



C O R P O R A T E   R E V I E W   2 0 2 2

# JOURNEY



# INTRODUCTION

Systems on Silicon Manufacturing Company (SSMC) is a joint venture of NXP and TSMC. Manufacturing began in the year 2000 and to date, SSMC has grown into a sought after provider of 8" wafer fabrication and foundry services. SSMC is reputed to offer flexible and cost effective semiconductor fabrication solutions, with strong focus in producing specialty wafers for Automotive, Internet of Things and Portable & Wearable and Secured Connectivity applications. The company has a development center for expanding its process technology portfolio, with differentiated offerings through the utilization of leading CMOS, Embedded Flash, High Performance Mixed Signal, RF, BCD, HV and Sensor technology.

SSMC has gained recognition from its global customers for consistently delivering wafers of high quality. Our best-in class yield, delivery lead-time, quality and reliability help customers achieve first-time-right in new product introduction and time-to-market.



## OUR MISSION

Going the extra mile to deliver best-in-class foundry services

## OUR VISION

Be the world leading source of automotive quality semiconductors wafers

# CEO MESSAGE

2021 saw the semiconductor industry experienced the unprecedented threats of supply disruption as a result of the global pandemic. Fortunately, thanks to our proactive business continuity management which helps SSMC greatly in mitigating risks arise. On the other hand, we remain competitive as we seized the opportunities in the increasing global IC demand. I am proud, through hard work and dedication of our employees that our operations had been fast adopting new strategy and becoming more resilient, agile and flexible to continue serving our stakeholders. Despite of all the challenges we faced, 2021 was filled with many remarkable achievements, boundless opportunity and progress.

## EXCELLENCE MANUFACTURING & OPERATIONAL PERFORMANCE

Throughout 2021, our Fab achieved full utilization, delivering wafers with optimal efficiency and maximum flexibility. With teamwork and automation, Fab productivity has been greatly accelerated, we recorded highest daily moves and wafer outputs in SSMC history.

## CUSTOMER RECOGNITION & STRONG GROWTH

We are glad to be able to fulfil customers' demand and exceed their expectations. With the support of their, we reached 11 Millionth wafer shipment milestone and received 2 awards for our outstanding performance.



# CEO MESSAGE

## SUSTAINABILITY & CORPORATE SOCIAL RESPONSIBILITY

I am incredibly proud of how our company, with passion and compassion, has contributed to sustainability and corporate giving. As a responsible corporate citizen, SSMC strives to make impact to the global climate change as well as make a difference to our society.

- We won the Community in Bloom 2021 Gold Award for our Eco Garden sustainability efforts.
- We received Ministry of Manpower Valued Partner Award 2021 for our commitment in upskilling our employees, create better jobs and build the Singapore core through the Career Conversion Programme
- We supported the disadvantaged and vulnerable ones in our neighbourhood community.

We thank our customers and shareholders for their continued trust in partnering with us in this difficult times. A special thanks to our employees and management team for their commitment and maintaining a safe working environment, which allows us all to focus on delivering the highest quality products to our customers. Let's continue to work together to take on the new challenges and to achieve greater heights in 2022!

