

Plasma Control Technologies

# Opportunities for growth with RF power supplies from a geographical perspective



Michael Kammerer, President of Plasma Control Technologies

# Agenda

- 1 PCT Business Environment
- 2 Opportunities for growth in ASIA
- 3 *Introduction of Samsung Speaker Mr. Dr. Lee*

# Connectivity: mobile, wearable and fast devices

## This trend is driving the Semiconductor world



### Mobile devices driving Semi industry performance

- Rapid product evolution of consumer devices
- Semiconductor performance demands innovative technologies for
  - Improved device performance
  - Reduced process times
  - Higher yields



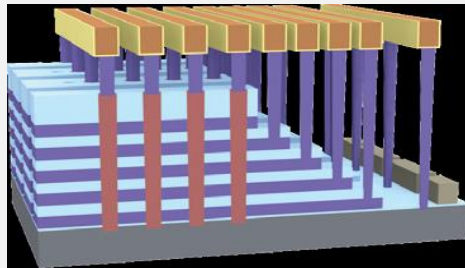
### Internet of things the way in the future

- Need for connectivity
- Need for big data (memory)
- Need for new requirements

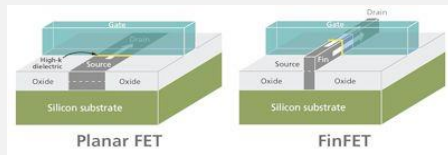
=> Faster and higher integrated chips (2D -> 3D)

# Advanced technology and innovation are pushed forward by OEM customers

Technology Drivers

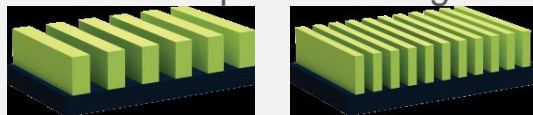


3D NAND



FinFET  
Logic Gate

Multiple Patterning



Dual

Quad

**Advanced technology is required to meet future electronic demands**

- 3D & V-NAND chips => for higher bit density
- FinFET => for power scaling
- Multiple patterning => for higher density

**Advanced technology needed for Plasma processes of:**

- Deposition
- Poly etch
- Cleaning of surfaces

**COMET is well positioned at top OEM's for all of the inflection point plasma processes**

# COMET helps customers solve their most critical technology challenges (1)

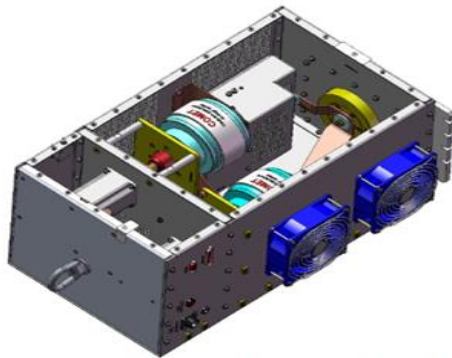
## with vacuum capacitor innovations:

- Enable new VHF processes up to 162MHz
- Increase power densities in smaller matching networks
- Higher speed and precision ensures more repeatable plasma results

