SINGAPORE

SEMICONDUCTOR VOICE

SSIA
Singapore Semiconductor Industry Association

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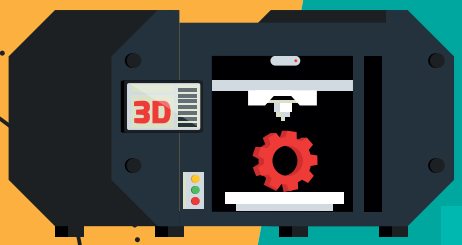

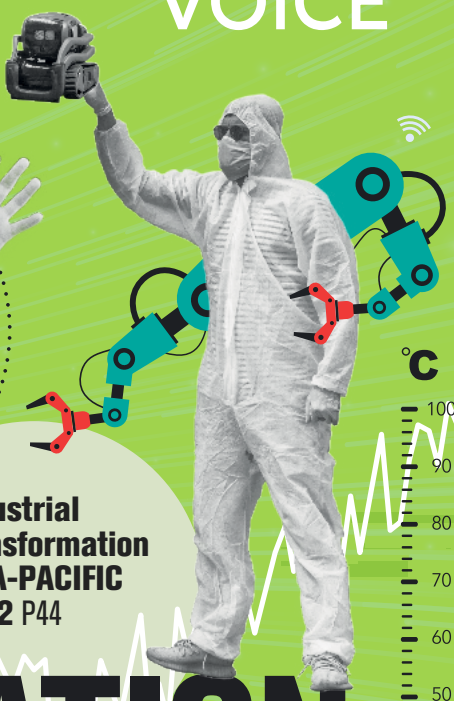

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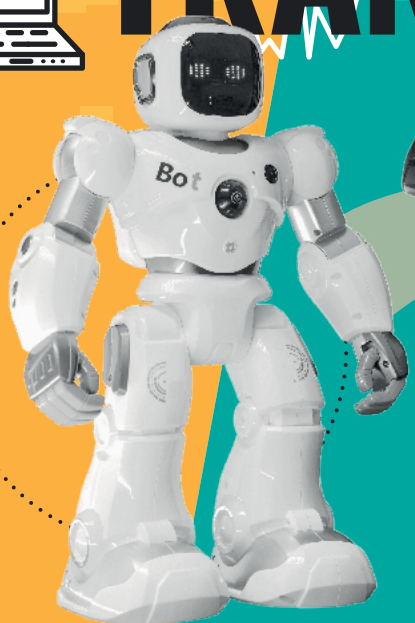

SSIA Welcomes New Members

ADVANTEST

AEROTECH

SIEMENS

WATLOW
Powered by Possibility

FOREWORD BY Executive Director

Time flies and before we know it, it is now the end of the year as we wrap up 2022 with SSIA's AGM this month. Many things have changed in this one year besides the pandemic where there have been many more global headwinds that have come up. In the last few months, we have heard about the ramifications of the US Chip Act as companies race to find alternative ways to navigate the waters by relooking at their supply chains.

The energy and fuel crisis which is precipitated by the ongoing war has not abated and it has been the growing concern on companies' minds as they grapple with higher operating costs and the goal towards net-zero. The economy is also softening with the growing inflationary pressures. All these factors have put the sector on a very cautionary outlook in terms of output.

With all of these ominous outlook of the industry, we must remain positive and it is timely that the Singapore Government announced the refreshed Industry Transformation Maps 2025 rolled out by Singapore's Future Economy Council. These maps will help firms across 23 sectors to equip the industry and people with skills for greater value creation in the spheres of digital and automation; and the electronics sector is one of them.

The 3 key thrusts that the Singapore Government will be focusing on has been the same 3 streams that SSIA has been working on with agencies, companies and academia in the past 4 years: Talent, Innovation and Sustainability. We held our biggest event in September on this theme of Sustainability and it had garnered overwhelming responses from companies and agencies alike. SSIA will continue to work on this front as we move towards our green plan 2030.

As technology, sustainability and other major shifts reshape the way companies operate, the big question has always been how can businesses enthuse and empower their workers with the skills to stay relevant and competitive. How do we fundamentally ensure that there is a healthy and sizeable pool of talents amongst the youth. The latter has always been the bane of the industry and this will be one of the focal points in the year to come.

With the slowing down of the economy, companies are already starting to relook and optimise their operations and looking at ways to digitalise and automate to boost their productivity and bolster their resiliency. Staff retraining is the modern mantra now and many companies are cultivating their staff to reap outsized rewards.

To cap off, SSIA will be organising one of our annual flagship events - **Electronics Industry Day on January 17, 2023** to develop the talent pipeline and the main target is students. This is in conjunction with the semiconductor awareness week that SSIA has anchored to bring about a cohesive nexus of companies, agencies and IHLs to attract and retain talent.

We need this time now more than ever to nurture the young minds to join our industry. Without people, we cannot thrive. #ForwardSingapore

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

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SSIA EVENTS Mark Your Calendar

17 JANUARY 2023

Electronics Industry Day

The Electronics Industry Day is a unique platform that brings together diversified businesses and partners within the semiconductor and electronics ecosystem to showcase our industry's vibrancy and resilience to both fresh talent and mid-career job switchers, looking to pursue a career in the sector. Be a catalyst in building talent for the industry.

7-10 FEBRUARY 2023 & 28 FEBRUARY - 3 MARCH 2023

Singapore Semiconductor Leadership Accelerator

A custom program 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 taskforce 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.

9 MARCH 2023

Semiconductor Women's Forum

Launched in 2021, organised by the Singapore Semiconductor Industry Association (SSIA) and supported by EDB, WSG, e2i, Global Semiconductor Alliance and the Semiconductor industry. This event aims to raise awareness on diversity and inclusion, attract more female talents to join the semiconductor industry, and inspire the current female workforce to stay and thrive in the industry.

APRIL 2023

Semiconductor Business Connect 2023

Backed by the MNCs, this platform aims to strengthen and grow the local Semiconductor and Electronics ecosystem by facilitating innovation through business collaboration. With a focus to grow businesses, Semiconductor Business Connect aims to connect the Semiconductor network, to innovate solutions and collaborate for success. The business forum will include keynote presentations from supporting agencies that will help business leaders develop strategies of the future, discuss trending current affairs topics such as supply chain disruptions and sustainability in manufacturing. Most importantly, providing business matching opportunities, connecting manufacturers and solution providers to optimize operations through Industry 4.0, sustainable manufacturing and supply chain management.

Find out more at **secretariat@ssia.org.sg**

SSIA
Singapore Semiconductor Industry Association

新加坡 联合早报 2022年9月14日 星期三 11

街访街坊

助人发挥职业潜能

在电子与半导体领域有30年工作经验的许碧如，也是劳发局的志愿职业顾问。她说，聆听和了解求职者的目标和理想，找出他们的长处和可转移技能，然后就可行的选项提供参考意见。

蓝云舟 报道
yznam@sph.com.sg

让许碧如感到有意义的，是帮助他人取得职业上的发展，发挥最大的潜能。

在电子与半导体行业工作的30年里，许碧如（53岁）从上司和导师身上获益良多，他们指导她，也让她在职业道路上成长。

“成长的经历教会我以人为本，发现他们的优势，让他们发挥最大的潜能。”

许碧如约两年前出任新加坡半导体行业协会战略项目总监，在那之前她在半导体企业任职，负责晶圆制造和高端科技研发、产品周期管理和品质管理等。

许碧如说，半导体行业深信能带来改变的是人。上司曾提名她参加导师培训，多年来她也在工作岗位上为团队成员提供指导。她相信，提供指导对于潜在的未来领袖所获得的职业发展起到很大的帮助。

许碧如目前也担任劳动力发展局的志愿职业顾问（volunteer career advisor），为有意加入电子与半导体行业的求职者提供职业指导。

她说，作为志愿职业顾问，重要的是聆听和了解求职者的目标和理想，找出他们的长处和可转移技能，然后就可行的选项提供参考意见。

半导体行业目前仍以男性占多数。虽然有意通过劳发局转业计划加入这一行的女性求职者比率，从2016年至2018年间的约17%增至2019年至2021年间的约24%，但整体而言投身这个行业的女性仍属少数。数年来，业内大力推动包容和多元化，今年3月也举办半导体行业女性论坛，鼓励女性考虑加入。

许碧如说，对于有意考虑转换跑道的求职者，拓展人际网络、向熟悉业内情况的人了解实际情况和他们的看法相当重要。

“一旦清楚自己的职业目标和志向，了解自己的优势和可转移技能，就能发现适合的行业和岗位。”

上司的指导让许碧如受益，也让她发现为他人提供职业指导是件有意义的事。（受访者提供）

数码

【东谈西论】
英女王伊丽莎白二世

伊丽莎白女王二世在位70年间，见证了世界与英国的激烈变革。女王给世人留下了什么？英国又会面临什么样的挑战？扫描QR码，用听的了解更多。

扫描QR码
听最新一期
《东谈西论》

五大热门新闻

- 医生头动手没施力 《医生不是神》CPR戏引热议
- 雇主申诉：女佣躲厕所和“甜心爸爸”聊天
- 非法进口食品又威胁高喊非礼 女董事被判监罚款
- 查尔斯三世僧弟妹为英女王进行守夜仪式
- 前女军官撤销出国申请

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Helping Others with Career Development

Julie Koh has been working in the Semiconductor industry for the past 30 years and is also a volunteer Career Advisor with Workforce Singapore vCA initiative. She commented that as a volunteer career advisor, it is important to listen and understand what the advisees are looking for, their goals and aspiration, calling out their strengths and transferrable skills, then advise them on the possible available options.

It is very fulfilling to see others grow and excel beyond their current role, towards their fullest potential.

Throughout her 30 years career in the Semiconductor industry, Julie shared that she has been very fortunate to have met many wonderful supervisors and mentors who were willing to coach and advise on her career development and growth. “The growth experience taught me to focus on people, their strengths, and develop them to their fullest potential.”, she said.

Julie joined SSIA about two years ago as the Strategic Programs Director, leading the organization in developing and managing strategic programs with key stakeholders, which includes government agencies, business partners of SSIA and institutes of higher learning. Prior to that, she had experience in Wafer Fab Manufacturing and Advanced Technology Development, Foundry Customer Engineering, as well as Backend Assembly and Test Subcons Quality Management.

For our industry, we strongly believe that people make the difference. When she was a Manager in GlobalFoundries, her supervisors nominated her for a mentorship program based on her growth potential, which she benefitted as a mentee and was trained to be a mentor subsequently. Through the years, she has mentored several team members in both GlobalFoundries and Micron. She believes that mentorship greatly helps in career development for aspiring leaders.

Julie is currently a WSG's volunteer Career Advisor and providing advice for talents who would like to join the Semiconductor and Electronics sector. It is important to listen and understand what the advisees are looking for, their goals and aspiration, calling out their strengths and transferrable skills, then advise them on the available options.

Despite being a male-dominated industry, the semiconductor sector is one where there are equal opportunities for any female talents. It was reported that the proportion of women job seekers entering the industry from 2016 to 2018 was about 17% and increased to 24% from 2019 to 2021 via the Career Conversion Programme organised by Workforce Singapore and SSIA. Overall, there is still significant opportunity to increase the female representation in the industry.

Through the years, there were significant effort and focus to raise awareness on diversity and inclusion in the industry. We organised the Semiconductor Women's Forum back in March 2022 where companies were invited to share how they have embraced diversity in their workforce and encourage others in the industry to emulate. This forum aimed to open up conversations with female talents to know more about the inclusive culture in the semiconductor industry, dispel any misconceptions and encourage them to consider this as a career choice.

Networking can yield many benefits when one is in a career transition. Developing connection with people knowledgeable about the industry you are looking to join is important, as it allows one to learn more about what they do and why they do it. If one does not have any community or network connections in the industry that they are looking for, the vCA initiative is a good starting point as there are many advisors out there who are open to sharing their experiences, and whom may have relevant contacts that may lead one to new opportunities.

Julie Koh (center) participated in a panel discussion "Relaunching Your Career Successfully" in June 2022, organised by Workforce Singapore, for female talents looking at re-joining the workforce.

Once talents are clear about their career goals and aspiration, and aware of their strengths and transferrable skills, they will be able to see which industry or job roles are suited for them.

Julie Koh (extreme left) moderated the panel discussion for Semiconductor Women's Forum 2022 on the topic "Making a Difference – Towards an Inclusive and Sustainable Eco-system"

HR Roundtable: A Pivotal Step Towards Building Talent

Start from Young

We all know that a good and thriving industry is only as good as it can be with people at its heart.

Hence, tangible steps need to be taken in order to ensure that our younger future generation will be interested and engaged to join the industry.

In this roundtable that was held last month at Waterfront Grand Copthorne Hotel, SSIA hosted a close group of HR stakeholders from various key companies as well as agencies and Institute of Higher Learning such as Economic Development Board, ITE and e2i.

The attendees shared and gave suggestions on the various outreach programs and initiatives that the group can come together to attract more young talents to join this industry. An upbeat note shared by Mr Ang Wee Seng, Executive Director of SSIA that he had been seeing a positive trend in the intake of polytechnic students opting for Engineering courses; increasing the talent pool for the semiconductor industry.

And of course, while building the young talent is critical, retaining the current pool of talent and attracting mid-career professionals to the industry is equally just as important.

Velinda Wee, Human Capital Development Director of SSIA reiterated the 3 workstreams which SSIA has been focusing on to grow and develop the workforce, strengthening and growing themlocal ecosystem and finally, sustainability. She further shared on some of the upcoming activities that SSIA will be organising in the coming months.

