiconductor Industry in A Sustainability-First Landscape

Sembcorp Energy Storage System on Jurong Island

The semiconductor industry's importance in the Singapore economy is well-established. It is the single largest manufacturing segment of our economy, accounting for 7% of total GDP in 2021. This figure will only grow as the country pursues inward investment in response to the global megatrends of automation, industrial Internet of Things, 5G and Artificial Intelligence.

Balancing business objectives with sustainability is getting more challenging for the industry. Foundries have sizeable carbon footprints, due to the energy-intensive nature of their operations. In addition, climate change, volatility in energy markets and disrupted supply chains have downstream implications for businesses amid the softening global economy.

Sembcorp Industries, as a leading energy company in Singapore, offers customers a suite of energy solutions, enabling a sustainable pathway for transiting the sector towards a greener future.

Decarbonisation is no longer just a good-to-have

There has been increasing external pressure on corporates to decarbonise their operations. For example, global initiatives such as RE100 are encouraging businesses to sign up and commit to using 100% renewable energy to stay relevant with changing investor and customer expectations.

Similarly in Singapore, the government has taken a concerted effort to achieve net-zero emissions by 2050, with the power generation sector a key focus area for emissions reduction. Clear roadmaps have been laid out for the sector's transformation, through diversifying our energy mix with more renewables, regional power imports and low-carbon alternatives.

A sustainable transition to meet future power needs

Solar energy remains the most promising renewable energy source for Singapore, and there has been accelerated deployment across the country, with a target of 1.5 gigawatt-peak of solar generating capacity by 2025. Sembcorp, through its portfolio of rooftop, ground-mounted and floating solar assets across the country, has contributed to more than a third of this target. Some of our largest rooftop solar assets are located on top of foundries, generating electricity to meet clean energy demands.

Foundries that are unable to generate solar energy on their rooftops can continue to fulfil their energy needs through gas-fired power agreements in the short-term to address competitive concerns and mitigate price and supply volatility, while transiting to renewable electricity over time. Sembcorp can also support a commercially sustainable transition for businesses by backing them with the purchase of renewable energy certificates that offset each unit of energy consumption. Leveraging our carbon management business, GoNetZero™, Sembcorp offers corporates a one-stop access to real-time verified renewable energy and carbon management solutions to support their climate action plans with transparency and traceability.

Sembcorp's rooftop solar PV asset on top of Micron Technology's plant in Singapore

In supporting Singapore's green energy transition, Sembcorp's 285MWh Energy Storage System and its upcoming 600MW hydrogen-ready power plant on Jurong Island will also provide a stable platform for future renewables capacity growth and resilience for Singapore's energy grid.

Sembcorp is committed to Singapore's clean energy future. With its suite of solutions spanning conventional energy, renewable energy and carbon management solutions, Sembcorp looks forward to partnering with semiconductor businesses across the industry in addressing their long-term energy needs and accelerating their sustainability journey.

CONTRIBUTED BY

Vickrem Vijayan
Head, Energy Commercial (Singapore)
Sembcorp Industries

Chipping Away at Decarbonising Singapore's Manufacturing Sector

The current trajectory of the manufacturing sector is unsustainable. At present, this is a fact on a global and local level. According to the World Economic Forum, manufacturing produces one-fifth of the world's carbon emissions and consumes 54% of the world's energy sources. In Singapore, the Lion City's manufacturing sector, which accounts for roughly 20% of GDP and 12% of employment, is also responsible for 47% of emissions and approximately 42% of electricity consumption. With Singapore targeting 50% growth in manufacturing by 2030, we cannot carry on with business as usual.

The conundrum: Doubling energy consumption while halving CO2

Singapore has become a hub for microchip manufacturing and the semiconductor industry is poised to serve as the backbone of the city-state's growth plans for its manufacturing sector. Unfortunately, microchip fabrication has an outsized carbon footprint that will be difficult to shrink, with energy consumption projected to double for the industry by 2030 in Asia. So, Singapore is faced with a dilemma. How can the regional powerhouse accelerate growth for this lucrative industry while also accelerating the nation's decarbonisation?

