HIGH END SOLUTION FOR HIGH QUALITY FLEXO

FLEX³PRO

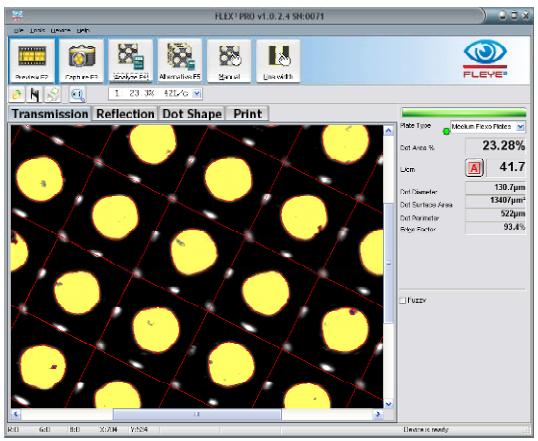
FAG Graphic Systems
CH 1003 Lausanne

Content

- Key design principles
- Control your Flexo process
  - Setup and control your Laser
    - Stain Density
    - Focus, Laser Power
  - Control your finished plate
    - Why checking the dot with the Lens is not good enough
    - Let‘s talk about the minimum Dot
  - Control your printing product
    - Measure the dot size
    - Measure the dot void

Key design principles for a High End Flexo Control Device

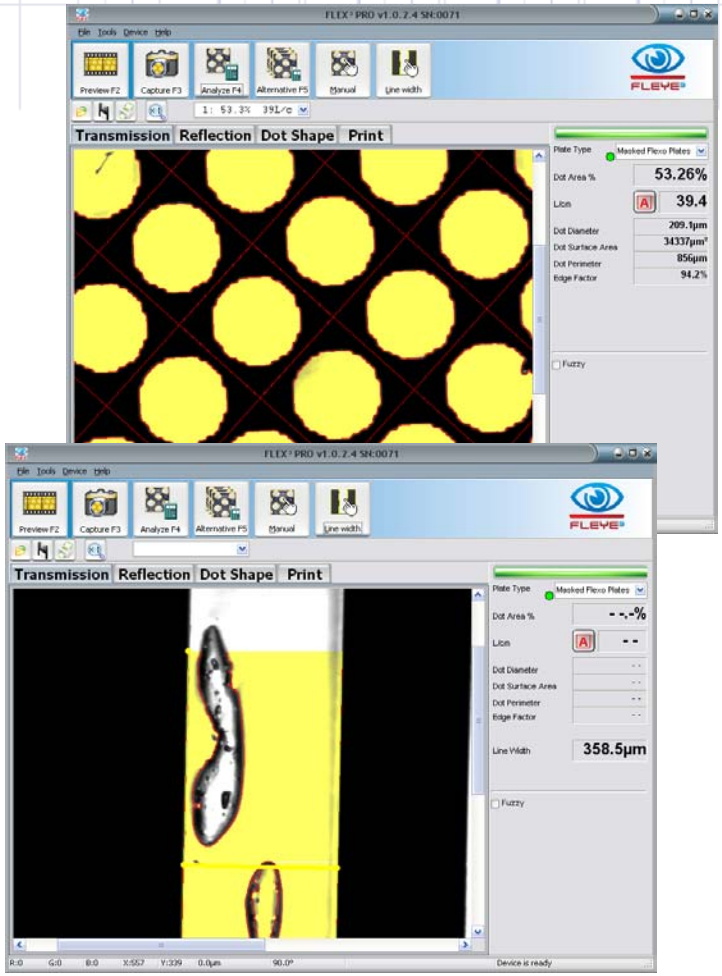
PATENT PENDING



- Positioning arm for transmission readings
  - Directed light source requires exact positioning
- Free hand use in reflection modes and 3D mode possible
- Transportable unit in self containing box
- Connected and powerd by USB
- Calibration Target on glass included
- Windows XP SP3, Vista and Windows 7

- Designed by the VIPFLEX developer Team based on 13 years of experience in Flexo control devices

Setup and control your Laser



- Control the Stain density
  - No transmission densitometer needed
  - Zero on area cleaned with a tape
  - Measure on 100% patch
  - The density is linear up to D1.000
- Measure the imaged LAMS
  - Dot size
  - Line width
- Compare results obtained with different Laser settings to determine the optimum.