Summary of events in the coming months include :

- The Electronics Industry day – Jan 2023
- Semiconductor Women's Forum - Mar 2023
- Semiconductor Business Connect – April 2023

Training Initiatives

- Singapore Semiconductor Leadership Accelerator (SSLA)
- Leadership in Engineering

The following agencies gave some insights on the challenges that they have been facing and how they will be tackling these issues with SSIA as the key partner ahead:

Economic Development Board (EDB) on "Future manpower needs & talent development initiatives"

Representatives from EDB shared on the challenges faced by the semiconductor companies globally due to lack of talents in this industry. Although the Institutes of higher learnings continue to generate strong pipeline for Engineering talents but graduates are not attracted to join the Electronics Industry. EDB shared with the group on some of their upcoming talent outreach initiatives which will be spearheaded by SSIA to attract young talents to join the industry.

Some of these key features of the engagement programs for the youngsters include career talks, mentorships, internships, school competitions, Semiconductor week, Summer camps and continuous awareness programs planned throughout the whole of next year.

Institute of Technical Education on Introduction of ITE Work Study Diploma and Students internship schemes

ITE representative shared on its work study diploma programs, offering a total of 39 courses spreading across 3 sectors. These diploma programs are aimed at attracting ITE graduates to build a ready pipeline of local talents and eligible employers will receive grants to defray the costs of developing and providing on-the-job training to ITE graduates.

SSIA will work closely with companies to organise school talks and student engagement activities and plant tours as part of school "Learning journeys" to create an awareness among students and educators. The Electronics Industry Day will be happening on 17 January 2023 at ITE College Central.

SSIA hopes that all members can come together as one "Voice" and continue to support SSIA in all the upcoming initiatives.

ELECTRONICS INDUSTRY DAY

17 JANUARY 2023 @ ITE COLLEGE CENTRAL

The Electronics Industry Day is a unique platform that brings together diversified businesses and partners within the semiconductor and electronics ecosystem to showcase our industry's vibrancy and resilience to both fresh talent and mid-career job switchers, looking to pursue a career in the sector. Be a catalyst in building talent for the industry.






ORGANISER

SSIA
Singapore Semiconductor Industry Association

Register your interest to be part of this event with Teresa at **teresa@ssia.org.sg**

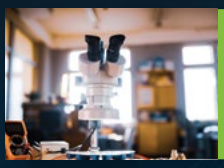
Follow us for more updates! **ssia.org.sg**

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.

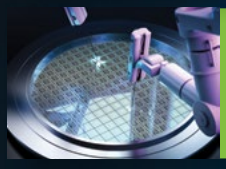
REPUBLIC POLYTECHNIC

Introduction to Vacuum and Plasma Technology (1 day)

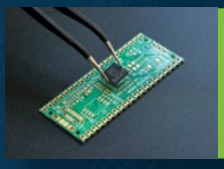


Microscopy and Thin Film Characterization for Failure Analysis (1 day)

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*

SINGAPORE SEMICONDUCTOR LEADERSHIP ACCELERATOR PROGRAMME

Run 8

Programme Dates:
7–10 February, 28 February–2 March 2023

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 taskforce – 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.

The upcoming 8th run conducted by Singapore Semiconductor Industry Association (SSIA) and Human Capital Leadership Institute (HCLI), will take place in **February/March 2023**.

WHO IS THIS PROGRAMME FOR?

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, and this includes heads of business units and senior managers.

INTENDED LEARNING OUTCOMES

1. Comprehensively understand the evolving role of leadership in the context of the global workforce landscape and the semiconductor industry.
2. Gain insight into business model innovation and the alignment with business strategies.
3. Learn about best practices in people management, team building, and organisational leadership.
4. Acquire an in-depth understanding of how aligning sustainability efforts and strategies with business outcomes can be a competitive advantage.
5. Create strategies to help organisations identify, recruit, develop and train top talent.
6. Develop networking strategies with leaders from the business, government, and academia.

SSLA – A DIFFERENTIATED LEARNING EXPERIENCE

1. Be inspired to continue creating revolutionary possibilities within the semiconductor industry.
2. An immersive hands-on learning experience designed to accelerate both personal and professional growth to succeed in a VUCA environment.
3. Real-life experience sharing by business and thought-leaders from the industry.
4. Interactive and experiential workshops with relevant case studies and discussions.
5. Action learning projects designed to address industry specific challenges.
6. Networking with leaders from the business, government, and academia.

COURSE FEE

S$12,000/pax* (subject to GST) **Subsidy is applicable to Singaporeans only.*

For more information or enquiries, please contact **velinda@ssia.org.sg**

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Will the Semiconductor "BOOM AND BUST" Depend on Talent Instead of Sales?

Everyone in the semiconductor industry can agree that the past two years have been nothing like what we have ever seen before. It has always been one of the most volatile industries, with periods of soaring demand followed by periods of drought. But the laws to which we have become accustomed for so long seem shattered. In the worst supply chain crisis, we have seen some of the greatest innovations of recent years - and the advancements and enablement that memory technologies bring are leading the whole semiconductor industry.

This year, Samsung has started manufacturing logic chips on a 3nm processing node and is planning to reduce the footprint to a 1.4nm processing node by 2027.

If you cannot go physically smaller, the other option for increasing storage density is to go up. That's what we saw in NAND flash memory this year. A couple of days after Micron announced the shipping of its first 232-layer 3D NAND, SK Hynix announced the development of a 238-layer, 4D NAND flash memory. Following the example of 3D NAND memory, researchers are exploring options for DRAM to stretch upwards vertically to save valuable planar space.

Although DRAM and NAND flash memory continue to advance, every improvement is a painful move that opens doors for emerging memories like FRAM or MRAM. These non-volatile memory technologies are anticipated to finally have their breakthrough with Tech Insider predicting a market volume of $36 billion by 2030. They have the potential to step in for DRAM and NAND as storage-class memory that is faster than DRAM and non-volatile like NAND.

And while there is ominous news about the next bust cycle, it is also clear that the digitization that we have seen spurring over the past two years, will continue and it is not possible without semiconductors and especially memory components. So the overall trend is and remains positive.

Still we should never forget: Behind all these innovations are people. And the big risk for the industry is the ability to build the talent it needs to keep the innovations going. The average age of an electrical engineer in the U.S. is 44 years, in Europe it might even be slightly higher. Add to this that the number of degrees in electrical engineering awarded in the U.S. in 2020-2021 declined by 6.4% with a little over 28.000 degrees awarded. At the same time, the projected demand for electronics engineers by 2026 is increasing by 6.4%. Although Taiwan has about 20.000 graduates every year, despite a significantly smaller overall population, the demand in the region will also remain consistently high. So it's very clear that we are going to face a fierce war for talent.

We are at an interesting threshold in technological advancements. But in the end, it will all come down to whether we can get the talent to keep-up the level of innovation and continue to find creative ways to advance it further.

CONTRIBUTED BY

MARCO MEZGER
COO at Memory Specialist Neumonda

NEUMONDA
MEMORY COMPETENCY

Dr Marvin Lee and Mr Ang Wee Seng, Executive Director of SSIA

Why First Impression Is Vital For The Industry to Grow

Doubling down efforts to influence young minds as early as possible is key

What is your vision for the semiconductor industry and how do you see digitalization helping companies in the industry?

In line with the Electronics ITM 2025 recently announced at the 5th ITAP event last month, Singapore's semiconductor industry will continue to focus on R&D and strengthen our talent pipeline, while reducing our carbon footprint. This will allow us to capture greater growth opportunities as the world races ahead to embrace efforts in Digitalization and Sustainability. The demands of digitalization will accelerate the growth of the global semiconductor industry, which is projected to grow from approximately US$600 billion today to US$1 trillion by 2030, close to twice the industry's current size.

It is therefore critical for Singapore to embrace digitalization and for this very reason that our Smart Nation initiative was launched in 2014. AI, quantum technologies, cybersecurity, future communications and trust technologies are some of the more strategic technology focus areas for us in the Smart Nation and Digital Economy space in Singapore. Our unwavering pursuit for technology advancements in the Semiconductor industry, supported by a strong R&D talent base, remains critical.

Last year, together with the Agency for Science, Technology and Research (A*STAR), EDB and the National Research Foundation (NRF), we announced the Future of Microelectronics Initiative (or the FME Initiative), with the objective to build a globally competitive public-private microelectronics research ecosystem in Singapore. Through this initiative, we will focus on building and strengthening our research capabilities in wide bandgap semiconductors, heterogeneous integration, mmWave and beyond, edge AI as well as sensors and actuators. We hope to capture new market opportunities through catalysing disruptive innovations, continue to remain attractive to leading companies in the semiconductor and digital tech space, and double down on efforts to attract, develop and retain world class talent.

As we embrace digitalization, it is also pertinent that we do so in a sustainable fashion. Today, navigating the impact of climate change has become a global priority. Countries and companies alike recognize its significance and are taking Sustainability more seriously. Increasingly, companies are facing clients demanding sustainable manufacturing and supply chains, and Governments are making national commitments to reduce carbon intensity from industrial sectors as well as advocating the use of low-carbon and efficient energy sources. Beyond addressing the existential crisis posed by climate change, the integration of sustainability into our development plans is therefore core to our long-term competitiveness. The aim is to transform the local semiconductor industry into a low-carbon footprint sector.

What are some of the potential roadblocks and what we can do to mitigate?

The talent piece has always been a hotly debated topic but I don't necessarily see this as a roadblock, rather an area we could do better in.

To help us fulfil our aspirations for the semiconductor industry in Singapore to grow at least as fast as the global semiconductor industry, our talent base must expand in tandem and we need to bring in the right mix of people to support our efforts. Importantly, companies in Singapore will need to have ready access to talents and ensure that the current workforce continues to upgrade and upskill to keep their businesses relevant with time.

How do you see SSIA's role in boosting the key areas moving forward?

Beyond what we are already doing today, SSIA will have to work a lot closer with the semiconductor companies, academic institutions, and the Singapore Government to jointly create multiple pathways for people to consider a career in the semiconductor industry. We should double down

efforts to influence young minds and reach out to them much earlier in their academic pursuit such that the impression sticks!

It will help if we can understand what truly excites them and position our communications and outreach efforts accordingly. Let's not forget the mid-careerists too! There are diverse opportunities for everyone from the young to old, and from IC design to the factory floor in the semiconductor industry. It is important to feature the diversity of career opportunities available and correct traditionally held impressions of how the industry is setup only for men to excel. I applaud the SSIA for recognizing this as an issue and has since initiated efforts to create awareness through events such as the SSIA Women's Forum. It will take the support of the entire industry and time to shift mindset.

SSIA has accomplished a lot on the talent attraction front with strong support from Government agencies, including organizing job fairs, lining up speakers for school career talks, curating content for social media posts and even the annual Electronics Industry Day. SSIA should also enlist the help of our key industry players to organize summer camps, company visits and arrange for semiconductor experts to teach in schools, and in the process grow mindshare amongst the students. Many companies are keen to be a part of this endeavour but may not always know where to start or how to increase their reach. This is where SSIA could step in to broker the partnerships between companies and our academic institutions.

To create greater collaborative opportunities in our local ecosystem, SSIA could also help by facilitating the alignment of demands from large international companies with solution providers amongst our local enterprises. The match-making needs to take place all year round beyond the annual Semiconductor Business Connect or the SSIA Summit, and would require the big boys in our ecosystem to take the lead and work closely with SSIA to curate the problem statements and tighten the alignment of interests. A few of these local SMEs could potentially become suppliers to multiple MNCs in Singapore. Such partnerships will also help the SMEs to expand their industry network, uplift existing and develop new capabilities, creating opportunities for them to scale their businesses.

To align with the broader objectives of Singapore's Green Plan 2030, SSIA can act as the interlocutor between government agencies and the bigger players of our local industry to facilitate the exchange of views through industry roundtables and engagement sessions. It is also useful to create awareness on the topic of sustainability, and assist companies in developing, aligning and driving their sustainability initiatives. Where opportune, we could potentially be looking at co-developing industry standards through benchmarking efforts with other countries and with other sectors.

Given your tenure at EDB and now NRF, can the semiconductor industry augment your current projects?

I see semiconductors as the enabler of many emerging technology areas that we focus on in the Smart Nation and Digital Economy (SNDE) space in Singapore. This includes AI, quantum computing, cybersecurity, future communications and trust technologies. Advances in new semiconductor technologies and the supply of chips will therefore empower us to capture even more opportunities in the SNDE space. The converse is true, where a thriving SNDE ecosystem also drives up the demand for more chips and faster innovations in the semiconductor industry.

How has SSIA and the semiconductor industry evolve through the years that you have been on this journey with us when you were at EDB?

I was fortunate to have joined the Semiconductors team at EDB during the industry super cycle and had the opportunity to manage various significant investment projects with the top semiconductor companies these two years. Our Government's commitment to the long standing partnerships with the companies and years of relationship building fostered through EDB and our stakeholder agencies have given us the nimbleness to harness opportunities when they strike during this super cycle. This competitive edge remains pertinent for our success in the long run.

Working with the SSIA was one of the key highlights of my journey with the semiconductor industry. SSIA has grown from strength to strength especially under Andrew's and Wee Seng's leadership. They bring so much energy to our discussions on all fronts and have progressively built a robust network of industry players that enjoy connecting with one another! I look forward to the continued partnership with the SSIA, EDB and the semiconductor industry in my new SNDE portfolio at the NRF!

CONTRIBUTED BY

DR MARVIN LEE
Director (Smart Nation and Digital Economy)
National Research Foundation
Singapore

The Need to Grow an Agile and Competitive Talent Pool in Schools

Can you share with us the general overview of the industry and how the semiconductor industry has evolved through the years along the lines of students intake and has the interest waned or picked up over the years in the Engineering faculty?

