

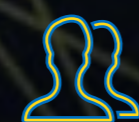


M A L A Y S I A N P A C I F I C I N D U S T R I E S B E R H A D

I N V E S T O R P R E S E N T A T I O N

Q 4 F Y 2 0 2 3 ( A p r - J u n ' 2 3 )

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# Business overview

MPI – A MEMBER OF THE HONG LEONG GROUP

## Hong Leong Group and MPI

- The Hong Leong Group was established over 50 years ago and is one of the largest conglomerates in Asia
- Carsem and Dynacraft are operating companies within Malaysian Pacific Industries, which is a part of the Manufacturing & Distribution Services segment of Hong Leong Group
- Carsem was acquired by Hong Leong over 30 years ago
- Carsem has 49 years experience in semiconductor assembly and testing
- Today, Carsem is one the most trusted and recognized names in the Outsourced Semiconductor Assembly & Test (OSAT) Industry

## Hong Leong Group Holdings

- Banking & Financial Services segment (2) is the largest segment with over 300 banks in Asia including insurance services
- Property Development & Investment segment (3) builds and manages commercial and residential real estate around the world
- Hospitality & Leisure segment (4) is comprised of hotel and casino operators in Macau and Las Vegas
- Hong Leong continues to grow by acquisition and owns more than 50% stake in each of their group companies

### The Hong Leong Group One of the Largest Conglomerates in Malaysia





# Financial performance snapshot

STRONG FUNDAMENTALS CREATE BUSINESS RESILIENCE IN TOUGH TIMES

Revenue (RM million)

482

Q4 FY23

EBITDA (%)

21%

Q4 FY23

Net cash (RM million)

801

as of Q4 FY23

CAPEX (RM million)

59

Q4 FY23

Note: FY23 = July 2022 – June 2023



# Business outlook

## Semiconductor industry growth has slowed down



- Economic headwinds (inflation and recessionary risks) persist leading to sluggish end consumer demand environment (global GDP growth to drop to 3% in 2023, as per IMF);
- Weak 2023 outlook with expectations of a 11% drop in semiconductor industry revenue vs. 2022 (Gartner);
- Elevated inventory levels and dipping chip prices are fueling the slowdown in semiconductor industry

- Trends, such as the switch to battery electric vehicles, autonomous driving, vehicle connectivity;
  - Adoption of 5G, digitalisation, artificial intelligence, and sensing devices
- Robust growth in computing (servers), and in industrial & renewable energy segments;
  - Intelligent applications such as smart watches, etc.



## Long term growth drivers

## Challenges to MPI's business



- Higher costs – labour, energy, water, transportation, equipment, and raw materials from suppliers;
- Elevated inventory levels and dipping chip prices;
- End market demand drop and deferment; and
- Industrywide talent scarcity

- Prudent cost management measures such as energy consumption optimisation, freight cost reduction, etc.;
- Close collaboration with customers to ensure a healthy overall sales pipeline – short & long term;
- Capacity expansions at China and Malaysia - a reliable supply centre based out of Malaysia and China;
- Strong cash position to pursue technology/ company acquisitions to move further into advanced packaging space;
- upskilling and specialized hiring plans in place



## MPI's responsive strategy

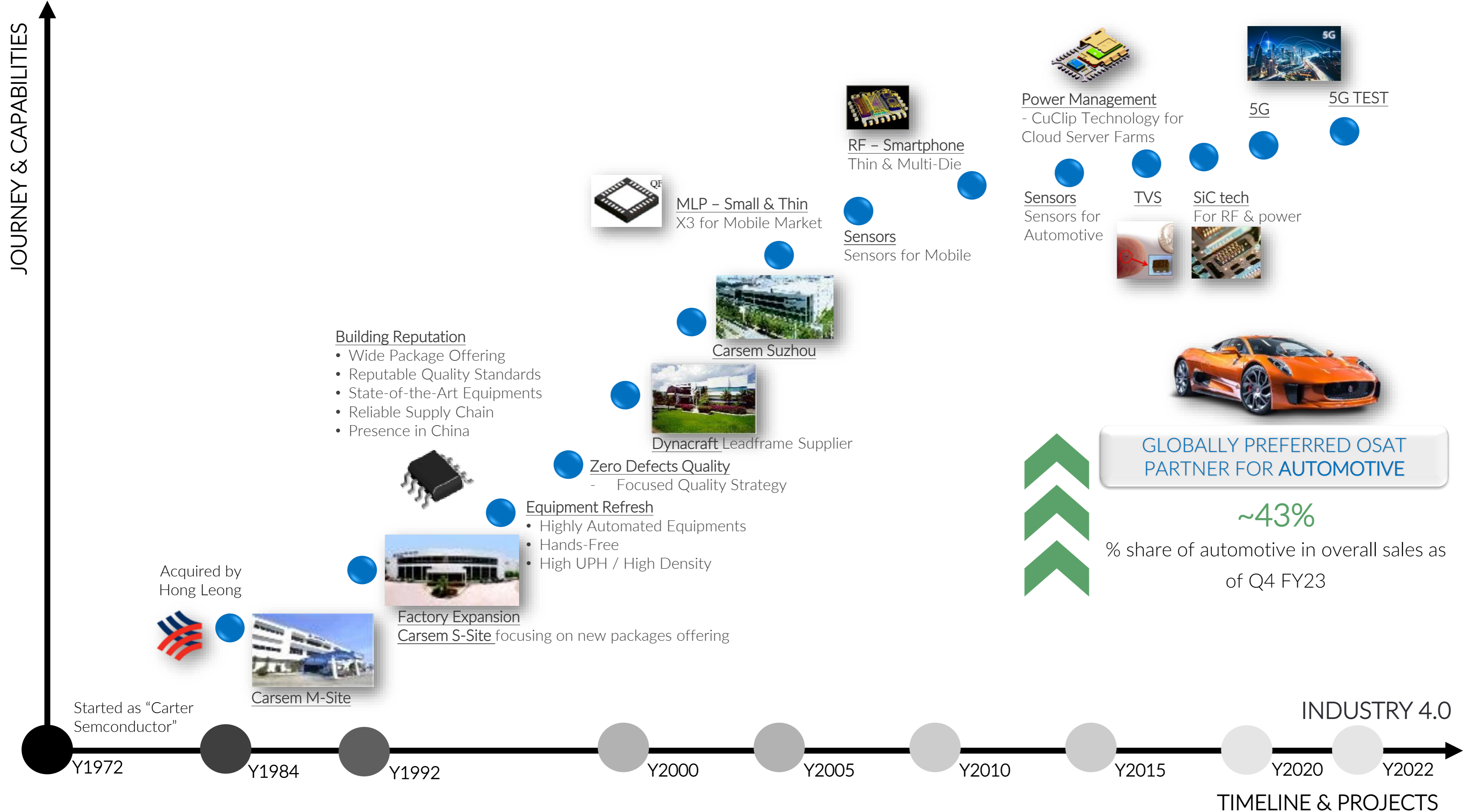
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# Our journey



- Building Reputation**
- Wide Package Offering
  - Reputable Quality Standards
  - State-of-the-Art Equipments
  - Reliable Supply Chain
  - Presence in China

- Equipment Refresh**
- Highly Automated Equipments
  - Hands-Free
  - High UPH / High Density

**GLOBALLY PREFERRED OSAT PARTNER FOR AUTOMOTIVE**

**~43%**  
% share of automotive in overall sales as of Q4 FY23

**Carsem**  
One of the most trusted OSAT partners globally





# Board of Directors

## YBHG DATUK KWEK LENG SAN

### CHAIRMAN; Non-Executive/ Non-Independent

- Appointed to BoD of MPI in Jul 1990, and as GMD of MPI from Sept 1990-Aug 1993; Member of the nominating committee
- Chairman of Hong Leong Industries Bhd., Hume Industries Bhd., and Southern Steel Bhd.; Director of Hong Leong Company (Malaysia) Bhd

## YBHG DATO' MOHAMAD KAMARUDIN BIN HASSAN

### Non-Executive Director/ Independent

- Mar 2015: Appointed to board of MPI, and is a member of the Board Audit & Risk Management Committee of MPI
- Is a Director of Duopharma Biotech Bhd and Muhibbah Engineering (M) Bhd, and ManagePay Systems Bhd

## MANUEL ZARAUZA

### GROUP MANAGING DIRECTOR/ Non-Independent

- Over 25 years of experience across various manufacturing sectors
- April 2015-Aug 2016: Joined HLMG Management as its Managing Director
- Aug 2016-Present: Group Managing Director of MPI

## DR TUNKU ALINA BINTI RAJA MUHD ALIAS

### Non-Executive Director/ Independent

- Jan 2018: Appointed to board of MPI, and is a member of Nominating Committee of MPI
- Is a Director of IJM Corporation Bhd, Batu Kawan Bhd, MBSB Bank Bhd and Raja Alias Foundation
- 1992: Set-up legal firm (Wong Lu Peen & Tunku Alina); Managing Partner till 2011, Consultant now

## IR. DENNIS ONG LEE KHIAN

### Non-Executive Director/ Independent

- Nov 2014: Appointed to board of MPI; is the Chairman of the Nominating Committee and a member of the Board Audit & Risk Management Committee of MPI
- Held directorships in Shell Malaysia Trading Sdn Bhd, Champ Distributors Sdn Bhd, Lubetech Sdn Bhd, Assar Chemical Dua Sdn Bhd and was the Chairman of the Board for UMW Pennzoil Distributors Sdn Bhd.

## MS FOO AI LI

### Non-Executive Director/ Independent

- Appointed as an Independent Non-Executive Director of the Company on 1 September 2021.
- She is presently attached to CDC Consulting Sdn Bhd providing advisory work.
- Her last position in the energy industry was as the Chief Financial Officer of Hengyuan Refining Company Berhad (formerly Shell Refining Company (FOM) Berhad) from 2016 to 2019.



# Management team

MANY YEARS OF CONSOLIDATED EXPERIENCE IN THE INDUSTRY



**MANUEL ZARAUZA, GROUP MANAGING DIRECTOR, MPI**

Over 25 years of manufacturing sector experience; Previously with Siemens, Osram Opto Semiconductors, and Seoul Semiconductor



**ERIC CHEAH**  
CFO, MPI

Extensive experience across large-scale semiconductor manufacturing & in KPMG



**INDERJEET SINGH**  
GM, CARSEM S-SITE, MY

Started his career at Carsem & went on to hold various management positions



**MURALITHARAN**  
GM, CARSEM M-SITE, MY

Previously held senior leadership positions at NXP semiconductors



**RAYMOND SHI**  
GM, CARSEM SZ-SITE, CHINA

More than 20 years of experience with Carsem SZ handling operations



**CK LEE**  
HEAD, CARSEM CHINA

Started his career at Carsem & went on to hold various management positions

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# Supply chain & business model

CARSEM'S PACKAGING & TESTING SERVICES FORM A VITAL PART OF SEMICONDUCTOR VALUE CHAIN



Growth opportunities exist among margin pressures - *Advanced packaging (SiP, 3D), Industry 4.0 and downstream niches present upsides*

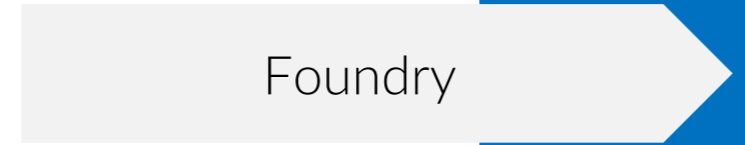


Carsem provides turnkey packaging & test services

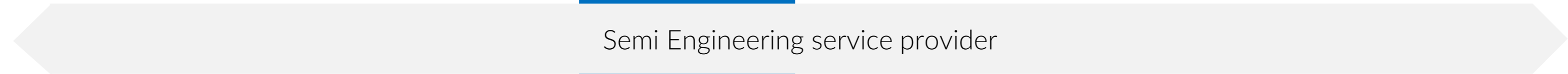


EMS expanding into engineering services and IC backend

Foundries expected to further offer broader set of services, incl. packaging & testing



IDMs applying selective 'make-and-buy' strategy



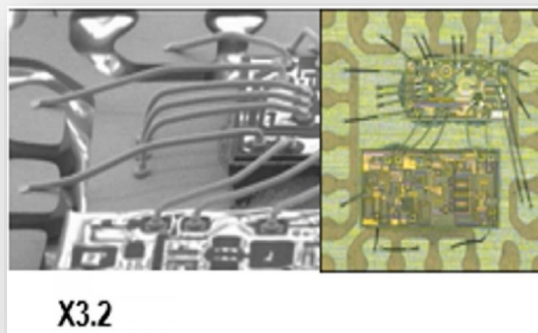
Engineering service providers covering wide range of value chain steps without own packaging & testing facilities



# Wide portfolio

COMPREHENSIVE TURNKEY PACKAGING & TEST SERVICES

ACROSS KEY APPLICATIONS

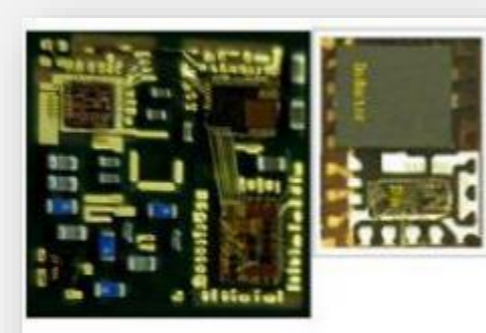


X3.2


MLP



Small Outline IC



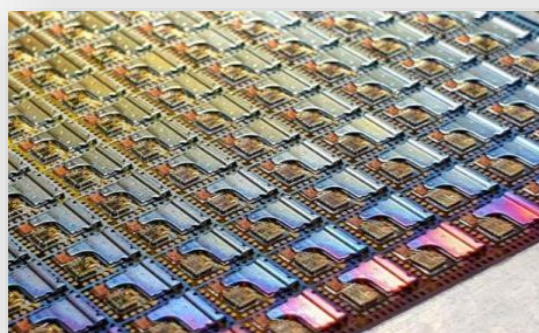
System in Package (SiP)



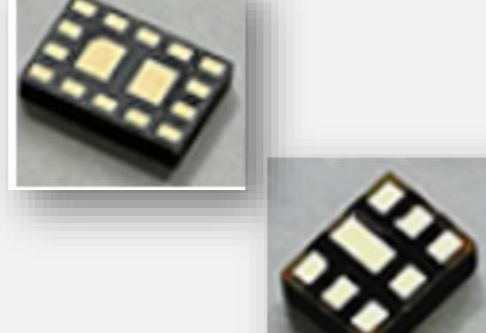
Quad Flat Package (QFP)




MEMS & Sensors



Copper Clip



Flip Chip



Transient Voltage Suppressor (TVS)



Power Management (SiC, GaN, GaN on SiC)



MICRO



Land Grid Array (LGA)