Innovative vacuum capacitor design 2014

SmartCon

Customer case 2014



Matchbox Size 40 Liter

Performance  
40 MHz  
10 kW



Performance  
40 MHz  
20 kW

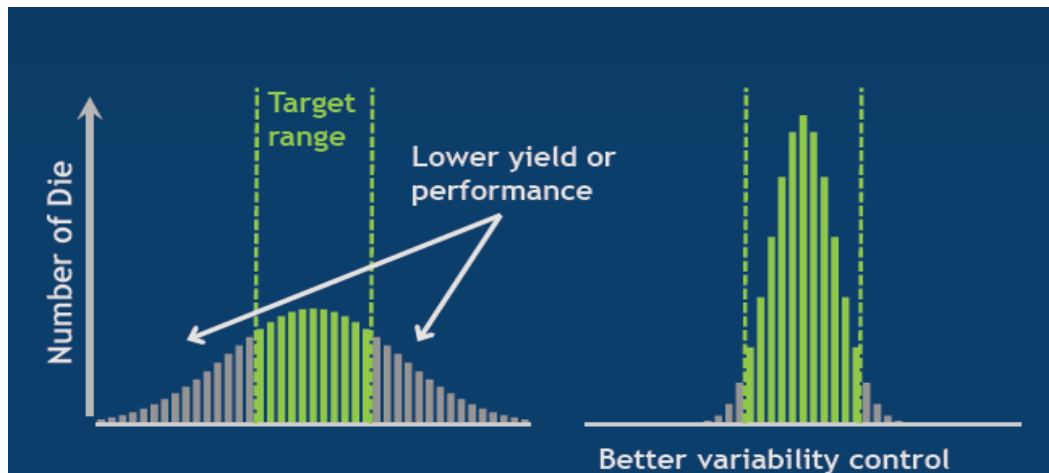
25 Liter



# COMET helps customers solve their most critical technology challenges (2)

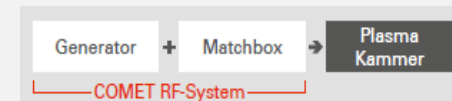
## with Plasma Control Technologies (RF power supply)

- Reduces wafer to wafer variation
  - Through fast tuning technology
  - Through minimized match to match variability and copy exactly



Customers require variability control for

- Higher yields
- Improved productivity
- Higher efficiency=> less losses
- Lower power consumption,
- Improved device performance



For sustaining outperformance, we focus on close collaboration early in the development process

# Complete range of RF power product portfolio delivering advantages to the customers (USP)



- RF Technology know-how:  
=> all power unit components synchronized and bundled to customers need
- COMET as a «one-stop shop»  
=> all power unit components from “one single source”
- 3 R&D Competence & Design centers (US, Europe, Asia)  
=> close to the customers for early development and fast technical support

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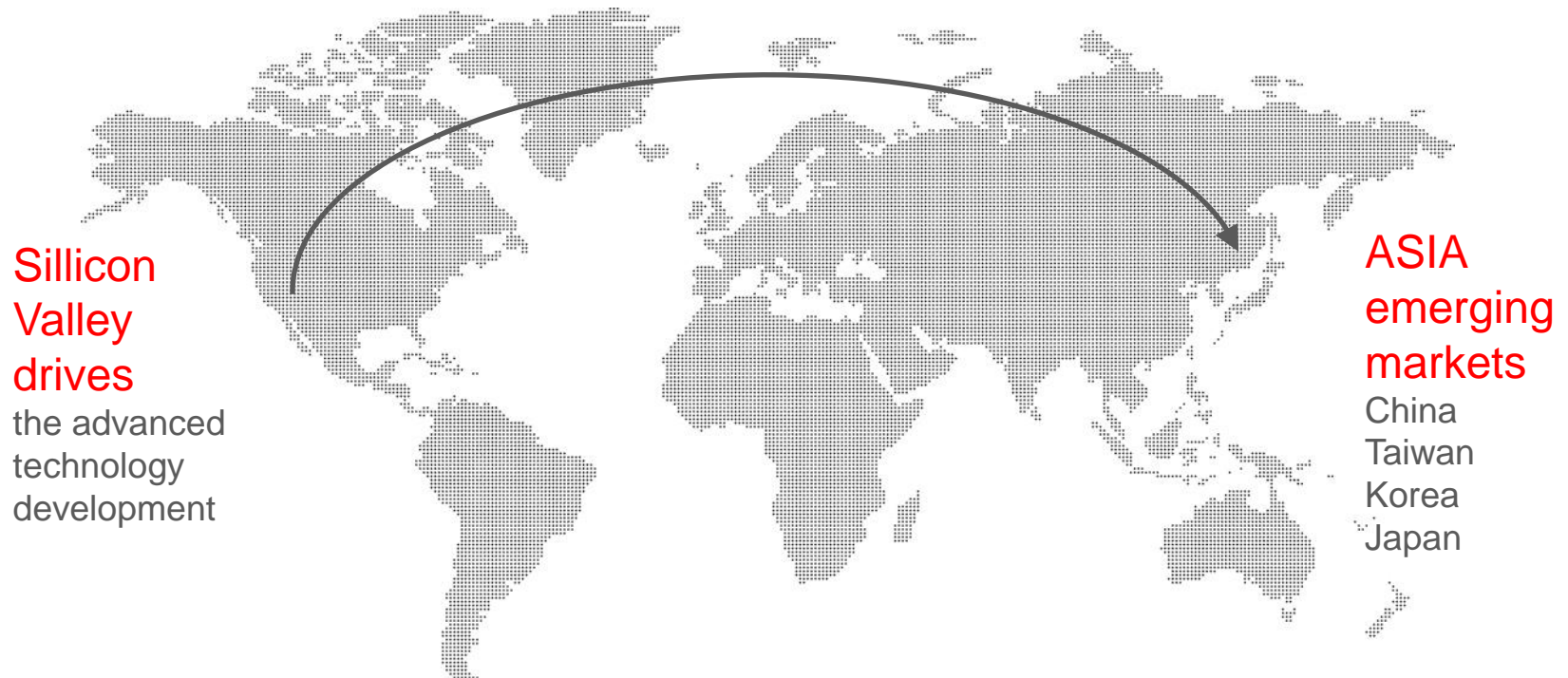
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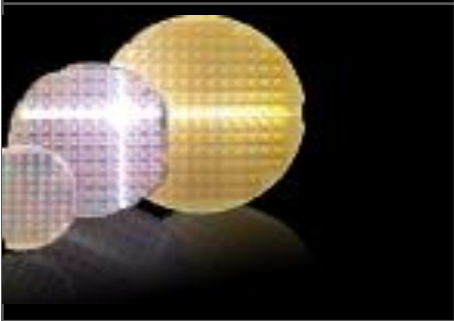