The semiconductor industry in Singapore started with backend operations (assembly and test) in the 70s. In the late 80s, Singapore shifted its focus to high-value-added manufacturing, which included front-end activities such as IC Design and Wafer Fabrication. The institutes of higher learning (IHLs), including Singapore Polytechnic, deem it our responsibility to prepare the required talent for Singapore's semiconductor industry. At Singapore Polytechnic, we constantly align our curriculum to enable our students to acquire new skill sets needed by the industry.

Share with us a bit more on your perspective on the collaboration with SSIA over the past few years

Singapore Polytechnic's collaboration with SSIA over the past few years has helped to close the loop between the semiconductor industry and academia. We are happy to partner with SSIA in its focus areas of talent outreach and continuing education. For instance, SSIA has helped to garner strong support from the industry when Singapore Polytechnic introduced the enhanced internship program in 2016. We were offered relevant workplace attachments for our students, allowing them to better connect their learning to the workplace and prepare themselves for a smooth transition to the workplace upon graduation. In addition, we also partnered with SSIA in rolling out relevant short courses to retrain, reskill and upskill adult workers in areas of Digital IC Testing, Wafer Fabrication, Robotics, Advanced Manufacturing and Artificial Intelligence, amongst others.

As Singapore Polytechnic continues to be the leading training provider of semiconductor technologies and skills, our collaboration with SSIA will enable us to jointly expand and strengthen a regional talent pool with the specialised expertise for semiconductor companies to tap on and scale up their business with a clear competitive edge in a fast-growing digital world.

How do you see SSIA's role in boosting the key areas moving forward in the areas of talent and tech?

SSIA is key in bridging the industry and the institutes of higher learning (IHLs) to promote and co-create opportunities to attract more students to join the semiconductor industry. This provides good touchpoints for our students and academic staff - with the industry via short job stints and internships for students, industry attachments for staff, and industry visits for all. SSIA plays an important role in generating awareness about upcoming technological trends in the industry through workshops and seminars. The association also monitors the growth trends of the semiconductor industry and provides information on compelling career options available for individuals. This enables us to plan and build a steady stream of talent ready to meet our nation's needs in the semiconductor industry.

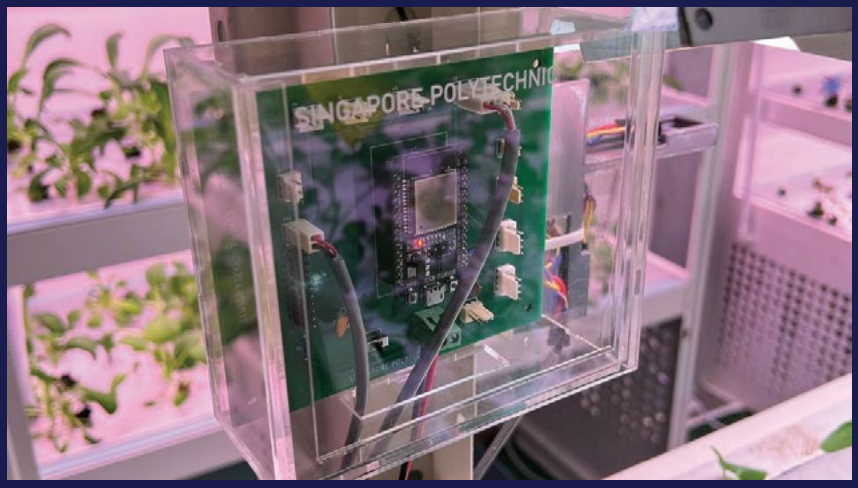
Talk about your vision for the industry and where we are now

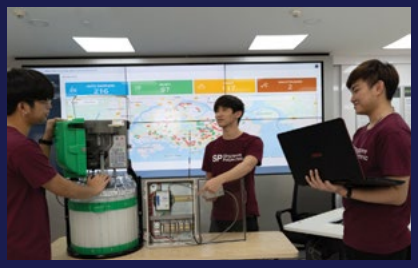
The semiconductor industry continues to be important for the economy, with semiconductor chips required to drive the megatrend of digitalization and technologies like 5G, Artificial Intelligence, Cloud and the Internet of Things. Due to our unique history,

a robust semiconductor ecosystem has evolved. I see Singapore's semiconductor industry continuing to thrive and grow. However, Singapore will need to develop an innovative, agile and skilled workforce to ensure industrial sustainability, strengthened through innovation and competencies in emerging technologies like 5G, robotics, and Artificial Intelligence, amongst others.

How do you think the next Industry Transformation Map (ITM) 2025 would change the landscape, especially in terms of talent for the students?

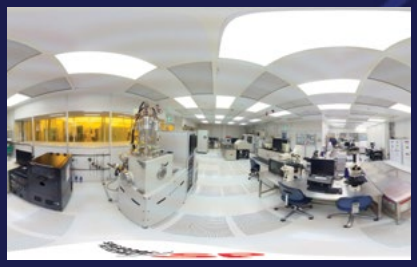
The ITM 2025 for the electronics sector focuses on strengthening the local talent pipeline, both fresh talent and mid-career switchers, which will be done through multiple approaches, such as work-study programmes, internships, CCPs and other CET programmes. I see more collaborations arising between government agencies, IHLs, SSIA and the industry to make this happen. At the same time, sustainability will be the next change affecting the manufacturing sector, with the commitment to a low-carbon future. As a training provider, we will need to prepare our students and adult learners to understand the need for sustainability and energy efficiency even more as they build their skills and knowledge for a future-ready industry.





Any key insights on some past projects that students find particularly drawn to in the last few years?

In recent years, projects in applications deploying Artificial Intelligence, the Internet of Things (ioT)and robotics are some of the areas that students are interested in. The projects span manufacturing, smart urban environments and sustainability. We also have students interested in real-world projects arising from problem statements given by the industry.



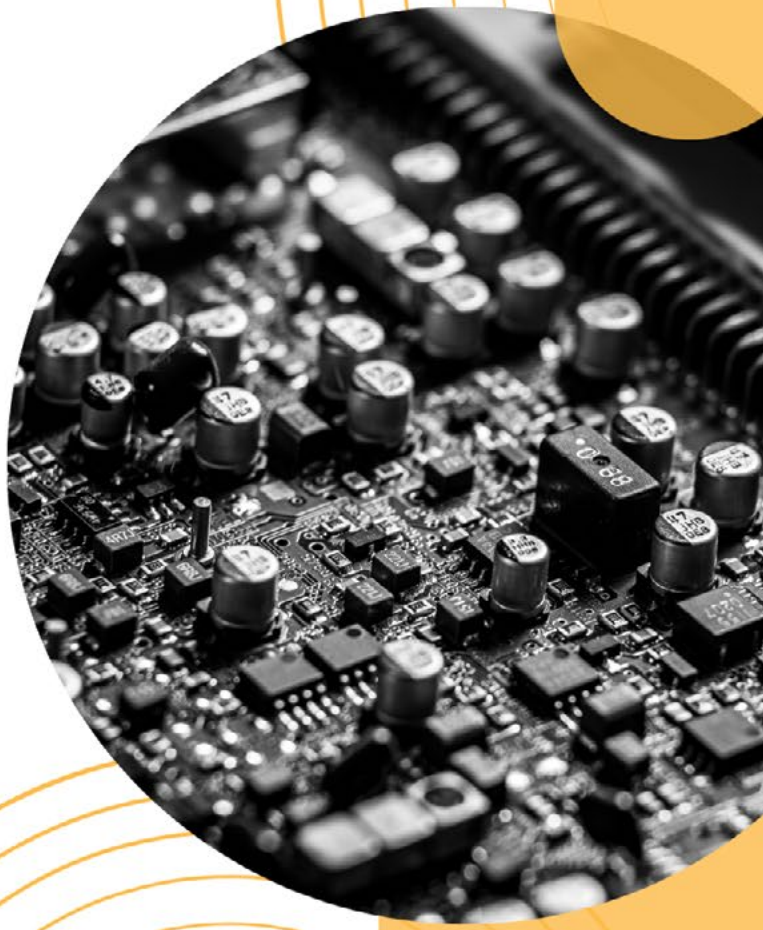
CONTRIBUTED BY

DR LIM JOO GHEE
Ag Director, School of Electrical & Electronic Engineering at Singapore Polytechnic

LOOKING AT MANPOWER RESOURCING FOR YOUR BUSINESS GROWTH?

Workforce Singapore

Career Conversion Programme for Electronics Engineer and Assistant Engineer



Hire and reskill mid-career switchers to meet your manpower needs

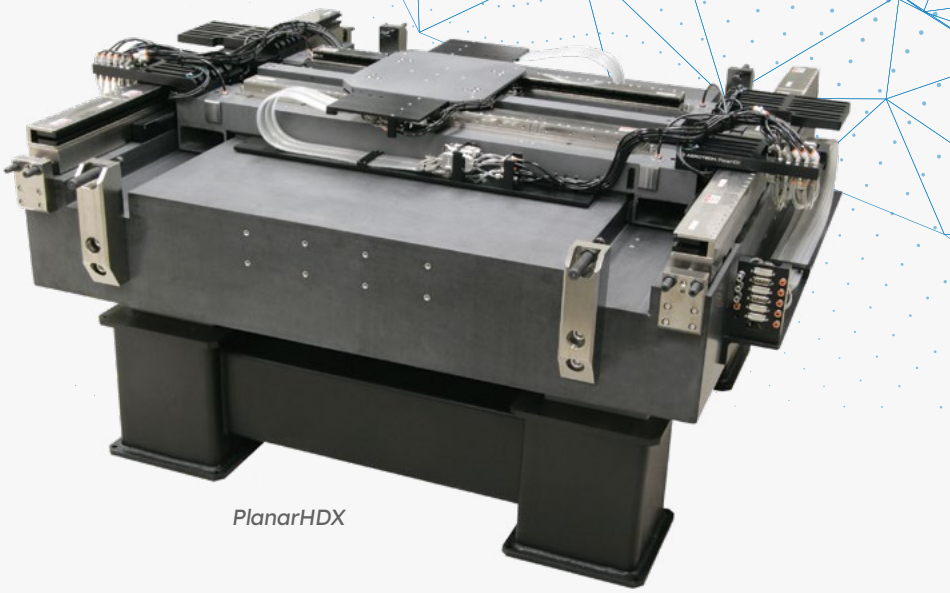
Reskill existing workers to take on new or enhanced job roles

Tap on Government funding for salary support

SCAN ME

Push the Boundaries with Aerotech

Enabling high-accuracy chip manufacturing and inspection



PlanarHDX

Since 1970, Aerotech Inc. has been the global industry leader in precision motion control and automation. From standard positioning technologies and control systems to custom-designed automation systems, our products support research and industrial organizations worldwide. Aerotech solutions enable manufacturing, testing, and inspection processes on a micrometer and nanometer scale for the world's most demanding industries.

INCREASED THROUGHPUT

Aerotech provides production-ready semiconductor lithography, inspection, metrology, and micro-transfer printing automation subsystems, and we're trusted by leading innovation OEMs globally for our semiconductor automation solutions.

PlanarDLA

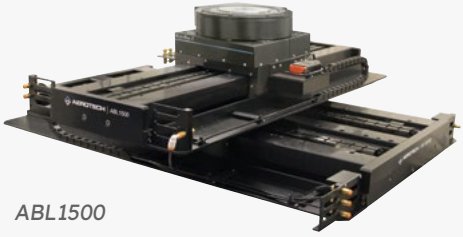
Looking to maximize productivity and yield without sacrificing accuracy? We combine mechanics, controls, and electronics in optimized designs to give you the highest throughput possible for your manufacturing or inspection application. We're changing the semiconductor industry by extending the functionalities and applications of semiconductor automation equipment. Accelerate your semiconductor manufacturing and inspection with our solutions.

PRECISION

As electronics shrink to meet consumer demand, your need for precision in wafer manufacturing and inspection grows. Small electronics require precise and efficient semiconductor devices. Our precision motion control and advanced mechatronics provide accuracy to the micro and nano levels, meeting the tightest tolerances on the latest generation of electronic devices.

RELIABILITY

We keep your processes moving. Our highly advanced motion control technologies are built on a foundation of old-world quality and craftsmanship, so they run day after day, year after year. That's why top semiconductor manufacturers around the world rely on us.



ABL1500

We've spent decades working with companies in the semiconductor industry, allowing them to manufacture wafers and chips in the most efficient way possible.