IC - PDIP, SOP packages



Test



*Automotive*

*Industrial*



*Consumer & Communications*

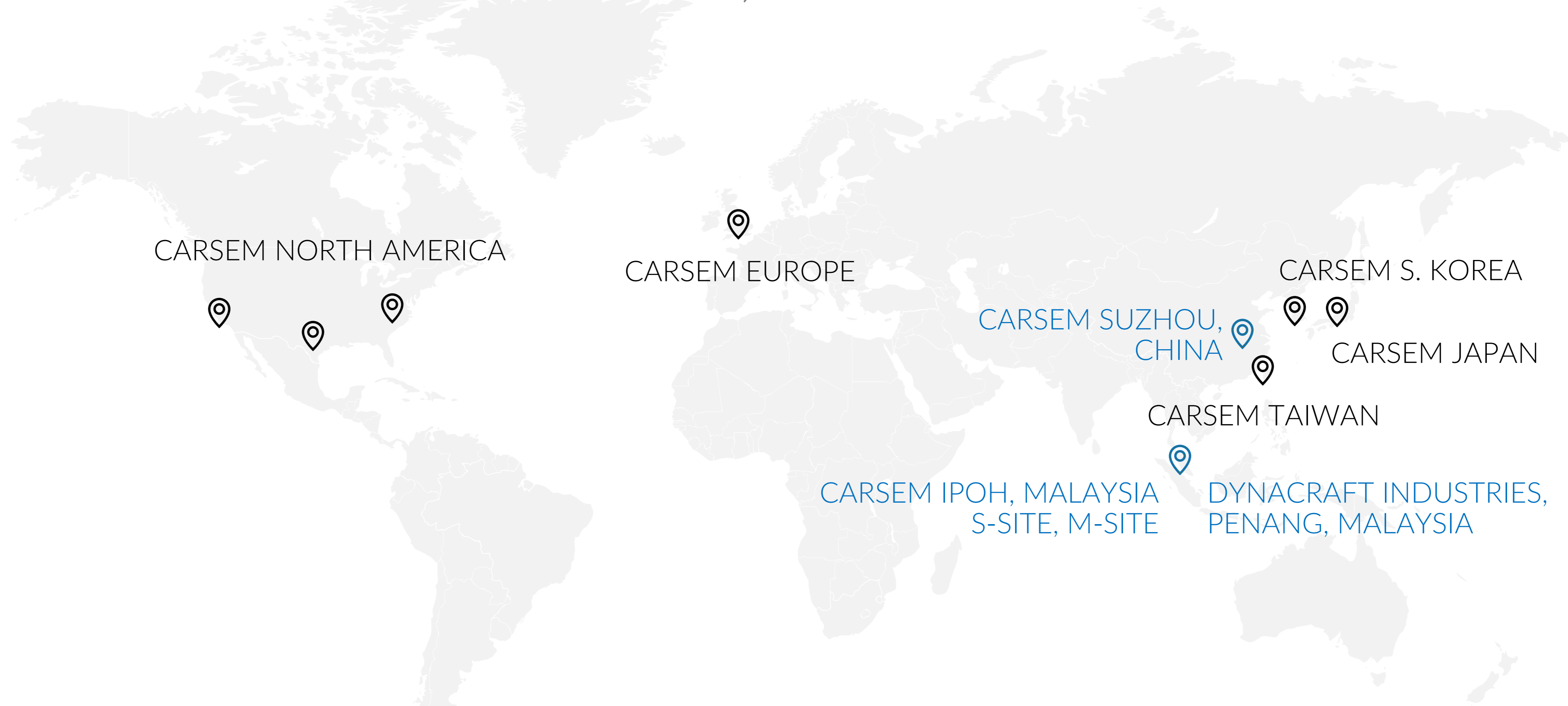
*PC/ Notebook*





# Geographic footprint

BROAD GEOGRAPHIC PRESENCE, SERVING A GLOBAL CUSTOMER BASE



LEGEND

Manufacturing plants & Sales offices

Sales offices



# Production facilities

## CARSEM MANUFACTURING SITES & BUSINESS UNITS




**Carsem (M-Site, Ipoh)**

- Floor Space: 436K sq. ft. (40,500 sq. m.)
- Workforce: 2,261 employees
- GM: Muralitharan




Automotive & Consumer

SOIC   MICRO   MSU



**Carsem (S-Site, Ipoh)**

- Floor Space: 640K sq. ft. (60,000 sq. m.)
- Workforce: 3,152 employees
- GM: Inderjeet Singh



Automotive & Industrial

PMG   MLP   TEST



**Carsem Suzhou, China**

- Floor Space: 600K sq. ft. (56,000 sq. m.)
- Workforce: 1,877 employees
- GM: Raymond Shi



Automotive & Consumer

RF   MLP   LGA   FC



# Production facilities

OUR FACTORY EXPANSION PLANS CONTINUE AT M-SITE



## Capacity Expansion Plan

Existing Factory = 143K sqft

New 4 storey Factory = 76K sqft

Level 4 = 15,800sqft

Future expansion

Level 3 = 20,000sqft

Future expansion

Level 2 = 20,000sqft

10K clean room production floor

Completed

Level 1 = 20,000sqft

100K clean room production floor

Completed

Note: 1. Level 1 & 2 received CCC approval (Certificate of Completion and Compliance)  
2. Level 3 & 4 are pending facilitisation





# Production facilities

DESPITE NEAR TERM CHALLENGES, CONSTRUCTION OF NEW FACTORY AT SUXIANG IN CHINA CONTINUES



2023-Apr  
Foundation work

2023-May  
Foundation work

2023-Jun  
Scaffolding work

2023-Jul  
L2 formwork

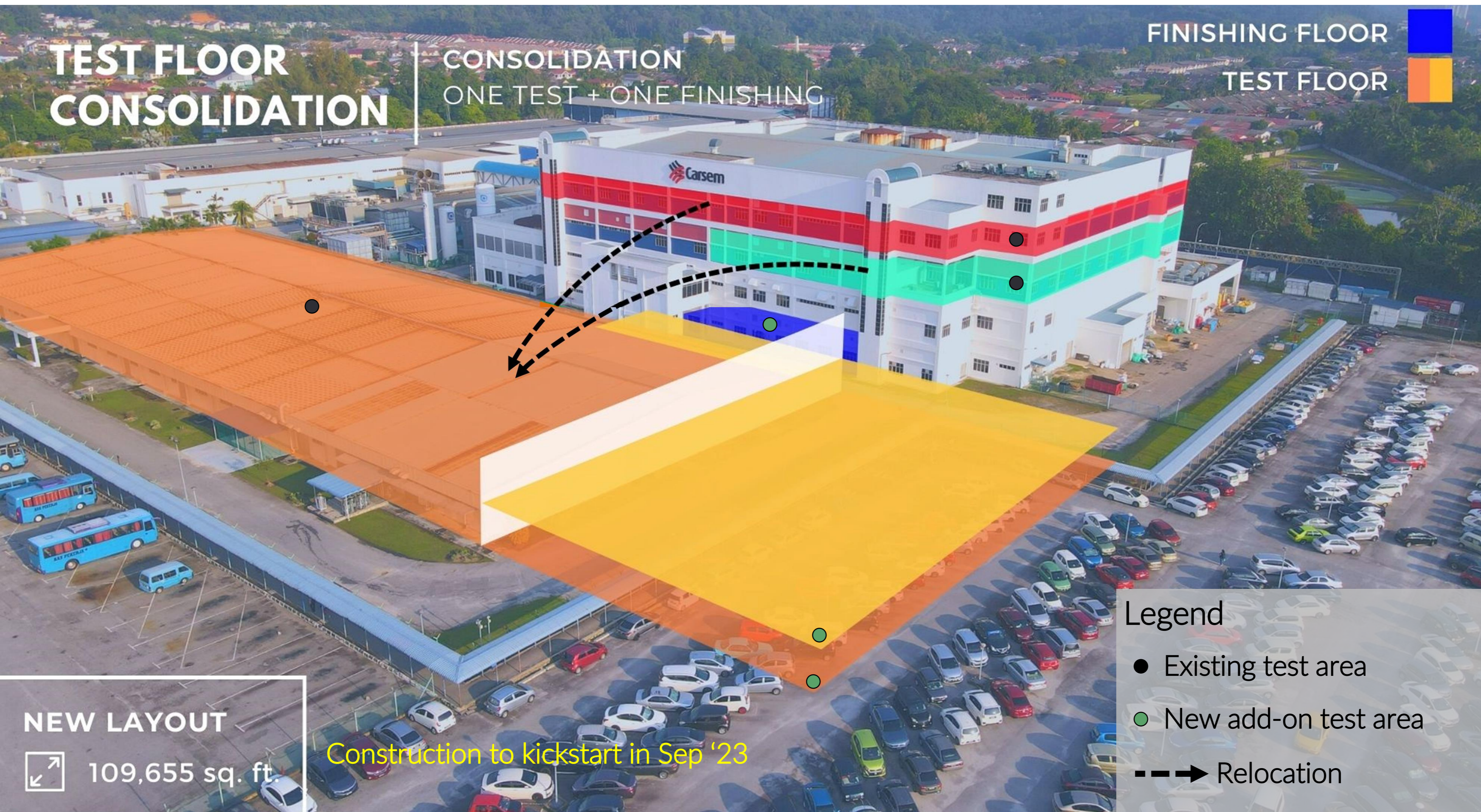
2023-Aug  
L2 slab casting

*Production expected to commence by 2025*



# Production facilities

INVESTING AT S-SITE TO STRENGTHEN CAPABILITIES FOR THE GROWING AUTOMOTIVE & INDUSTRIAL SEGMENTS



- 1 **Equipment standardization**  
Replacing current legacy handlers with newer high efficiency test handlers
- 2 **One floor consolidation**  
Expanding test floor to support the additional machines
- 3 **Test automation**  
Overhead tunnel

### Benefits

- ✓ Achieve world class OEE
- ✓ Eliminate variance of test machines
- ✓ Consolidate floor space
- ✓ Automate test operations (Industry4.0, AI)
- ✓ Develop 5G capabilities

### Legend

- Existing test area
- New add-on test area
- > Relocation

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# Sustainability performance

## FY23 PERFORMANCE SNAPSHOT

Maintained position in **FTSE4Good Bursa Malaysia Index**

and in **top-quartile of ESG ratings** amongst all PLCs assessed by FTSE Russell on Bursa Malaysia

<p>GHG emissions intensity (vs. baseline)</p> <p><b>12% lower</b></p> 	<p>Energy index (vs. baseline)</p> <p><b>10% lower</b></p> 	<p>Water index (vs. baseline)</p> <p><b>20% lower</b></p> 
<p>Gender diversity</p> <p><b>51% women in workforce</b></p> 	<p>Health and safety</p> <p><b>Zero occupational fatality</b></p> 	<p>Training</p> <p><b>11.5 hours</b> on average per employee</p> 



### CERTIFICATE OF MEMBERSHIP

This is to certify that **Malaysian Pacific Industries** is a constituent company in the FTSE4Good Index Series



**FTSE4Good**

June 2023

The FTSE4Good Index Series is designed to identify companies that demonstrate strong environmental, social and governance practices measured against globally recognised standards.

V3.0



# Sustainability at MPI

OUR APPROACH IS RESPONSIBLE & RESPONSIVE, DRIVEN BY 3 THEMES

**Better Economy**

- We create economic value for our shareholders
- We work with like-minded partners
- We prioritise safety & productivity, and offer innovative solutions to our customers

Shareholders   Customers   Suppliers

**Better Environment**

- We respect the local environment
- We strive to manage our energy consumption and GHG emissions
- We manage our waste and use natural resources with care

Energy & emissions   Water   Waste

**Better Society**

- We prioritise the safety & wellbeing of our people
- We conduct business ethically and compete fairly
- We engage with & support our communities

Employees   Business ethics   Community







**Sustainability themes at MPI**



# UN Sustainable Development Goals

6 PRIORITY SDGs MOST ALIGNED WITH OUR BUSINESS



<p><b>3</b> GOOD HEALTH AND WELL-BEING</p> 	<p>Safeguarding employee health &amp; safety is a top priority for MPI</p>	<p>MPI makes a significant contribution towards employment and economic growth</p>	<p><b>8</b> DECENT WORK AND ECONOMIC GROWTH</p> 
<p><b>5</b> GENDER EQUALITY</p> 	<p>As a global employer, MPI strives to ensure workforce diversity and address inequality</p>	<p>MPI actively focuses on innovation, technology and related infrastructure development</p>	<p><b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> 
<p><b>6</b> CLEAN WATER AND SANITATION</p> 	<p>MPI's operations strive for water conservation and wastewater management</p>	<p>MPI has a role to play in emissions control, energy efficiency improvement and waste management</p>	<p><b>13</b> CLIMATE ACTION</p> 



# Environment

## IMPROVING PREPAREDNESS AND RECEIVING RECOGNITION



*GM gembawalk to final water discharge point*



*GM gembawalk to IETS system*



*Initial discussion with NGO @ DOE to organise River Cleaning Program at Sungai Meru*



*In 2022, Carsem M was specially invited to participate in the Perak State level National Environment Day Ceremony officiated by the Menteri Besar of Perak, YAB Dato' Seri Shaarani*



*Carsem M has also collaborated with the Department of Environment to organise Environment Day and "Kempen Sembang Sungai Meru"*





# Health & safety

## EMPLOYEE AWARENESS

EMERGENCY PREPAREDNESS & RESPONSE



Safety committee meeting



Plant inspection



Plant inspection



Accident investigation



5S audit



Machinery inspection



Safety committee meeting





# Training & education

TRAINING & UPSKILLING IS AMONG OUR TOPMOST STRATEGIC PRIORITIES

Online & offline training - ISO37001 Training, Automotive Series Training, Engineer Core Competency – DOE, 8D, Customized Course – Leadership Series



ISO37001 Standard Training



ISO37001 Standard Training



Automotive Series Training



8D & 3X5 Why Training



DOE Training



DOE Training



Team Bonding Training

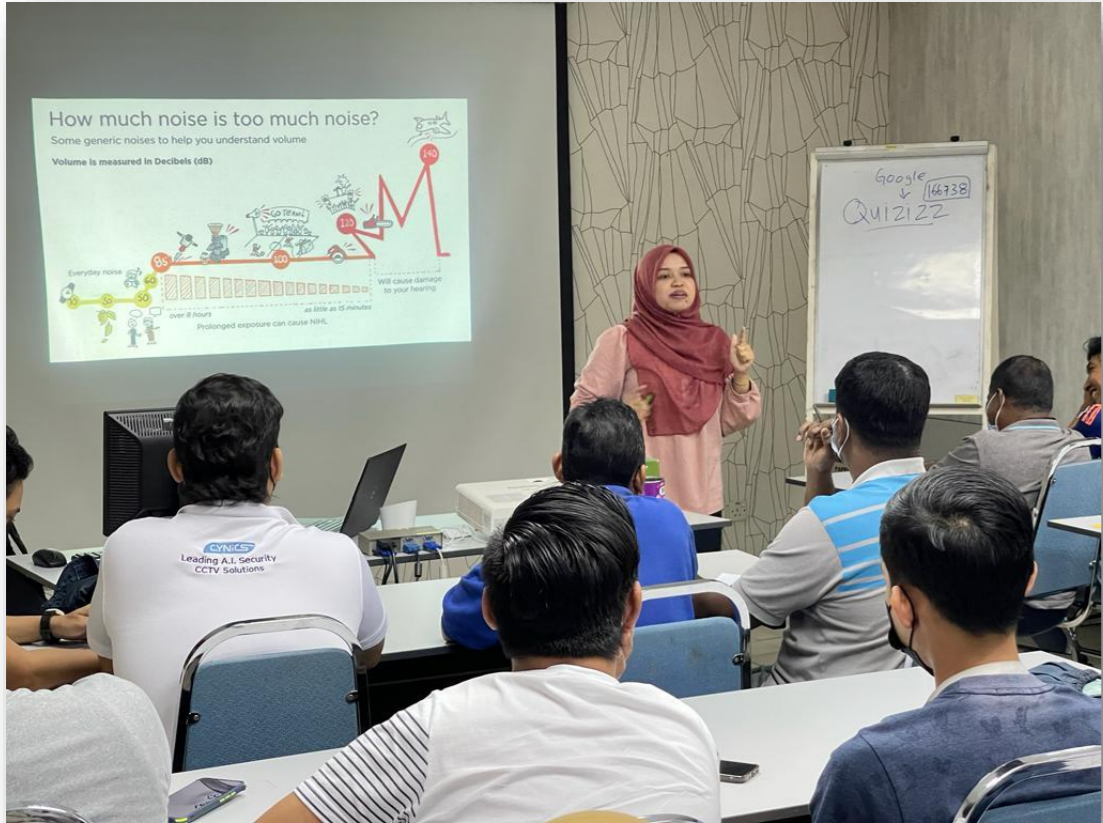


Team Bonding Training



# Training, sports & recreation

*Continuous education program for chemical handlers and noise hearing conservation*