*Mike Young*  
CEO of SSMC

# MANAGEMENT TEAM



**MIKE YOUNG**  
CEO and Acting  
Technology Development



**JERRY THE**  
CFO  
Finance & Accounting



**IVAN HEE**  
Vice President  
Business Ops & Purchasing



**DAVIS CHOU**  
Vice President  
Operations



**CHUA HIAN CHOON**  
Vice President  
Quality & Product & Test Engineering



**NEO TECK LEONG**  
Senior Director  
Module & Manufacturing



**COLLIN TAN**  
Senior Director  
Facilities & ISEP



**ALICE CHENG**  
Director  
Human Resources

# CORE VALUES

## WORKING TOGETHER

- Be Open Minded
- Achieve Win-Win
- Drive Towards a Common Goal

## TAKING INITIATIVE

- Take Ownership
- Act With Sense Of Urgency
- Persevere To Succeed

## TOGETHER WE RAISE VALUE



## RAISING THE BAR

- Passion To Win
- Challenge Yourself, Challenge Others
- Be the Benchmark

## VALUE PEOPLE

- Build Deep Core Competence
- Empathize & Recognize
- Empower & Coach

## INNOVATE

- Think Outside Of The Box
- Drive Value Creation
- Find Better Ways

## INTEGRITY

- Courage To Speak For What is Right
- Take Responsibility
- Do The Right Thing Even When No One is Watching

# OPERATIONAL HIGHLIGHTS

## CONTINUOUSLY STRIVE TO DELIVER THE BEST PERFORMANCE

We are maintaining a best-in-class operational performance by delivering more process technologies to produce specialty wafers as well as deploying advanced manufacturing automation systems such as robotics, IoT and big data to boost productivity. Our goal is to deliver high quality wafers to satisfy our esteemed customers.



### SHIPMENT

- Reached 11 Million wafers shipment milestone in Nov
- Achieved >100% utilization throughout 2021



### NEW TAPE OUTS

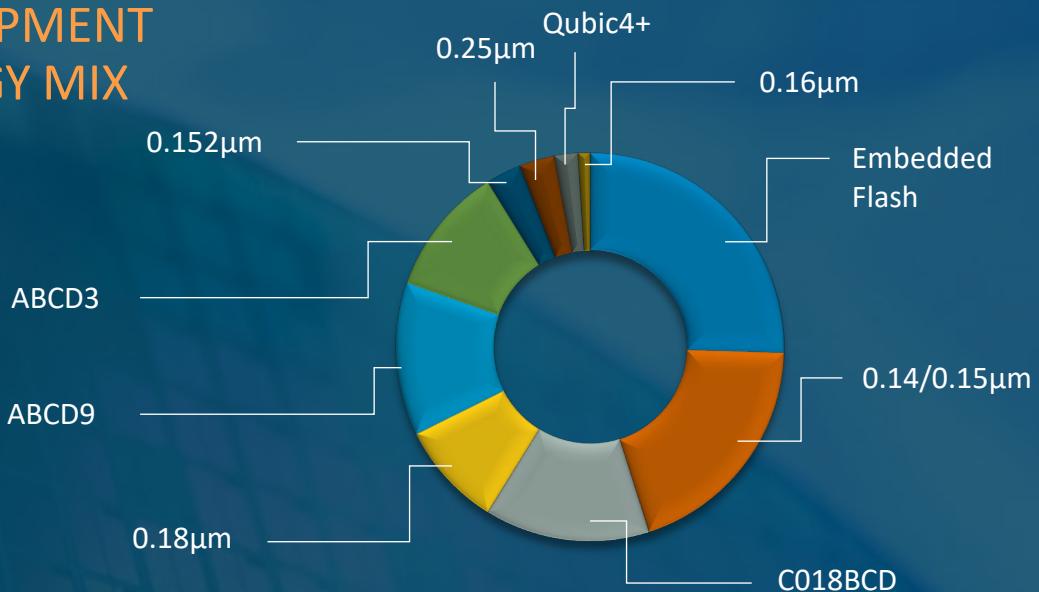
- Record bookings
- Steady expansion of our technology portfolio to produce specialty wafers