LET'S CONNECT

CONTRIBUTED BY

AEROTECH

HELPING CREATE A BRIGHT AND SUSTAINABLE FUTURE

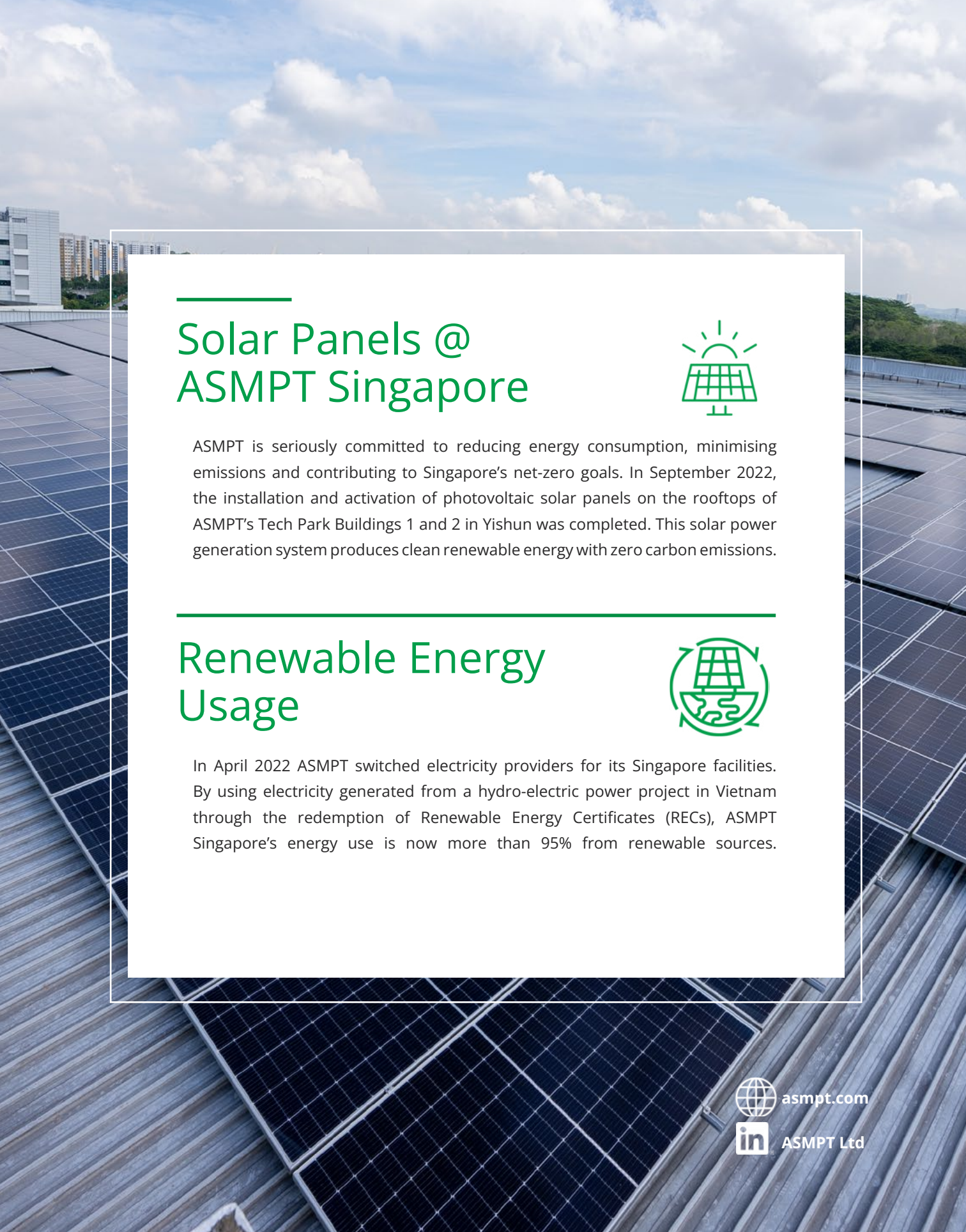
ASMPT's ecological and social commitment is directly linked to its definition of Company Success. Energy and water consumption, emissions, the management of resources and waste – all of these are critical in determining the world we will all live in.

At ASMPT, we take our corporate responsibilities seriously both within the company and beyond. Sustainability, integration, diversity and equality, the physical and mental health of our employees and an overarching sense of responsibility permeate all aspects of our activities. This extends from individuals to the whole Group, and encompasses our relationships with suppliers, partners and other stakeholders.

We are keenly aware that we are all part of one world, never forgetting that what we do, and how we do things, carries stakes for society and the environment. The impact of our ecological footprint guides our decisions as a responsible business. The ASMPT Group is enroute to completing a detailed net-zero decarbonisation roadmap, aligned with our objective of creating a bright and sustainable future for all stakeholders. We look forward to sharing more in the coming year.

ASMPT Singapore Tech-Park Building 1 (TPB1)


ASMPT Singapore Tech-Park Building 2 (TPB2)



Solar Panels @ ASMPT Singapore

ASMPT is seriously committed to reducing energy consumption, minimising emissions and contributing to Singapore's net-zero goals. In September 2022, the installation and activation of photovoltaic solar panels on the rooftops of ASMPT's Tech Park Buildings 1 and 2 in Yishun was completed. This solar power generation system produces clean renewable energy with zero carbon emissions.

Renewable Energy Usage

In April 2022 ASMPT switched electricity providers for its Singapore facilities. By using electricity generated from a hydro-electric power project in Vietnam through the redemption of Renewable Energy Certificates (RECs), ASMPT Singapore's energy use is now more than 95% from renewable sources.

Advancing Technologies Towards A Sustainable Future: SSIA Summit and Semiconductor 2022

More than 500 participants and over 100 companies attended our flagship Summit and Dinner on 29 September. The event was a highly anticipated one since the pandemic. And this year saw one of the most successful and strong showing of support from industry partners and agencies alike.

Andrew Chong, SSIA Chairman giving his opening address

MOS Alvin Tan on a tour of exhibition booths

As we emerged from the pandemic, more companies have been gaining ground to power new and innovative technologies as we move towards the digital and yet green economy. Consequentially, the usage of chips will accelerate due to the growing climate goals such as solar panels and electric vehicles. This is a paradox as the industry moves towards net-zero goals. In this respect, SSIA Summit 2022 tackled this important contradiction and explored how some of the industry players had pivoted to balance business and the environment.

SSIA Summit attendees mingling

Semiconductor Dinner attendees catching up

Industry leaders catching up with one another

Exhibition attendees speaking with the booth representative

The huge dinner crowd at the Summit

The event was graced by Mr Alvin Tan, Minister of State for Ministry of Trade and Industry & Ministry of Culture, Community and Youth. He reiterated on the 3 main pillars that the Singapore would be focusing on in the long term namely Talent, Innovation and Sustainability. He expounded on the challenges along the way but remained optimistic about the sector's bright future.

And in line with Singapore's ambitions to move towards a net-zero carbon future, he was heartened to see many companies remain committed to reducing carbon emissions and there had been already been some pilot novel emission abatement solutions underway such as STMicroelectronics's district cooling system.

Thought leaders the likes of Mr Russell Tham of Temasek International, Xinying Tok of Carbon Trust and Mr Kenneth Ng of Razer were amongst those who shared about their experiences of building a sustainable green company enabling the use of technology and insights.

The Summit culminated in a Dinner that saw many leaders letting their hair down and for two years since the pandemic, was a great way to forge new friendships and foster the existing partnerships.

MOS Alvin Tan giving a speech to the conference attendees

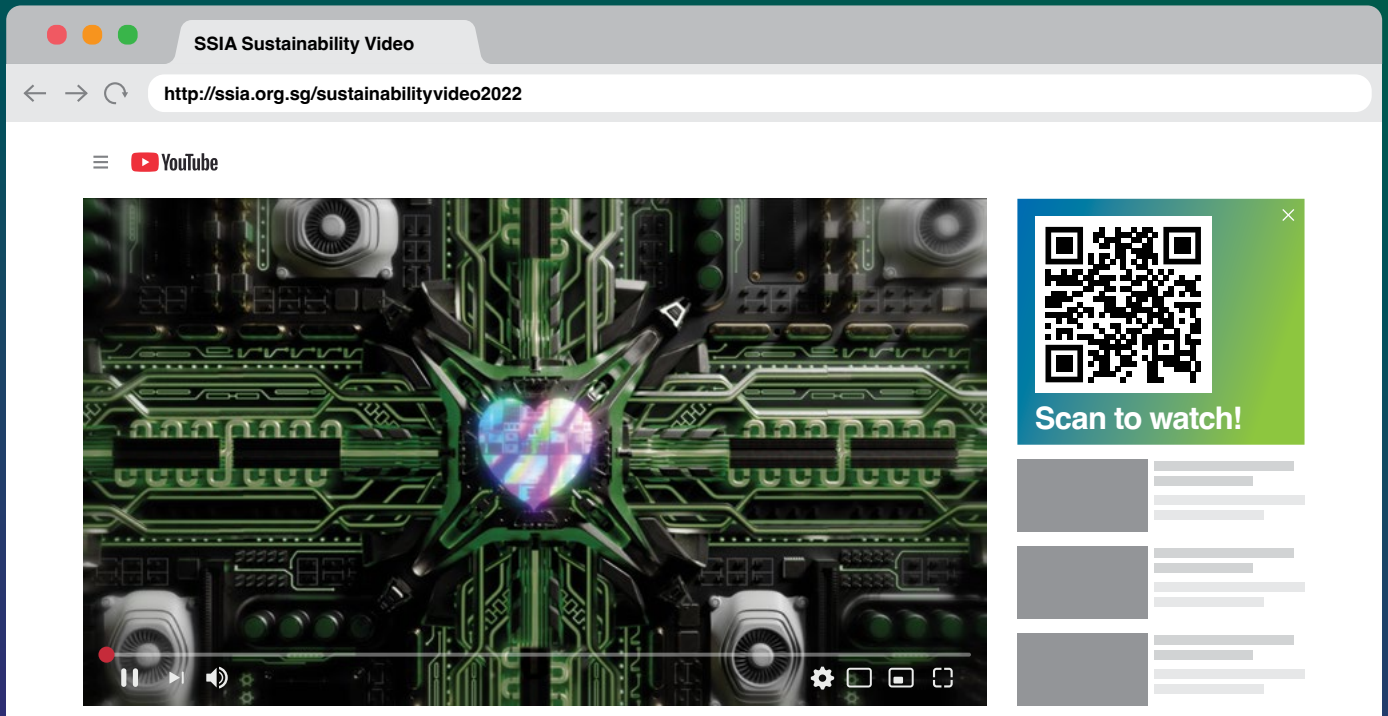
SSIA Summit Panel Discussion panelists and host

Russell Tham, Joint Head, Enterprise Development Group (Singapore); Head, Strategic Development, Temasek International, giving his speech

Jubilant friends in the industry coming together since the pandemic

SSIA Sustainability Video

This video encapsulates the essence and importance of the commitment of the industry towards net zero. Together, we can put sustainability at the heart of our actions.



A Quality AMHS Provider

MFSG
Move.Forward

ABOUT US

MFSG is a Singapore-based provider of **Automated Material Handling Systems (AMHS)** to major semiconductor manufacturers.

As a reliable solution provider, we develop efficient Automated Material Handling Systems that allow our customers to increase production efficiency, reduce costs and improve quality control. We are consistently leading the industry by being innovative, flexible and upholding our core values.

AMHS PRODUCTS

AMHS Software

- Material Control System (MCS)
- AMHS Monitoring & Simulation (AMS)
- Overhead Hoist Transport Controller (OHTC)
- Mobile Robot Controller (MRC)

Material Storage System

- Stocker (Cassette/FOUP/RSP)
- Near Tool Buffer (NTB)
- Purge Reticle Cabinet (RC)
- E-Rack (Cassette/FOUP/RSP)
- Operator Load Unload Station (OLUS)
- Over Head Buffer (OHB)

Material Transport System

- Overhead Hoist Transport (OHT)
- Autonomous Mobile Robot (AMR)
- E84 Tool Integration

Material Purge System

- Tool Loadport Purge (TLP)
- Front Purge System (FPS)
- Overhead Purge System (OPS)

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Micron Singapore Named SUSTAINABILITY LIGHTHOUSE by the World Economic Forum

The World Economic Forum has named Micron Technology's Singapore facility as a Sustainability Lighthouse – the first front-end semiconductor fab in the world to have received this recognition.

The designation demonstrates Micron's leading position in driving the future of sustainable manufacturing and acknowledges Micron's proactive approach to eco-efficient operations that are good for its business and the planet. Micron's manufacturing facilities in Singapore and Taiwan were first awarded World Economic Forum Global Lighthouse Network (GLN) status in 2020 for their elite facilities that are leading the Fourth Industrial Revolution.

"Sustainably operating semiconductor manufacturing at scale requires sophisticated artificial intelligence and machine learning techniques that can efficiently analyze and process data," said **Manish Bhatia, Executive Vice President of Global Operations at Micron Technology**. "We're proud to be recognized by the World Economic Forum for our industry leadership in paving the future for smart and sustainable factories."

"Member of the Global Lighthouse Network - a unique global community of like-minded peers - are exploring synergies and collaborating to share insights and best practices on how to

unlock not only efficiency, productivity and growth, but also new levels of sustainability and workforce engagement, to lead towards a cleaner and more inclusive future of manufacturing," said **Francisco Betti, Head of Shaping the Future of Advanced Manufacturing and Value Chains, World Economic Forum.** "Micron as a leader in its approach to environmental stewardship, will be able to share knowledge and best practices with peers, support new partnerships and help other manufacturers deploy technology, adopt sustainable practices and transform their workforces."

Micron's manufacturing approach includes implementation of AI tools, smart control systems and predictive maintenance to improve production efficiency and automation. The company leverages data analytics, smart-controlled systems, predictive maintenance and deep learning technologies to improve automation, reduce energy use and emissions. Micron Singapore has been ramping up its production in line with industry demand growth and produced the world's first 232-layer 3D NAND- the most advanced NAND technology in the industry. At the same time, it has grown sustainably by reducing resources used per gigabyte produced by 45% from 2018 to 2021.

Micron has committed to spending $1 billion by 2028 to meet its environmental targets. These goals include achieving 75% water conservation and 95% waste diversion globally in 2030, and commits to net-zero emissions from its operations and purchased energy (scopes 1&2) by 2050 with 42% absolute emissions reduction across the company's global operations (scope 1) from 2020 levels by 2030. The company also focuses on procuring renewable energy globally to support its net zero objective and continues to target 100% renewable energy in the U.S. by the end of 2025. Through this combination of short-term targets and long-term commitments, Micron seeks to align its goals to the objective of the Paris Agreement on climate change to limit global warming to no more than 1.5°C.

CONTRIBUTED BY

Micron

SmartSiC™ is Heading to Become a New Industry Standard

Electric Vehicles (EVs) are a once-in-a-century transformation that generates a deluge of innovations.