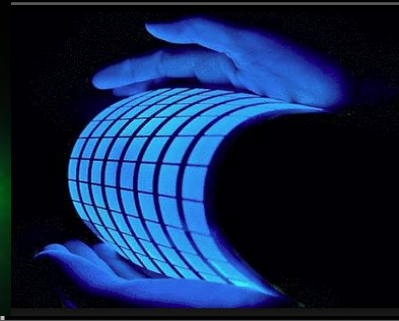

# Opportunities for growth in ASIA

Advanced Plasma Control Technologies required globally.

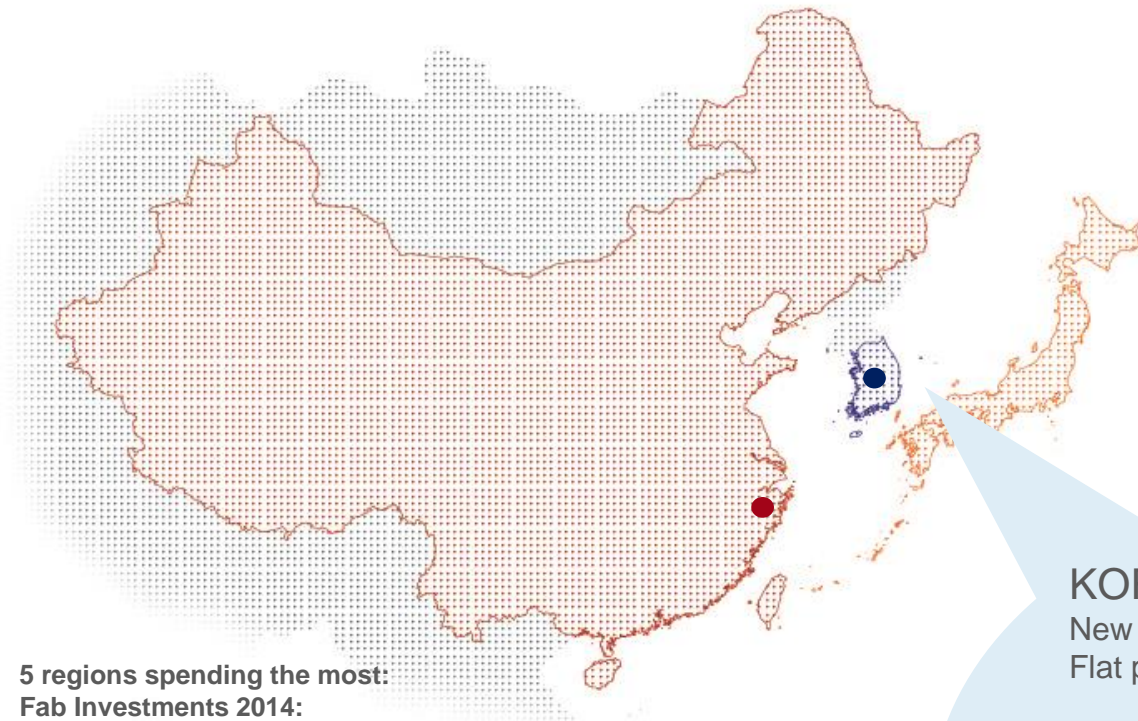


# Diversify business:

## We focus in Asia on 4 major applications

<b>Semi</b>	<b>Non Semi (Industrial applications)</b>		
			
<b>SEMI</b>	<b>LED</b>	<b>COATING &amp; Treatment</b>	<b>LASER</b>
Technology Transition (200mm, 300mm) opens new opportunities in Asian foundries	Higher Quality LEDs requires tailor made solutions.	Growth in Asia in OLED displays (FPD), Integrated Circuits (IC) devices on flexible