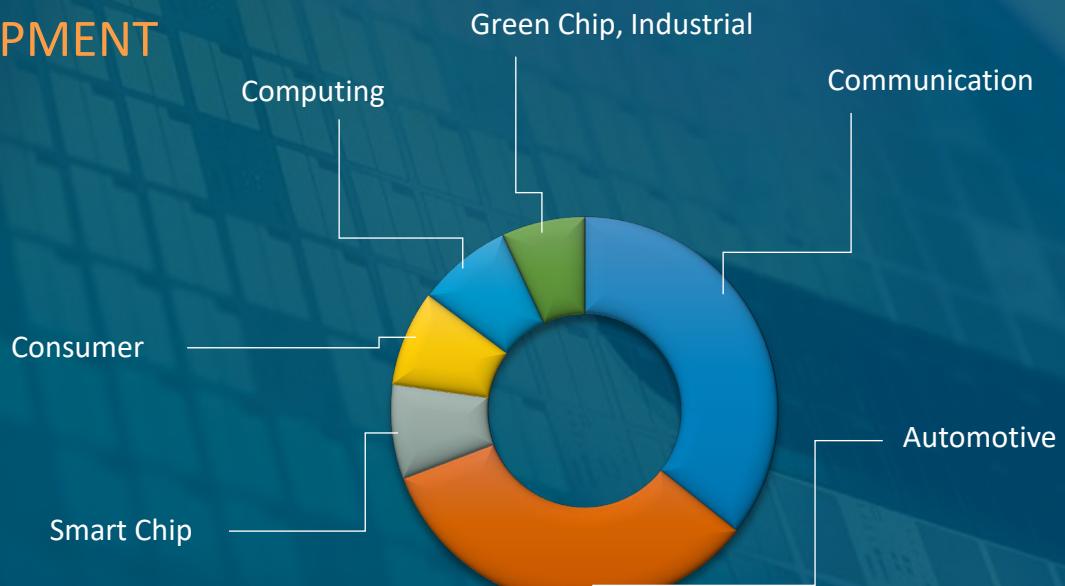
### WAFER OUTS

- Record wafer outputs
- Record Daily Moves
- Productivity increased by 30% YoY

## 2021 SSMC SHIPMENT BY TECHNOLOGY MIX

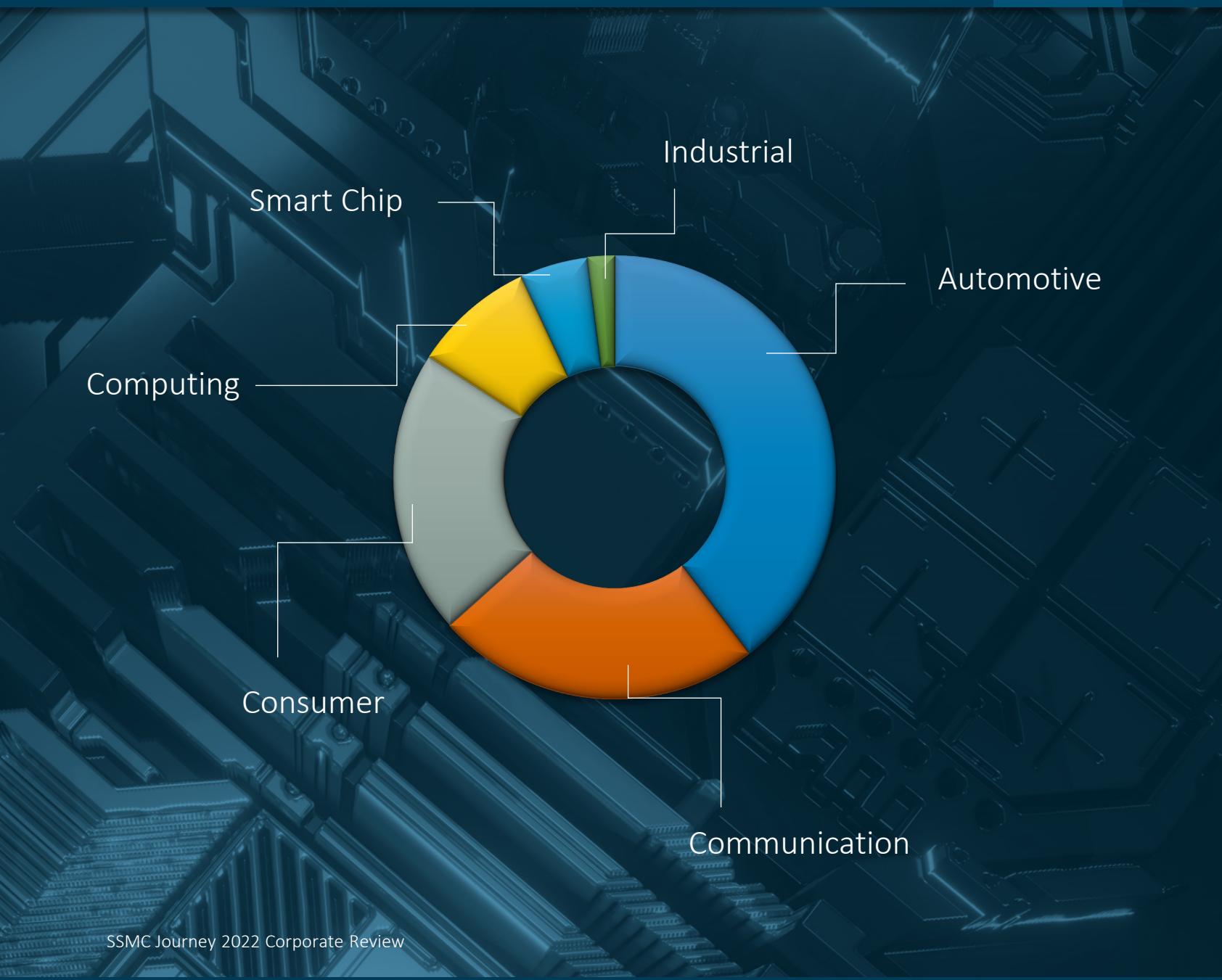


## 2021 SSMC SHIPMENT BY MARKET



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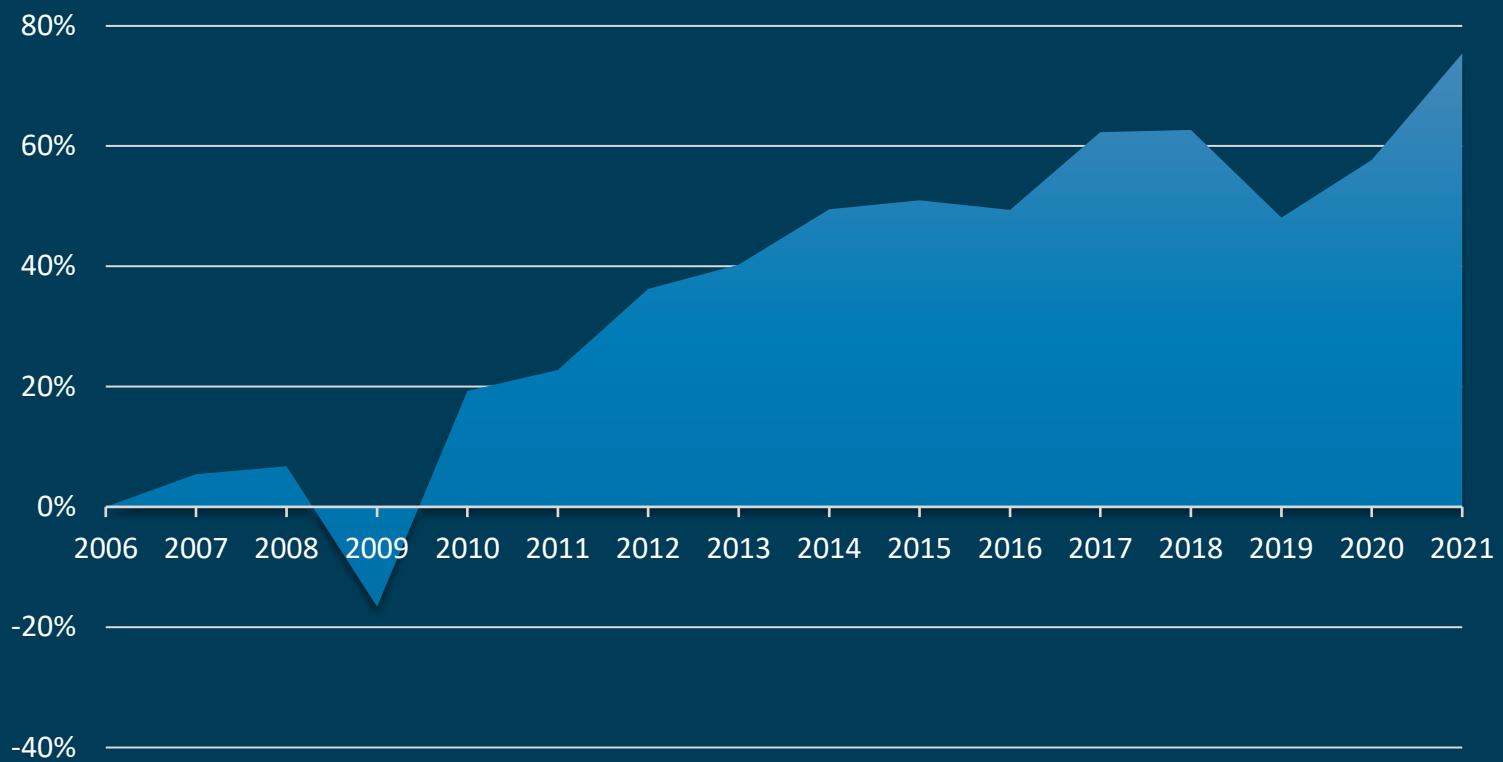
SSMC's advanced Embedded Flash and 0.14/0.15µm technologies remain extremely popular with our customers, they account for 46% of shipments. Our shipment to communication market