The previous revolution in transportation was around the 1900s and it took 15 years for the world to switch from horse-driven vehicles to mechanical mobility. The transformation from gasoline to electric vehicles will likely be faster due to the urgent need to cut CO_2 emissions and limit global warming.

Since Tesla pioneered the EV market in 2018 by introducing Silicon Carbide (SiC), the technology has been adopted by the majority of car makers. Nevertheless, numerous hurdles in terms of electrical performance, productivity, cost and yield need to be overcome to allow SiC to take centre stage in the EV sector.

Soitec has anticipated these challenges and the upcoming demand from the EV industry. It developed SmartSiC™, as a higher value-added alternative to single-crystal SiC substrates, offering a greener, faster, and better solution for higher-efficiency power.

Thanks to the ten-times reuse of single-crystal SiC donor wafers, and the ten times better conductivity for lower RDS(on) power devices, SmartSiC™ is ready for high-volume production and heading to become a new industry standard.

"Our SmartSiC™ substrates will be a key ingredient to help accelerate the electric vehicle revolution," says Emmanuel Sabonnadiere, VP of Automotive & Industrials division of Soitec.

"With our new generation of substrates, electric vehicles will benefit from power electronics devices that take energy efficiency and performance to the next level."

Greener, faster, better: Soitec generates innovations which are relevant for the use of our resources, energy efficiency, economic performance, and commercial success. They are driving the development of numerous industries and ecosystems that recognize the strategic importance of semiconductors and the substrates they are built on.

In our soil grows an amazing future.

CONTRIBUTED BY

soitec

Bringing You Tomorrow's Technology... Today!

CAD-IT was established in Singapore in 1991 with the vision to be the preferred industry 4.0 partner to our valued customers and a key global contributor to the successful use of innovation and technology.

Our mission is to provide world-class Industry 4.0 solutions, thereby helping our customers and their supply chains achieve greater innovation, quality and productivity, reduced costs and time-to-market, by being good stewards of the resources that God has blessed us with.

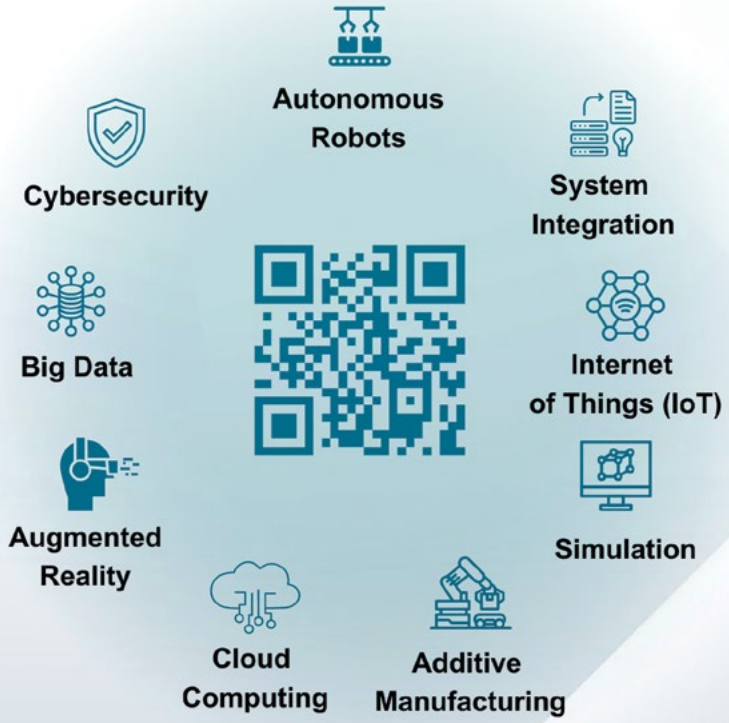
CAD-IT Today

- 22 companies in our group
- 17 offices in Australia, China, Europe, Southeast Asia, South Korea and USA
- 3 factories in Suzhou Manufacturing Automotive Parts
- 146+ International & National Awards
- Serving over 1,000 customers
- Trained over 10,000 professionals

CAD- IT's Industry 4.0 Intellectual Properties (IPs)

- Development Platform
- Digital Twin Toolkit
- Artificial Intelligence (AI) Diagnostics
- Integrated Data Center Management
- Technical Publication Portals
- Digital Factory Suite
- Artificial Intelligence (AI) Telematics
- Other Areas of Research

Achieving Digital Transformation & Sustainability



Through CAD-IT's End-to-End Industry 4.0 Solutions

CAD-IT's solutions include **Ansys** (System-level, Multi-physics Simulation), **Autodesk** (Advanced Manufacturing Solutions), **Cortona 3D** (3D Technical Authoring), **DEFORM** (Bulk Metal Forming), **Flownex** (Flow Simulation), **PTC** (IIoT, AR and PLM solutions), **Rockwell Automation** (Plex Smart Manufacturing Platform) and **Rocky DEM** (Particle Flow Simulation).

To find out how you can start your journey, email us at **sales@caditglobal.com**.

CONTRIBUTED BY

CAD-IT

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.

GlobalFoundries Partners with Google in Providing Open Source Silicon Platform

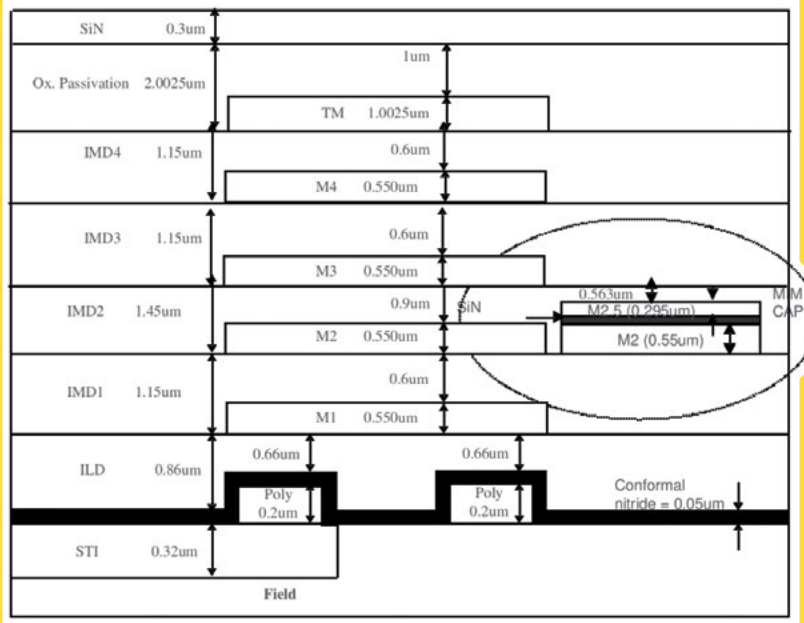
CALLING ALL software developers and hardware engineers, researchers and undergrad students, hobbyists and industry veterans, new startups and industry players: Bring your fresh ideas and your proven experiences and contribute to growing the open source silicon ecosystem!

Over the past few years, the world has experienced an unprecedented acceleration of adoption of digital capabilities. This started from a single mega trend driving the demand for semiconductors every decade or so in the past, such as the adoption of personal computers, internet connectivity driving the demand for enterprise servers and networking, and adoption of mobile devices. Today, we are experiencing several mega trends concurrently, driving the demand for semiconductors such as Internet of Things, 5G adoption, artificial intelligence and the automotive sector.

The accelerated digital adoptions were further triggered by the recent pandemic, that have contributed to greater demand and pervasive deployment of semiconductors. This transition has not only given rise to a "New Golden Age" of semiconductors but also a tectonic shift in how we define and deliver innovation as an industry. With the industry undergoing the new wave of 4.0 digitalization journey, technologies such as AI and Machine Learning, Big Data Analytics, Robotics, AR and VR have further opened doors for innovation, underlying the importance of semiconductors to continue to power these trends.

Over the last few decades, the industry has also seen a shift from an integrated setup where companies both designed and manufactured their devices in-house to the foundry model where the roles for design and manufacturing are separated. This diversification of roles has given rise to more companies who are able to specialize in chips design and partner with pure play semiconductor companies who provide the scalable production capabilities and sophisticated platforms for testing. As a pure play semiconductor manufacturer, GlobalFoundries (GF) is a key partner to more than 200 customers in providing feature-rich solutions. GF is committed to fostering innovation and creativity within the semiconductor industry through meaningful partnerships. GF and Google have partnered to provide developers access to the Process Design Kit (PDK) for the GlobalFoundries 180MCU ("GF 180MCU") technology platform under the Apache 2.0 license, along with a no-cost silicon realization program to manufacture open-source designs on the Efabless platform.

With this partnership, chip design companies and developers will now have access to a major foundry-level platform that they can use as a testbed



GF180MCU 1P5M 5 metals stack-up, 9kA top metal, with MIM between M3 and M4 layers. Source: GlobalFoundries

to run their ideas. Tapping on GF's depth of research and innovation, along with its high-volume production capabilities, the platform will allow developers to implement and run complex models for testing at scalable production levels. All designs submitted will be manufactured at GF Singapore's GIGA+ Fab, in partnership with Google.

The GF 180MCU platform offers open source silicon designers new capabilities for high volume production, affordability, and more voltage options. This PDK includes the following standard cells:

- Digital standard cells' libraries (7-track and 9-track)
- Low (3.3V), Medium (5V, 6V) and High (10V) voltage devices
- SRAM macros (64x8, 128x8, 256x8, 512x8)
- I/O and primitives (Resistors, Capacitors, Transistors, eFuses) cells' libraries

ABOUT THE 180NM TECHNOLOGY

The 180nm technology space continues to see strong market traction in motor controller, RFID, general purpose MCUs and PMIC, along with emerging applications such as IoT Sensors, Dual Frequency RFID and Motor Drive. End users can expect to see these chips in a myriad of home and industrial appliances such as smoke detectors, alarm systems, washing machines, refrigerators, fitness equipment, computer peripherals.

Specifically, applications using 180nm are at a global capacity of 16+ million wafers a year and expected to grow to 22+ million wafers in 2026.

Google is sponsoring a series of no cost shuttle program available to all. The first shuttle (MPW0) will start accepting designs with design submissions due by early December 2022. Each shuttle run will select 40 projects based on the following criteria:

i. Design sources must be released publicly under an **open source license**.
ii. Projects must be fully reproducible from design sources using open source tools and the GF180MCU PDK.

This program is part of Google's expansion of free open source silicon design and manufacturing program to further grow the community of developers and companies building custom silicon, and build a thriving ecosystem around open source hardware.

For more information on this program, visit Google's Open Source blog at **https://opensource.googleblog.com**.

CONTRIBUTED BY

GlobalFoundries™

Driving Decarbonization and Digitalization Together to Address the Challenge of Our Generation

On 13 October 2022, Infineon Technologies held its fourth edition of OktoberTech™ Asia Pacific in Singapore. OktoberTech is Infineon's annual global technology forum that brings experts together to share ideas and showcase technologies that contribute to lessen the impact of climate change.

The full day event featured new partnerships with LG Sciencepark and VinFast, 9 tech talks, 3 panel discussions led by leading industry experts, as well as 43 live demo showcases. This was OktoberTech's first physical event since Covid-19 following a virtual forum in

43 demo showcases by Infineon, our partners and our customers

Panel discussion: Working towards a Sustainable Planet by 2050

2021. More than 1,000 people attended the event with over 700 of them being physical attendees.

OktoberTech has always been about harnessing a vibrant ecosystem for co-innovation to shorten the time to market, especially in emerging fields. Together with LG Sciencepark, the start-up ecosystems in Singapore and South Korea are now linked, making available technical and business support as well as potential growth opportunities.

On-going conversations amidst the never-thinning crowd at the demo showcase area further added to the buzz and livened up the atmosphere.

> "To feel the energy in the room, to meet the people, to see the faces and to have the spontaneous discussions in between – that just really felt great."

Dr Andreas Schumacher, Executive Vice President of Strategy, Mergers & Acquisitions, Infineon Technologies AG

Panelists gave valuable yet objective insights during the panels on decarbonizing future mobility and on demystifying the Metaverse. The final panel discussion on change for sustainability, was led by a panel of youth climate ambassadors including Samantha Thian, Founder of Seastainable Co.; Bolong Chew, CEO of Solar AI; Andy Ang, World Bank Climate Ambassador; Sirmana Singh, Sustainability Manager at Foodpanda. These panelists, with their invigorated passions for sustainability, are stepping up to be the next generation of leaders who will take the helm in inspiring youths to be more eco-conscious.

MoU collaboration with LG Sciencepark

With this year's theme on decarbonization and digitalization, OktoberTech served as an excellent platform for Infineon, its partners, customers, stakeholders of the ecosystem and change makers to forge new connections and work toward answering the challenge of our generation.

Scan here to view all video recordings.

