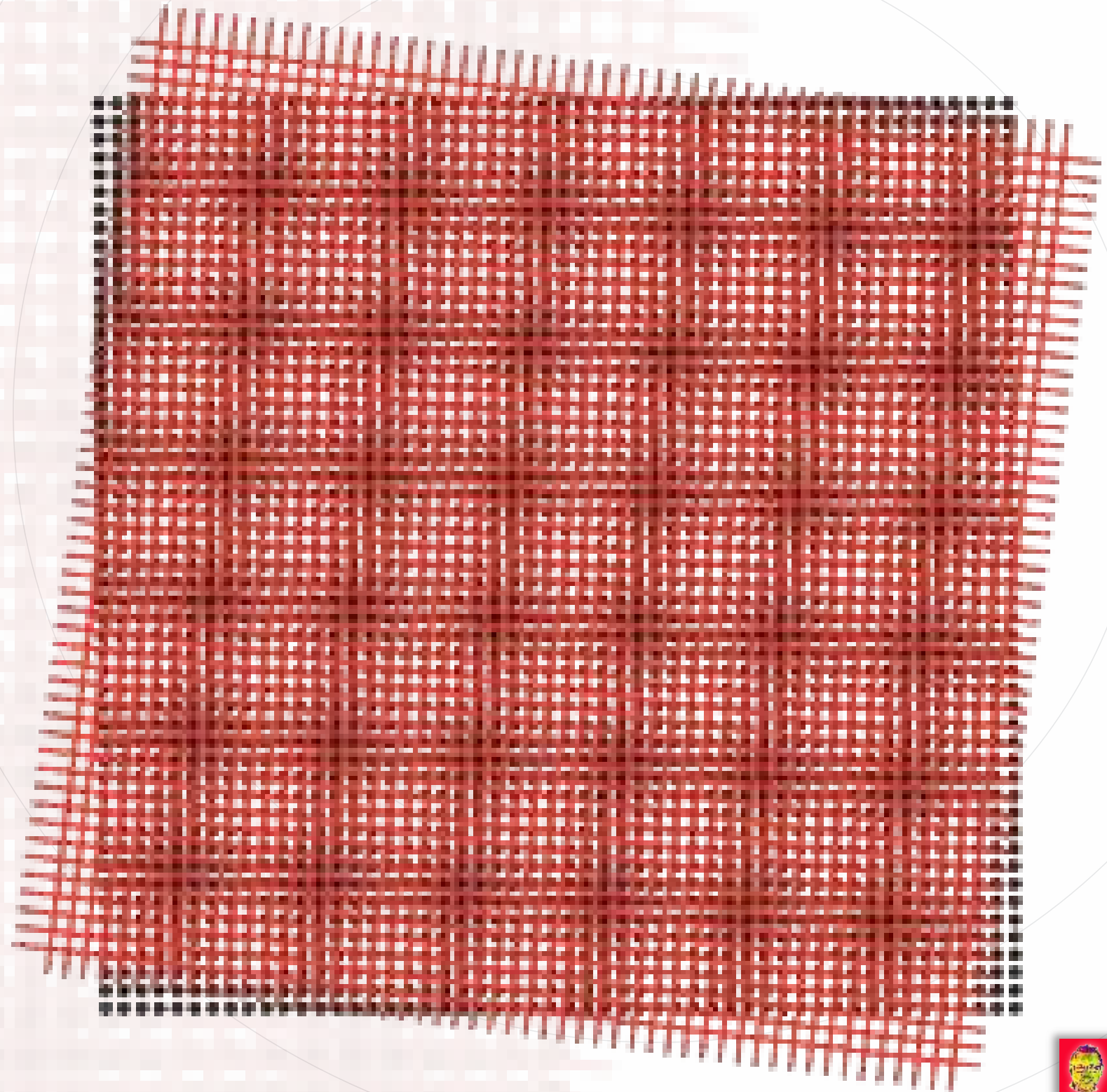