Innovation and integration through bundled offerings

A holistic approach is needed to make these contradictory goals achievable. Bundling and integration of multiple solutions to create energy efficiency and decarbonisation synergies is one way some complex manufacturing industry players are implementing more holistic sustainability strategies with success. For example, a multinational pharmaceutical player recently centralised and integrated the generation of seven of its utilities on-site for its greenfield Singapore factory, enhancing overall efficiency and avoiding approximately 8,000 metric tonnes of CO2 emissions. Another example can be seen in the bundling of rooftop solar with a best-in-class efficiency chilled water system, far beyond the regulatory requirements, for the Singapore plant of a global leader in the lighting manufacturing industry. The result, lower energy consumption and a 10,000 metric tonne reduction in CO2 emissions.

Semiconductor players can take inspiration from these approaches and look to leverage new solutions to decarbonise. For example, process heat can now be delivered with electric heat pumps instead of fossil fuel, allowing significant CO2 savings, or even be fully decarbonised via on-site generated or imported renewable electricity via a green power purchase agreement (PPA). The virtual green PPA market in Singapore is flourishing and there is still potential for more solar and locally sourced biomass generation capacity to be developed to provide scalable green energy alternatives.

Trailblazing a path to accelerate decarbonisation

In addition to the introduction of renewable power generation and alternative energy carriers, the transition to a carbon net-zero manufacturing economy will have to go hand in hand with adapting to the intermittency of renewables and ensuing volatility of energy prices. This is especially important for small countries such as Singapore. This is why the research and innovation arm of ENGIE in the region, ENGIE Lab Singapore, with the support of the Singapore Economic Development Board (EDB) and Nanyang Technological University (NTU), developed the Renewable Energy Integration Demonstrator Singapore - Sustainable Power for Off-grid Regions (REIDS-SPORE) platform.

In operation since late 2020, the REIDS-SPORE research platform on Semakau landfill carries out cutting-edge research and development into adapting old and creating new energy solutions to sustainably address the needs of Singapore and the broader Southeast Asian market. This living lab, test bedding solutions under the tropical conditions of the local environment, counts among its work, research into intermittent energy storage and green hydrogen. In fact, REIDS-SPORE has a full-chain hydrogen system powered by advanced electrolysis technology, the first of its kind in Southeast Asia, which won R&D Project of the Year at the Asian Power Awards 2022 as the sole R&D ground-breaking and trailblazing initiative in Asia's power sector.

Among the solutions currently under development on the platform, two with notable applications for the semiconductor industry are Thermal Energy Storage (TES) and Battery Energy Storage Systems (BESS). These solutions hold potential to ease renewable energy intermittency issues by improving demand side management and can deliver energy cost reductions.

Realising a sustainable energy future for Singapore

Singapore's manufacturing sector must prioritise sustainable transformation for the nation to achieve its SG Green Plan 2030 commitments. It can seem a daunting challenge. There is no single solution that can take the sector or the semiconductor industry to net zero.

However, through engagement with specialist energy services companies capable of guiding a holistic, integrated, innovative approach, it is absolutely achievable.

CONTRIBUTED BY

Daowei Lin
Head of Business Development for Industry

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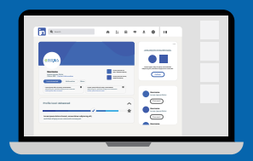

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Passionate about the electronics sector? We want you!

Semiconductor Active Youth (SAY) Ambassador Programme

The Semiconductor Active Youth (SAY) Ambassador Programme is a one-year programme meant to create a robust pipeline of young talent for the semiconductor industry, working in close partnership with both Institutes of Higher Learning (Polytechnics and Universities) and leading companies in the industry. Ambassadors gain valuable insights and hands-on experience in the semiconductor industry, and training and mentorship opportunities with industry leaders from the companies across the value chain.

Companies will pair the mentors with the ambassadors and to also provide with relevant industry content. To pilot this programme, six queen bee companies will be participating in the first year, with more to come.

If you are interested in participating, please contact **yvonne@ssia.org.sg** and **xingyun@ssia.org.sg** with your CV. Kindly note that applicants will be screened and we will notify successful candidates upon acceptance.

We have launched a programme just for you! Be the voice and future of the industry.

Find out more!