



Gudeng

Protection

Innovation

Storage

EUV Pod development and evaluation update

Chenwei Ku

Agenda



- **Research & Develop Roadmap**
- **EUV mask carrier development / product status, issues**
- **Supporting data or test results**
- **Commercial availability**
- **EUV pod into production with Gudeng's platform**

Research & Develop Roadmap



<Reticle Handling Solutions>

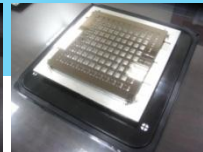
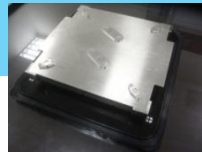
Product roadmap

ArF



EUV Pod Production

ArF DPT



Demonstration & Deliver

Evaluation Testing

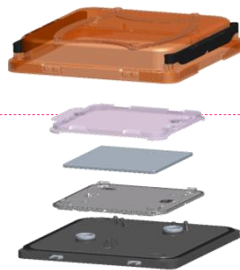


EUVL (NA0.25)

Testing & Evaluate

EUVL (NA>0.32)

Prototype



1st EUVL

Modification Approve by Scanner Supplier

ISMI Interoperability

EUVL Production

2nd EUVL Prod.

2011/10/13

2009

2010

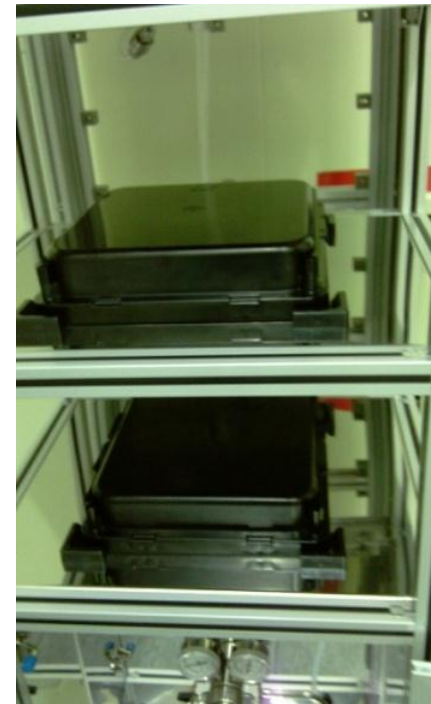
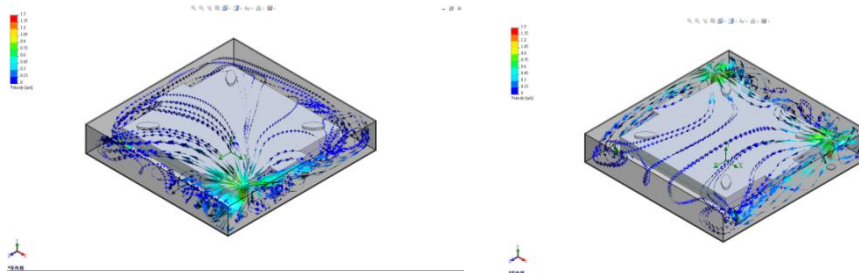
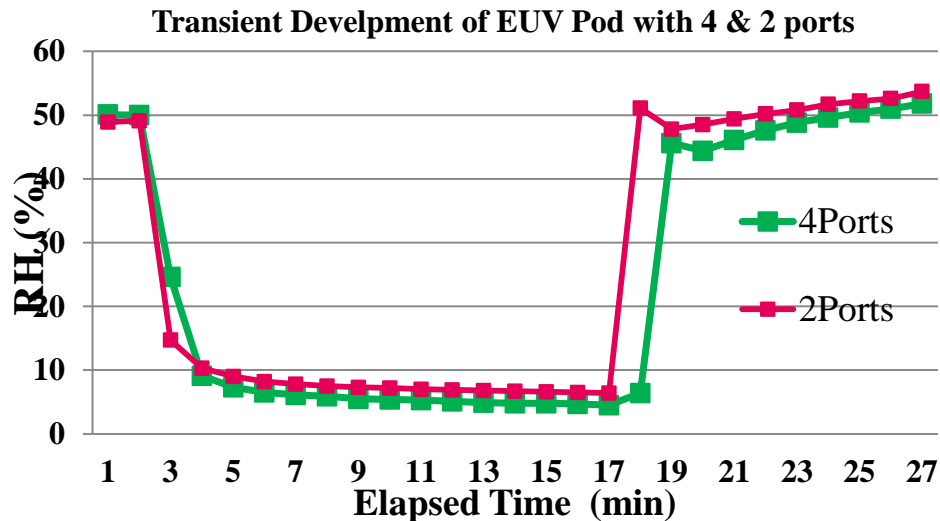
2011

2012

2013

Investigation- Standardize Purging Ports (SEMI E152)

- Proposing two additions to E152:
 - Two purging ports: location only (4ports)
- Add a new figure to E152 to define those changes.