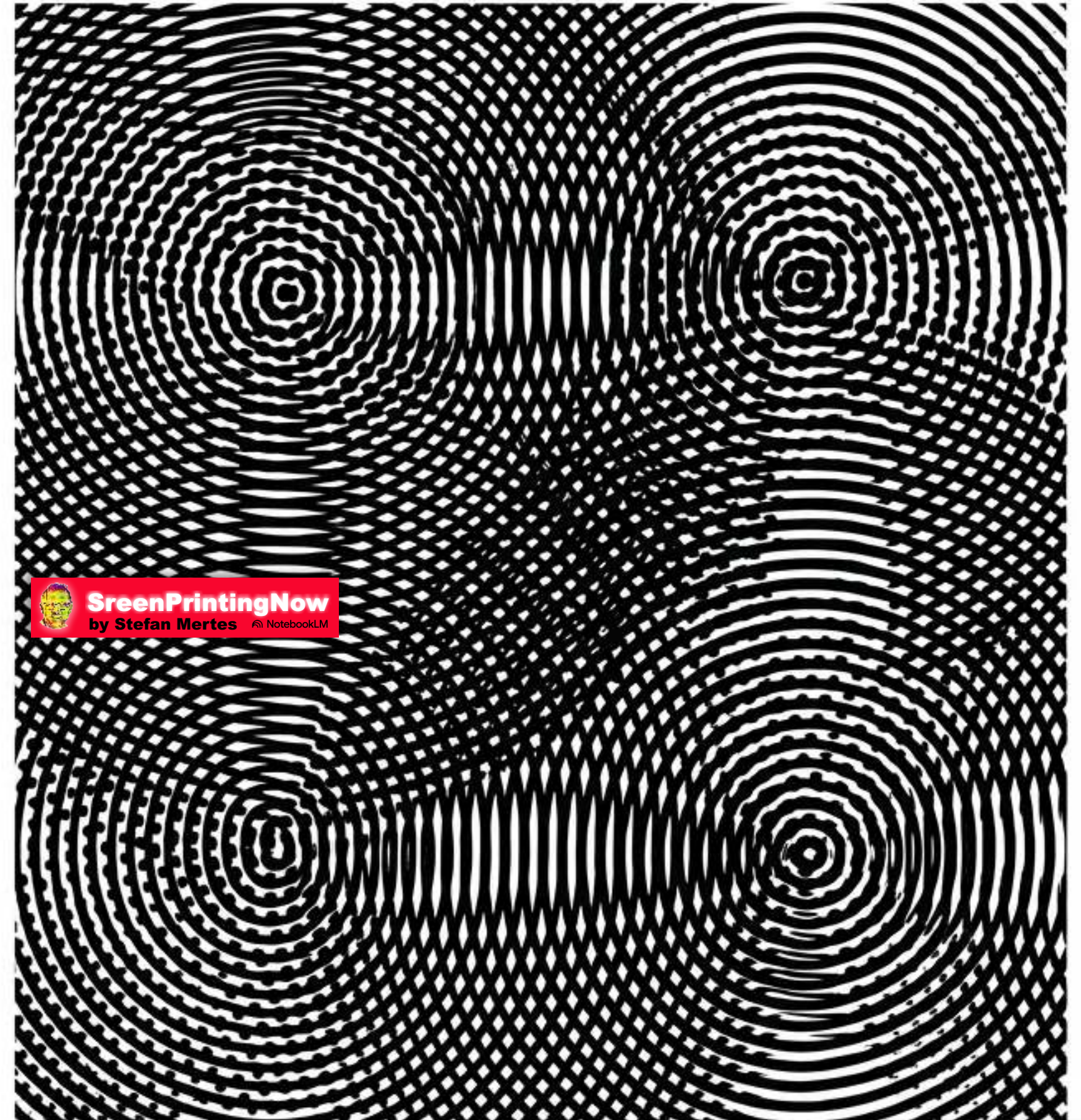
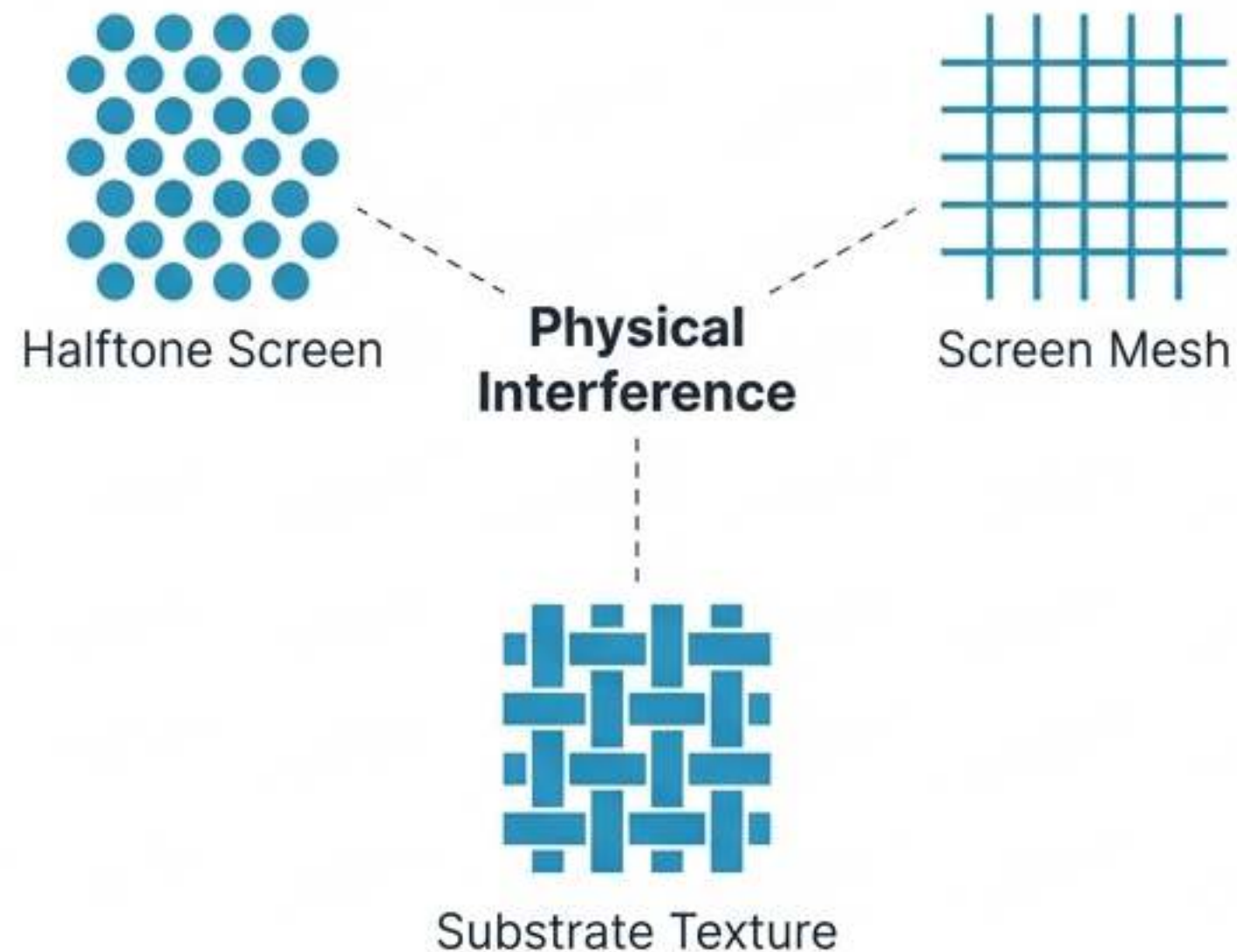
Avoiding Halftone Moiré Patterns in Screen Printing