*Carsem C.E.R.I.A & Hong Leong Sports carnival*



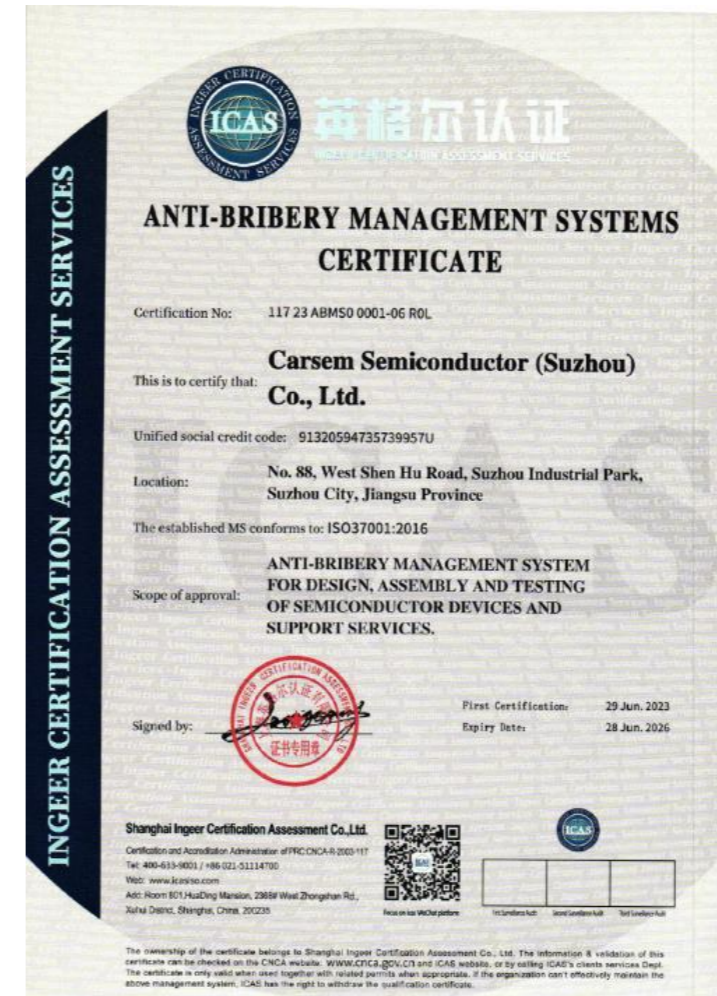


# Anti-bribery & anti-corruption

LEADING ETHICALLY & TRANSPARENTLY

### Certification for implementing Anti-Bribery Management Systems, complying with ISO 37001:2016.

Operating subsidiaries	Certifying authority	Status
Carsem M	SIRIM QAS International Sdn. Bhd.	Re-certified in FY23
Carsem SZ	Shanghai Ingeer Certification Assessment Co., Ltd.	Certified in FY23
DCI	SIRIM QAS International	Certified in FY23



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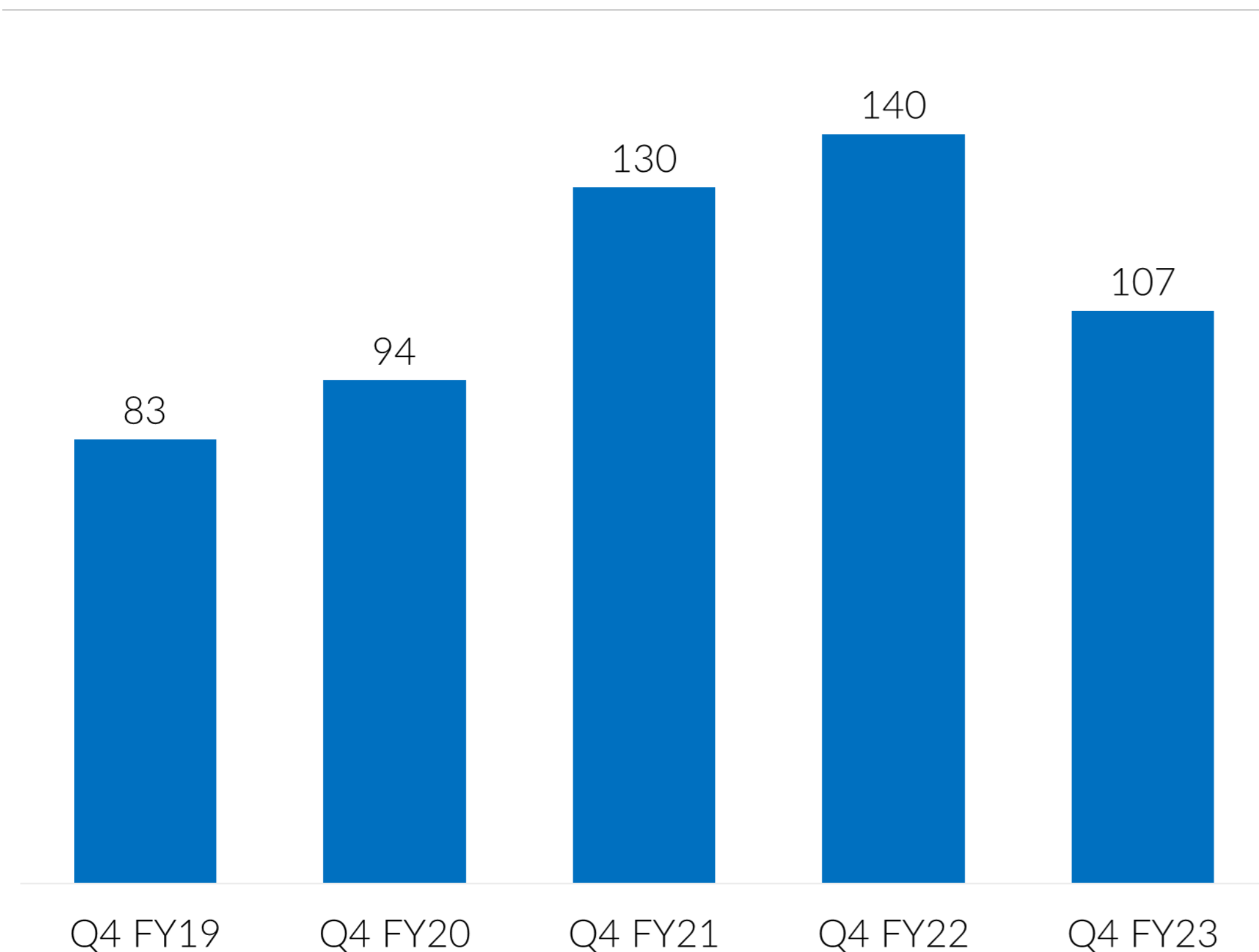
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# Industry dynamics

GLOBAL SEMICONDUCTOR INDUSTRY REVENUE IS EXPECTED TO DECLINE BY 11% IN 2023

MPI Revenue (US\$ million)



Economic headwinds persist leading to weak end consumer demand environment

- ✓ Worldwide EV car sales up by 37% annually - EV gaining market share - captured 19% of the market
- ✓ Global PC Shipment dropped drastically by 12% annually - slight pick up on quarterly basis, GaN to be the gamechanger
- ✓ Smartphone shipment fell further by 10% annually - 6th consecutive quarter of decline



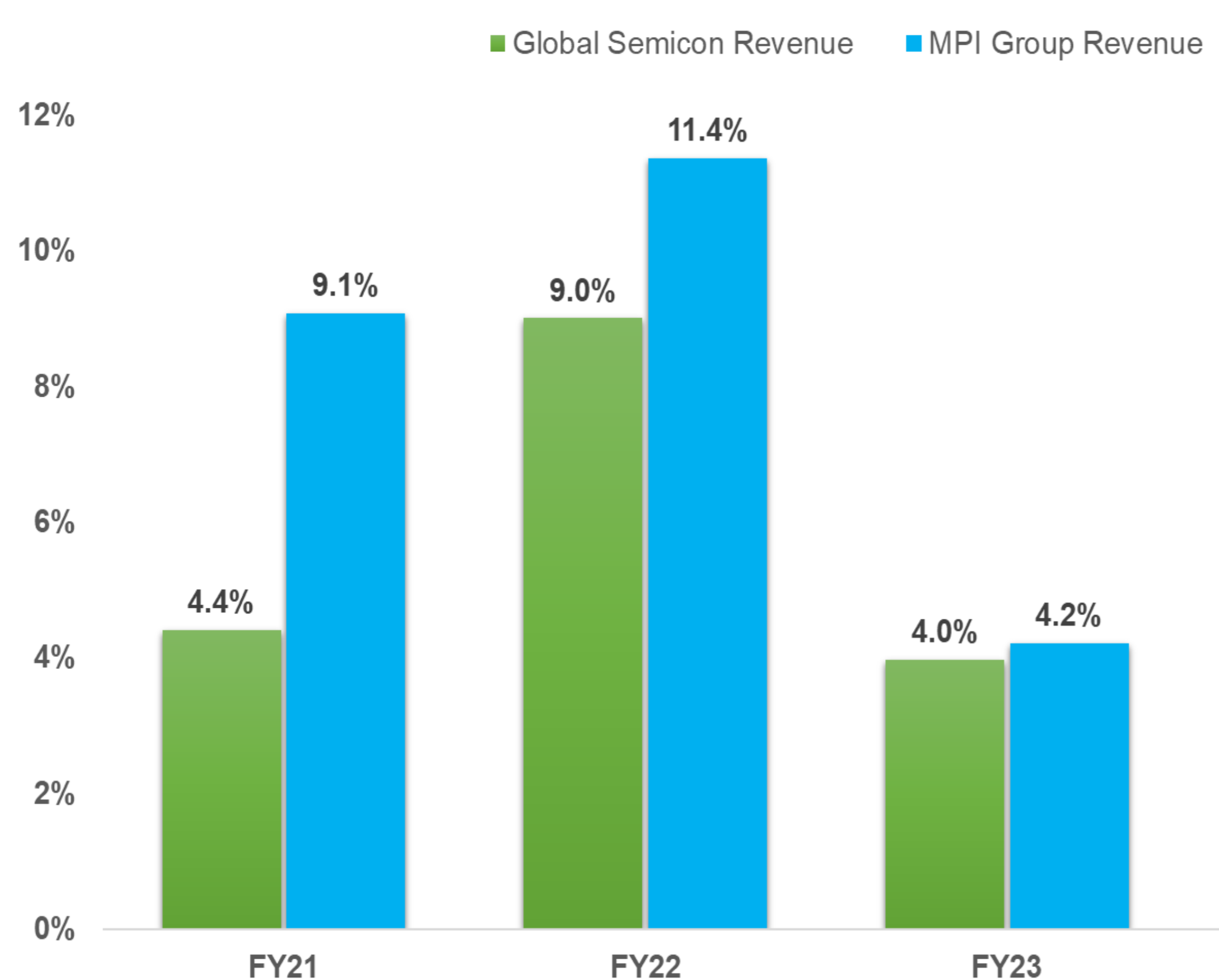
Elevating inventories & dipping chip prices, fueling the decline of semiconductor market

Source: Statista; Canalis



# Industry dynamics

MPI HAS OUTPACED INDUSTRY GROWTH EVEN IN PREVALENT MARKET ADJUSTMENTS



Base year FY20

Right strategy – market segment to play in, competitive pricing

Investments in growth areas

Anchor customers

Strong cash position



# Industry dynamics

## OTHER CHALLENGES IN SHORT TERM AFFECTING TOPLINE & BOTTOMLINE

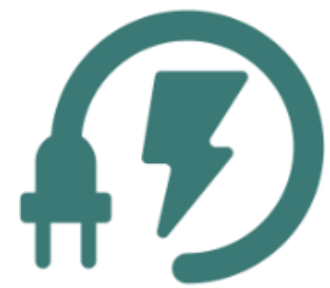
<b>Electricity rates</b>	<b>Employee wages &amp; working hours</b>	<b>Increase in machine cost</b>	<b>Steep inflation</b>	<b>Talent crunch</b>
<b>Commercial electricity tariff hike</b>	<b>Wage increase &amp; 45 hour working week</b>	<b>Machine &amp; delivery cost up</b>	<b>Rise in prices of raw materials</b>	<b>Hard to get good semiconductor talent</b>
<ul style="list-style-type: none"><li>Upgrading to efficient facility equipment, digital sensors to track electricity consumption and installing solar panels</li><li>Requires substantial investment</li></ul>	<ul style="list-style-type: none"><li>Driving plantwide digitalization &amp; floor space consolidation</li><li>Optimizing each resource to increase plant wide productivity</li></ul>	<ul style="list-style-type: none"><li>Deployed teams to plan in advance &amp; monitor material as well as machine deliveries</li><li>Carsem to avoid shipment by air as much as possible and prefer vessel to save costs</li></ul>	<ul style="list-style-type: none"><li>R&amp;D team is investing time in value engineering to optimize cost</li><li>In some cases, Carsem passes on the cost to the customers depending on the volume of business</li></ul>	<ul style="list-style-type: none"><li>Carsem is working with specialized agencies to get good talent from worldwide</li><li>Carsem is also investing in technical learnings for existing employees to upskill</li></ul>



# MPI's response

## COST PRUDENCE MEASURES – IMMEDIATE RESPONSE TO MARKET CONDITIONS

*Continuous measures are taken to make a positive impact on costs, make processes efficient and proliferate it to all the sites*