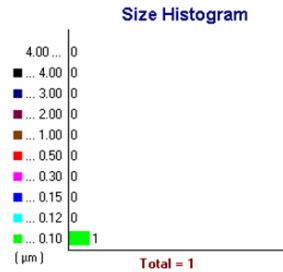
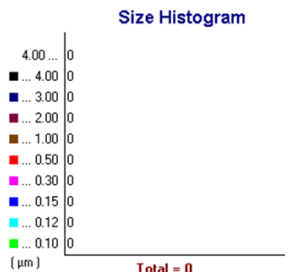


Particle Test- Robotic Transfer in Atmosphere

Frontside adder

Backside adder

Inspection sensitivity is 100nm.
Inspection area is 142mm X 142mm.



- Transfer blank from RSP200 to dual pod 100 times for each pods.
- The test result in using transfer from RSP200 to RSP200, normally particle added from 0 to 1.
- 0.01 adder/cycle on both the RSP 200 and EUV pod.

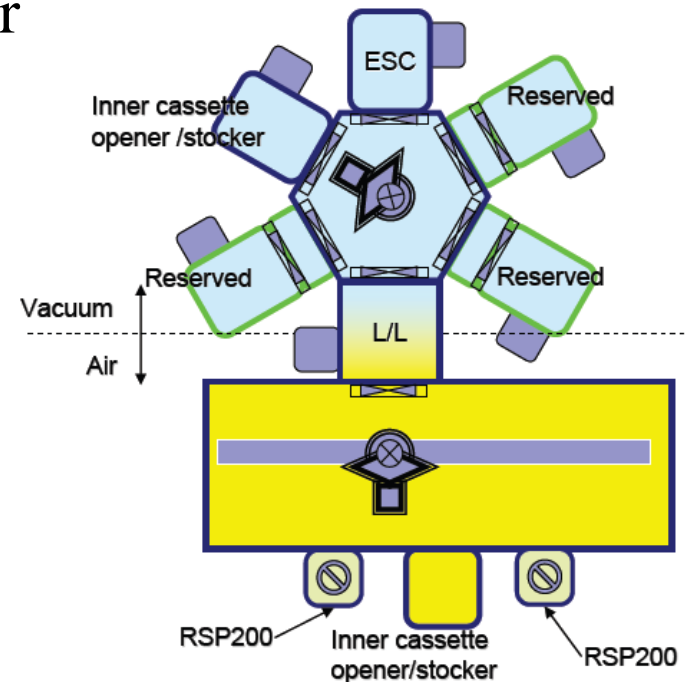
Particle Test- Vacuum Chamber Handling Test

- **Testing Procedure**

- A substrate is loaded inside the pod after the initial inspection with Lasertec MAGICS M3350.
- The pod is put on the loadport of Selete MPE Tool.
- The inner pod is transferred into the vacuum chamber via the loadlock.
- The substrate on the inner pod baseplate retraces its steps to the outer pod