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Providing Full Stack End-To-End Capabilities And Solutions Across The Globe

Complete Test Cell Solutions

for CMOS Image Sensors

M7IS ATE Solution
Application Specific Test Solution with integrated light source

AEM Illuminator
Integrated light sources combined in a single instrument

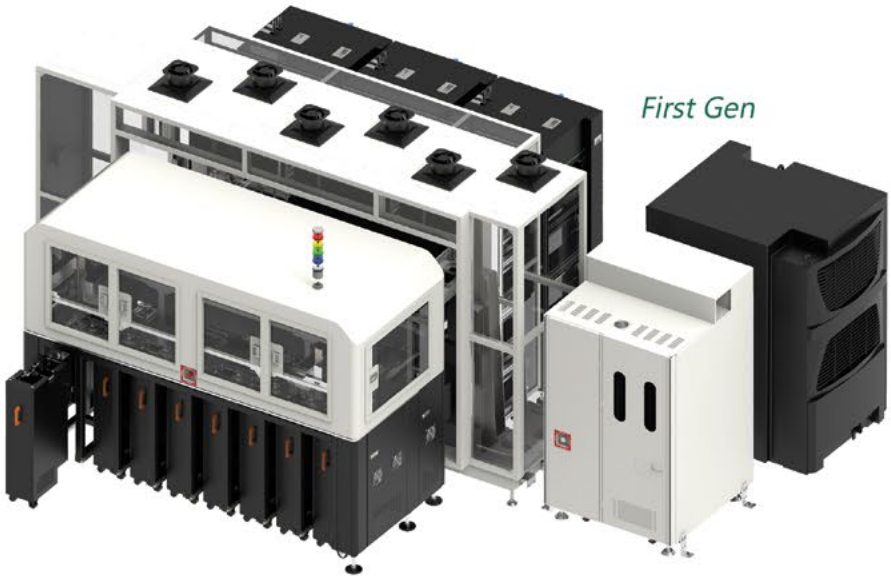
ZEN Handler
High Throughput handler with unique flip mechanism for “live bug/ dead bug” configuration

System Level Test Solutions

AEM's approach to SLT enables increased coverage of the test flow

AEM Test Cell Concept enables Burn-In, FT Lite and SLT on a single platform with Machine Learning and Big Data

Burn-in	Traditional ATE	System Level Test



First Gen

Leader in Fast Growing SLT Market

SLT growth driven by advanced computing & packaging AEM has over **40,000** SLT sites in production

Full Stack Technology

Delivering **composable** technologies and solutions for advanced, integrated semiconductor or test needs

Full Stack Delivery

Critical delivery capabilities giving our customers a **reduced time to market**

Visit our website at:
www.aem.com.sg

GUUD:

Adopting greener practices for your supply chain and trade finance

The semiconductor industry plays a critical role in Singapore's green transformation, and although many companies don't realise it, traditional supply chain and trade finance practices tend to be manual and paper-based, contributing heavily to each company's carbon footprint, and utilising a huge amount of resources.

At GUUD, we specialise in simplifying global trade processes, helping companies digitalise in the areas of compliance, logistics and trade finance. As a specialist in global trade, we have partnered with governments, associations, and businesses around the world, offering digital platforms and sustainable solutions that help them realise cost savings, while improving effeciencies, and helping to train and upskill employees in digital knowledge.

RYTE TFAP, a product of GUUD, is an award-winning multi-bank trade finance application portal designed to support businesses in managing multiple banking relationships for various trade financing instruments, including the import financing of raw materials. With the support of MAS, Singapore Customs and 11 leading trade finance banks, RYTE TFAP has successfully digitalised the tedious, manual processes of trade finance applications, at the same time providing easy data reusability to mitigate human errors. This has been proven to help companies realise significant time and cost savings, versus the current traditional manual process flows.

Aligned with our core mission to Trade for Good, we aim to continue developing technology solutions that create value for your business by unifying, simplifying, and digitalising global trade processes. We believe that it is important for businesses in the semiconductor industry to take the first step towards the adoption of sustainable trade finance and supply chain solutions.

Feel free to reach out to our team at GUUD to find out more and kickstart your sustainability journey with us.

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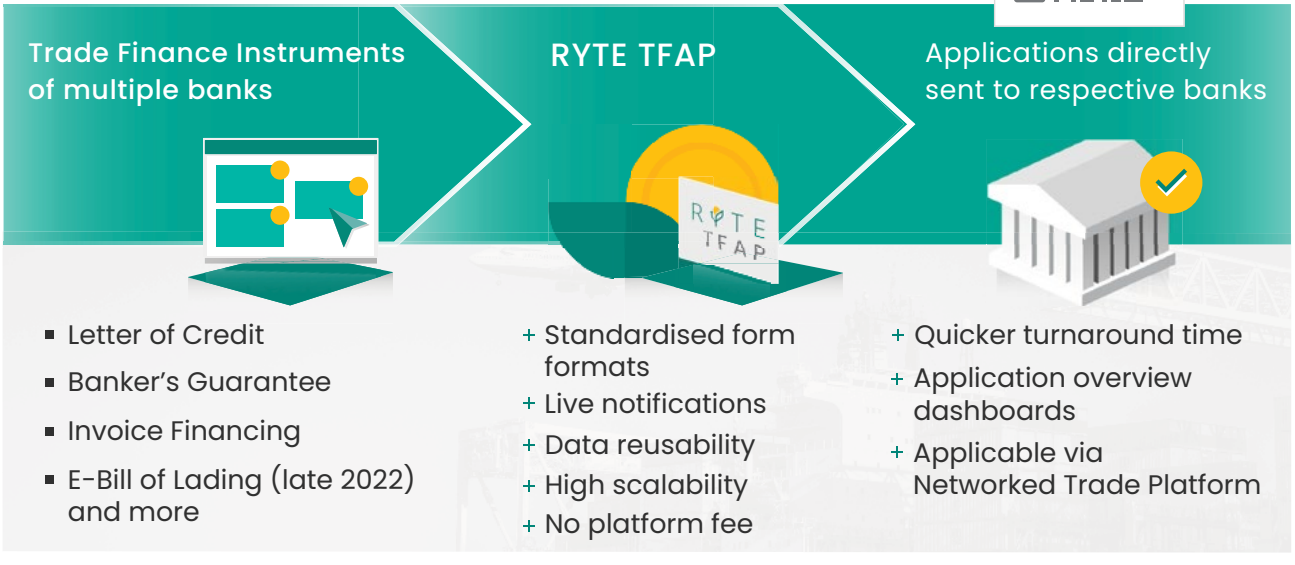
GUUD
BUY SHIP PAY

Accelerating Trade Finance in the Semiconductor Industry



- Letter of Credit
- Banker's Guarantee
- Invoice Financing
- E-Bill of Lading (late 2022) and more

+ Standardised form formats
+ Live notifications
+ Data reusability
+ High scalability
+ No platform fee

+ Quicker turnaround time
+ Application overview dashboards
+ Applicable via Networked Trade Platform

SNUG Singapore 2022

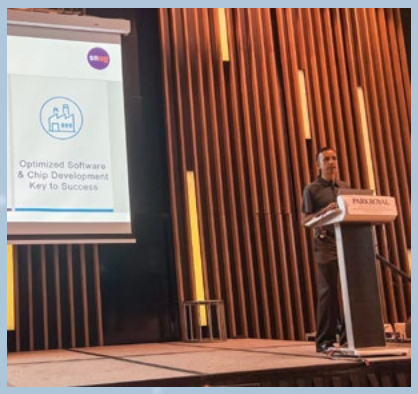
SNUG (Synopsys User Group) Singapore conference started in the year 2000 and has been one of the key events each year for the electronic design community where they can learn about the latest advancements in the semiconductor industry. It is also a platform for Synopsys EDA software users to share their latest ideas and innovations as they solve their most complex problems in chip design. This year's conference was held in-person on September 23rd 2022. It's been 3 years since the last live SNUG conference due to the pandemic and it has been sorely missed. Speakers from leading IC design companies gathered at the Parkroyal @ Beach Road hotel to address key growth areas including AI, machine learning as well as trends affecting the industry including talent development and retention. The energy was palpable as the almost 500 attendees anticipated the day's keynote speeches, user papers and the opportunity to network and rekindle past connections as well as form new ones.

Eu Gene Goh, Senior Director of Design Engineering at AMD, kicked off the conference with his keynote address, focusing on the recent AMD and Xilinx merger and what exciting new advancements this will bring to the area of high performance and adaptive computing.

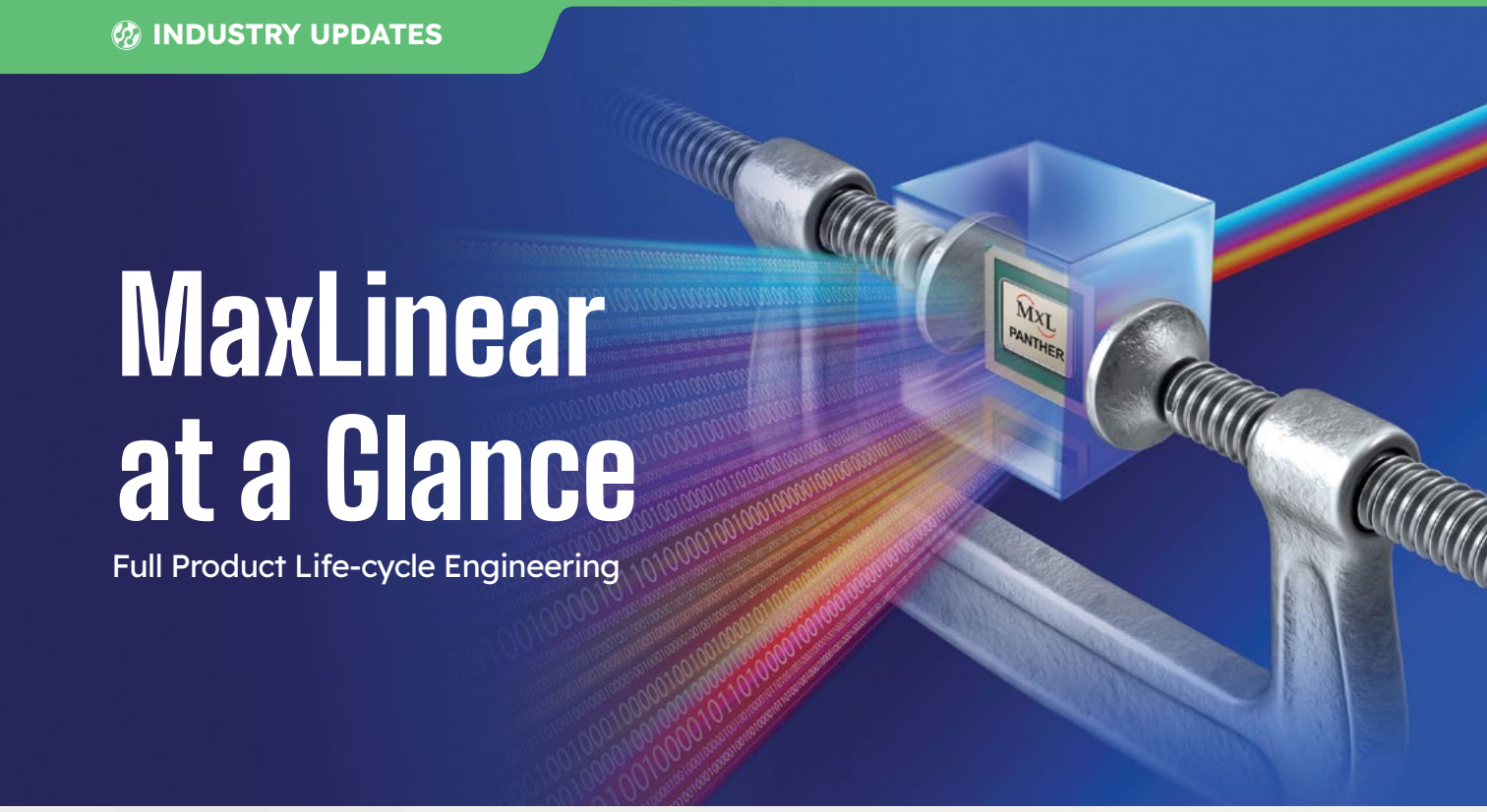
Eu Gene, then went on to talk about the IC design industry in Singapore and how SSIA (Singapore Semiconductor Industry Association) IC Design Committee, of which he is the co-chair, is helping to promote and retain local and global semiconductor talent.

We all realize that Singapore is indeed a key player in the entire semiconductor eco system and attracting new talent to develop their career in this industry is vitally important for its sustainability and growth. One key initiative is the Digital Design Finishing School Vocational Training, which will equip new graduates with the necessary skills to enter into the IC design sphere and hit the ground running. It will also play a crucial role in training and upskilling engineers who would like to move deeper into this area for their careers. This initiative is targeted to begin in the first half of 2023.

As the world emerges from the pandemic, we are waking up to a new world where things were not what they used to be. The push for transformation and change has accelerated the growth in the IC design and semiconductor industry. SNUG provides an important avenue for innovation sharing and networking opportunities. As attendees left at the end of the conference, the common feedback was that it was a content-filled day with many exciting take aways from the keynotes and user sharing sessions. We look forward to SNUG Singapore 2023.



Ashok Vittal from the Fusion Compiler R&D group in Synopsys, delivered the keynote address, "SysMoore Era: The Golden Age of EDA Innovation." Ashok discussed macro trends in innovation that leverage both software and chips to create world-changing products. In order to achieve the same levels of growth in computing power, companies are innovating in a different way, instead of relying on just smaller technology nodes. This is where SysMoore era comes where it is driven by systemic complexity and it aims to maintain exponential technology growth through other means. Ashok then described how Synopsys has been investing heavily in this area to further help designers unlock innovation.



MaxLinear at a Glance

Full Product Life-cycle Engineering

MaxLinear (NYSE:MXL) is a global and fabless system-on-chip (SoC) product company, striving to improve the world's communication networks for everyone through our highly integrated radio-frequency (RF), analog, digital, and mixed-signal semiconductor solutions for access and connectivity, wired and wireless infrastructure, and industrial and multi-market applications. MaxLinear is headquartered in Carlsbad, near San Diego, California and operates major design centres worldwide employing approximately 1,800 employees.