Smart Sense to monitor electricity on each machine



Digital transformation and automation initiatives for better OEE



Freight cost reduction by consolidating shipments bi-weekly



Alternative energy – Solar



*Ongoing discussions with vendors to install solar panels on the rooftop*



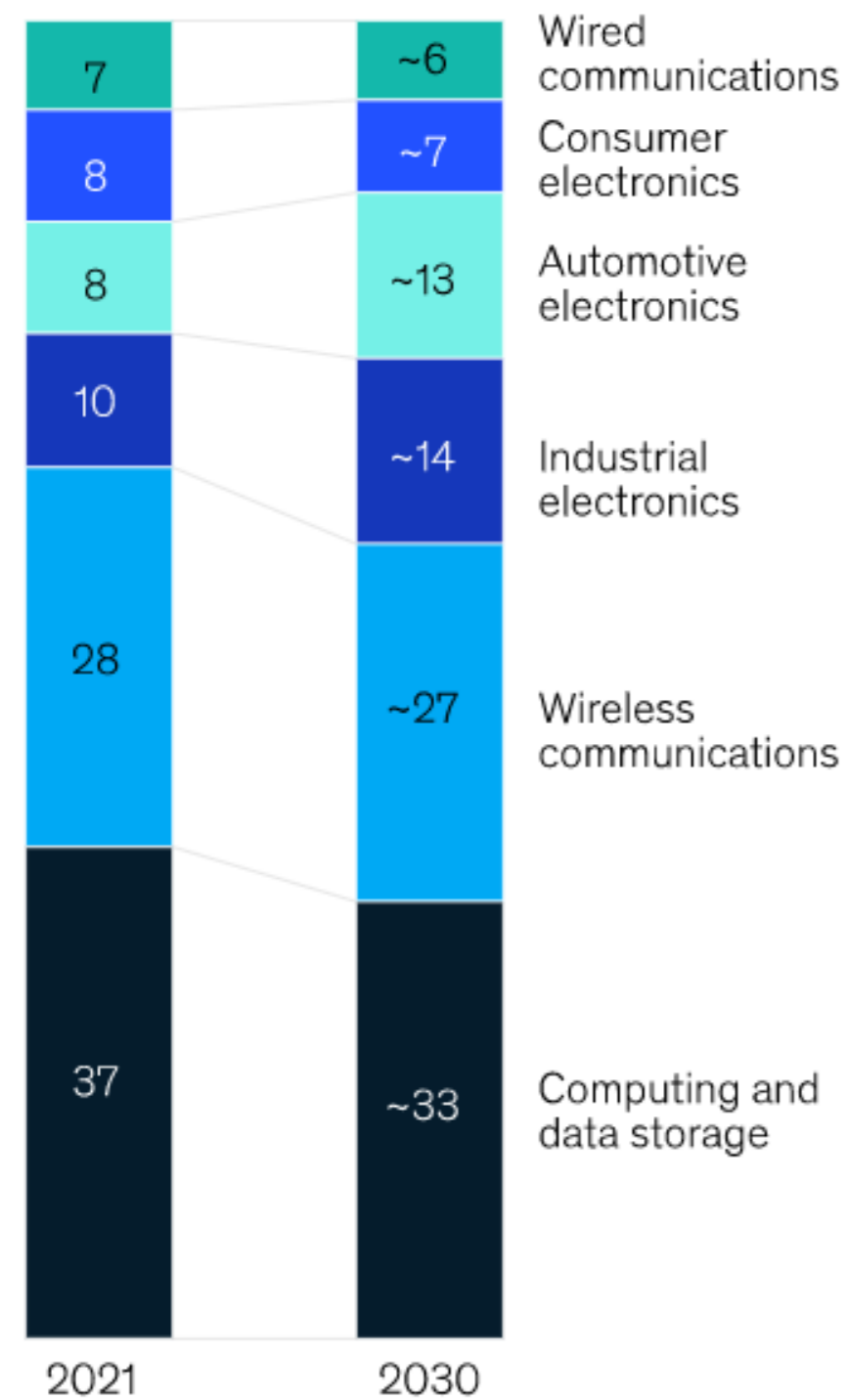


# Industry dynamics

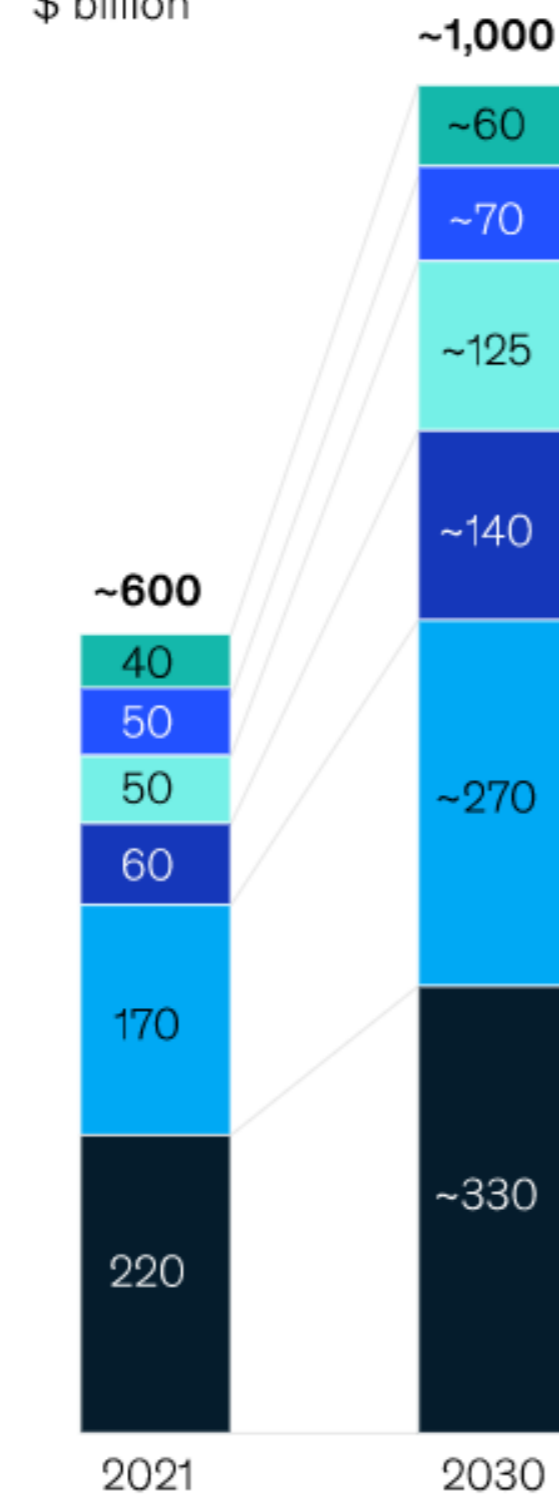
LONG TERM SEMICONDUCTOR DEMAND IS SET TO GROW, DRIVEN BY AUTOMOTIVE AND INDUSTRIAL SEGMENTS

## Global semiconductor market, 2021-30

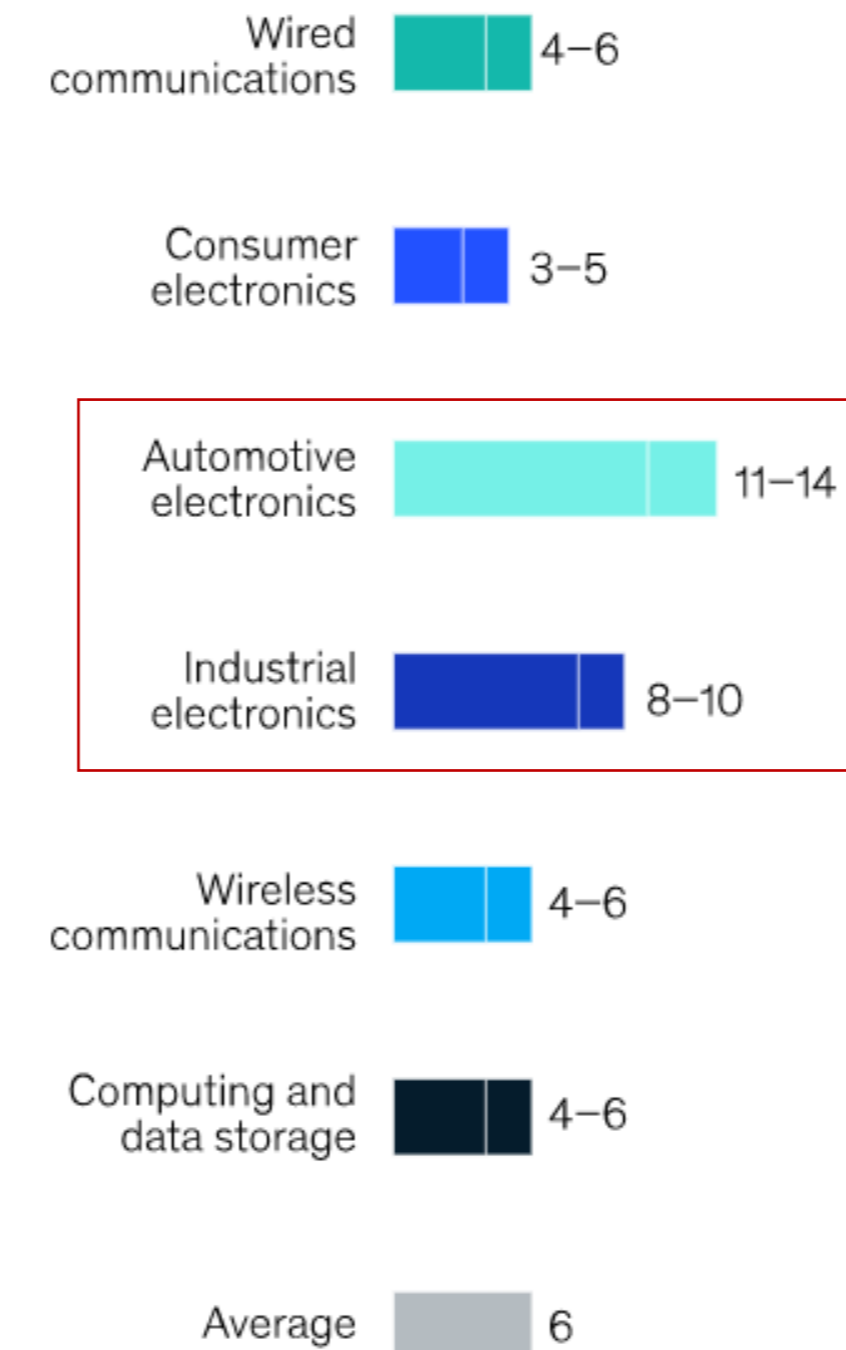
Market by vertical, % share



Market by vertical, \$ billion



2021-30 % CAGR



## Significant opportunities ahead

### Electric vehicles

- 30% of global vehicles will be electric by 2030 (~ 7X vs. 2021)

### SiC/ GaN technology

- SiC based EVs are expected to grow from 1 mil units in 2021 to ~13 mil units by 2030, driving total auto SiC market expansion
- Significant spending is announced on front-end but not as much on the backend

### 5G connectivity

- Prospects beyond phone - automated factories, AI, smart cities, AI enabled cars, etc.

### Semicon investments

- Substantial public and private spending is announced, globally

### Strong pipeline

- Tech. advancements in automotive and power segments augur well for Carsem's strategy aligned with these segments

Source: McKinsey



# Growth strategy

OUR LONG TERM VISION IS TO BE THE LEADING OSAT FOR AUTOMOTIVE, DRIVEN BY 4 STRATEGY TENETS



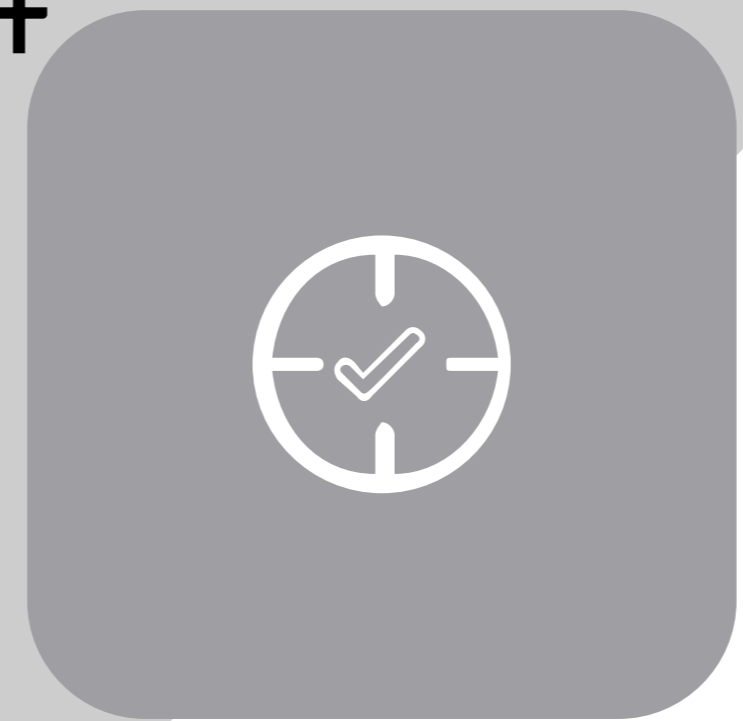
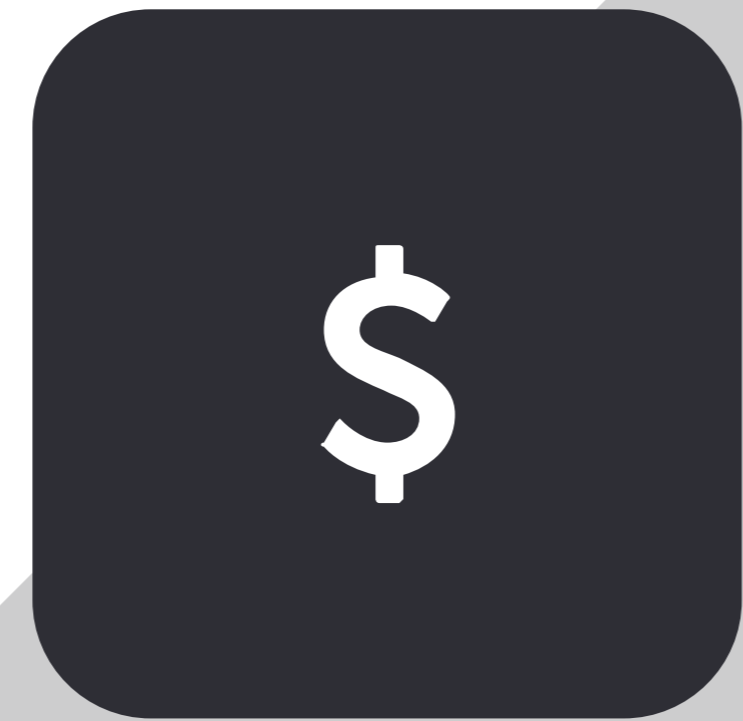
## Sales

- Strategic sales across application & geography segments
  - Sharp sales pipeline management



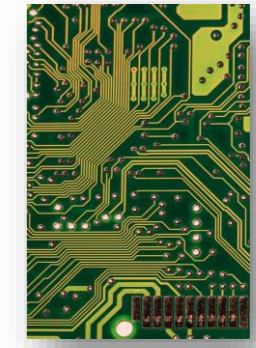
## People

- Strategic workforce – restructuring & hiring
  - Upskilling, training
- Covid mitigation, Employee engagement

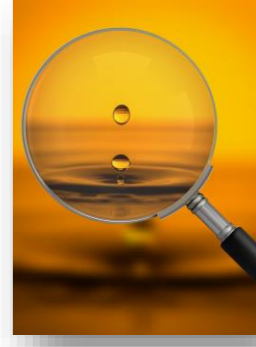


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## Technology

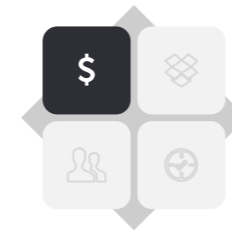


- Investing in SiC, MEMS sensors, GaN, 5G testing
- Advanced packaging – inorganic options for modules/ 3D printing/ design house
- Robust R&D; own product (TVS)



## Quality

- Zero Defects Culture
- Automation, high productivity
- State-of-the-Art Equipments



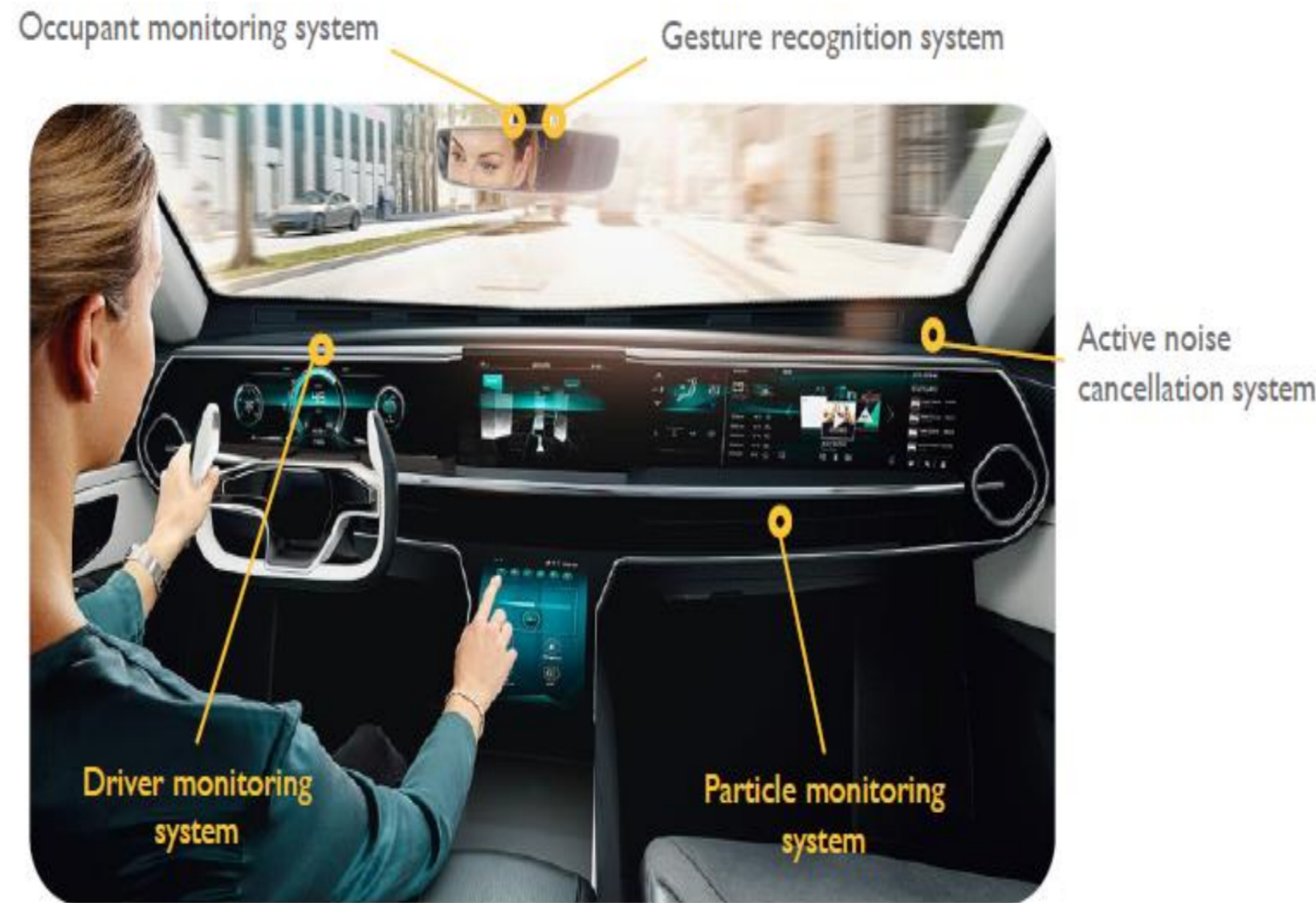
# Sales – Target segments to play in

MPI MADE A STRATEGIC MOVE TOWARDS UPCOMING TECHNOLOGIES

Continued investments in complex packaging technologies



SiC adoption in EVs is gaining momentum – Experience of handling SiC packaging will lead the way