- **Cycle Time: 220 cycles**

- **Inspection Level: 4pix ← 46nm PSL**



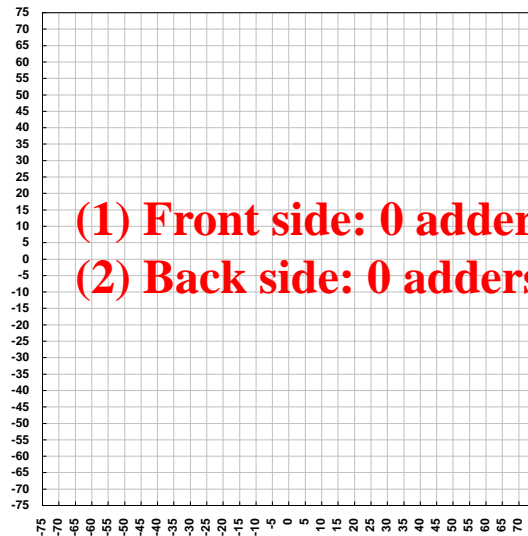
Support by Selete

Results- Vacuum Chamber Handling Test

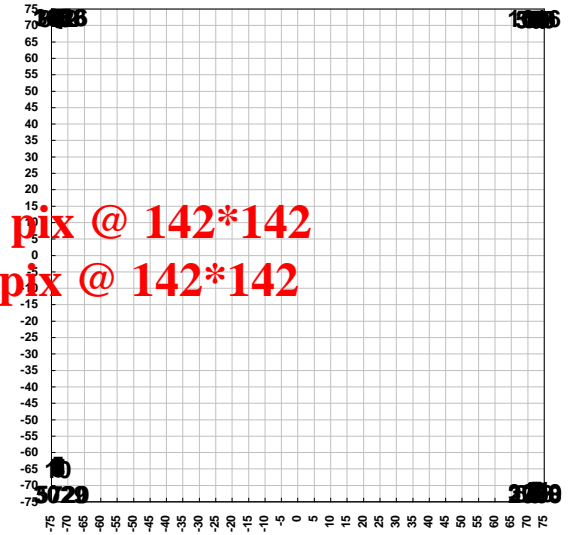


220 cycles

X	Y	pix
		Dense(Normal)



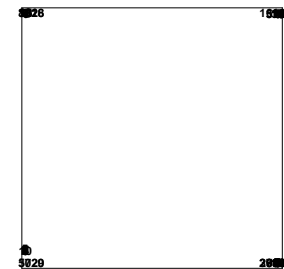
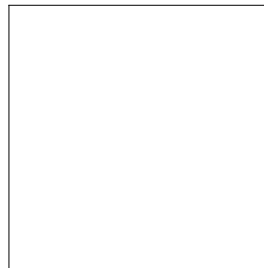
(1) Front side: 0 adders ≥ 4 pix @ 142*142
 (2) Back side: 0 adders ≥ 4 pix @ 142*142



<FRONT>

<BACK>

The area of 146 x 146 mm² was inspected.



Support by Selete

Commercial Availability



2009	2010	2011	2012	2013	2014
40nm	32nm	28nm	14nm	8nm	?

Prototype EUV Pod

Interoperability

R&D

Compliant

SEMI standard

1st EUV Pod for HVM

?

2nd EUV Pod

Joint
Development
Supplier

Market
Demand

R&D solution required 1.5~ 2 yrs ahead of Production

2011/10/13

Solution for Haze Prevention

Mask Process flow (in cleanroom)



SMIF pod / EUV Pod

- low outgas,
- ESD shielding,
- excellent sealing,
- N₂/CDA purge function

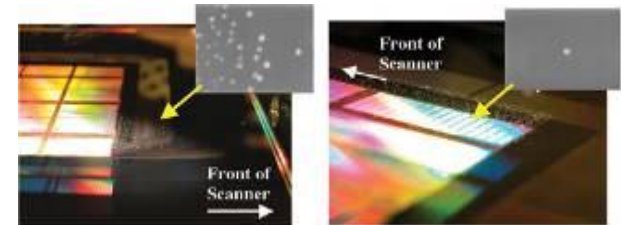
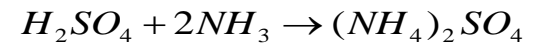
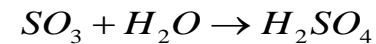
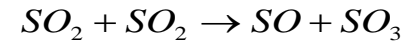
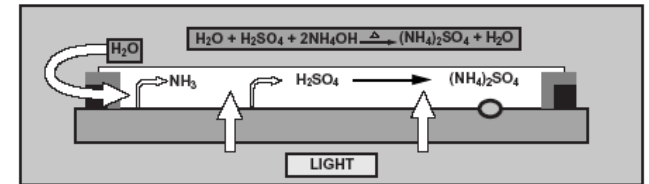
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Purge Station