A Technical Guide for Precise Results



The Interference Effect: The Physics of Moiré

Moiré patterns result from the physical interference of at least two overlapping geometric structures: the halftone screen of the artwork, the mesh structure of the screen, and the texture of the substrate.



A 5-Checkpoint System for Moiré-Free Printing

Preventing interference requires a systematic approach, moving from digital specifications to physical mechanics.





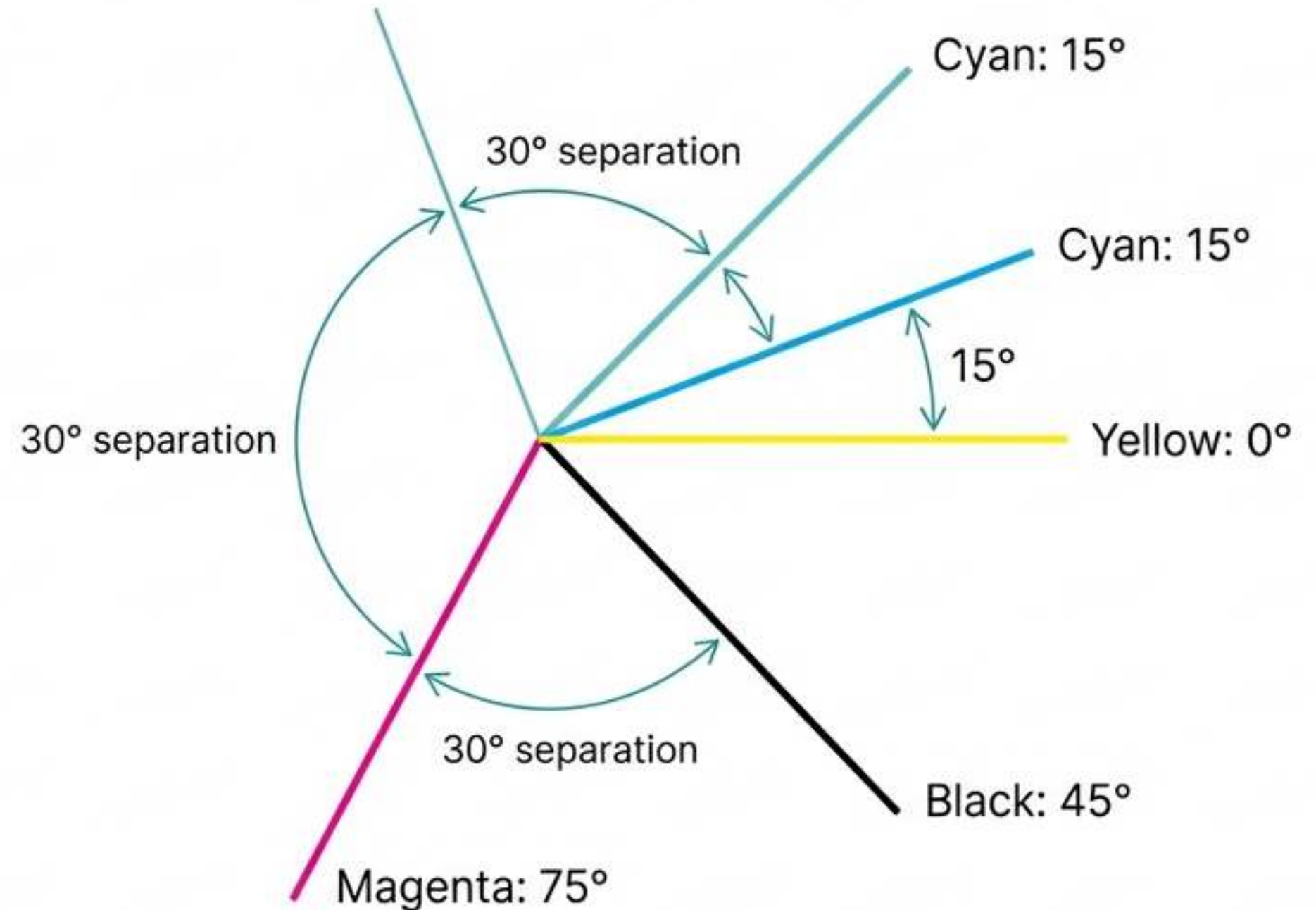
Checkpoint 1: Correcting Angles to Prevent Primary Moiré

A nominal 30° angle separation between Cyan, Magenta, and Black is mandatory.

Standard Specifications:

- Cyan: 15°
- Magenta: 75°
- Yellow: 0°
- Black: 45°

Critical Tolerance:
Maximum deviation: $\pm 0.5^\circ$





Checkpoint 2: The LPI-to-Mesh Ratio

$$\text{Mesh (per inch)} \approx \text{LPI} \times 4.5$$

Technical Reference Matrix

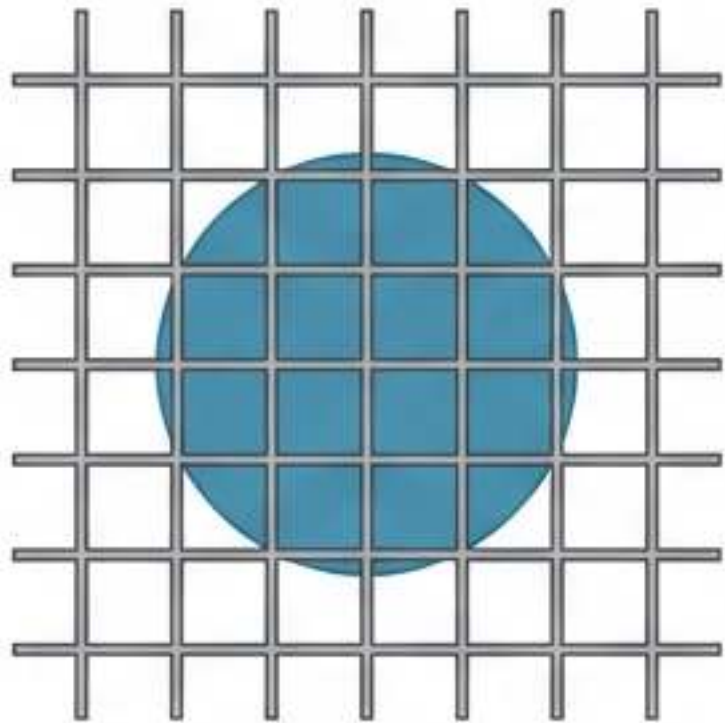
LPI		Recommended US Mesh
30 LPI	→	140 – 160 US Mesh
45 LPI	→	195 – 230 US Mesh
55 LPI	→	255 – 305 US Mesh
65 LPI	→	305 – 355 US Mesh