substrates. Thinfilm PV panels	High growth in China. Today are the leading companies in the US & Europe.

# Build up & develop new Customers in Korea



## 5 regions spending the most:

### Fab Investments 2014:

Taiwan	(\$9.7 billion)
Americas	(\$7.8 billion)
<b>Korea</b>	<b>(\$6.8 billion)</b>
China	(\$4.6 billion)
Japan	(\$1.9 billion).

In 2015, the same regions will lead.

Source: World Fab Forecast; by Christian Gregor Dieseldorff, Industry Research & Statistics, SEMI (September 8, 2014)

## KOREA

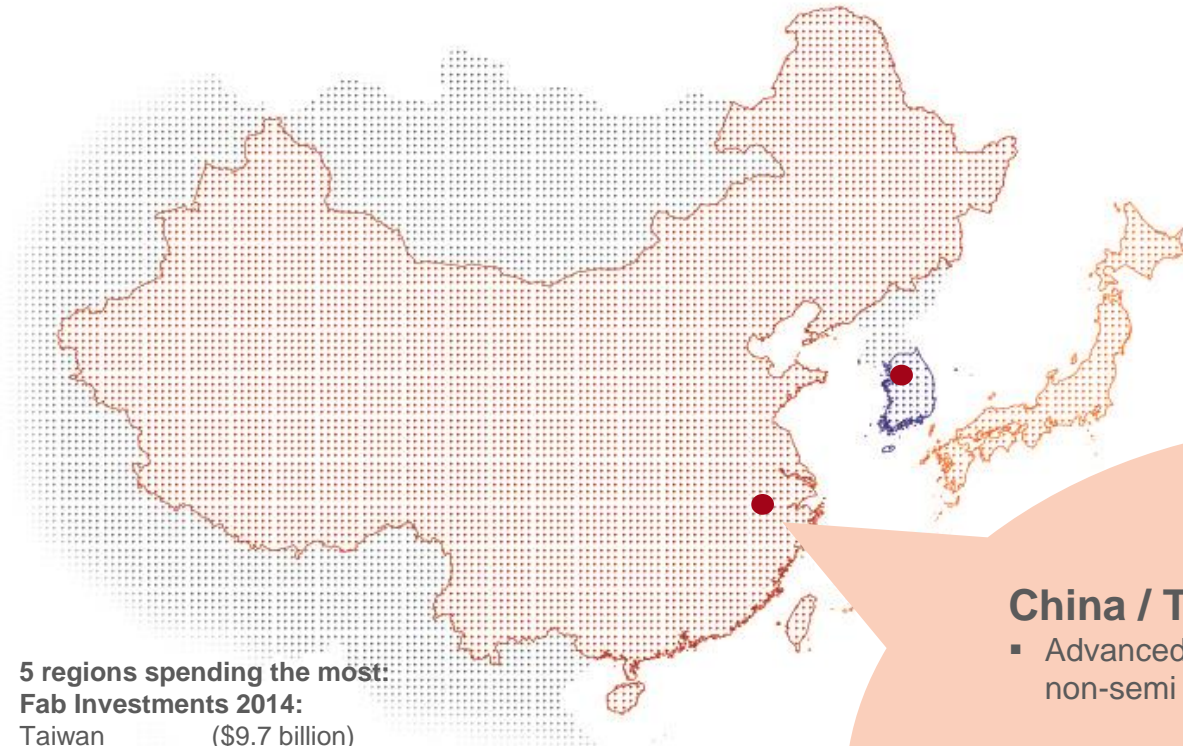
New investments in Semi,  
Flat panel display and LED

