HD Flexo

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What is HD Flexo?

- A new product for 2009 from Esko Artwork
- It revolutionizes digital flexo by offering imaging which is both **high quality** and **easy to use**
- It is developed from strong existing know-how
  - 4000 dpi Optics
  - Esko Screening Technology

Flexo vs Offset

Flexo has many advantages as a print process:

- Cost of flexo press is less than offset press
- 3 times less waste to get to “color OK” in flexo
- Good for packaging substrates
- UV inks: high speed and good density

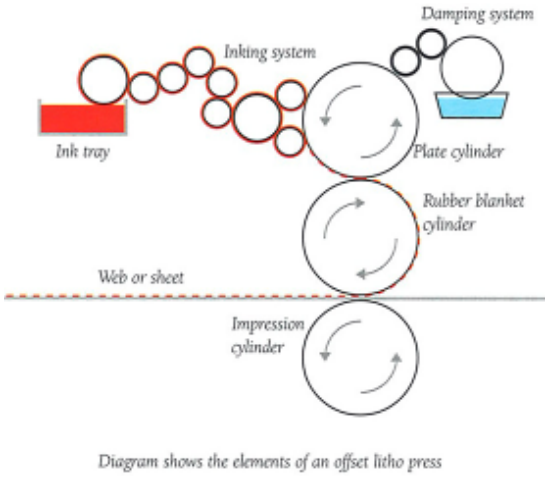


Diagram shows the elements of an offset litho press

Offset press - complex

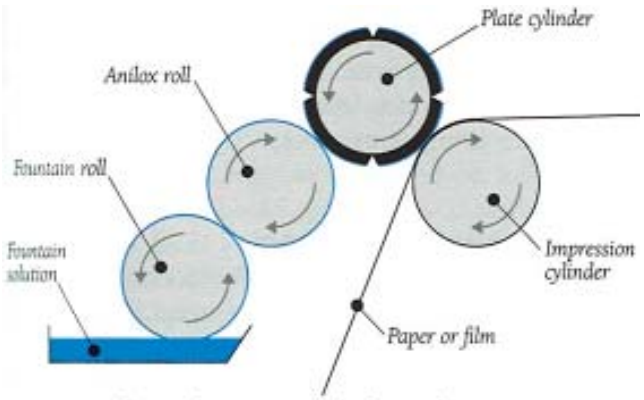


Diagram showing the components of a flexographic printing station.

Flexo press - simple & cheap

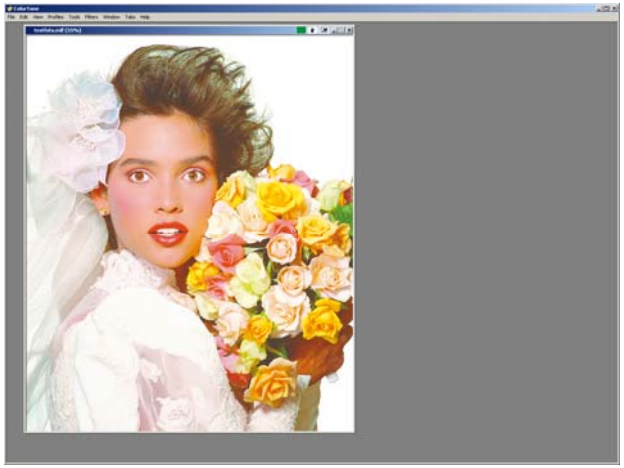
But prepress for flexo still had some limitations

- Digital CTP (the CDI from Esko) has made big improvements
- But tonal range was still limited

Minimum dot in Flexo causes reduced tonal range

- The minimal printable dot in the highlights causes:
  - Tonal Jump
  - Color shift
  - Loss of detail

Reduced Tonal Range !



So this has limited the applications for flexo

- Some designs very hard to print
- Manual adjustment of CT images needed
  - To bump up non-printable dots and deal with loss of contrast
- Intensive pre-press work sometimes needed
  - Different screening needed per object
  - Splitting jobs into different plates for lineart and CTs
- All increases the complexity, and limits the quality