Customized sensors used for monitoring several data points – multi-functionality in small, cost-competitive, customized packages

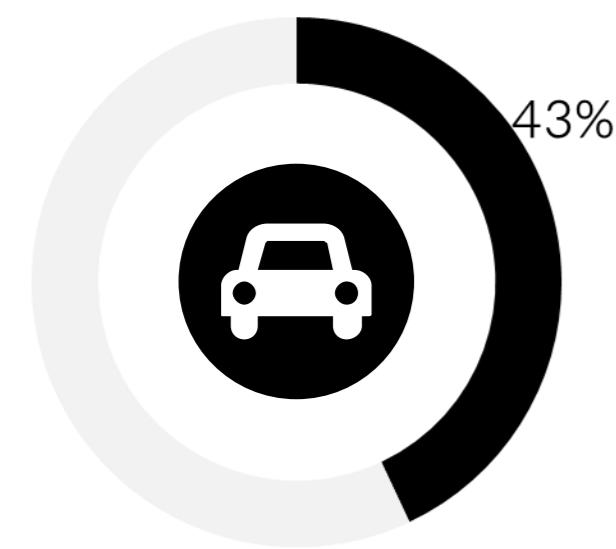


5G technology has a bright future – it is small for Carsem right now but in the next few years it will ramp up



# Sales – Revenue composition

AUTO REMAINS STRATEGIC – GROWN FROM ~29% IN FY18 TO 43% OF OUR SALES NOW



% Revenue share

**AUTOMOTIVE**

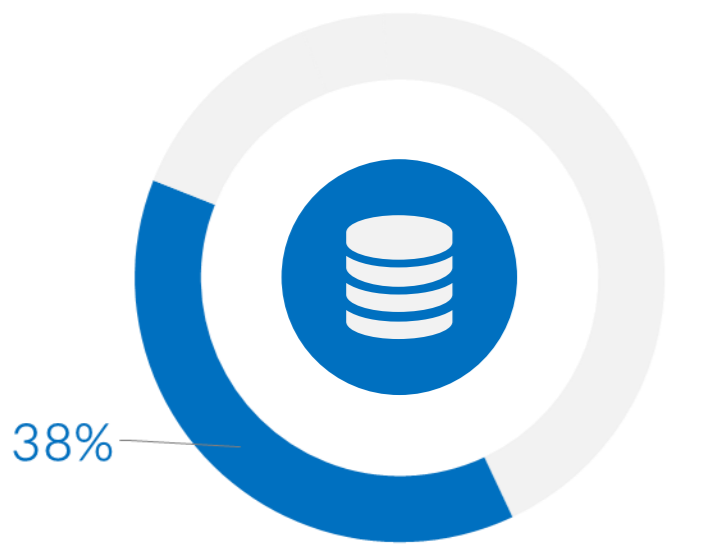
- Long term growth is driven by **electrification, ADAS/ AD, safety, and connectivity** trends



% Revenue share

**CONSUMER & COMMUNICATIONS**

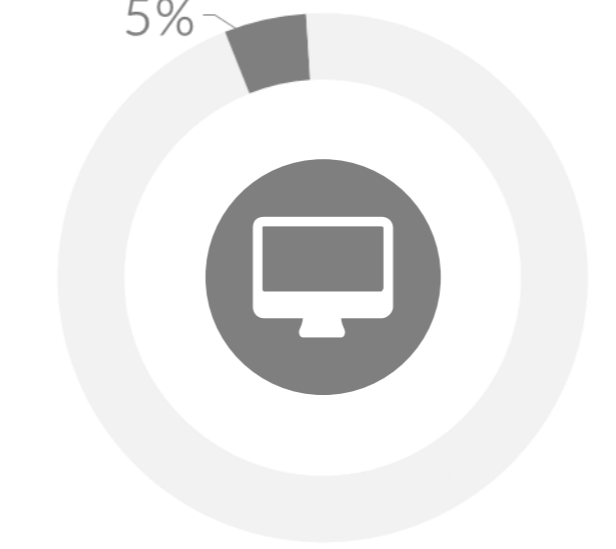
- **5G and IoT** are unlocking multitude of use cases – smart cities, healthcare, etc.
- Semiconductor demand is likely to ride this wave with need for **advanced packaging solutions**



% Revenue share

**INDUSTRIAL**

- With **Big Data and Industry4.0** gaining further momentum, need to power data centers & servers is growing
- This **high power & high efficiency** requirement is fueling new innovations

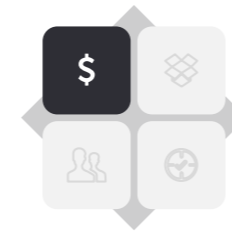


% Revenue share

**PC/ NOTEBOOK**

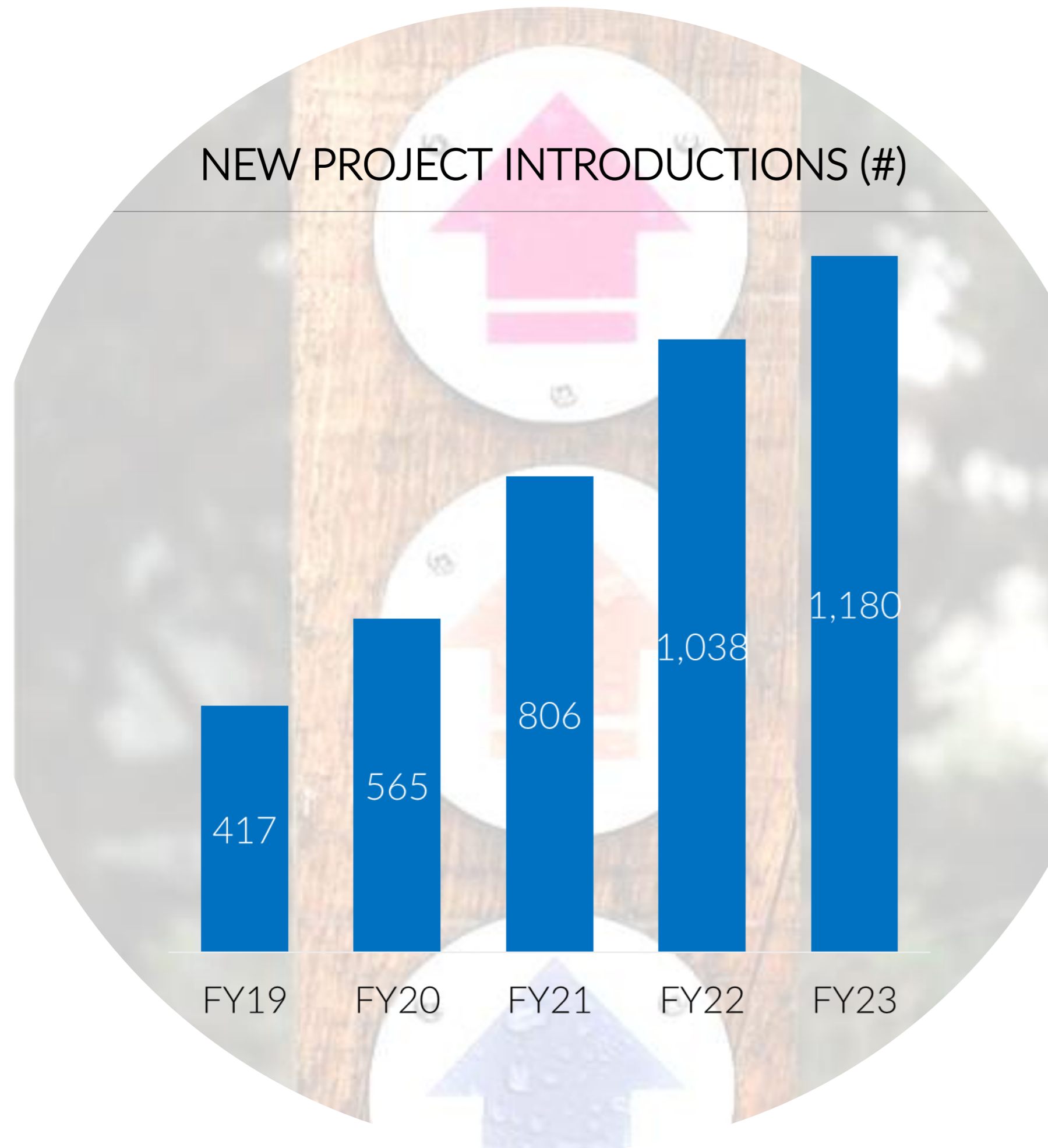
- Consumer electronics industry sales witnessing significant downward trend as the demand induced from trends such as WFH, online education, etc. normalizes with opening up of offices/ schools across economies

NOTE: Remaining 1% share of revenue is towards Miscellaneous applications



# Sales – Pipeline

HEALTHY PIPELINE BUT RECESSIONARY RISKS HAVE PUSHED PROJECTS TO FUTURE QUARTERS



- Carsem has a healthy order book with major projects coming from the Automotive segment

- Pipeline is full but the recent wafer shortage & end customer demand drop/ postponement has pushed projects to future quarters

- Ease of travel has helped Carsem team & customers engage in on-site physical meetings, driving closer collaboration on new pipeline projects in the last 6 months



# Technology – Automotive segment

INNOVATING IN LINE WITH STRATEGY TO BE GLOBALLY PREFERRED OSAT PARTNER FOR AUTOMOTIVE

## Major trends impacting semiconductor demand (Mobility disruptions)



### Electrification

Novel battery technologies, growth of electrical powertrain, demand for power electronics



### Autonomy

Surge in autonomous driving platforms & advanced safety features



### Connectivity

New use cases (V2X, V2V, OTA) - progression in connectivity technology (5G, WIFI-6)

>20 years as a certified automotive supplier

## Carsem Technology Value Propositions & Activities

### MEMS & Sensors – riding ‘Electrification’ and ‘Sensorization’ wave

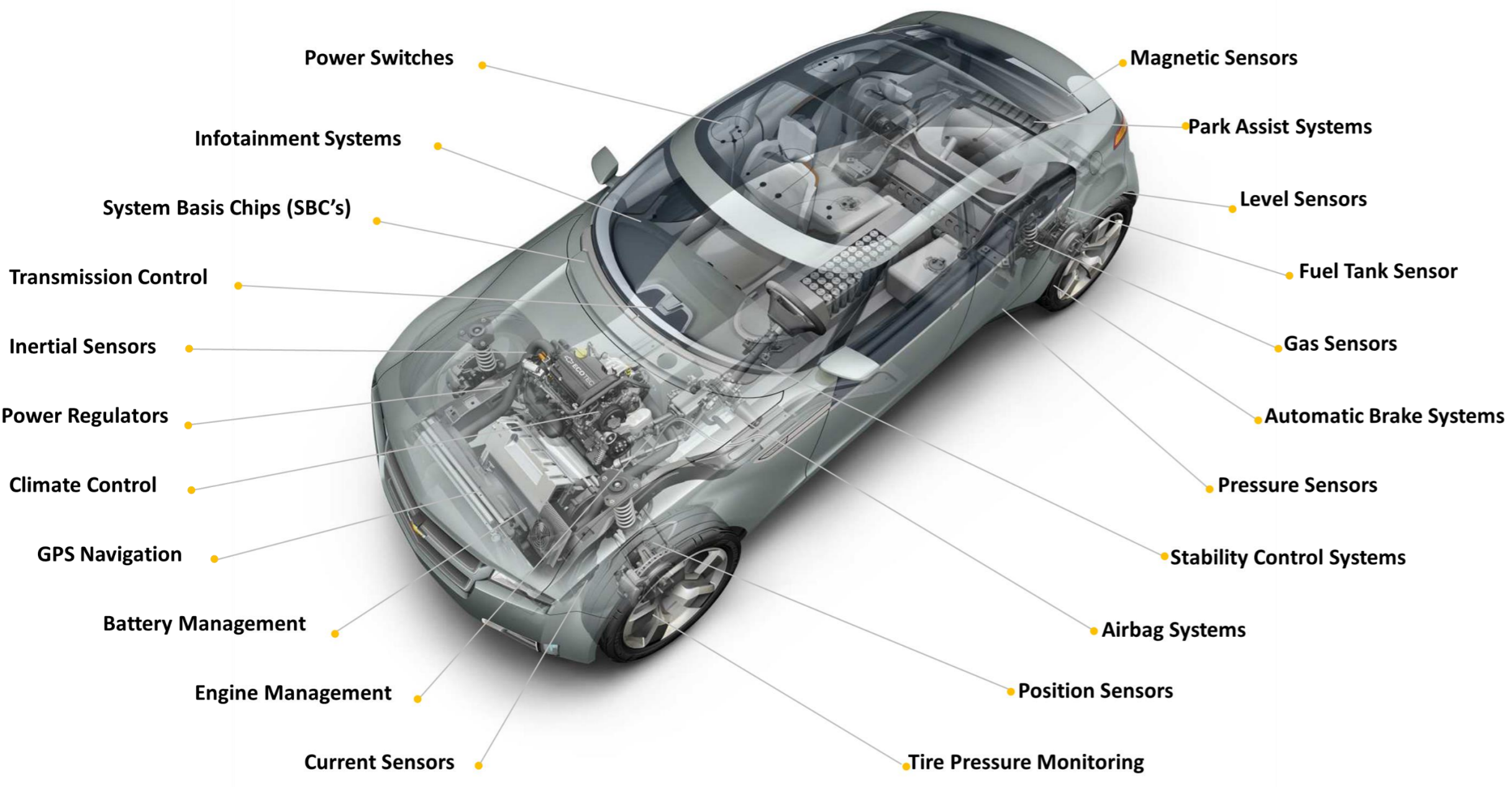
- ✓ SiP Pressure sensors for ICE and Safety are ramping up for Automotive, Gas & Flow sensors – safe launch production stage
- ✓ Expanding in temperature/ humidity sensor applications with qual, in parallel with ramp up phase - production tooling NRE on going with tool fabrication
- ✓ New focused development: current sensor for EV with wettable flank technology - sample launched for qualification
- ✓ New design concept under review for Lidar / Radar segment

### Power Packaging

- ✓ MIS solution Automotive PMIC Module, pass qualification, under safe launch
- ✓ Module development with SiC for automotive

### RF for Connectivity

- ✓ Differentiated support on diverse applications using Gallium Nitride (GaN) technology





# Technology – Industrial segment

EXPANDING PORTFOLIO ALIGNED WITH TRENDS IN ADVANCED PACKAGING & TESTING FOR POWER

## Major trends impacting semiconductor demand



### Industry 4.0

Higher performing devices with greater functionality driving models that enable increased flexibility, higher productivity & lower costs



### Big Data

More servers with high power & high efficiency to support large volumes of data

>30 years in power packaging

## Carsem Technology Value Propositions & Activities

### Power Packaging

- ✓ Awarded the next generation of Power stage products for servers and workstation (Cu Clip). In qualification will be ready for HVM in Q3 FY23
- ✓ Development on chip embedding package, expected HVM in FY22/23
- ✓ Development of Cu Clip for automotive in progress, expected HVM in Q3FY24
- ✓ Setup Taiko Ring Removal process for ultrathin die application, in production
- ✓ High power (2KV/100A) Test solution under development, with applications in base station/industry power supply/big data center

### MEMS & Sensors

- ✓ Ramping gas sensing applications & flow sensor under R&D, target production in Q4 FY23; also, ramping current sensor and magnetic sensor applications. Expanding further in high end applications with special coating on die technology – under devp.
- ✓ Hermetical & Non hermetical Ceramic Packages (Gyroscopes & Accelerometers) with safe launch. Targeted production by Q2 FY24





