

Advanced Mask Carrier and
interface System
EUV masks Standard Meeting



C.Le Guet
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› Major changes in mask process and manufacturing flow

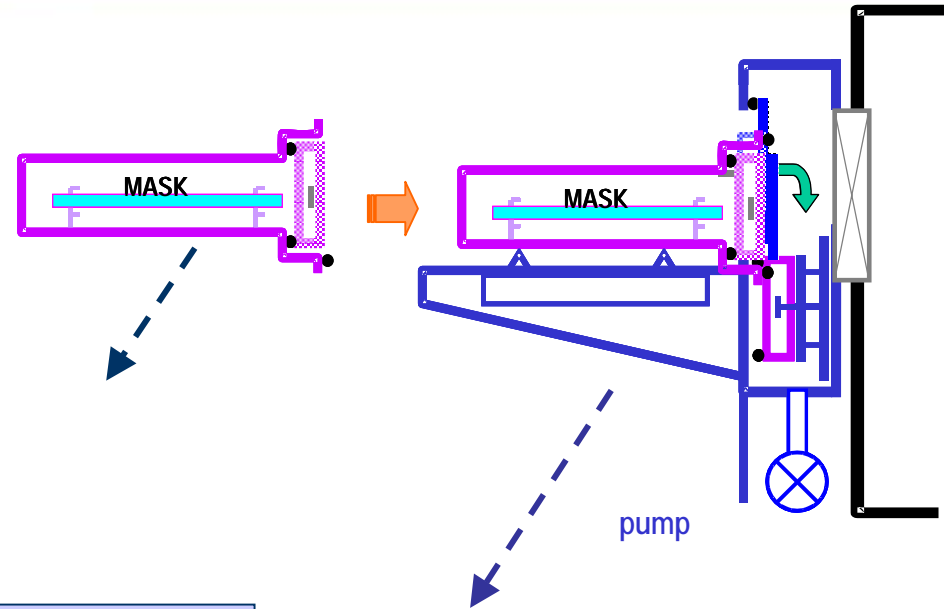
- pellicle, vacuum, Critical defectivity specs ...
- **Adsorbed molecular contamination/contrast killer**



Risky points identified:

- (Direct) **contact** to the reticle
- **Environment** (molecular and particles)
 - pumping/venting cycles are critical, need to be controlled and monitored

- > One carrier system for whole mask flow line
- > Air tight: Vacuum capable/atmospheric operations
- > Specific environment
- > Ultra Cleanliness
- > Automation



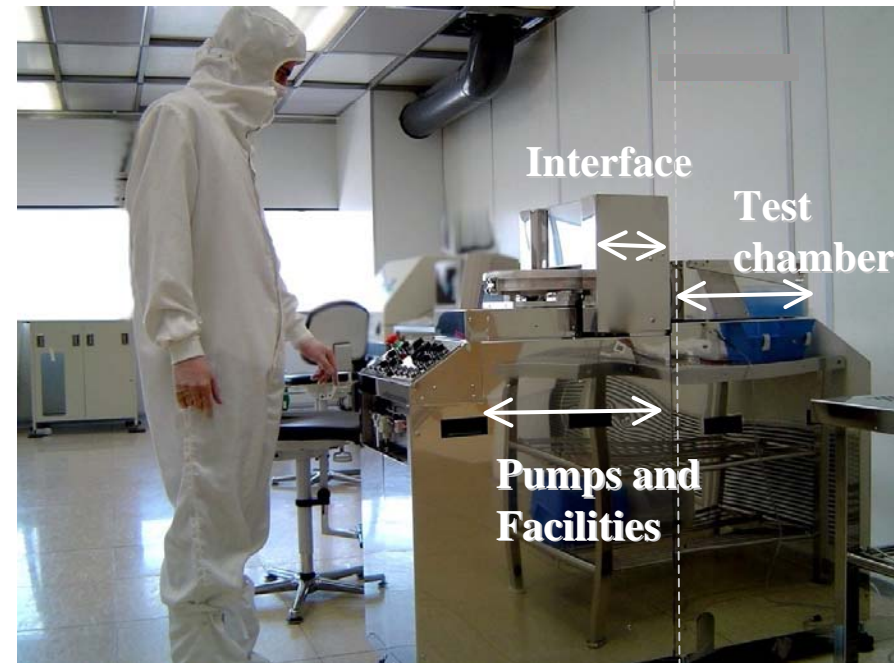
Carrier

- Advanced design
 - for complete mask material flow
- Advanced materials
- Mask protective enclosure (still opened)

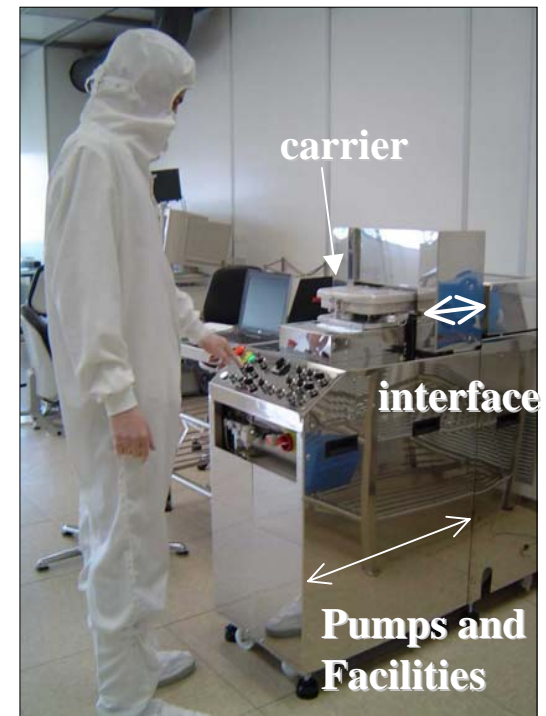
Interface

- Conditioning & environment
 - Pumping & venting
 - Opening & closing functions
- Automatic Process Control automation

- › Particles measurements
 - on full substrates scan
 - Tests without protective enclosure (Silicon substrate)
 - particles $> 0.15 \mu\text{m}$
 - 20 cycles/tests
 - atmospheric pressure and vacuum test runs
- › Particles number measured smaller than background noise level (< 0.1 part/cycle)
- › Beta system tests on



- › Standards on mask protective enclosure
- › To include **performances/contamination** requirements
 - low outgassing
 - molecular contamination
 - particles generation
 - ESD...
 - tightened/environment



- › Alcatel alpha system showed promising results
 - Beta system under tests
- › Standards Recommendations:
 - performances/contamination need to be considered
- › Data needed from Mask Shop/end Users for contamination/performances

adixen
by Alcatel Vacuum Technology

End



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