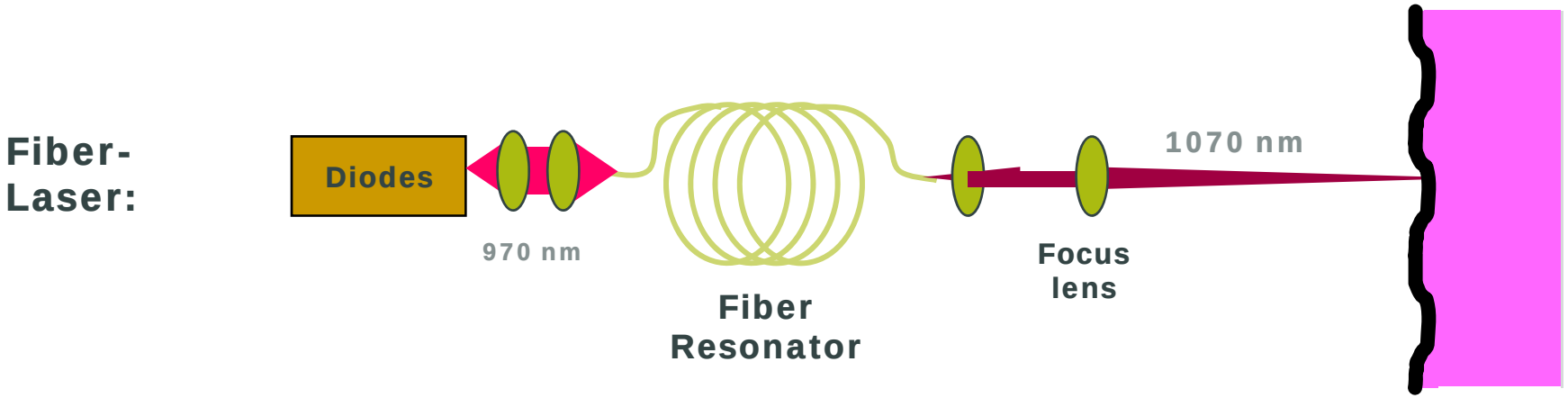
“HD Flexo” achieves a full tonal range - “like offset”

0,5% in CT prints with only 2% density.
No need anymore to bump up CT.
No loss of image contrast!
Pre-press is simpler and quicker – for higher quality

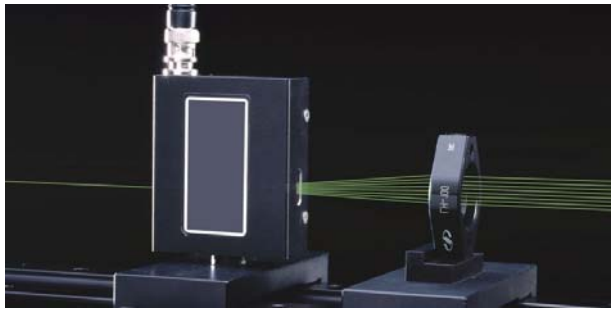
How does HD Flexo work?

HD Flexo = High Res Optics + new screening

- High Res optics is a finer (4000ppi) "writing pen" to image the plate
- Finer spot has the high beam quality you expect from the CDI
  - Very tolerant to variation in plate: stable imaging and printing

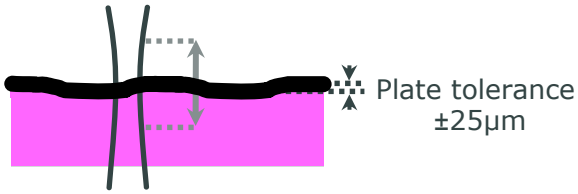


Imaging Optics – Technology Leadership



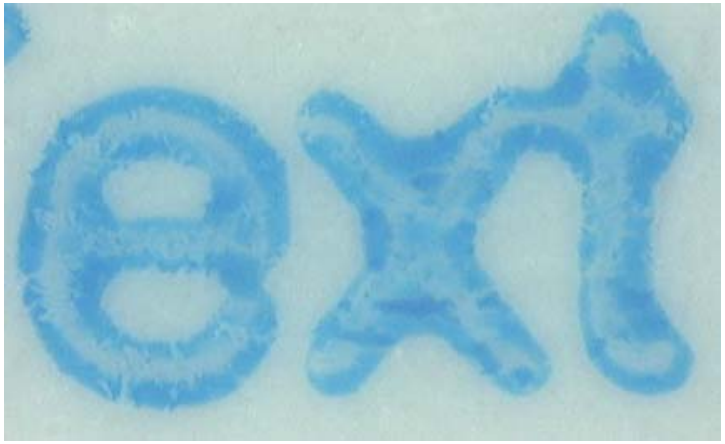
Acousto-Optics multiple beam generation:

- Up to 48 imaging beams
  - Low drum speed to ease plate loading
- Imaging beams are holographic copies of master beam
  - Easy and reliable calibration
  - Optics calibration constant within Laser lifetime
- High focal depth
  - 0.5mm focal depth for perfect ablation