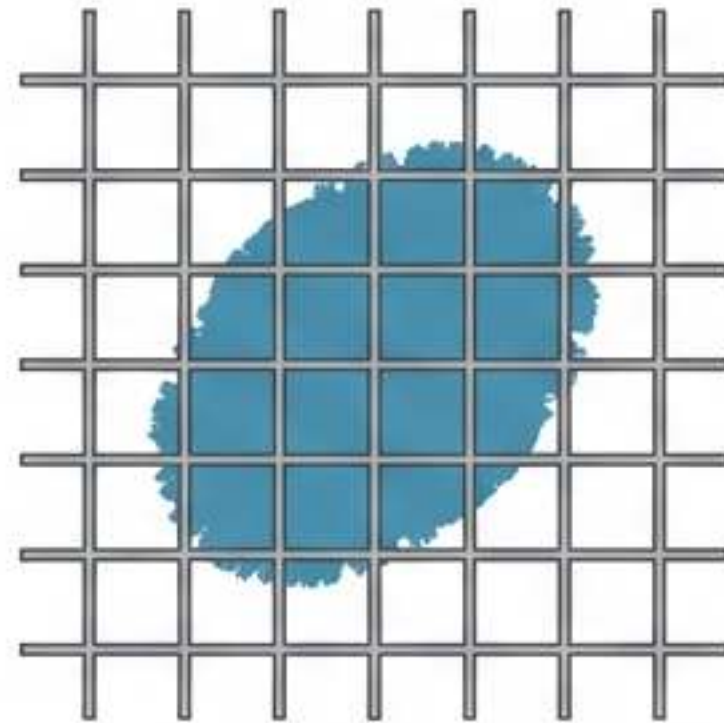
Checkpoint 3: Stencil Geometry and Thickness

Dot Shape

Round or elliptical dots offer the lowest Moiré susceptibility and highest mechanical stability.



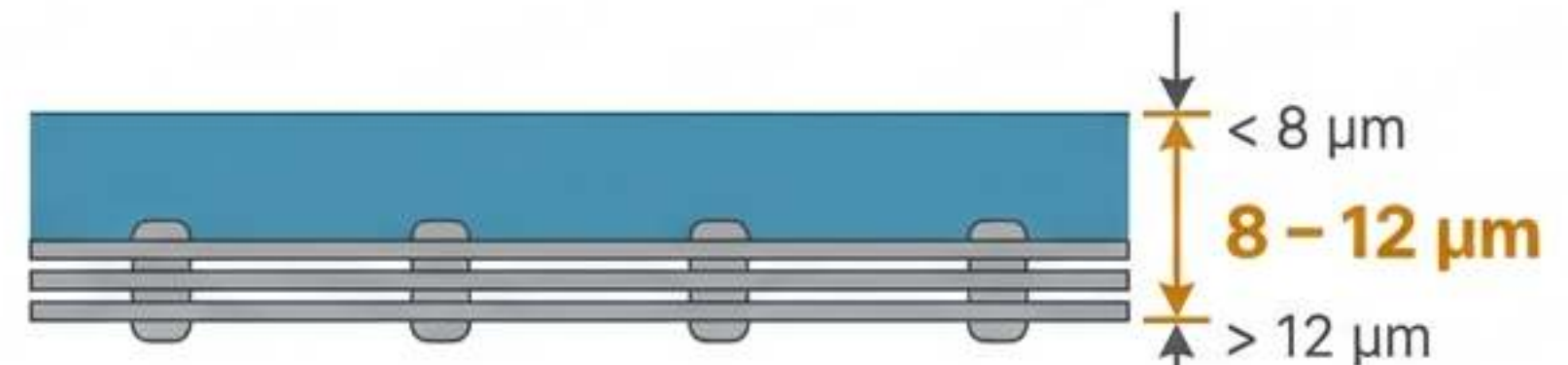
Good



Bad

Stencil Thickness (EOM)