High Contrast and sharp images are the base for accurate measurements

What happens when changing Laser parameters? The simple but powerful image comparison feature

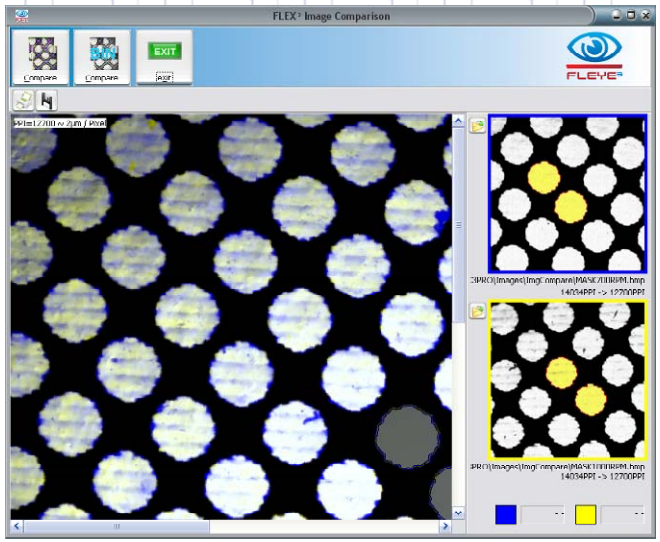
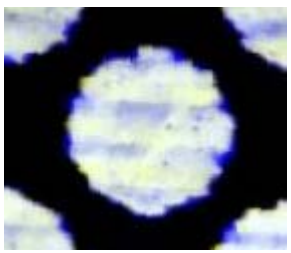
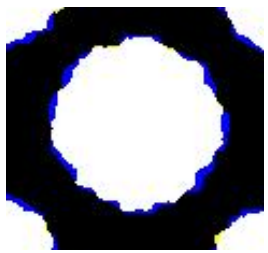


Image compare of
700RPM and 1000RPM



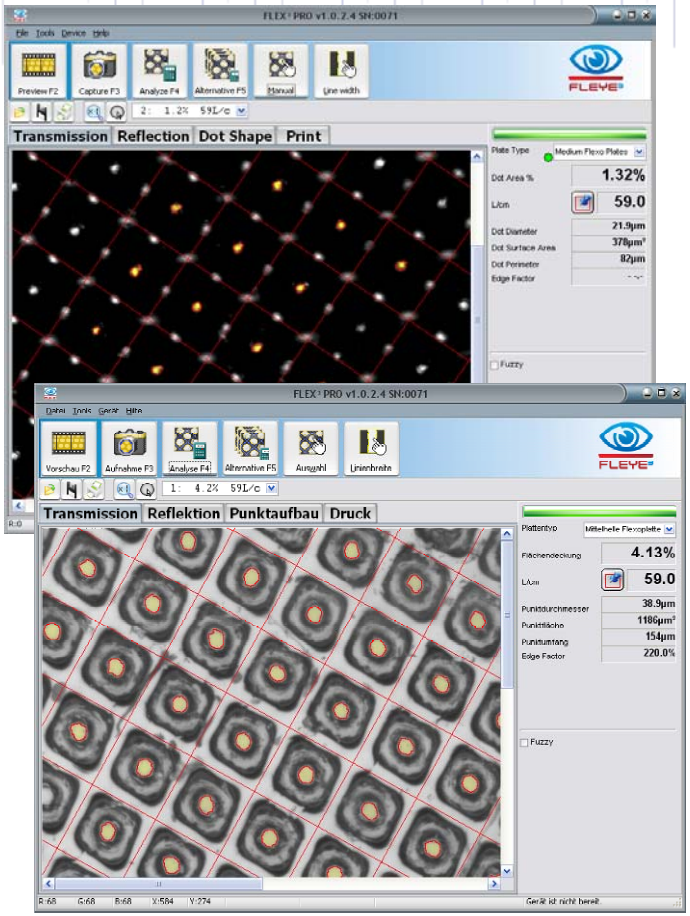


Impact of Changing Laser Power

- Transmission measurement:
  - The dot area% will change
- Analyze the reason for different dot area % by comparing images
  - Rounder dots (TIFF structure is rounded)
  - Engraving tracks removed

Images are automatically
- **resized**
- **rotated**
- **overlaid**

Measure the finished Plate:
Is a lens and a light table good enough?