High-Res Optics: improved lineart

- Lineart and type imaged more finely on plate
- So it prints cleaner, especially for small text

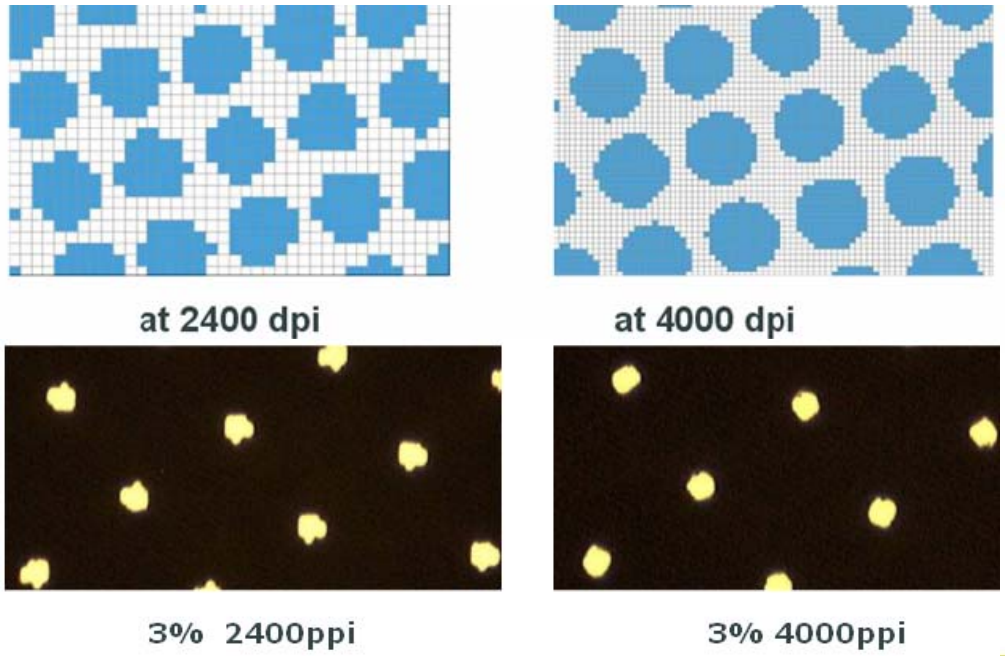


4p 2540ppi

4p 4000ppi

4000ppi Optics: finer screen dots

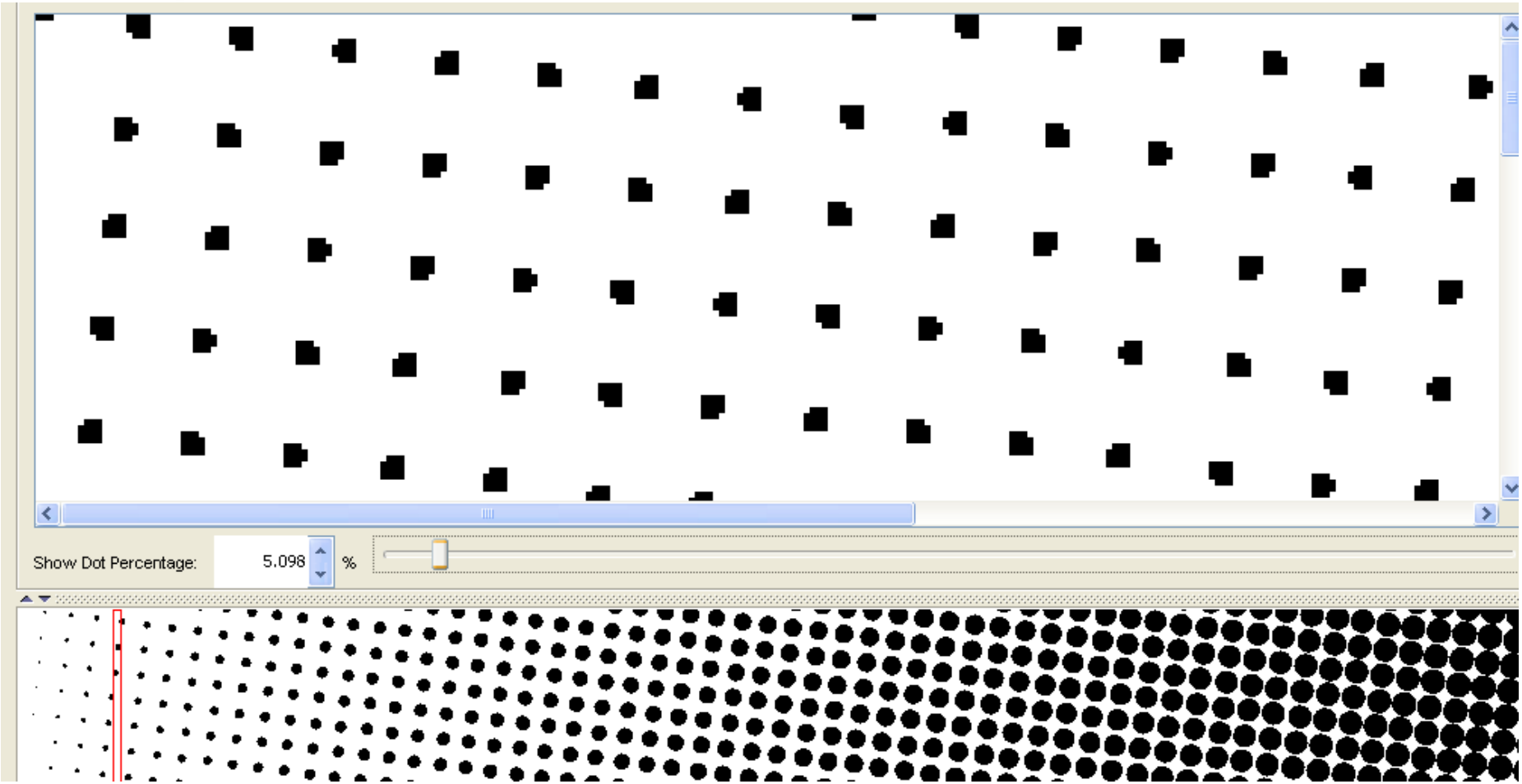
- 2.5 x more data to describe same dot shape
- Dots are more round and dot shoulders are perfectly shaped
- Rounder shape means less Dot Gain
- 4000ppi means dots can be smaller → highlights
- Extended tonal range 0 to 100%



