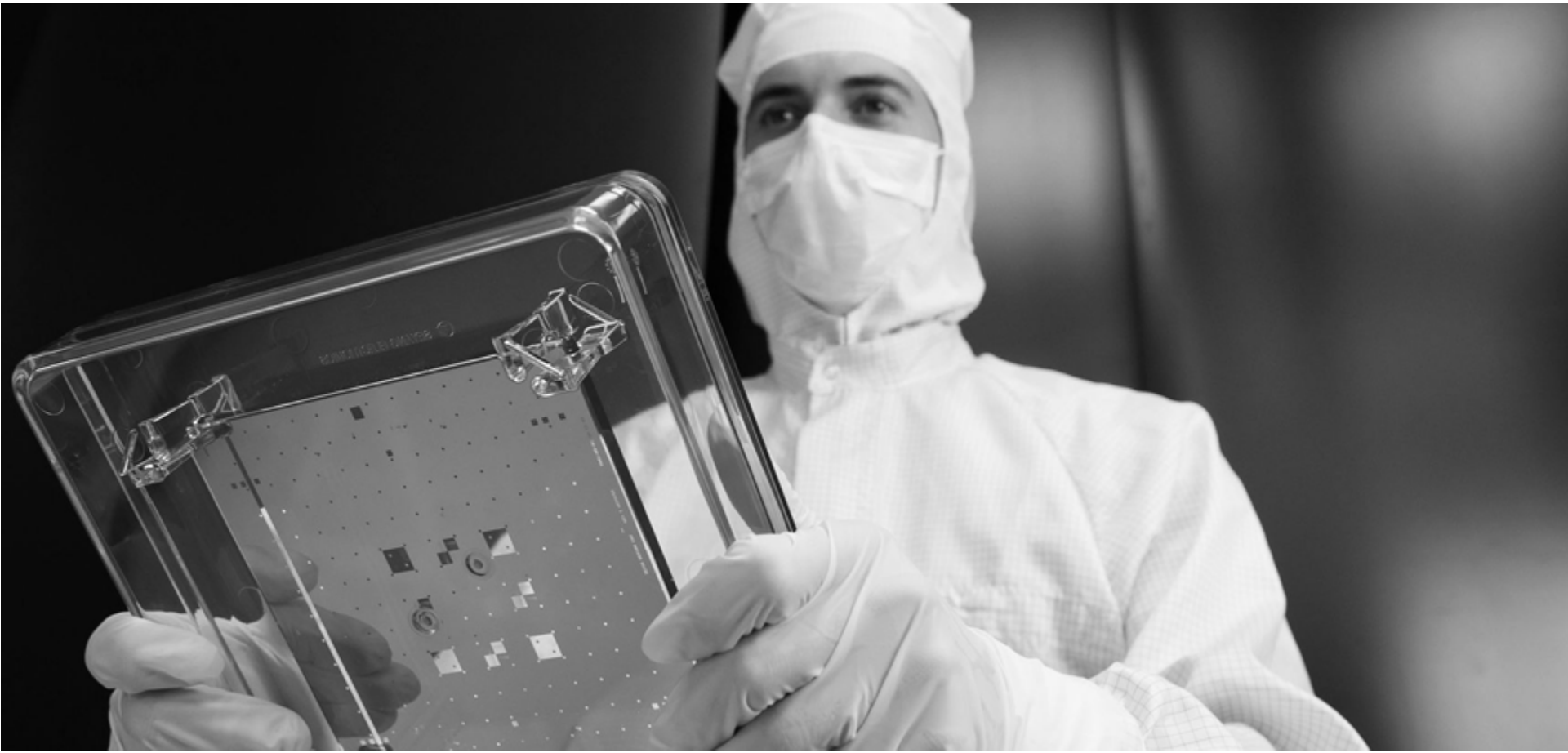
Source Requirements for Next Generation AIMS™ EUV Mask Metrology Tool (Aerial Image Monitoring System)