continue to be our top segment at 36%, while automotive products contributed to 34% of 2021 shipment reflecting our traction in automotive market focus.



## 2021 NEW TAPE OUTS BY MARKET

In 2021, we experienced a good mix across all our niche technology offerings. A strong growth in new tapeout products for Automotive, Communication customers, as we accelerated the technology qualification in the QuBic5, ABCD9 and BCD Gen3 (Automotive) processes to provide an enhanced portfolio of applications.

## WAFER OUTS GROWTH TREND FROM 2006 TO 2021 (BASED ON 2006 OUTPUT)



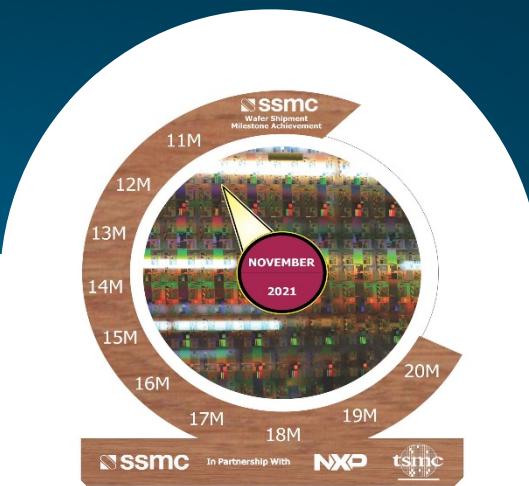
# 2021 WAFER OUTPUTS

In 2021, during the global IC shortage situation, SSMC managed to stay focus in supporting customers' demand surge. The fab was running at its maximum capacity utilization throughout 2021, and reached a historic high growth in wafer outputs.

In spite of the challenges of COVID-19 constraints, we maintained flexible and dedicated in providing uninterrupted, continuous wafer delivery and timely Fab services to our customers.