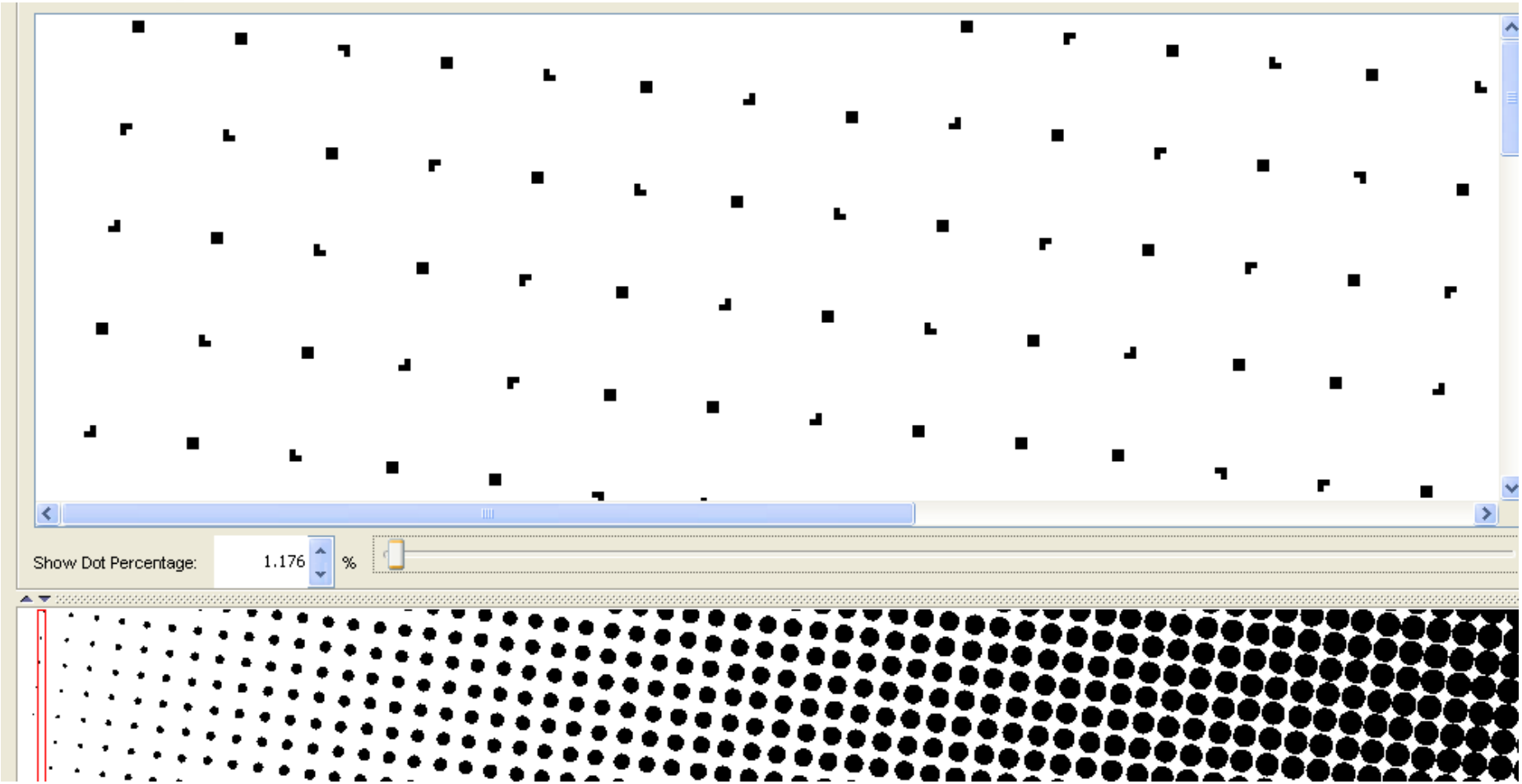
How the HD Screens extend tonal range

Lets start by looking at some digital dots

The traditional round dot works well in mid-tones