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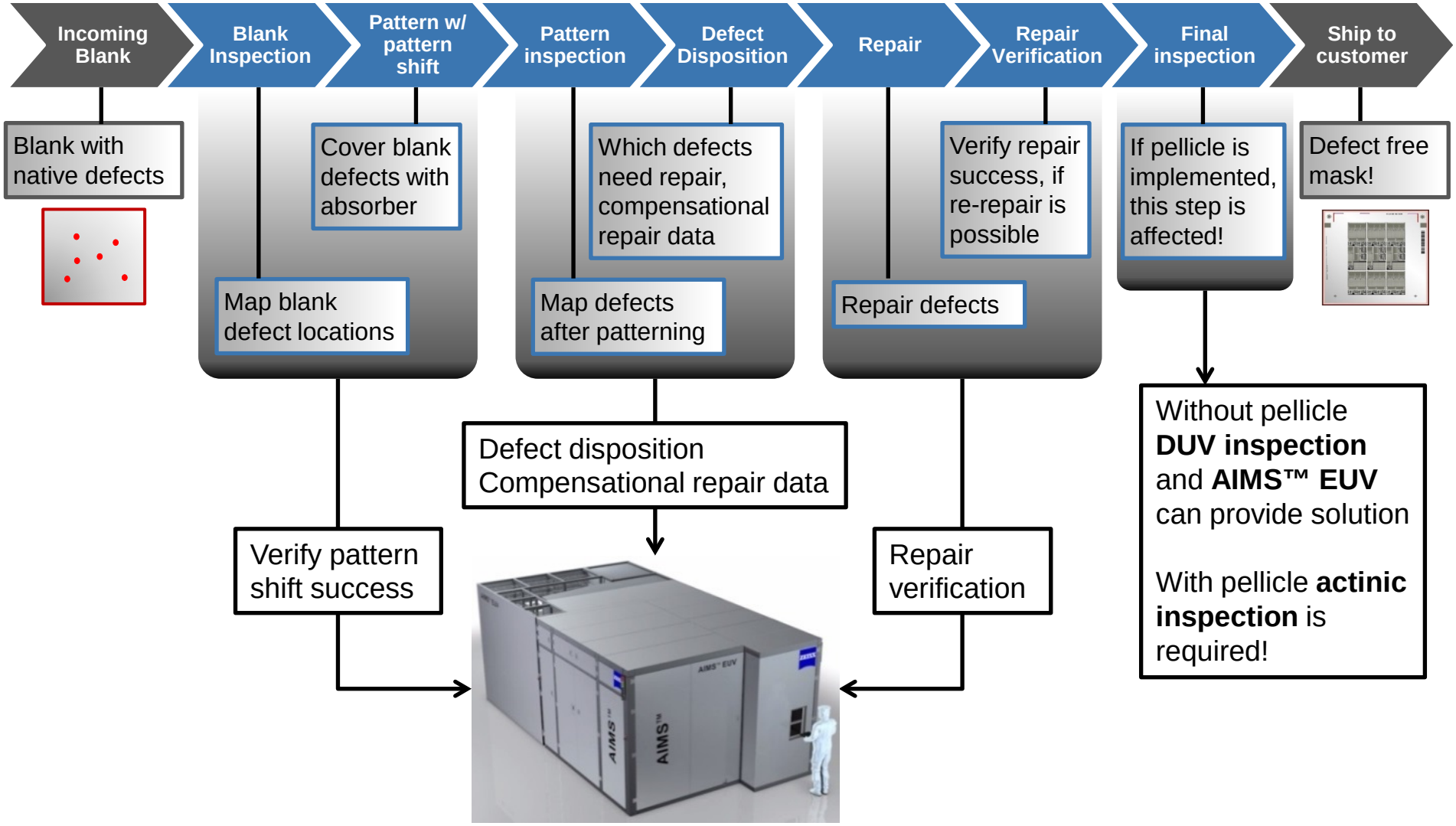
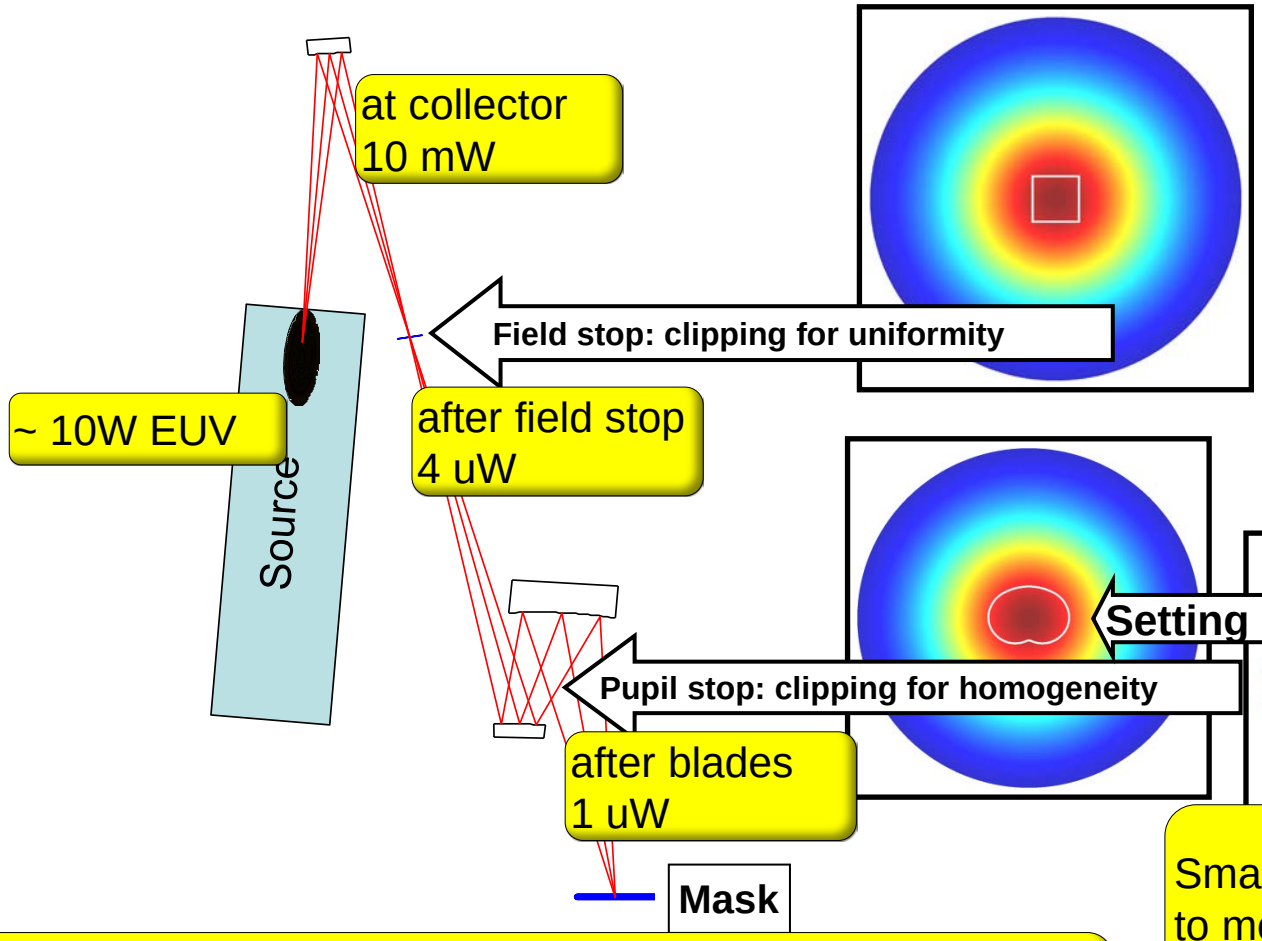
Role of AIMS™ EUV in the mask shop
As first actinic metrology tool, there are many aspects