- Continuous / intermitted purge
- Ultra-clean gas

approach

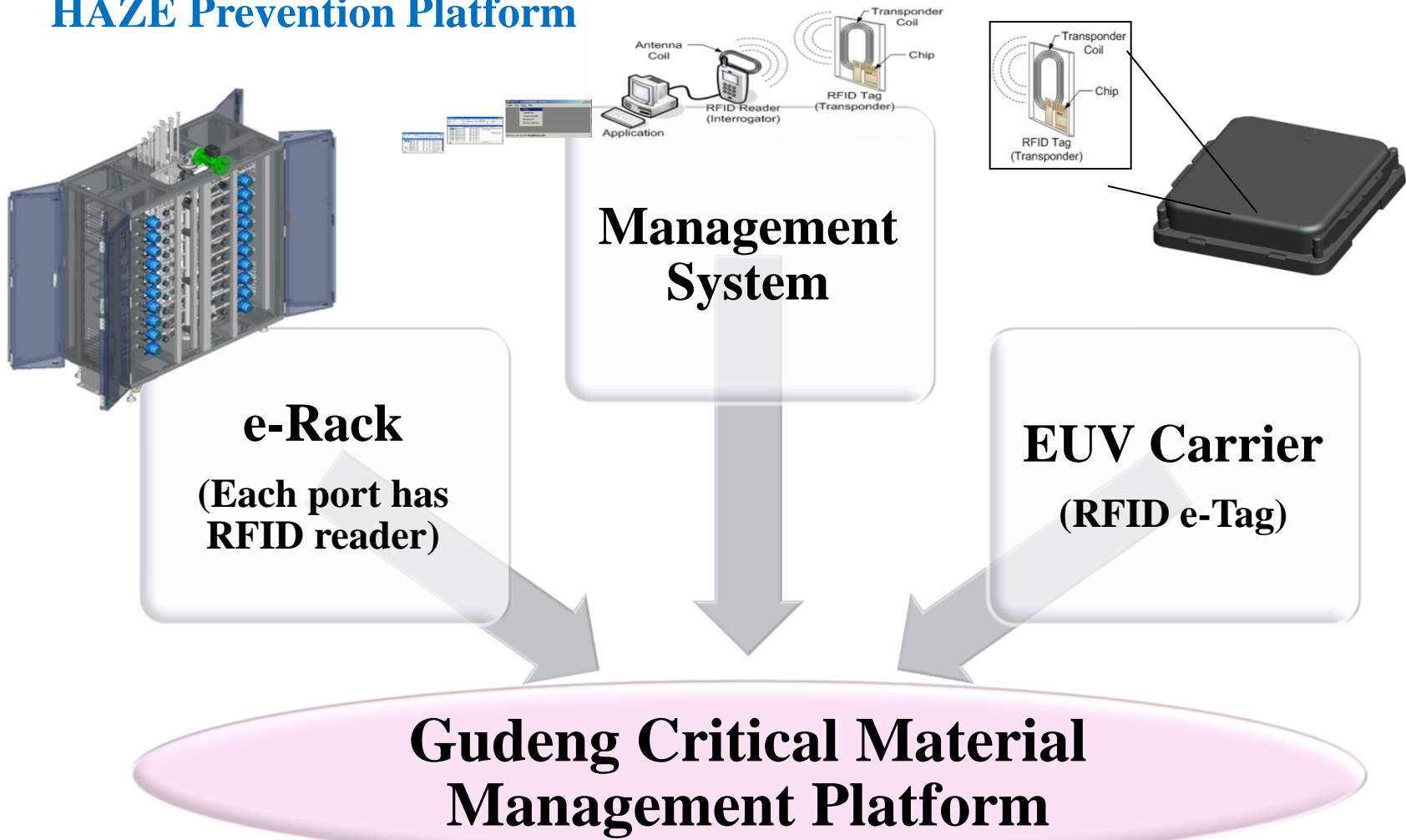
= Low initial / running cost & Low gas consumption & No haze goal



Maintain reticle within the ultra clean environment all the time with minimized running cost!

Implement the Program-Recommendation

HAZE Prevention Platform



EUV pod into production with Gudeng's platform



- Gudeng has been assisting customers to enhance their product yields and reduce production costs by providing customized products with innovative design concepts.
- Gudeng EUV dual pods devote our resources to be as good as in the robotic transfer test, and vacuum test.
- New commercial EUV pods be available for EUV industry use by the end of 2011.

Thanks for your Attention



- ***Customer Satisfaction and higher margin***

High customer satisfaction and good customer relationship

- ***Short Time to Market Period***

Design / Test / Manufacturing are all done in house, Speed and quality can be controlled

- ***Innovative Design to Meet Customer's Need***

Strong R/D team

- ***Customer- Oriented Design – We Design What Customer Needs***

Close and strong customer relationship