But the highlight dots are too small to print well



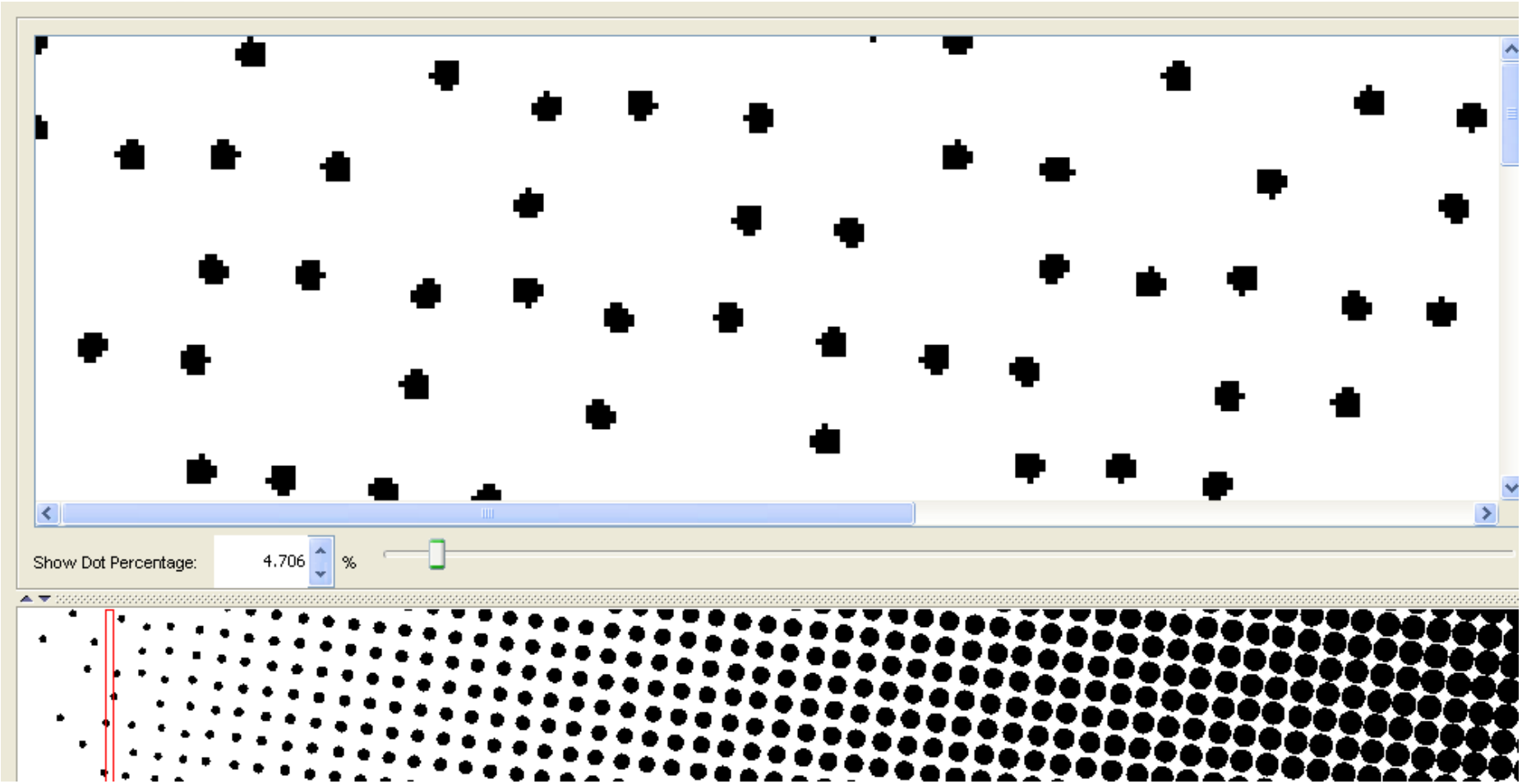
About 10 years ago, a technology was invented…