# Technology – Consumer/ communications segment

TAPPING INTO THE 5G REVOLUTION THROUGH ROBUST CUSTOM OFFERINGS

## Major trends impacting semiconductor demand



### 5G

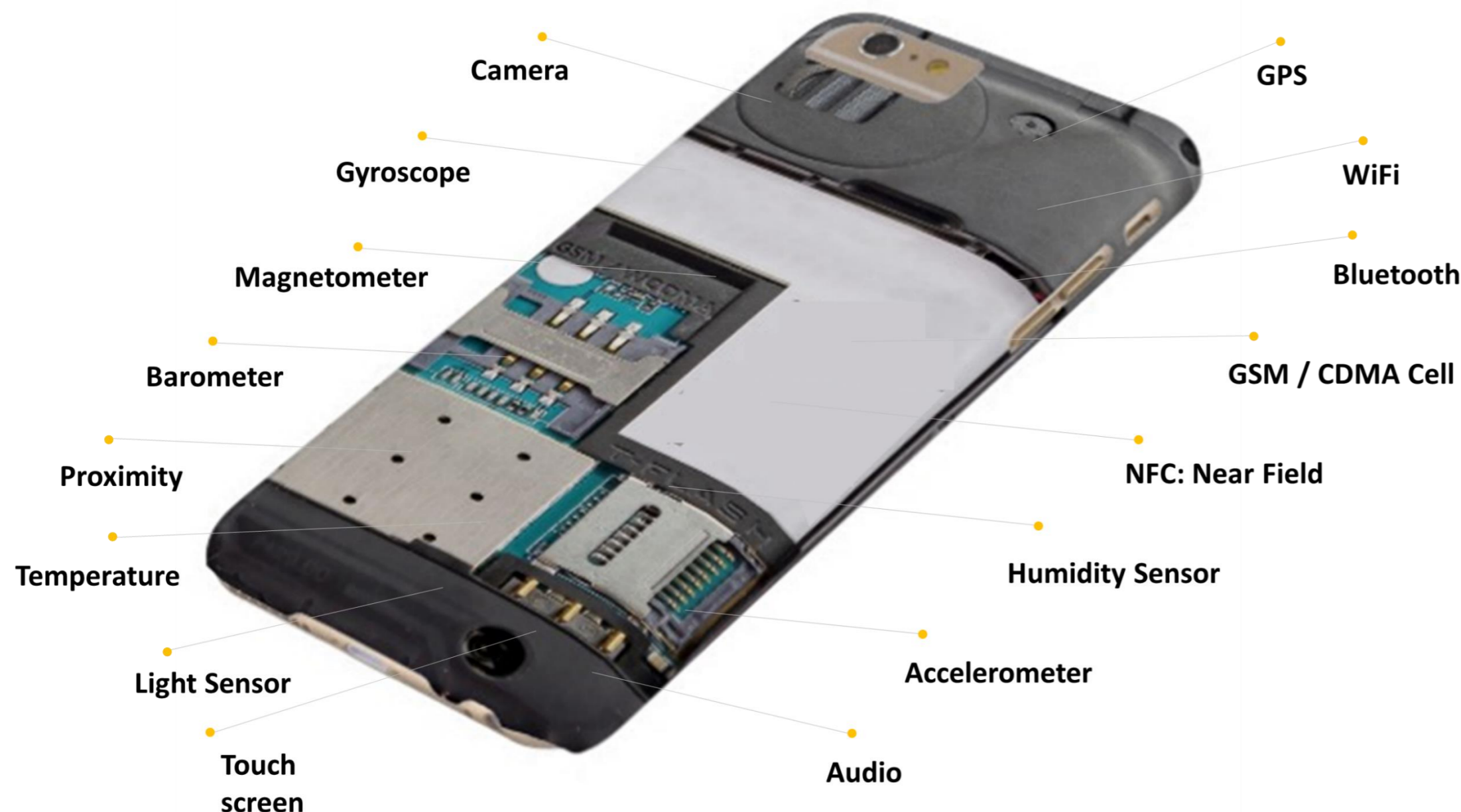
High data rates, massive connectivity and ultra-low latency, catalyzing remote health care, autonomous driving, AR/ VR experiences



### IoT

Need for combining functionalities – security, connectivity & microprocessors - stimulating usage of sensors, actuators & computing power

## Carsem in Communication



## Carsem Technology Value Propositions & Activities

### RF (5G mobile, WiFi6)

- ✓ FC MIS with underfill plus exposed die process start HVM in Q4FY23
- ✓ QFN SIP solution : FC+ SMT, power management application under development, high end wireless charging, fast charging , Li-Ion battery management

### Power Packaging

- ✓ RF Power (mid-high) packaging expertise for handphones/ 5G base stations; high volume manufacturing experience of handling GaN
- ✓ RF module/ high power switch for 5G base stations remains focus

### MEMS & Sensors

- ✓ Optical sensor using clear compound under volume production (for VR, wearables, etc.); and IMU for hand held devices with qualification lot shipped
- ✓ Expanding into high grade BOM for RF segment and qual in progress





# Technology-Immediate focus

SiC - UNLOCKING RF & POWER APPLICATIONS

## CARSEM ADVANTAGE

- ✓ Already working with the No.1 SiC wafer supplier in the world
- ✓ Optimized packaging & performance for better results
- ✓ Ongoing advanced SiC packaging solutions for major customers in Europe and China
- ✓ Dedicated SiC technology trained team for assembly & test
- ✓ Enhanced dedicated floor space & lines to cater to latest technology - SiC & GaN
- ✓ Witnessing double digit growth YoY with strong pipeline for the coming years in SiC

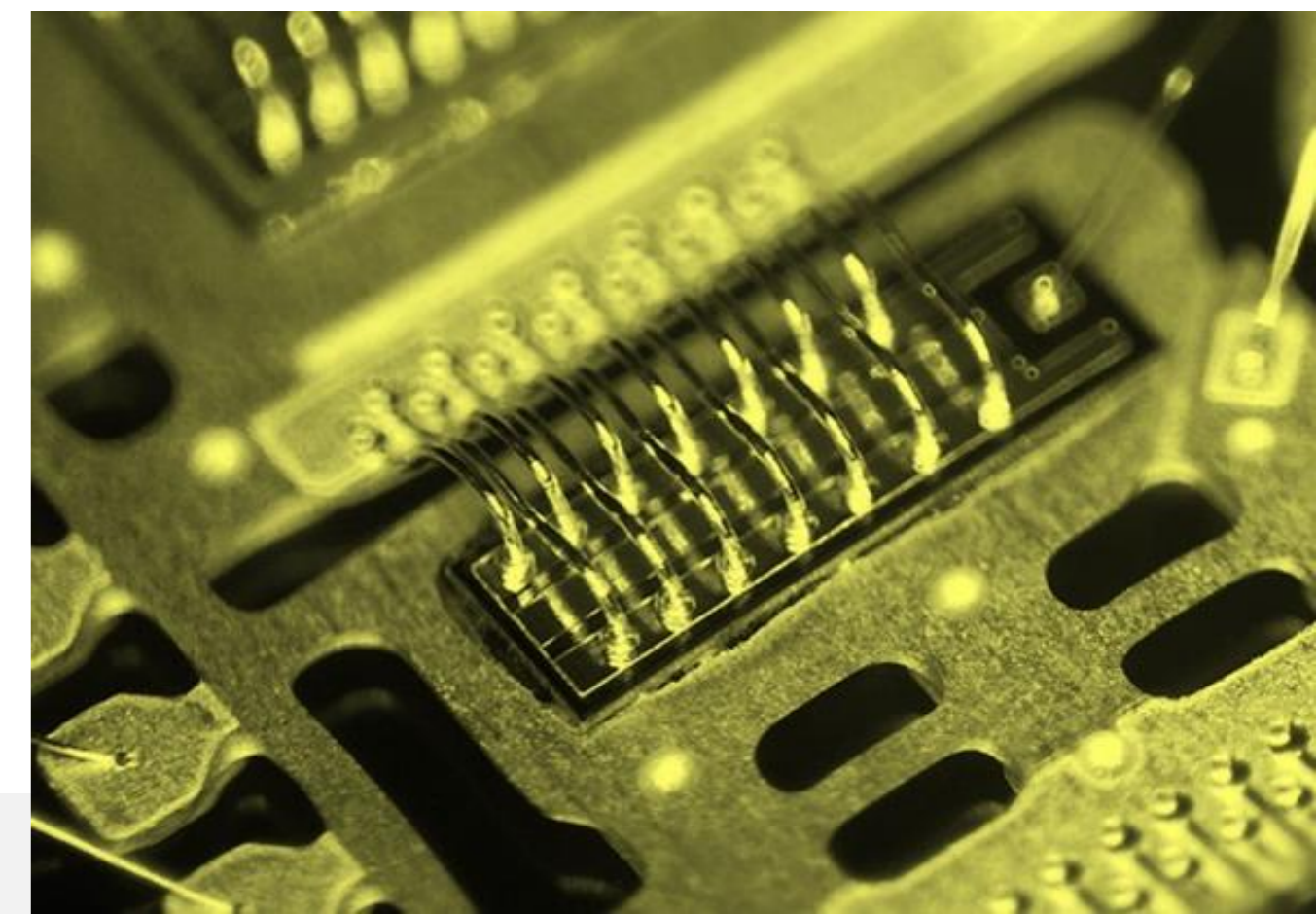
*SiC technology for power has a promising future, globally*

*Carsem S-site at Ipoh, Malaysia is already working with major players on pipeline for SiC packages*



Benefits of SiC over previous gen materials

- ✓ Wider bandgap,
- ✓ improved energy conversion efficiency & power density,
- ✓ higher thermal conductivity (3-4X Si/GaAs/GaN),
- ✓ higher switching frequencies, and reduced system size



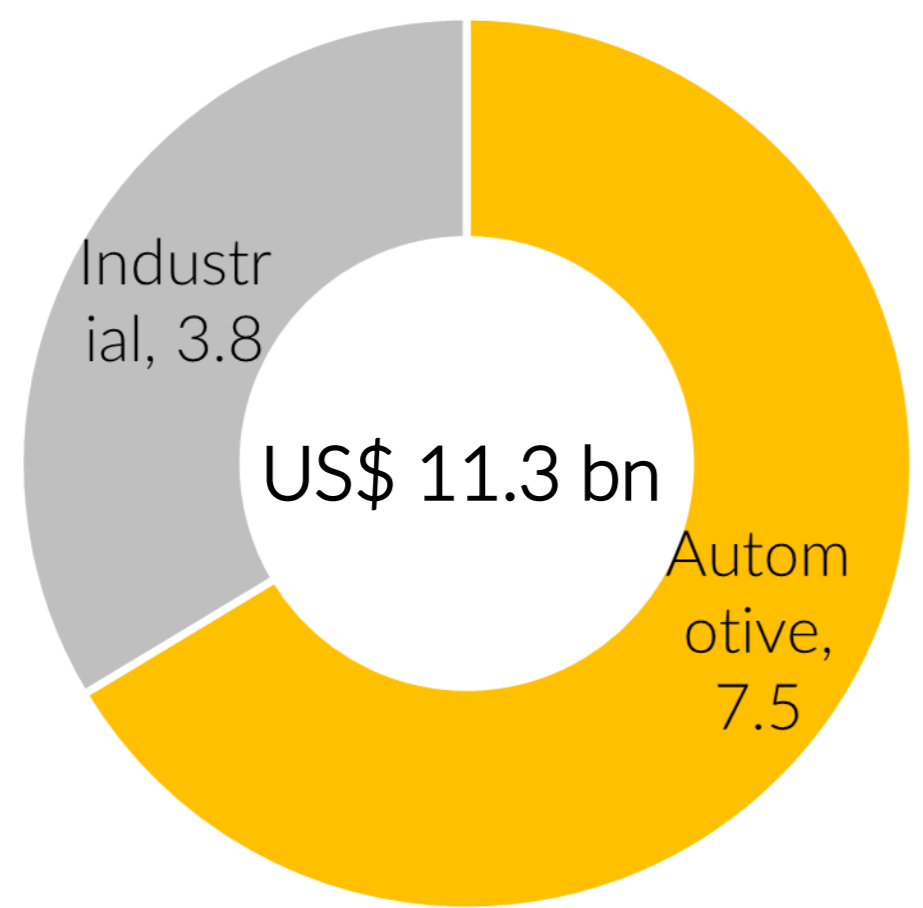


# Technology-Immediate focus

## GROWING DEMAND FOR SILICON CARBIDE TECHNOLOGY

The silicon carbide device market is accelerating at breakneck speed, driven by automotive

Power SiC devices market, 2030e  
US\$ billion

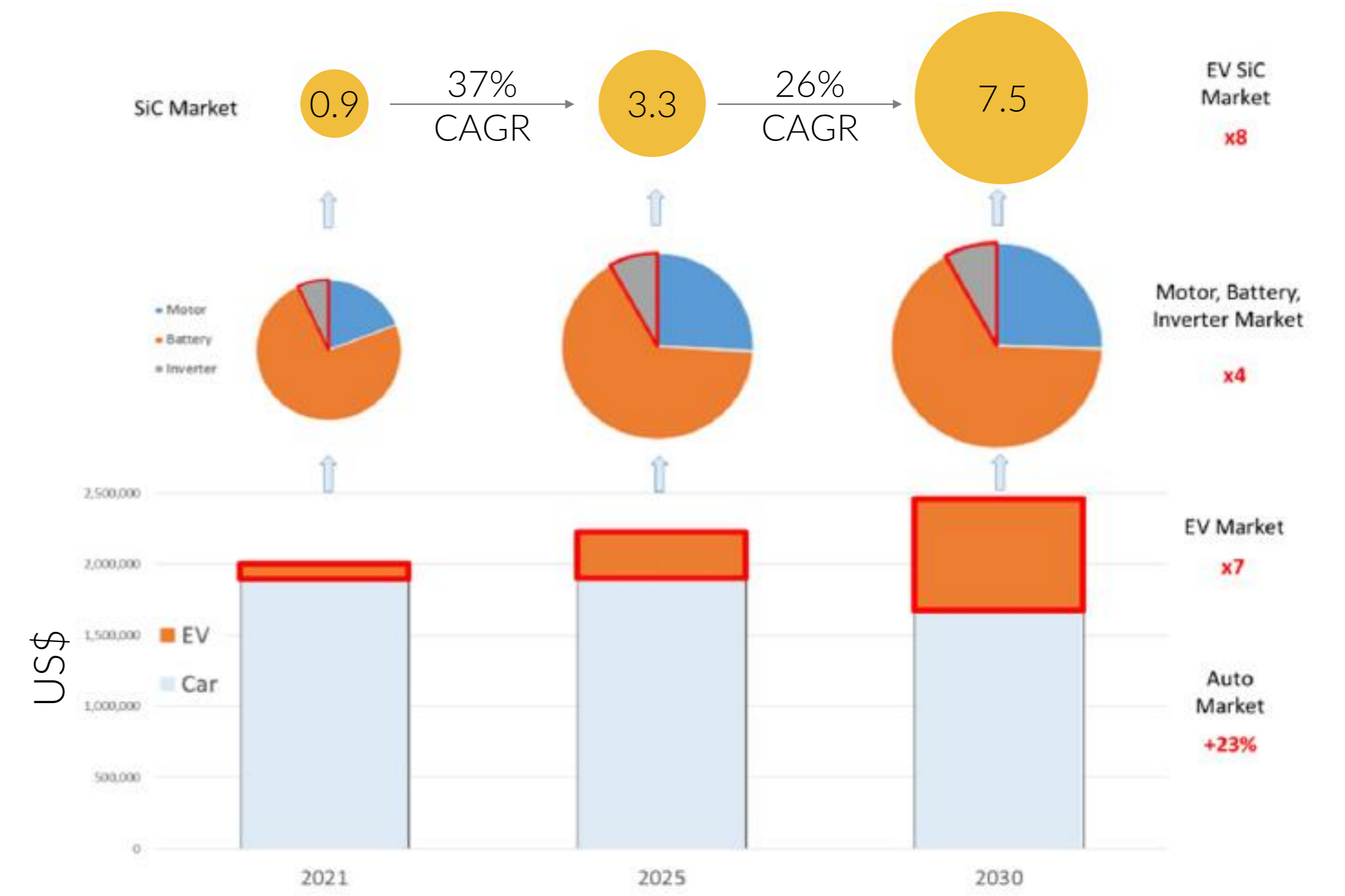


from slightly over US\$ 1 billion market in 2021...CAGR ~ 30%

Source: Goldman Sachs Global Investment Research



Auto-related (EV) SiC market growth to stand out, rising to US\$3.3bn in 2025 and to US\$7.5bn in 2030 from ~ US\$0.9bn in 2021