# WINNING PARTNERSHIP

OUR CUSTOMER'S SUCCESS, OUR PRIDE



Our continuous pursuit of perfection and customer satisfaction is knitted into our company culture and shaped by the Total Customer Satisfaction foundations we set. We take pride in our work and we value long-term relationships with our customers.

In 2021, we achieved winning partnership with an increased customer loyalty through our touchpoints, services and engineering support. Our Fab production flexibility was especially valuable to customers in crisis situations during the un-precedented time of COVID-19. We had received lots of compliments and positive feedbacks from customers on our team's dedication, customer-focused mindset which led us to becoming their supplier of choice.

- 2 customer awards received for outstanding performance and support
- 200 compliments received on our Delivery Flexibility: Maintaining efficient teamwork and fulfilling customer demands with sense of urgency.
- 11Million wafers shipment milestone achieved in November 2021

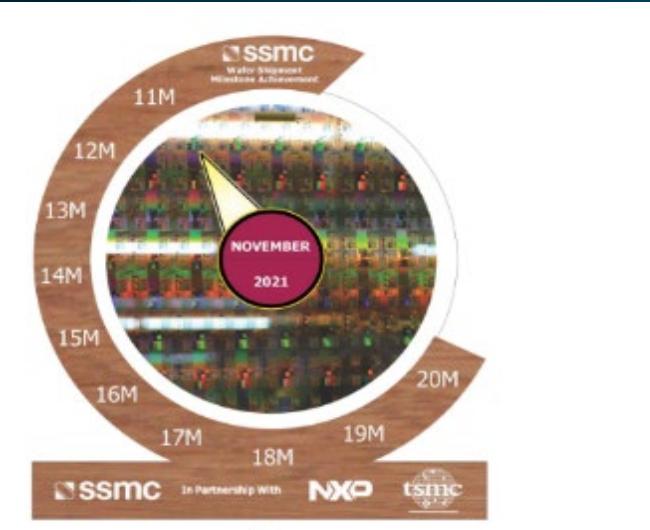
# WINNING PARTNERSHIP

## SSMC'S 11 MILLIONTH WAFER SHIPMENT ACHIEVEMENT



On 17 November, SSMC achieved our 11th million-wafer shipment since establishment. It is remarkable that we made this milestone achievement under the adverse market conditions with the COVID-19 global pandemic and disruptive impact to the semiconductor supply chain.

This auspicious 11th millionth wafer belonged to an automotive car access product and was manufactured using ABCD9 Power process. Going forward, we will stay focus in striving for manufacturing and service excellence, delivering highest quality wafers and continue to be our customers' preferred wafer fab.



We deeply appreciate all our customers' support and trust, helping us to achieve the 11 millionth wafer. Thank You!

# WINNING PARTNERSHIP

## LONG TERM PARTNERSHIP AND EXCELLENT SUPPORT AWARD



On 19 March, SSMC was Proud to be Presented a Customer Award in Recognition of SSMC & TSMC for the Strong Collaboration and Fast Response to Customer's Business Requirements.

### OUR 15 YEARS' LONG TERM PARTNERSHIP

SSMC has been supporting our US-based customer' high performance analog and mixed signal products since year 2007 for their solutions in Automotive and Consumer applications. The long 15 years of partnership is built on the foundation of trust, quality and commitment, working together to achieve the mutual strategic goals towards business excellence.

### EXCELLENT SUPPORT

The teamwork, cooperation and collaboration from the customer account team, engineering team to the fab Operations team contributed to achieve a fast, responsive and flexible solution to meet customer's demand.

# WINNING PARTNERSHIP

## CUSTOMER APPRECIATES OUR DELIVERY SUPPORT AND STRONG PARTNERSHIP.

On 28 May, SSMC was recognised with an Outstanding Supplier by a China-based semiconductor company that designs and distributes chipsets for mobile communication, IoT and industrial electronics applications.