- "Samba" screening, from Barco
- "Hybrid" screening, from Artwork Systems
- And a host of imitators

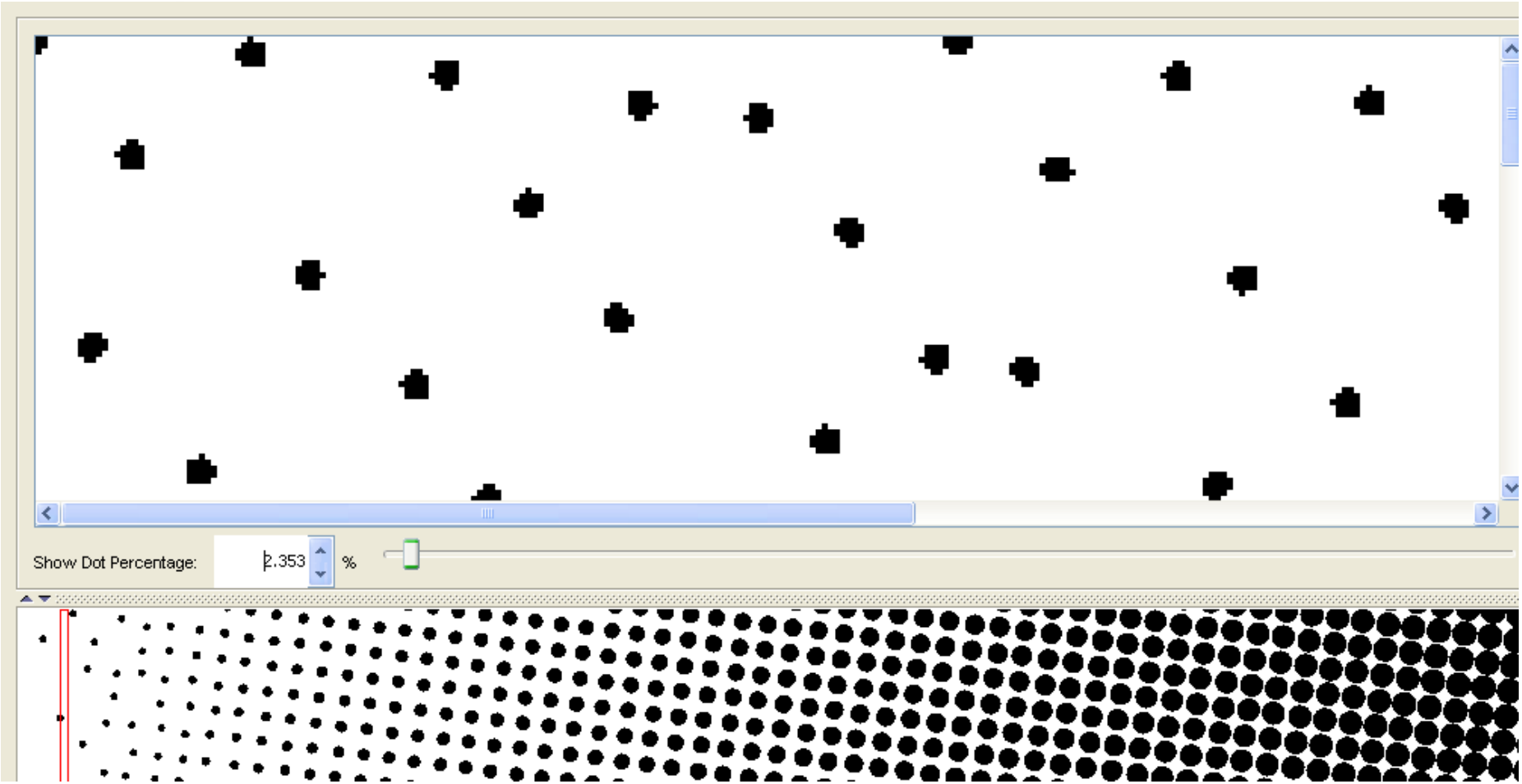
- Lets look at the digital dots formed by these hybrid systems, to see how it works…