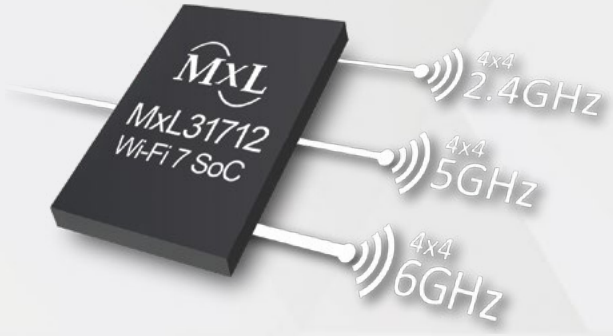
In Singapore, MaxLinear's presence has grown significantly since 2020 when it acquired Intel's Connected Home Division (CHD).

The increment from a smaller business operation to a full-fledge R&D centre is increasing MaxLinear's brand visibility within the SSIA and Singapore: it is now one of the largest semiconductor R&D design centre within SSIA, employing more than 200 employees, with 85% engineers covering the full spectrum of semiconductor product engineering activities.

Historically, MaxLinear began by developing the world's first high-performance TV tuner chip using standard CMOS process technology, but soon after developed a full line of products that drive 4G and 5G wireless infrastructure; enable data centre, metro and long-haul optical interconnects; bring 10Gbit to the home; power the IoT revolution; and enable robust and reliable communication in harsh industrial environments.

Over the years, MaxLinear expanded through organic growth and through several acquisitions that have perfectly complemented the existing portfolio to deliver complete end-to-end solutions in the target markets. The Intel CHD acquisition is an example that benefited from a large Singapore R&D footprint, itself originating from Infineon's Broadband Business Group way back in 2009.

This acquisition added Wi-Fi, Ethernet, and Broadband Gateway Processor SoC technology to the connected home platforms. By now MaxLinear is one of the only 2 companies owning all available Broadband Access and connectivity solutions to be able to build AnyWAN™ based Gateway/Routers covering the worldwide demand.

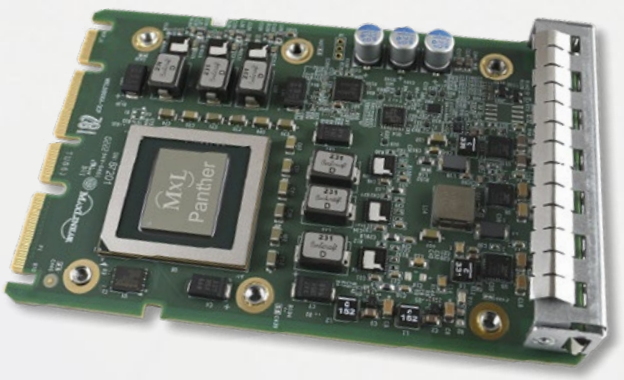


All of these technologies are in the focus for the R&D efforts of the Singapore design centre which fully owns the entire product lifecycle R&D from marketing requirements to product release, supported by all disciplines of semiconductor design for IP and large scale SoC.

This includes an Algorithm and Systems Architecture group defining the specifications to be implemented by the VLSI teams. The design then goes to Functional Verification, Design-for-Test and Layout end-2-end.

We're also operating a full System Development Group developing Firmware, Software which are tested at early stage of the platforms lifecycles. We rely on rapid-prototyping and in-circuit emulation of pre-silicon designs. Our development DNA ensures full system functional verification pre-tapeout in the end-application environment.

Finally, we operate various system-test labs to support full-product qualification and characterization at chip- and system-level. Our R&D centric test-lab supports test-program development and sign-off for mass-production at our OSAT partners for both, wafer and sample test. A product engineering team drives yield optimization and failure analysis efforts to minimize costs and defect rates.



In that capacity, the Singapore Design-Centre just released the world's highest performance AnyWAN™ Broadband SoC. It supports seamless operation of all existing broadband technologies world-wide, be it Fibre, Cable, DSL, Fixed-Wireless-Access (FWA) or Ethernet. It also supports home-connectivity AnyLAN base on the newly emerging, highly efficient, 2.5GbaseT Ethernet Physical Layers and Switches.

Since connectivity in the home is all about WiFi, our SoC supports the legacy Wi-Fi 5/6 and the upcoming Wi-Fi 7 standard. MaxLinear's newly announced Wi-Fi 7 chip, was taped-out in Singapore earlier this year. It is the world's first single-chip, fully integrated Tri-Band 4x4 (2.4GHz, 5GHz and 6GHz) SoC. It is designed based on the IEEE 802.11be standard supporting 12 spatial streams delivering optimal Multi-Link experience and EHT (Extremely High Throughput) data-rates aggregating up to 18.6Gbps.

Our R&D group in Singapore also addresses the data-center segment: utilizing our SoC and system expertise, we recently expanded our competency domains to the high-performance storage accelerators. It is important to offload the compression and encryption functions from server CPUs. The newly announced Panther3 SoC supports 200Gbps throughput that scales to 3.2Tbps of single-pass data-reduction at compression rates of up to 12:1. This leading product incorporates data-integrity preservation with real-time validation (RTV) and safe data-deduplication with MaxHash™ computation, for higher levels of compressions, thus enabling data-centers to optimize their storage resources.

It is exciting to see the growth of the R&D operation since 2020. Navigating through challenges of the pandemic, the Singapore design-centre has become the third largest Maxlinear site and is progressively becoming more visible within the SSIA. We are proudly supporting the SSIA R&D IC design committee efforts to improve the young and local talent growth initiatives. Together, we strive to mitigate one of the biggest common talent challenges of the local semiconductor industry.

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MAXLINEAR

Industrial Transformation ASIA-PACIFIC 2022

Held from 18 – 20 October, Industrial Transformation Asia-Pacific 2022 saw more than 15,000 attendees across 3 days at Singapore Expo. The opening ceremony was attended by over 1,000 delegates and was graced by our Guest-of-Honour, Mr. Heng Swee Keat, Deputy Prime Minister and Coordinating Minister for Economic Policies of Singapore, as well as Mr. Alvin Tan, Minister of State for the Ministry of Culture, Community and Youth, and the Ministry of Trade & Industry.

As the leading advanced manufacturing platform in Asia Pacific, the event deep dived into trends and developments in three key dimensions: **Digitalisation, Talent & Workforce Development, and Environmental Sustainability,** to influence the magnitude of sustainable business development for advanced manufacturing and its related sectors locally, regionally, and globally.

The 5th edition of the event saw a total of 276 exhibitors showcasing their latest Industry 4.0 innovation for their brands, while encouraging the adoption of innovative I4.0 tools, data analytics, and technologies to integrate systems, data and people for seamless process flow, greater productivity with lower transaction cost, and operational excellence.

Visitors were able to indulge in the following immersive Experience Zones at the event:

1 **Gateway to Industry 4.0:** Sustainability and Artificial Intelligence are the key themes driving the industrial transformation. With Training, Assessment, Audit and Certification services, TÜV SÜD enables organisations to scale technologies in their digitalisation and sustainability transformation. (Powered by TÜV SÜD)

2 **Industrial Transformation Experience Zone:** Features 14 exhibits, each showcasing the latest technologies in enabling I4.0, sustainability, and workforce transformations. (Powered by Singapore Polytechnic)

3 **Additive Manufacturing Experience Showcase:** A One-Stop experience on the entire Additive Manufacturing value chain, featuring innovative products with topology-optimised designs, enabled by an integrated digital workflow with sustainably sourced and recycled materials. (Powered by National Additive Manufacturing Innovation Cluster)

4 **Digital Twin Experience Centre:** Digital Twin has been helping organisations to reimagine their

approaches to accelerate productivity gain and attain sustainability goals. To demystify the concept of Digital Twin, Beca has curated an immersive experience through four bespoke manufacturing use cases. (Powered by Beca)

5 **Next Generation Logistics Experience Zone:** Showcase of the latest technologies in enabling industry 4.0 in the logistics industry (Powered by LogiSYM)

6 **Talent & Workforce Development Zone:** Showcase unique technology and case study-based training for the workforce to enhance their competitiveness and capabilities in Singapore's manufacturing industry. (Powered by A*STAR)

There were 12 product launches promoting innovative solutions, 4 country-focused segments providing accurate insights into the regional markets' needs and initiatives, as well as 10 partner presentations featuring industry insights, case studies, technology innovations.

ITAP also managed to garner a total of 13 trade associations and 18 regional trade associations to participate in the event. Many collaborations, business and networking opportunities were forged onsite.

To increase exhibitors' and visitors' engagement, ITAP also specially curated 28 guided tours with an attendance of over 250 participants. At each booth, they were able to have a concise overview of the show topics to selected I4.0 showcases, innovative pilots, and deployment concepts in the field.

The next edition of Industrial Transformation Asia-Pacific event returns on 18 – 20 October 2023. For more information, please visit **https://www.industrial-transformation.com/**

Top: Let-Lab Founder Mr. Agmon Porat and Let-Lab SG Head, Dr. Viveka Kalidasan with their team. ***Bottom:*** *Let-Lab SG Head Dr. Viveka and UCT internal Champion Mr. Jay with a team of founders*

Tapping Into Singaporean Deep-Tech Ecosystem and Transforming Industries

A new innovation lab with the aim of driving sustainable industry 4.0 innovation ecosystem amongst Singapore's semiconductor players. Connecting industries, academia, and start-ups with a real manufacturing playground for accelerating product-market fit.

Let-Lab is the innovation arm of Ultra Clean Holdings, Inc. ('UCT'), founded in 2018 by Mr. Agmon David Porat in Israel. It aims to shape the future by accelerating the growth of sustainable, semiconductor industry 4.0 innovations, aligned with UCT's strategic goals into ventures.

Let-Lab SG being a new entrant to the Singaporean start-up ecosystem aims to contribute to the (sustainable) semiconductor industry transformation and subsequently help the industries adapt, scale and sustain the transformation. Let-Lab SG works with various stakeholders like other venture capitalists, venture builders, accelerators and incubators, institutions, thus strengthening its co-innovation ecosystem. Let-Lab SG is the only accelerator in Singapore focusing on semicon industry 4.0 innovations and ventures

Since its launch in April 2022, Let-Lab SG has initiated contact with 25+ start-ups. Let-Lab offers start-ups an incubation period, funds them and provides a collaborative workspace, access to advanced manufacturing facilities, mentorship & guidance, access to a strongly established ecosystem of partners from diverse backgrounds and proof-of-concept (POC) development at either UCT's facilities or implementation & testing partner's facilities and access to additional funds. The main differentiating factor from other accelerator or incubator programs is that start-ups would be housed at UCT, working closely to test out their POC and pilot their product.

The flagship 12-months long incubation programme is divided into sequential phases, starting with i) scouting for start-ups and innovations. The team then ii) matches the technologies with the areas of unmet needs within UCT, along with a relevant domain expert, iii) A POC is then developed and iv) the programme ends with the execution and deployment of the innovation across UCT, globally. A detailed business model is created with respective financial aspects for raising funds and finally market access is provided for customers and end users.

Regarding the programme, Let-Lab SG's Head, Dr. Viveka Kalidasan proudly says, "Our programme is unique as it helps start-ups get a real semiconductor industry 4.0 playground for them to test, pilot and deploy their innovations. Moreover, they also get access to a plethora of resources, as we are parallelly building a sustainable semiconductor industry 4.0 ecosystem in Singapore and globally. We bring to the doorsteps of start-ups, real customers and real innovation and commercial value. While we empower startups, we are mindful of the sustainable industry 4.0 transformation the industry is undergoing"

Let-Lab SG is consistently seeking to expand its presence in the ecosystem. If you wish to be a part of the change, feel free to reach out to **viveka@uct.com** or **agmon@uct.com**

CONTRIBUTED BY

UCT | LET LAB

Deep Tech. Deep Impact.

Overcoming Challenges in the Semiconductor Supply Chain: A Framework to Unlock Growth

The semiconductor chip shortage has highlighted fundamental flaws in the supply chain. But a structured, sprint approach to transformation can deliver quick wins so the whole value chain can take advantage of growth opportunities.

To do this, companies need to rethink functions and processes, and how technology powers business. There are four main challenges to overcome.

1 Breaking down silos for enterprise-wide thinking

This is essential to respond to changing market dynamics with speed and agility. Organizations need to leverage data-driven analytics and decision support processes and tools to maximize revenue and margins.

2 Integrating legacy systems and data

With growth, especially inorganic growth, organizational processes, systems, and data need to realign. Technology investments have failed to integrate legacy landscapes and problems around master data are causing serious challenges in planning, manufacturing, procurement, and fulfilment.

3 Building supplier integration and visibility

The interdependence of the industry means many businesses rely on others to execute their networks and supply chains. This has caused major problems around core supplier integration and visibility.

4 Mitigating risks

The industry faces multiple risks in an increasingly interdependent (but often hidden) ecosystem. Firms are modernizing their traditional planning processes to evaluate risk scenarios more accurately, but they're missing the data, analytics, and talent to rapidly assess, react to, and mitigate these risks.

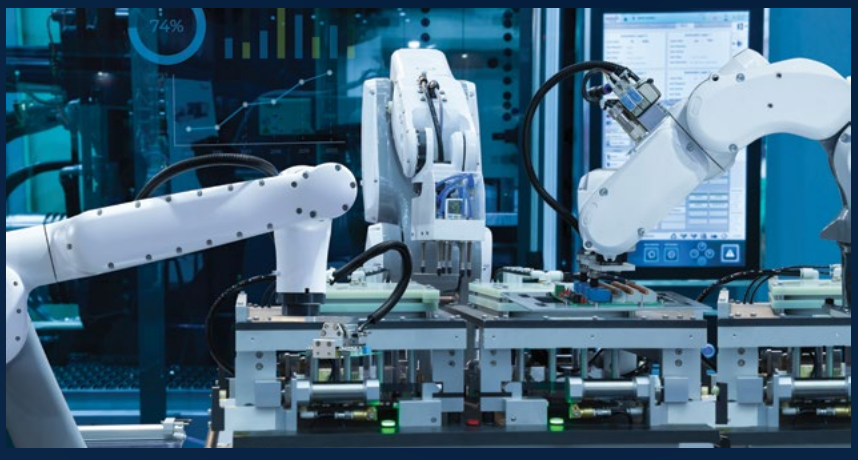
GENPACT'S SUPPLY CHAIN FRAMEWORK TO ACCELERATE BUSINESS VELOCITY

Genpact's transformation methodology rapidly assesses market opportunities and strategic objectives based on a company's current state. It finds the people, processes, technology, and data gaps that are blocking desired outcomes and recommends an operating model that will bring business wins through short sprints of change.