Current Concept for AIMS™ EUV Illumination
Source brightness is important



Most of the EUV radiation is lost due to geometrical clipping.
To maximize the photon count within the limited etendue, brightness is more important then source power!

Smaller pupil fill leads
to more clipping an the pupil

design example

AIMS™ EUV Performance Specifications

Performance Specifications		
Target node	**7nm logic** (16nm hp)	
Scanner emulation	Up to **0.33 NA**	
CD Reproducibility	**≤1.5 nm** (3σ, mask level)	
Run Rate standard 7 focus planes per site	**≥ 27.5/hr** **≥ 51/hr**	> 38.5% pupil fill > 77% pupil fill
Run Rate fast mode* 7 focus planes per site *CD-repro = 1.8 nm (3σ)	**≥ 55/hr**	>38.5% pupil fill

AIMS™ EUV targets NXE:3100 and NXE:33x0 aerial image emulation

Next generation AIMS™ EUV will require higher run rates at smaller pupil fill

Top Level Criteria for Next Generation AIMS™ Source

We are looking for a next generation source for AIMS™ EUV based on the key parameters

- Stability
  - Plasma position — <3% of FWHM*
  - Energy stability — <3.5% (3σ) pulse-to-pulse
- Brightness — > 30W/mm²/sr (minimum)
  >100 W/mm²/sr (target)
- Cleanliness — 100% (debris containment must be included in the source)
- Availability / Reliability

*The positional stability requirement variies depending on source characteristics and the illumination concept. A mixing illumination may relax this requirement.

We make it visible.