Instead of making dots smaller, remove some dots

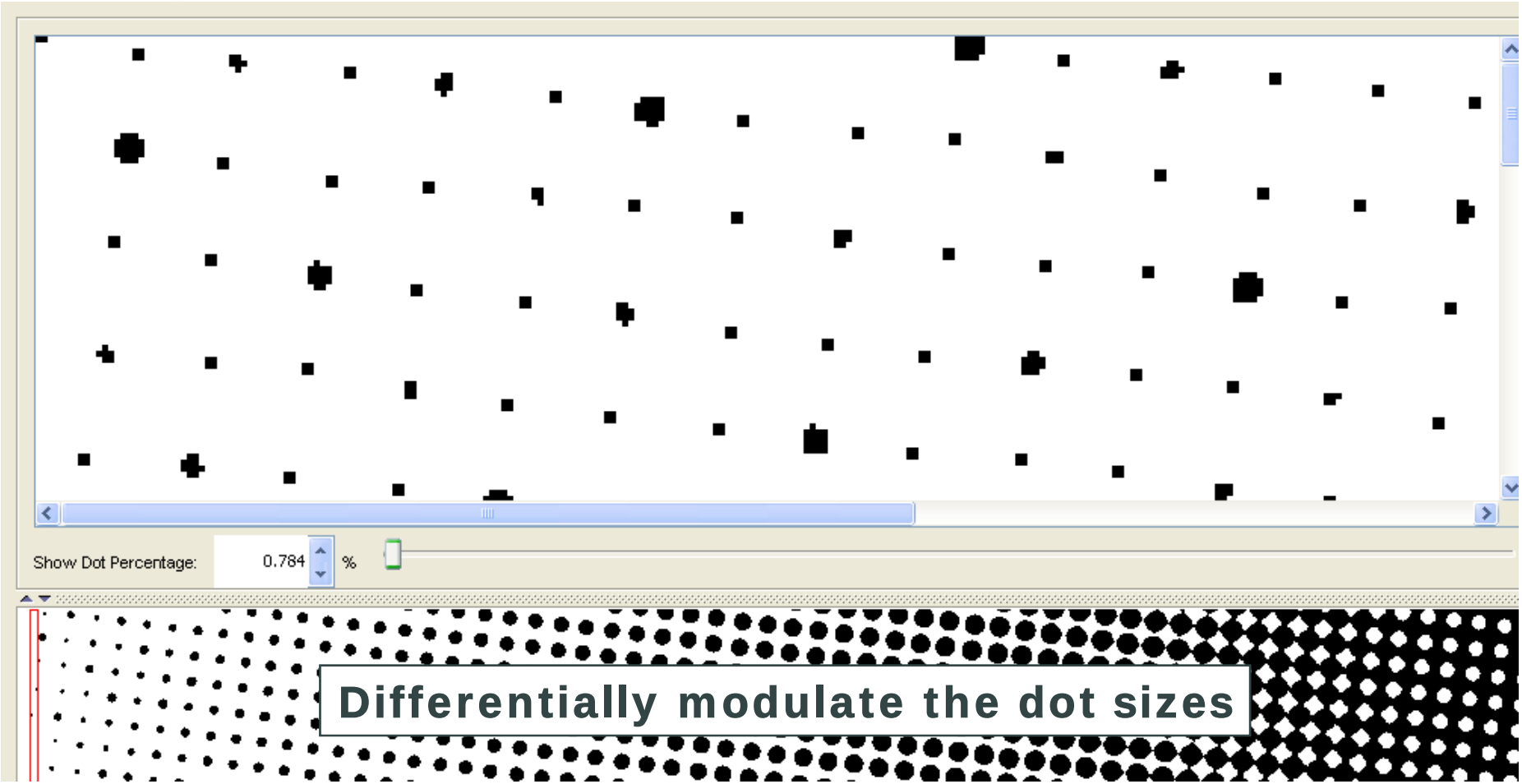
But a pattern with missing dots sometimes looks grainy