- **Target:** 8 μm – 12 μm for sharp-edged halftones.
- **< 8 μm :** Risks poor mechanical anchoring to the mesh.
- **> 12 μm :** Leads to dot deformation from capillary effect.



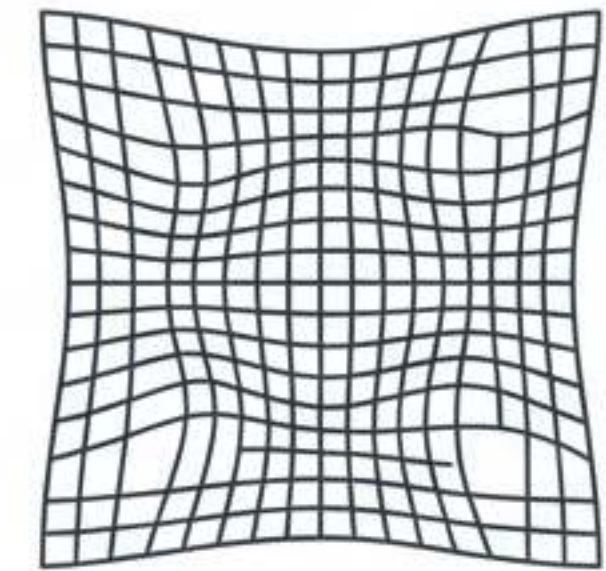
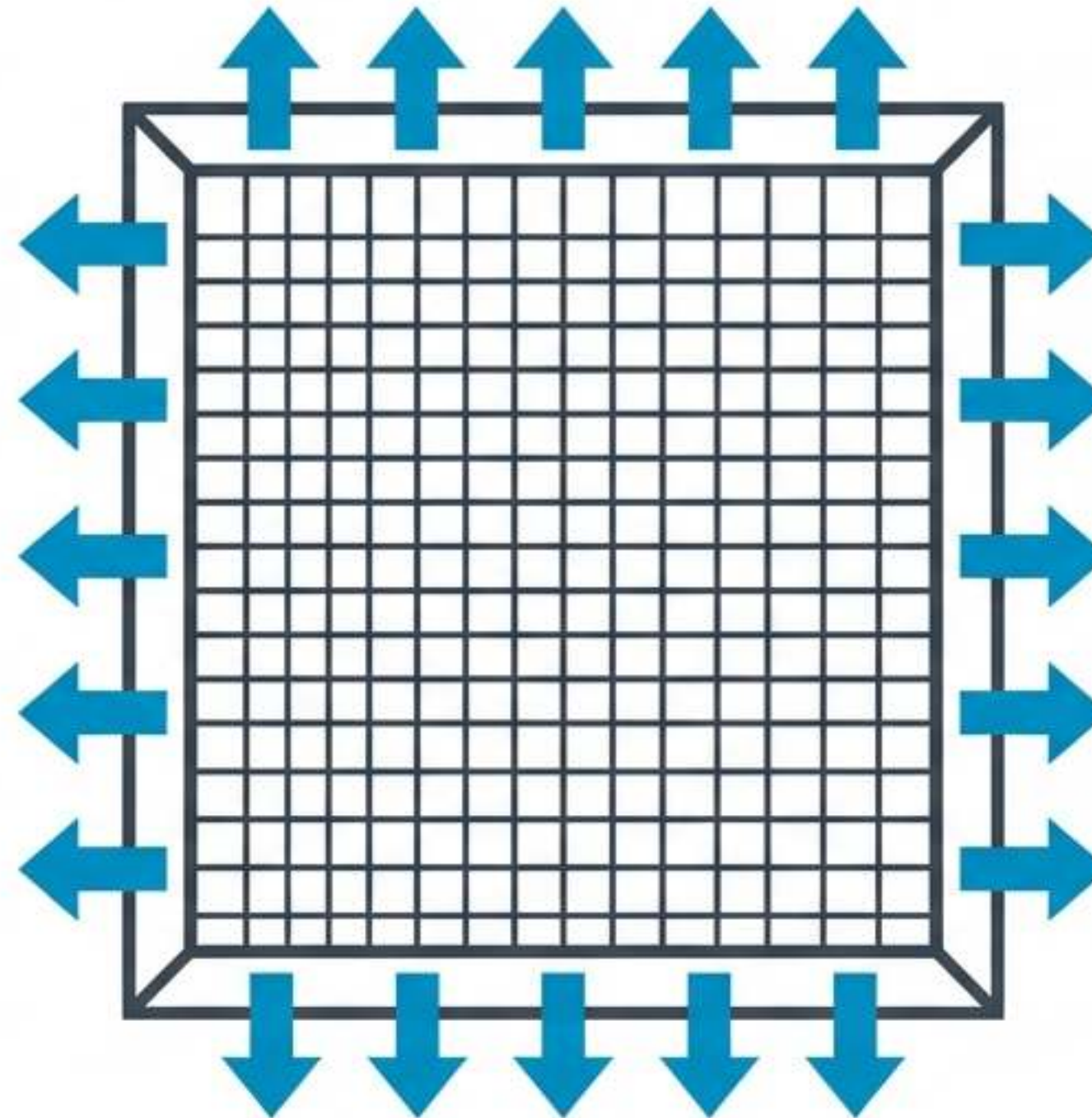
EOM (Emulsion-over-Mesh)