This is the six-step proprietary methodology we've deployed for over 70 global clients:

1. Project alignment
2. Assessing vision and current state
3. Process design
4. Digital architecture
5. Organizational design
6. Define the roadmap

Business leaders understand their supply chain challenges but often struggle to recognize which specific actions will drive meaningful outcomes using limited resources. This structured methodology delivers a fact-based operating model design aligned with a firm's strategic and operational objectives and sets milestones to ensure it delivers value.



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JOHN WAITE
Vice President, Global Supply Chain, Genpact

Why Agility is Key for Headwinds Today and Growth Tomorrow

2022 has been a year of dramatic flux for the global semiconductor industry. What started out as a year of expected robust growth, has turned into a year headed for a turbulent close. In this uncertain environment of challenges that include a looming recession, interest rate hikes, elevated commodity prices, and disrupted supply chains, it has become a business imperative to identify strategies to manage and mitigate risks.

Maintaining resilient and sustainable supply chains, unlocking value from working capital cycles, optimizing capital structures and preserving liquidity are key priorities for businesses entering into 2023, all while ensuring continued sales momentum.

CHIPS POWER OUR DIGITAL WORLD, YET SEMICONDUCTOR COMPANIES FACE MULTIPLE VULNERABILITIES

Semiconductor companies face a unique set of challenges today. The weakening global demand for consumer electronics has hit key players, as customers effect sharp corrections to inventory levels in line with weaker demand. This bullwhip effect has driven a recent series of disappointing earnings reports with results at below market expectations.

On the other hand, the automotive and industrial sectors continue to face stalled production due to the persistent shortage of nodes of 90 nanometers and above. Chipmakers are struggling to ramp up sufficient capacity in the short term to meet demand, resulting in further revenue misses. Should a demand recession hit strongly next year, excess inventory orders could lead to a situation similar to what has been observed in consumer electronics.

While demand and supply dynamics differ from sector to sector, the pressure on balance sheets and cash impacts all industries. Whether it is cash trapped in inventory, the need to push production targets, making investments and capital expenditure for the long-term or having to secure key raw materials, businesses are grappling to manage and keep cash.

The inflationary pressures on commodity prices, increasing interest rates and higher holding costs are also adding pressure on margins and earnings before interest, taxes, depreciation, and amortization (EBITDA). Not to mention, the push from customers to lengthen payment terms coupled with increased order sizes, are leading to outsized leverage and risk positions.

Post-pandemic pressures, geopolitical tensions and their resulting uncertainties are placing increased attention on Free Cash Flow and strong liquidity buffers as cushions for safety in volatile environments. Recessionary trends tend to impact Free Cash Flow first, and companies with larger cash buffers will be better able to withstand difficulties. Hence, cash vulnerability of semiconductor companies and increasing pressure on net working capital cycle pose significant challenges; at the same time, there is an opportunity to manage liquidity differently to weather the storm.

HOW ACTIVE WORKING CAPITAL MANAGEMENT CAN EASE THE PAIN

According to Citi's internal client base data of over 1,000 corporates, net working capital pressures are being felt across all industries. Cash conversion cycles have lengthened to 44 days in the second quarter of the year versus 41 days in the previous quarter. Payment time periods have shortened (67 days in Q2 2022 vs. 70 in Q1 2022), accompanied by increased Days Inventory Outstanding ("DIO") (56 days in Q2 2022 vs. 55 days in Q1 2022).

Working capital efficiency is a clear, critical objective for all companies, including semiconductor companies. The question then is how to unlock cash trapped in working capital as a valuable source of funds.

There are three areas that can support this – payables, receivable, and inventory. Using the right benchmarking and identifying supply chain finance needs is very important for companies to pinpoint gaps and unlock pockets of liquidity from their Days Payable Outstanding ("DPO"). Resilience and liquification of supply chains are core to managing working capital.

Account Receivables ("AR") financing solutions can also help monetize receivables earlier and shorten Days Sales Outstanding ("DSO"). These can be structured for small to large receivables and from bespoke to portfolio receivables. As customers push for longer payment terms, new customers get added to the sales book and longer contract cycles emerge. These are solutions that can help to future proof growth while balancing risks.

The security of raw materials has become critical and companies have resorted to increasing buffers on inventory to ensure availability of supplies. With agility being key to managing operations, there is a need to maintain a fine balance between financing inventory while maintain flexibility to upsize or downsize as required.

In a recent Citi survey of 600 participating companies across nine countries in Asia Pacific, 86% viewed relieving working capital constraints as key to stimulating revenue growth. Whether its optimizing supplier payment cycles, realizing cash faster from receivables or flexible inventory structures, these solutions serve to generate more Free Cash Flow to better manage volatility and external shocks.

SUSTAINABILITY BRINGS BUSINESS RESILIENCE, AND IT NEEDS TO BE DONE NOW

Sustainability is an increasingly critical theme for the energy and resource-intensive semiconductor industry. The pressure to go green increases as businesses across industries are scrutinizing emissions along their supply chains to meet sustainability targets.

Across the value chain and semiconductor ecosystem, multiple participants have committed to Net Zero and in relatively short timelines. As such, investing in sustainability is necessary for semiconductor companies to meet stakeholder expectations and address climate challenges. This will also need to be driven in their supply chains.

Defining the core areas where companies want their suppliers to be sustainable, having the right partners in place that to help the ongoing monitoring, infrastructure and compliance cost management are all necessary to achieving success in this area.

CITI AS A TRUSTED FINANCIAL PARTNER IN TIMES OF VOLATILITY

Citi Treasury and Trade Solutions (TTS) enables our clients' success by providing an integrated suite of innovative and tailored cash management and trade finance services to multinational corporations, financial institutions and public sector organizations across the globe.

With the industry's largest proprietary network with banking licenses in over 90 countries and globally integrated technology platforms, TTS continues to lead the way in offering the industry a comprehensive range of digitally enabled treasury, trade and liquidity management solutions.

Citi is the largest provider of supply chain finance in the world, with over 2,500 buyers globally and transacting in more than 130 currencies with over 225,000 unique suppliers. Citi's scale means we can better support large and diversified structures to address our clients' challenges and provide for enhanced supply chain performance.

Besides Supply Chain Finance, our Dynamic Discounting solution provides an automated option for Citi's buyer clients to make excess cash available to their mid-to-long tail suppliers for early payments, helping to create vital efficiencies and cost reductions, while supporting smaller suppliers. Citi's suite of structured trade solutions across Accounts Receivables and Payables Financing also help clients to optimize their working capital.

In support of our clients' priorities in sustainability, we launched our Sustainability-linked Supply Chain Finance program, which incorporates an incentivized pricing model going by a supplier's sustainability score. Under Citi's sustainable trade and working capital ("Sustainable T&WC") loans solution, clients can use loan proceeds for either environmental or social purposes.

LOOKING FORWARD

Given ongoing uncertainty in the macroenvironment and persistent headwinds, it is a defining period for semiconductor companies. These companies hold the future of the digital world, powering AI, autonomous vehicles, cloud computing, virtual reality and much more. To achieve success, become agile and ensure their businesses are future-proof, agility is key.

Efficient working capital management, responsible innovation, resilient supply chains and sustainable operations are key imperatives to achieve this agility.

Sources:
1. Internal data of 1,126 corporates from Citi's key client base globally.
2. Citi Global Perspectives & Solutions, 'Global Supply Chains – The Complicated Road Back to "Normal"', December 2021 edition and June 2022 update.
3. US chipmakers hit by sudden downturn after pandemic boom, The Financial Times
4. Global energy crisis highlights need for semiconductor sector to be more sustainable, The Straits Times
5. Chip Execs Say There's No Short-Term Fix for Supply Shortage, Bloomberg

CONTRIBUTED BY

MEGHA CHOPRA
Asia Pacific Head, Trade Sales and Client Management

Sustainability and Supply Chain Resilience Take Centre Stage at SEMICON Southeast Asia 2022

SEMICON Southeast Asia 2022, the region's premier event for the global electronics manufacturing and design supply chain, ended with a smashing success with a turn up of 13,700 visitors. Themed Forward as One – Building A Resilient and Sustainable Electronics Supply Chain in Southeast Asia, gathered industry experts for the latest developments, innovations, and trends across the semiconductor supply chain. Connecting SMEs, private-and-public partners and industry players, to explore new collaboration and growth opportunities.

President of SEMI Southeast Asia, Ms Linda Tan said, "Against the backdrop of global supply chain disruptions, the semiconductor industry has had to take a long look at its entire value chain and find solutions that would ensure business resilience and agility to adapt to rapidly evolving global circumstances along the way. SEMICON SEA 2022 therefore provides a timely and relevant platform from which industry players may gather to find solutions through dialogue, knowledge-exchange, and partnerships."

In an era of rapidly evolving and converging technologies, lies a critical need for collaboration across the broader semiconductor manufacturing and design supply chain. This is especially true in Asia Pacific — the world's biggest market for the chip industry. With Singapore's prowess in fabs and equipment manufacturing; and Malaysia's strength in the backend, test and packaging, this presents a trove of opportunities.

In light of this, Mr Ang Wee Seng, Executive Director of SSIA was invited to join a round table discussion on "Strengthening Singapore-Malaysia Value Chain to Grow SEA Ecosystem". Alongside Malaysia Semiconductor Industry Association (MSIA), and industry leaders from ASE, KLA, Advantest, Inari, the panel exchanged views on a wide range of topics. Moderated by Bettina Weiss, SEMI Global Chief of Staff, the panel touch on the synergies and how both countries can work together to capitalise on trade agreements, scale-up internationally and in turn, ensure resiliency within the SEA ecosystem.

The panel concluded that the future of SEA's semiconductor ecosystem is promising and will contribute significantly to the economic growth of the region while creating new jobs.

SEMI Southeast Asia would like to thank SSIA for their presence and sharing insights of the Singapore semiconductor landscape in SEMICON SEA 2022. We certainly look forward to more future engagements with SSIA.

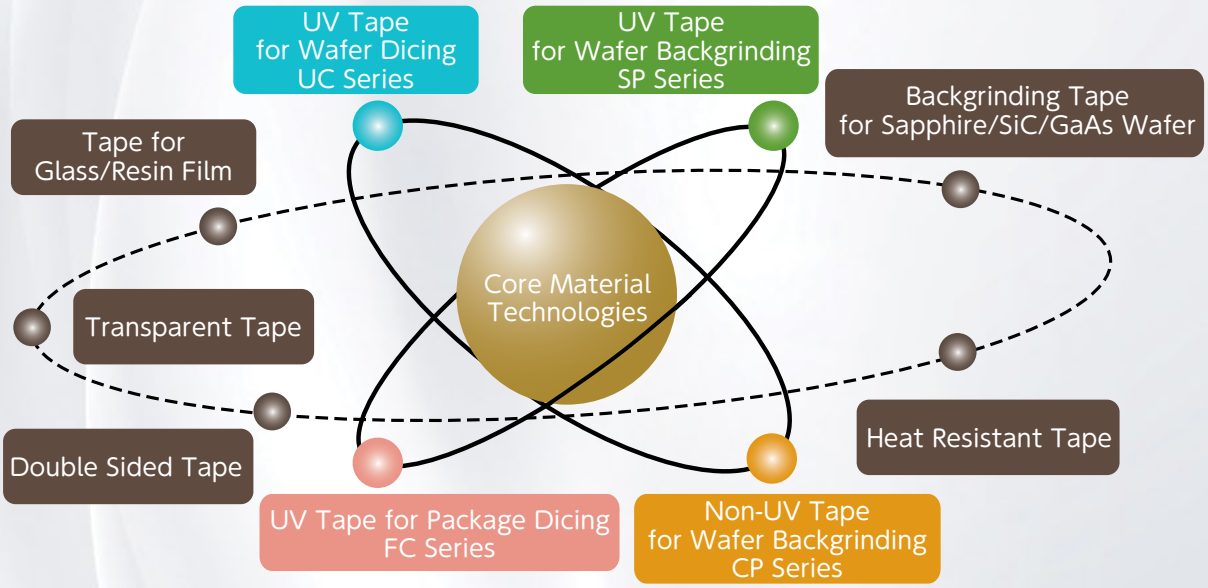
For more information about SEMICON SEA 2023, visit: https://www.semiconsea.org/

Bound to Innovate

FURUKAWA ELECTRIC GROUP

Furukawa UV tape is mainly used in processing semiconductor wafers made from materials such as silicon or glass. Its powerful adhesive strength keeps wafers in place when grinding and cutting. Once the wafer has been processed, exposing the tape to ultraviolet light (UV) reduces its adhesive strength, making tape peeling or die pick up simple.

Furukawa Electric also carries dicing die attach film—which combines dicing tape with die attach film used to attach semiconductor chips to substrates and other objects—and continues to earn the praise and trust of customers with its technologies that enable the design, development, and manufacturing of proprietary "die attach film, adhesive, and backing layers."



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