## COMET success

- New customers further developed
- Several new projects with RF power supply: match & generators
- Expanding capacitor business
- Close customer partnership due to own subsidiary



# Build up & develop new Customers in China



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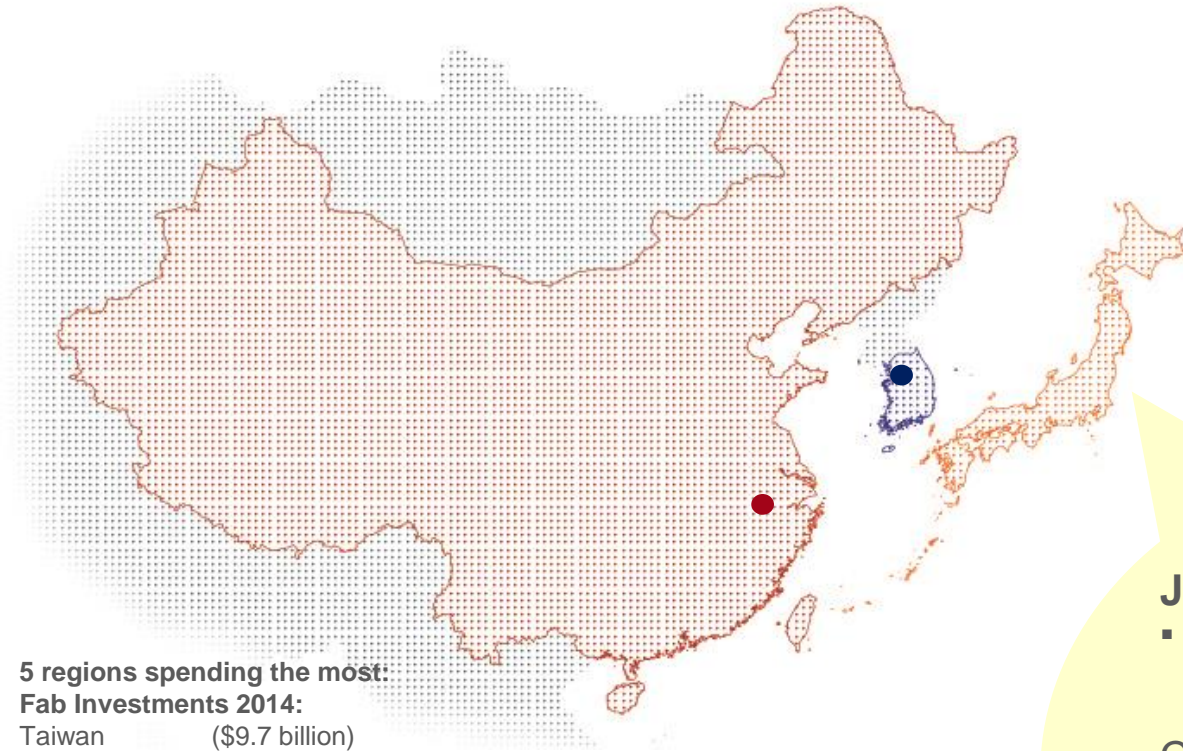
## China / Taiwan

- Advanced technologies required for Semi and non-semi applications

## COMET success

- Build up 2 new important OEM's in Semi / LED
- Business Development in non-Semi markets
- Reinforced customer support and sales force
- Fast reaction time due to own subsidiary

# Build up & develop new Customers in Japan



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## Japan

- Advanced technologies required for Semi and non-Semi applications

## COMET success

- Defending vacuum capacitor Business
- Opportunities to be identified with new Key Accounts (beside ETERIS (Tell/Amat))