Checkpoint 4: Maintaining Uniform Mechanical Tension

The Standard
Inter Regular
Constant screen
tension with a maximum tolerance of $\pm 1-2$ N/cm is a technical prerequisite.

The Risk
Unevenly tensioned mesh causes local shifts in the screen angle during printing, provoking sporadic Moiré.



Uneven Tension



The Tool
Verify with a
Newton
Tensiometer.



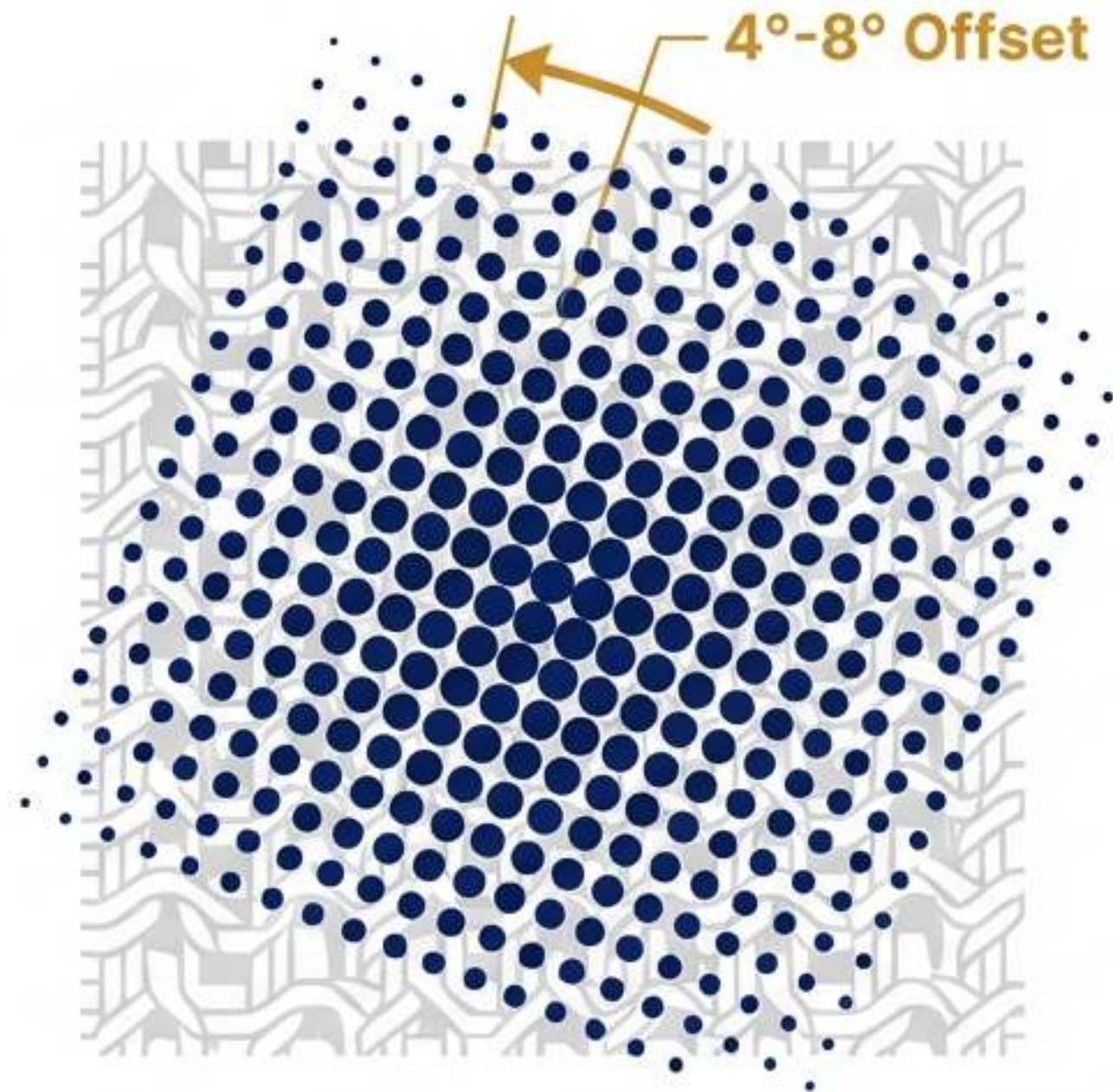
Checkpoint 5: Substrate Compensation for Tertiary Moiré