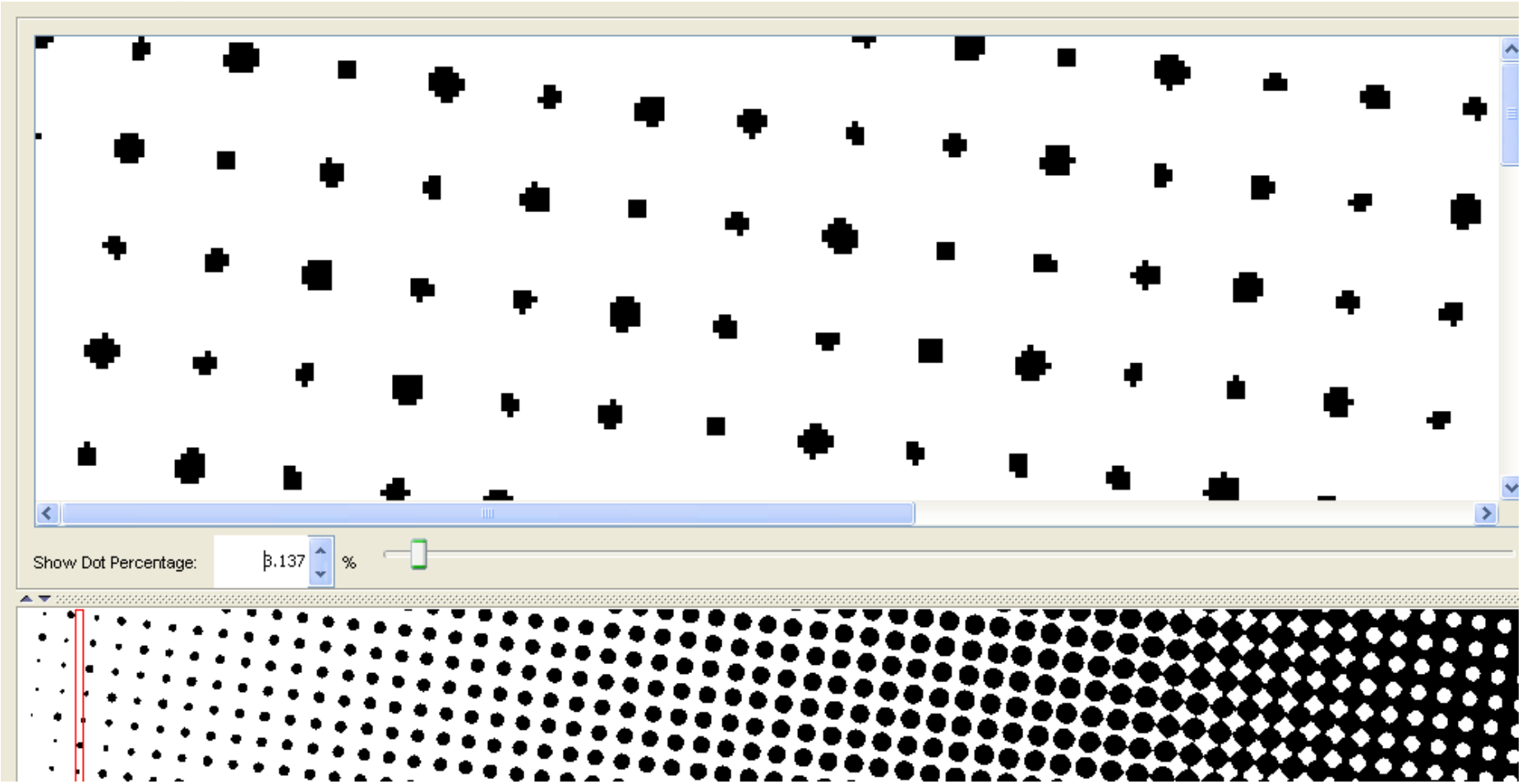
And a sparse pattern may lead to inconsistent printing



HD uses a mixture of dot sizes instead



Dots stay on the regular grid, so it is not grainy



Use higher rulings – with the same anilox

- The mix of large and small dots prevents "dot dipping"
- So you can use a higher ruling, without increasing anilox count

HD Screen

Mixed dot pattern stops "dot dipping". Good ink transfer with same anilox

Beyond quality - key benefits of HD Flexo

- HD Flexo has “the full tonal range of offset”
- This changes the game…
- Work can easily be switched between offset-flexo lines to optimize costs
- Screen ruling can be raised without the usual increase in anllox count
- HD makes prepress for flexo simpler and faster
  - Less need to edit or adjust CTs
  - Saves time, and less work means fewer errors

- In addition, HD plates have been proven to print more consistently than conventional in long print runs

- In short, HD is also a **cost saving solution** for today’s market - not just a luxury

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