### AWARD OF OUTSTANDING SUPPLIER 2021

- **DELIVERY SUPPORT**

Exceeding their expectation to support customer's critical 2G product delivery.

- **STRONG PARTNERSHIP**

Working closely together and helping them to overcome their key product's supply shortage amidst SSMC tight fab capacity situation.

We will continue to raise the bar, offering our unwavering support, bringing customer experience to a whole new level!

## OUTSTANDING SUPPLIER AWARD



# BUSINESS EXCELLENCE

In 2021, SSMC continued to scale new peaks in our Journey of Business Excellence by forging strong partnership, collaboration and demonstrated excellence in Health & Safety. We are closely aligned with our JV partners and have regular meetings to exchange our BCM executions success stories. Locally, we are humbled to be recognized by Singapore government agencies as the benchmark, and received requests to share our best practice among the industries.

## Marking 20 Years of Partnership with SCDF

On 22 January, Mike Young, CEO of SSMC, welcomed Singapore Civil Defence Force (SCDF) COMR Eric Yap Wee Teck, and presented a token of appreciation to COL Chew Keng Tok, second SCDF Division to commemorate the 20 year partnership.



Exercise Yellowstorm involved two simultaneous Hazardous Material (HazMat) scenarios. Our Emergency Response Team heroes and heroines were able to sharpen their operational knowledge, skills and enhance our readiness in emergency response. So that we can ensure business continuity to support all our customers.



## Ministry of Manpower Valued Partner Award

On 26 November, Mr. Mike Young, SSMC CEO, was bestowed the MOM Valued Partner Award by the guest of honour, Dr. Tan See Leng, Minister for Manpower and Second Minister for Trade and Industry in Singapore. In the presence of 300 physical and virtual attendees, a total of 10 outstanding partners, from private sector (DBS bank, SSMC), government tripartite alliances (SNEF, NTUC, SBF) and Non-Profit Organizations, were recognized for demonstrating efforts in supporting the local workforce, making work environment safe, inclusive and contributing to the fair and progressive employment best practices. SSMC has been a strong supporter of our programmes and initiatives, in particular helping to reskill PMETs (Professionals, Managers, Executives and Technicians) to take on value adding jobs in the Electronics & Semiconductor sector through the Professional Career Programme.

## SSMC Bestowed with Partner-in-Education Award

SSMC was bestowed the Partner-In-Education Award, during the Graduation Ceremony at Temasek Polytechnic (TP). The guest of honour, Dr. Mohamad Maliki Bin Osman, Second Minister for Education & Foreign Affairs, presented the award to Alice Cheng, HR Director, for making a significant contribution to TP in the following 3 areas:

- Providing Valuable Industry Learning Experience
- Enabling Semiconductor Industry 4.0 Collaboration projects to prepare talents for the 21st century
- Academic Partnership with TP in the Continuing Education and Training (CET) programs.



# SUSTAINABILITY

## SSMC ECO GARDEN WINS Double Awards



In November, SSMC Eco Garden received double awards from National Parks Board of Singapore which are:

- **COMMUNITY IN BLOOM 2021 GOLD AWARD**
- **ACHIEVEMENT RIBBON FOR OUTSTANDING EDIBLES – GROWING COMMUNITY GARDEN.**

This recognition represents the culminating years of fruitful harvest such as the 3KG papaya and 10.2KG winter melon leading to enormous growing efforts and success. These awards showcase SSMC's achievement in cultivating a sustainability culture, working towards our Eco-Vision for the cause of preservation and conservation of our environment.

"The numerous awards the Eco Garden has received over the years are the results of the dedication and teamwork among the members of the gardening interest group. We spend time after office hours to care for the plants in the Eco Garden and I am always thrilled when the fruits and vegetables are ready for harvest. It is rewarding to see the transformation of our Eco Garden and how people admire the beauty of it. I am truly glad to be able to share my knowledge of gardening with colleagues, creating a sense of community", said Michael Lim (Facilities Engineer), Vice Chairman of Gardening Interest Group.