The numbers on the right show the growth of each market compared with 2021

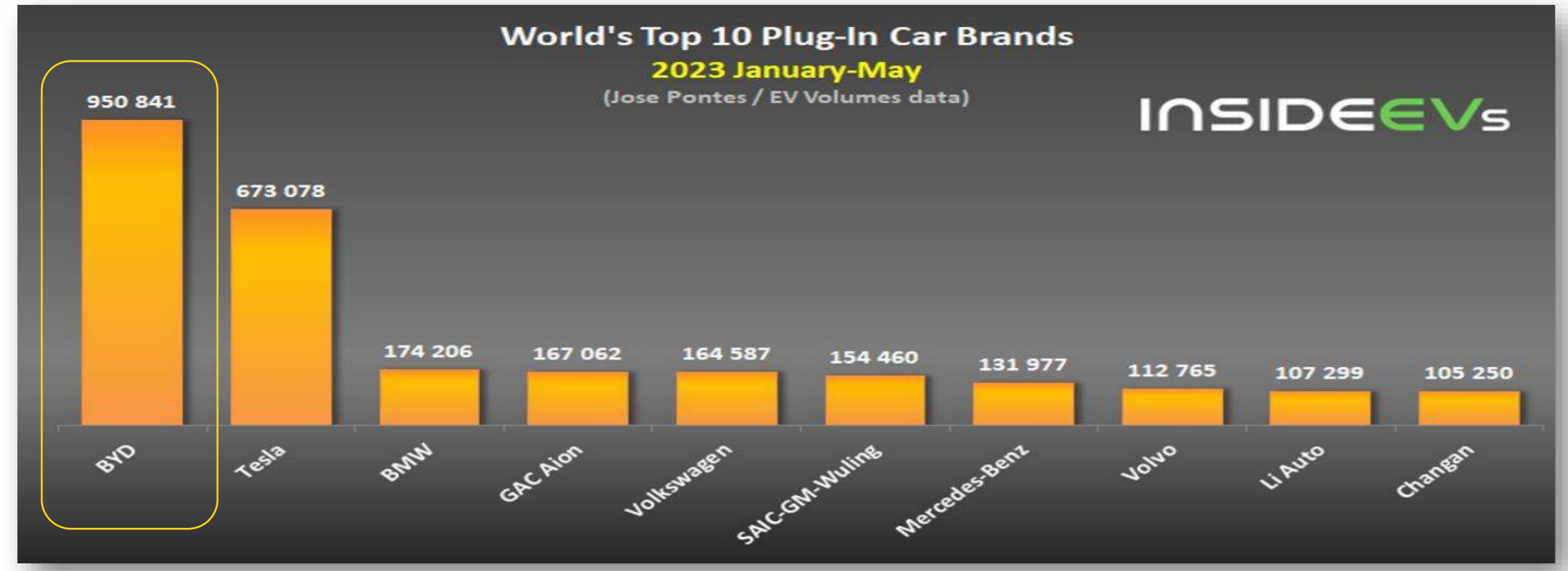


# Technology-Immediate focus

STRATEGIC FOCUS ON AUTOMOTIVE SEGMENT GROWTH IN CHINA

Chinese brand is No.1 in EV Sales in 2022 & 2023 YTD

**BYD beats Tesla in 2022 EV sales, as the world's No 1 electric car seller vindicated Warren Buffett's bet**

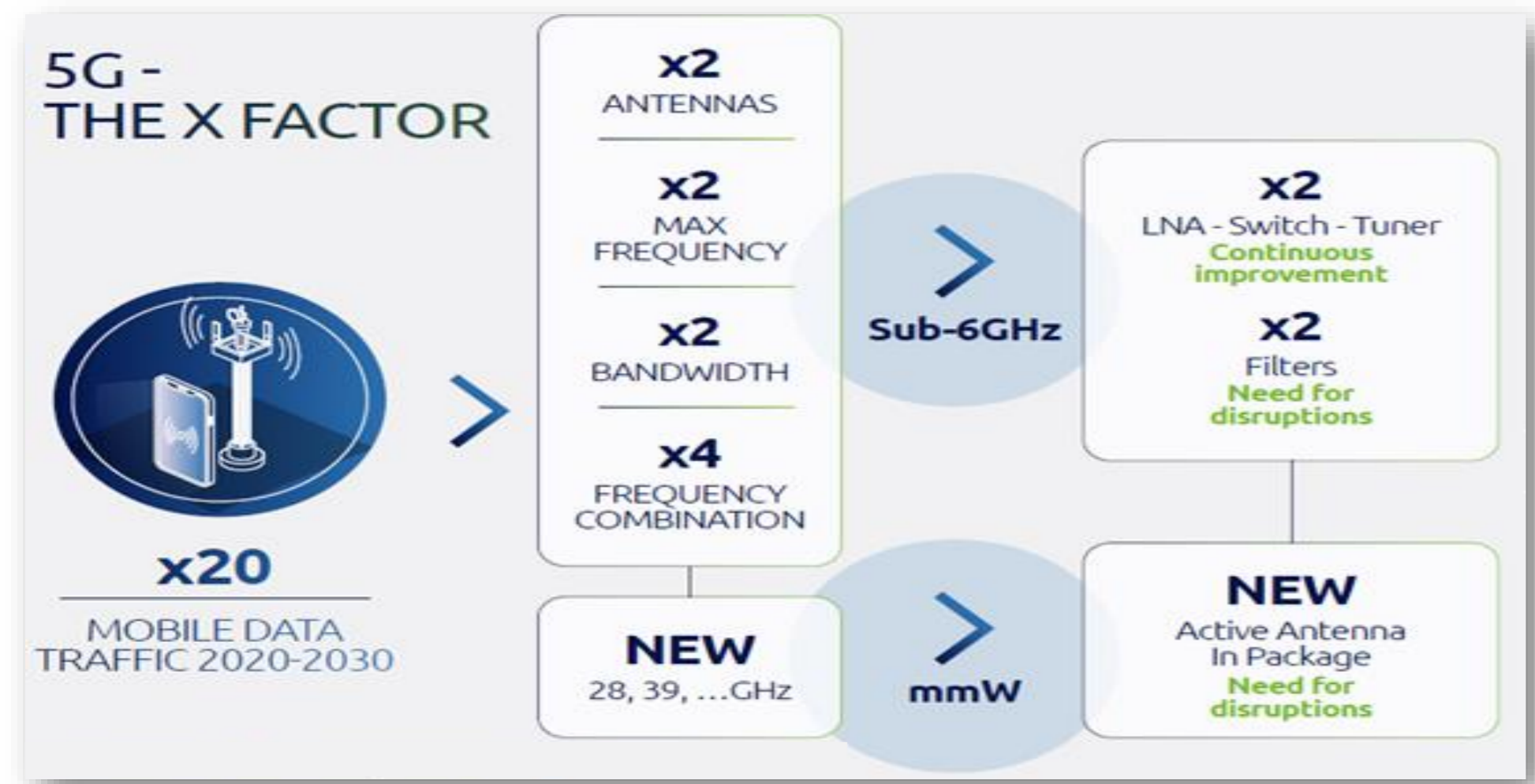


- Strong EV sales in China
- 83 automotive projects are already in different stages of pipeline
- Transfer some technology & experience manpower from Ipoh, Malaysia



# Technology – Immediate focus

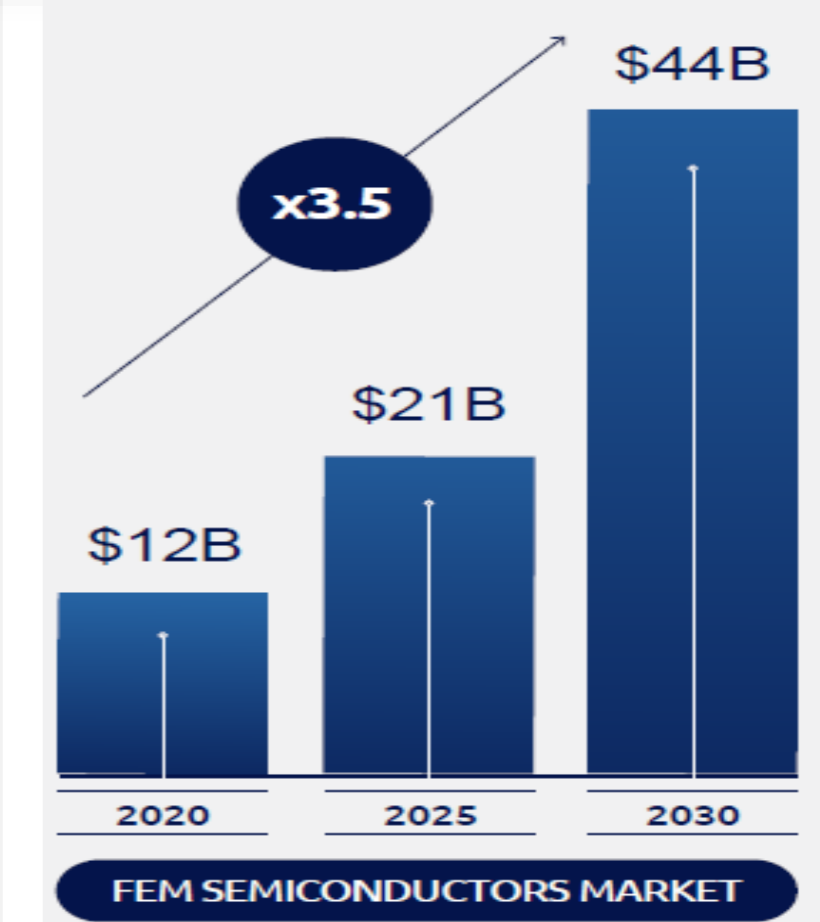
## GaN FOR RADIO FREQUENCY (RF) APPLICATIONS – 5G BASE STATIONS



	POWER AMPLIFIER (PA)	LOW NOISE AMPLIFIER (LNA)	SWITCH	ANTENNA TUNER (AT)	FILTER	ENVELOPE TRACKER (ET)	PHASE SHIFTER	SYSTEM ON CHIP (SoC)
4G / 5G SUB-6GHZ FEM KEY BLOCKS	RF-SOI	■	■	■	□	□	□	□
	POI	□	□	□	■	□	□	□
	FD-SOI	□	□	□	□	■	□	□
	GaN	■	□	□	□	□	□	□
5G MMW FEM KEY BLOCKS	RF-SOI	■	■	□	□	□	■	□
	FD-SOI	□	□	□	□	□	■	■
	GaN	■	■	□	□	□	□	□
WIFI & UWB FEM KEY BLOCKS	RF-SOI	■	■	□	□	□	□	□
	POI	□	□	□	■	□	□	□
	FD-SOI	□	□	□	□	□	■	■

Significant growth is projected for front end modules (FEM) in the next 8 years

- ✓ Carsem spent US\$ 12Mil for 5G RF FEM. Carsem Suzhou already has experience in FEM for 4G/5G, include DiFEM Module/DiFEM Module/Duplexer+ Quadruplext and Inregular SiP package, expected initial production in Q2FY24
- ✓ Industry technology trend suggests that the business of GaN related FEM will be much more than 4G
- ✓ Carsem Suzhou is already engaging with main 5G players of China for 5G base stations FEM



Source: Yole, Ericsson, Soltec, Qualcomm



# Technology – Future focus

## 5G – Next Generation of mobile broadband



- ✓ Exponentially faster download & upload speed
- ✓ Drastically decreased latency
- ✓ Implementation of IOT, Autonomous Cars, Artificial intelligence.
- ✓ High frequency signals on shorter wavelengths will require more base stations than usual 4G

### 5G use cases



## 5G TESTING

Carsem Suzhou has been working extensively on 5G test technology development

- ✓ CSZ is working with 10+ customers for 5G device testing
- ✓ Completed 5G and Wifi7 RF test capability development, up to WiFi7 7.125GHz
- ✓ Continuing engagement with specialized customer for 5G FR2 (mmWave) testing development
- ✓ Building an exclusive 5G RF domain specific test development team to be the best in this field

### CSZ R&D capability - able to support 5G sub 6GZ, but not ready for 5G mmWave yet

Product	2G	3G	4G LTE	5G (Sub-6GHz)	5G (mmWave)
	800MHz~2GHz	2GHz~2.2GHz	1.7G~2.7G	3.3GHz~6.0GHz (Sub-6GHz)	>28GHz (mmWave)
Bandwidth	6MHz~24MHz	15MHz	15MHz~130MHz	<1G Hz	>1G Hz
Switch	✓	✓	✓	✓	Under development
Filter (SAW/BAW)	✓	✓	✓	✓	Under development
Diplexer/Multiplexer	✓	✓	✓	✓	Under development
PA (Power Amplifier)	✓	✓	✓	✓	Under development
LNA (Low Noise Amplifier)	✓	✓	✓	✓	Under development
Antenna Tuner	✓	✓	✓	✓	Under development
SiP (include 2 or more components into a package)	✓	✓	✓	✓	Under development



# Technology – Future focus

## MODULES

Entirely new SMT Line



3D X - Ray



C - Mold



### CARSEM SUZHOU

- ✓ Invested in dedicated machines for FEM module line under production
- ✓ Invest in dedicated machine and skilled manpower to extend FEM line capacity
- ✓ Attacking high end customer FEM product, under engineering stage

### CARSEM MALAYSIA

- ✓ Assembling advanced packages with complete flexibility for customization
- ✓ Major portfolio of advanced packages is with big semiconductor companies in NA & EU
- ✓ Investing in superior machines and skilled manpower to handle advanced packaging

#### BENEFITS OVER STANDARD PACKAGES

RELIABILITY COST SAVING PERFORMANCE ROBUST REDUCED SIZE CUSTOMIZABLE





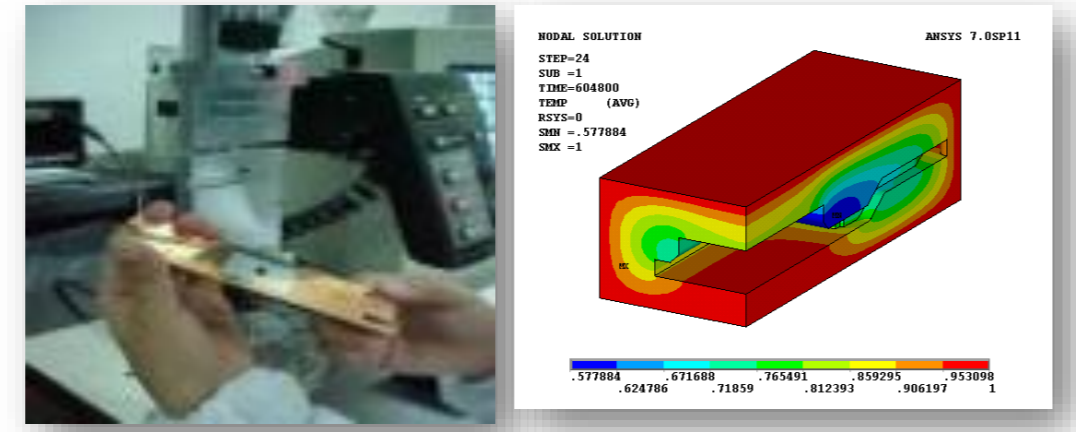
# Technology – Carsem technology center

DEDICATED TECHNOLOGY CENTER TO DRIVE INNOVATION & TECHNOLOGY DEVELOPMENT

CARSEM TECHNOLOGY CENTER (CTC) – 4M APPROACH TO R&D

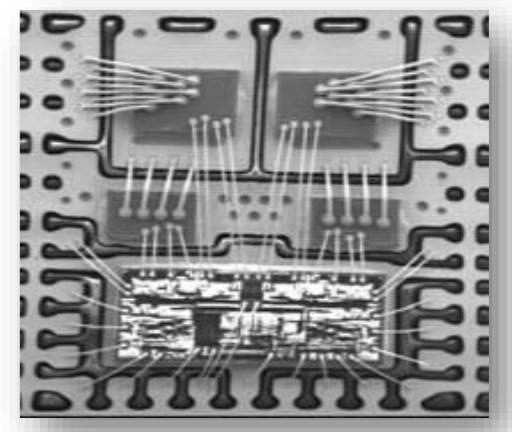
## MATERIAL

- Materials lab,
- Design & Simulation



## METHODOLOGY

- Process development
- Total 75 active patents



## MACHINE



- Dedicated to package/process/materials development

## MAN (HUMAN CAPITAL/ EXPERTISE)

- Total headcount: 66 (Technical Management ~8%, Project Management ~34%, Engineering ~58%)