The Cause

Interaction of the printed screen with the surface structure of textiles (e.g., Piqué-ware, heavy knits).

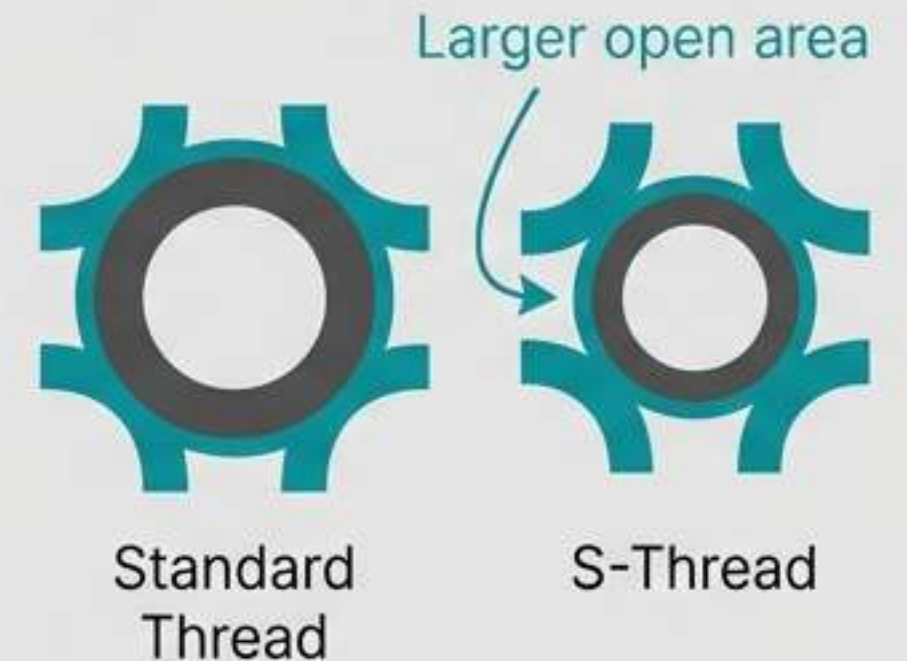
Solution 1 - Offset

Rotate the entire screen system by 4° to 8° to break parallel alignment with the fabric's weave.



Solution 2 - Advanced Mesh

Use S-Thread mesh for its reduced thread diameter, which significantly improves dot definition on structured surfaces.



The Point of No Return

Once printed, Moiré cannot be corrected. The interference is a physical property of the print.



Document the combination of Mesh Count, LPI, Angles, and EOM. This is essential for the reproducibility of industrial quality standards.

The Moiré-Free Workflow: A Summary of Specifications



ANGLES

30° Separation | $\pm 0.5^\circ$ Tol.

RATIO

Mesh $\approx$ LPI $\times$ 4.5

STENCIL

8-12 μ m EOM

TENSION

± 1 -2 N/cm

SUBSTRATE

4°-8° Offset Angle