# SUSTAINABILITY

## MITIGATING CLIMATE CHANGE: SSMC INITIATIVES

### SSMC TURNS OFF LIGHTS DURING EARTH HOUR

#### ANOTHER YEAR OF CLEAN ENERGY HARVESTING

In December, SSMC reached the first year anniversary of our clean energy harvesting. This is the latest initiative we have embarked on in making a green and sustainable future a reality. To further mitigate climate change and to conserve and preserve our environment, we continue to innovate in our energy saving techniques while pursuing our Eco Vision journey.



#### EVERYDAY IS EARTH DAY

On 27 March, SSMC observed Earth Hour 2021 by switching off all non-essential lights for 1 hour, from 8.30pm to 9.30pm. SSMC has always been active in corporate social responsibility for the larger community, being relentless in its dedication towards environmental sustainability. Thus, the energy conservation campaign was extended to all employees, encouraging them to power off at home as well.



# IMPACT ON SOCIETY

## COMMUNITY OUTREACH: SSMC DONATES TO NECDC

On 25 May, SSMC presented a donation of S\$8,000 to North East Community Development Council (NECDC) to support Dedicated NE Ambulance Programme in providing ambulance transport service for needy residents with mobility difficulties to attend the medical treatments for their chronic illnesses. The SSMC cheque was presented by Alice Cheng, HR Director & SRC Sponsor, to NECDC General Manager, Kelvin Thong. Together with SSMC's contribution, the Dedicated NE Ambulance Programme exceeded its combined donation target to reach well over S\$53,000 and can provide more than 800 rides (return trips) for the underprivileged!





## SSMC NURTURING FUTURE TALENTS IN THE 21ST CENTURY

SSMC is honoured to participate in the graduation ceremony of the class of 2021, from the School of Engineering, Diploma in Electronics, in Temasek Polytechnic. The Top 3 graduates received medals and subject prizes sponsored by SSMC to reward them for their outstanding results.



SSMC is also an active host to industrial visits, career tours and we offer internship opportunities for the students to gain insight in semiconductor industry.

## CELEBRATING A DIVERSE AND INCLUSIVE CULTURE IN SSMC

On 8 March, SSMC celebrated International Women's Day in-house. With nearly 50 participants gathered to empower women and #ChooseToChallenge; 12 women were honoured in the event. Our management also showed commitment in building an inclusive and supportive environment, and they pledged with everyone for creating awareness on gender equality.

### EMBRACING DIVERSITY AND EMPOWERING WOMEN

Today, SSMC has 41% of women in our workforce, we will continue to focus on promoting more women into technical and leadership positions. A diverse workforce is an innovative workforce and is adding to our competitive advantage. Our management team is committed to support and empower our female workforce by building an inclusive and supportive environment for women to grow professionally and personally.



**International Women's Day**

**“**

This IWD movement is a catalyst to spark awareness. If everyone can #ChooseToChallenge, we don't need to wait for 100 years to achieve gender equality.

**ALICE CHENG**  
HR DIRECTOR

### International Women's Day Nominees



## INTERNATIONAL WOMEN'S DAY



# JOURNEY AHEAD

Moving forward, we strive to deliver best quality and high performance wafers for our customers. We will power ahead with Automotive Quality Excellence, Manufacturing Excellence and engaging People Development in our continual pursuits to be a best-in-class wafer fab.

- We will continue to leverage on our strength in Business Continuity Management to manage risk for all our stakeholders by staying agile and resilient in all aspects of our business, with safety as our number one priority.
- We are committed in delivering automotive quality wafers.
- We will continue to offer more technology options with our investment in specialty processes to our customers.
- We are expanding our manufacturing capacity to better serve our customers and support their growing demands.

We anticipate another enthralling journey with you in 2022, growing our business strongly together!

**OUR JOURNEY CONTINUES...**



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