# Quality & productivity focus

INVESTING IN AUTOMATION & INDUSTRY4.0 TO ACHIEVE ZERO DEFECTS & HIGH PRODUCTIVITY GOALS

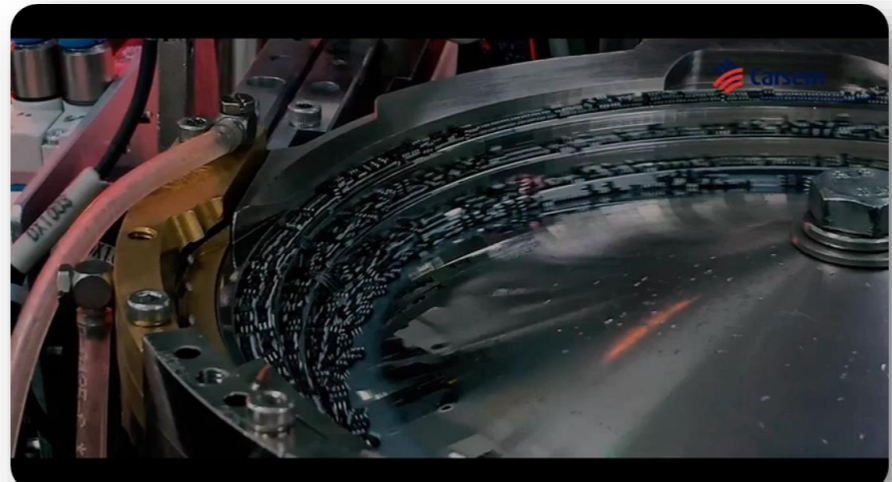


## End Game – Smart factory



### Highlights

- > Highly automated line with minimal dependence on people
- > Productivity improvement
- > Connecting shop floor & processes

### State of the art advanced facilities, towards lean manufacturing

<p>5G testing</p>	<p>Lights-off factory</p>
 <p>Rack &amp; stack with Pentamaster handler</p>	 <p>Automated guided vehicle</p>
	<p>Zero defects quality</p>  <p>Robotic arm</p>





# Quality & productivity focus

## AUTOMATION: EO Laser Continuous Run Enhancement

1. Operator can continuously load magazine without waiting for current lot to complete.

2. New lot is automatically tracked in when a new lot magazine is detected.

(Est 1 min saving)

3. Smart APC is only executed on every marking content change or every 1 hour. (Previously every lot)

(Est 2-4 min saving)

4. Host will automatically choose dummy strip and SPC requirements.

(Est 10 sec saving/sublot)

5. Optimistic SPC parks the next SPC validation frame to the marking chamber in a dual shuttle configuration.

(Est 20 sec saving)

6. After machine validates all frames is complete, magazine change is done and lot is tracked out.

(Est 1 min saving)



Improvement:

UPH increase by **19%**

Legend :

Changes on machine

Changes on host



# Quality & productivity focus

## CERTIFIED ON INDUSTRY'S LEADING PERFORMANCE PARAMETERS



**ESD Control**

Applicable to Design, Assembly, Testing & Finishing of semiconductor component

**IATF 16949:2016**

Design & manufacturing of semiconductor components

**ISO 45001:2018**

Occupational Health & Safety Management System implemented in compliance

**ISO 14001:2015**

Environmental Management System implemented in compliance

**Sony Green Partner Program**

Environmental quality assurance activities

**ISO 9001:2015**

Design & manufacturing of semiconductor components



# Awards and recognitions

## QUALITY & PEOPLE

### BEST SUPPLIER AWARDS received



Best supplier award, 2022  
HEK, China



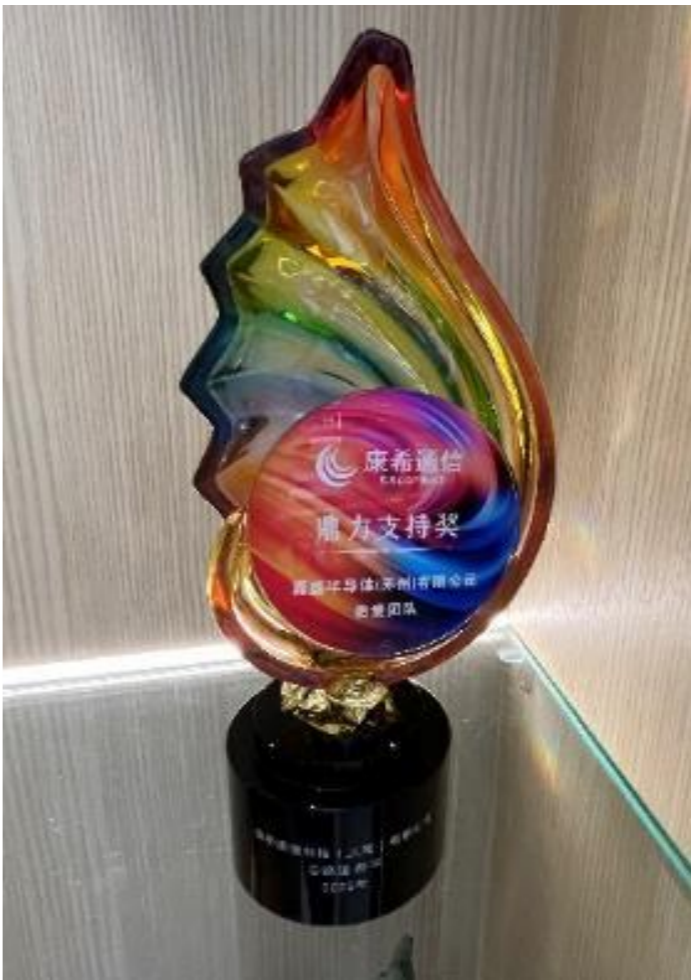
Best Partner Award, 2022  
PSE, China



Best supplier award, 2022  
QST, China



Best quality service award, 2022  
EPM, China



Best supplier award, 2022  
Kangxi, China



Awards to assembly and test engineering team, 2022  
Kangxi, China

# TABLE OF CONTENT

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1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
6	FINANCIALS & SUMMARY



# Financial highlights

## Q4 FY23 SNAPSHOT

### REVENUE

With the challenges faced in China & worldwide consumer demand drop, MPI closed Q4 FY23 at US\$ 107M

### EPS

Despite all the challenges & high costs, MPI Q4 EPS witnessed a positive swing of ~ 13 Sen

### CAPEX

Good or bad times, Carsem invests in replacing old machines & getting new technology in. Q4 FY23 – RM 59M

### CASH

Even in these uncertain market dynamics – MPI cash increased in Q4 by 4% YoY to RM 801M

### CHALLENGES

Geopolitical stress, global end market demand drop, Rise in costs & Manpower constraints

### SEGMENTS

Automotive segment is strengthening; Automotive (43%); Industrial (38%); Consumer (13%)



# Key financials

## MPI GROUP RESULTS AT A GLANCE

	Q4 FY23	Q3 FY23	Q4 FY22	Q4 vs Q3	Q4 vs Q4	YTD FY23	YTD FY22	YoY
	RM mil	RM mil	RM mil	%	%	RM mil	RM mil	%
Revenue	482.4	471.9	612.0	2%	-21%	2,044.7	2,416.1	-15%
(LAT)/PAT	17.1	(8.4)	93.0	>100%	>-82%	108.1	384.9	-72%
PATAMI	8.1	(17.8)	80.5	>100%	>-90%	61.3	328.9	-81%
EPS (sen)	4.09	(8.97)	40.47	>100%	>-90%	30.84	165.62	-81%
EBITDA %	21%	17%	30%			23%	31%	
Capex	58.9	44.3	93.9	33%	-37%	251.7	729.7	-66%
Dividend	50	0	50			70	70	
Net Cash	801.4	812.9	771.6			801.4	771.6	
EDR	100:0	100:0	100:0			100:0	100:0	
ROSF	0.4%	-0.9%	4.7%			3.1%	19.4%	



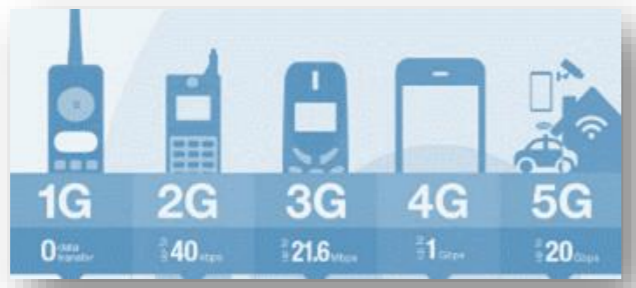
# Investments

CONTINUING STRATEGIC INVESTMENTS FOCUSING ON SENSORS, 5G TESTING & SiC/ GaN TECHNOLOGIES

CARSEM SITES

SZ

5G TESTING



S

SILICON CARBIDE

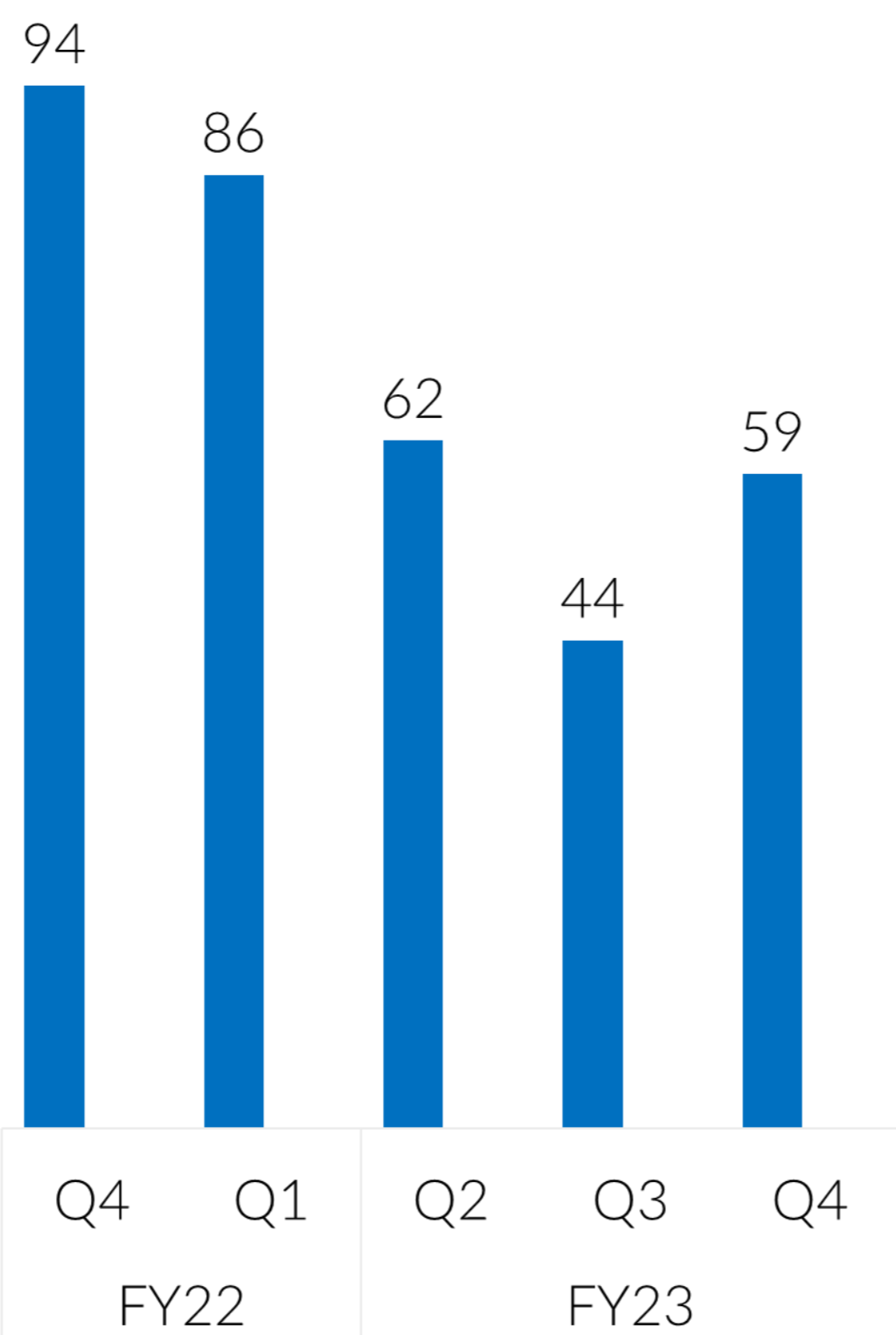


M

MEMS SENSORS



MPI CAPEX (RM million)



- Hire domain specific relevant people across the globe to support business operations & sales
- Investing in research & development to deliver latest technology solutions to our customers
- Floor space expansion to meet increasing business demands from existing & new customers
- Continuing Industry 4.0 via automation in each factory to have zero defects quality
- Upskilling existing operational & technical manpower to be able to perform better with latest technology
- Looking for more anchor customers to secure more guaranteed business in future



# Cash

STRONG NET CASH POSITION MEANS STABILITY IN UNCERTAIN TIMES

NET CASH (RM million) position remained healthy



MPI is cash rich despite significant capital expenditure and expenses towards managing externalities





# Statement of Profit or Loss

	Q4FY23 RM '000	Q4FY22 RM '000	Changes %
Revenue	482,426	612,035	-21%
Cost of sales	(443,389)	(490,371)	-10%
<b>Gross profit</b>	39,037	121,664	-68%
Operating expenses	(35,235)	(29,189)	21%
Other operating (expenses)/income	7,064	7,926	-11%
<b>(Loss)/Profit from operation</b>	10,866	100,401	-89%
Interest income	8,516	3,380	152%
Interest expenses	(2,732)	(2,361)	16%
<b>(Loss)/Profit before taxation</b>	16,650	101,420	-84%
Taxation	453	(8,373)	-105%
<b>(Loss)/Profit for the period</b>	17,103	93,047	-82%
<b>(Loss)/Profit attributable to:</b>			
Owners of the Company	8,137	80,488	-90%
Non-controlling interests	8,966	12,559	-29%
<b>(Loss)/Profit for the period</b>	17,103	93,047	-82%
<b>(Loss)/Earnings per ordinary share (sen)</b>			
Basic	4.09	40.47	-90%
<b>Ratio</b>			
GP %	8%	20%	
(LBT)/PBT %	3%	17%	
(LAT)/PAT %	4%	15%	
EBITDA%	21%	30%	



# Statement of Financial Position

	30/06/2023	30/06/2022
	RM'000	RM'000
<b>Non-current assets</b>		
Property, plant and equipment	1,416,233	1,511,323
Right-of-use assets	47,298	52,285
Investment properties	27,026	27,897
Investments	46	46
	1,490,603	1,591,551
<b>Current Assets</b>		
Inventories	149,537	206,279
Trade and other receivables, including derivatives	318,871	356,139
Tax recoverable	4	62
Cash and cash equivalents	1,053,096	964,826
	1,521,508	1,527,306
<b>TOTAL ASSETS</b>	<b>3,012,111</b>	<b>3,118,857</b>



# Statement of Financial Position

	30/06/2023 RM'000	30/06/2022 RM'000
<b>Equity</b>		
Share Capital	352,373	352,373
Reserves	1,826,261	1,811,656
Treasury shares	(163,816)	(163,816)
	2,014,818	2,000,213
<b>Non-controlling interests</b>	345,570	321,568
	2,360,388	2,321,781
<b>Non-current liabilities</b>		
Borrowings (unsecured)	79,480	180,100
Lease liabilities	21,788	23,566
Deferred tax liabilities	6,936	2,269
	108,204	205,935
<b>Current liabilities</b>		
Trade and other payables, including derivatives	346,104	543,813
Borrowings (unsecured)	172,184	13,170
Lease liabilities	3,177	2,781
Current tax liabilities	22,054	31,377
	543,519	591,141
<b>TOTAL LIABILITIES</b>	651,723	797,076
<b>TOTAL EQUITY AND LIABILITIES</b>	3,012,111	3,118,857
Net Assets per share attributable to owners of the Company (RM)	10.13	10.06
Net Cash	801,432	771,556
EDR	100 : 0	100 : 0



# Summary

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**MPI closes at US\$ 107M, despite several global challenges and demand drop across market segments**

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**MPI has a healthy order book for future quarters even in an uncertain market environment**

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**Carsem continues to invest in SiC & GaN Technology, 5G Testing, MEMS Sensors to grab the next wave of opportunities**

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**Investing in expansion - new factory in Ipoh, additional floor in Carsem S – Site (Ipoh) & a new site in China**

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**Net Cash (RM 801M for investment & M&A), No debts**



Thank You