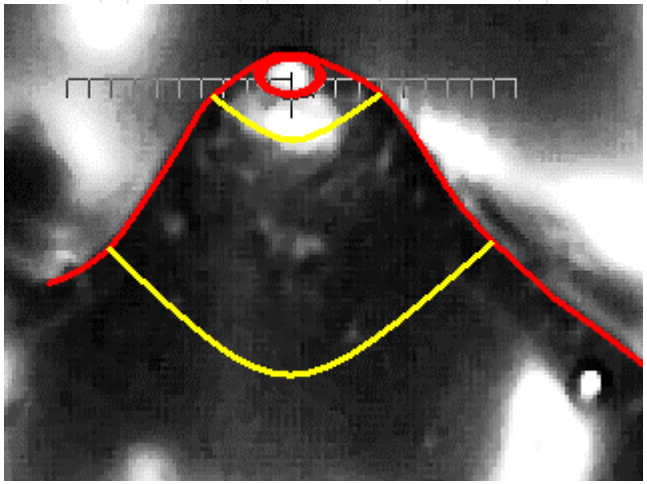


- 1% Dot at 59 L/cm
  - Expected Dot diameter is 19µm
- Measurement with FLEX³PRO
  - Dot Area is 1.32%
  - Dot Diameter is 21.9 µm
- Simulated lens approach
  - Standard light table
  - Plate in upside down position

- Dot Area measured is 4.13%
- Dot Diameter measured is 38.9 µm

What's wrong?

The directed light source advantages:



Red: real dot shape / plateau
Yellow: wrong plateau seen with lens

FLEX³PRO

- Directed (parallel) transmission light source:
  - Flat area -> white
  - Non flat area -> Black

Lens approach

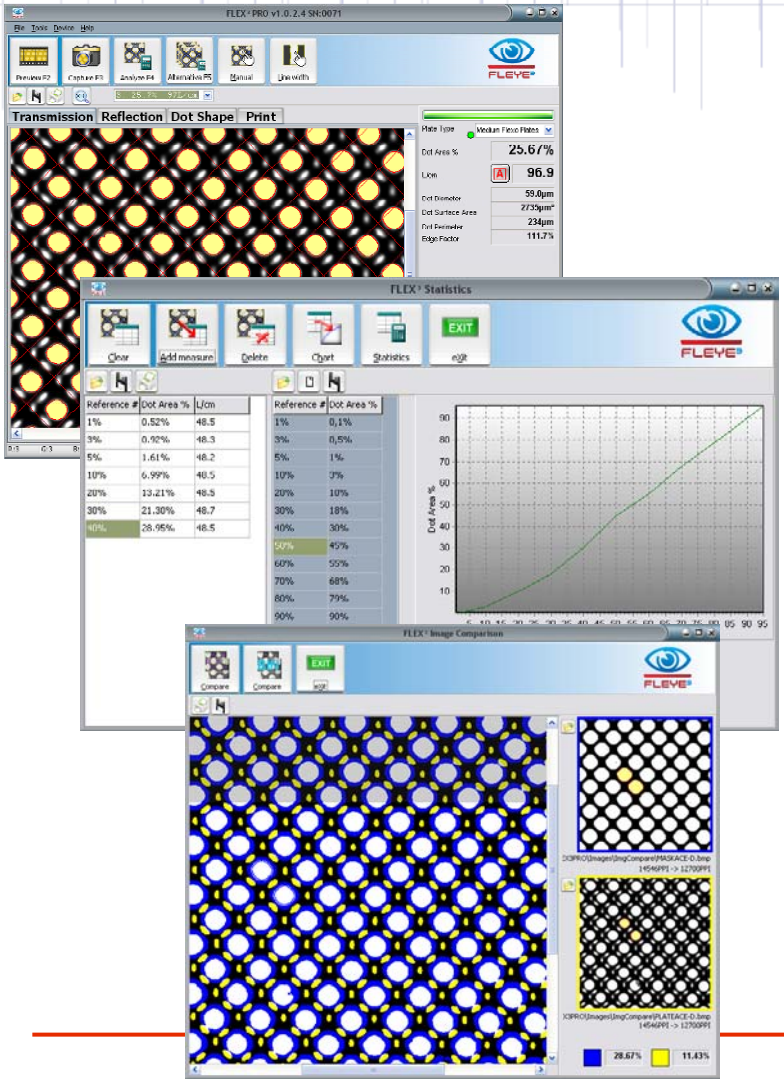
- Standard light table
  - No change in steepness -> white
  - Large change in steepness -> Black

Lens can be used

The lens approach works only, If the printing dot surface edge has a sharp cut in steepness!

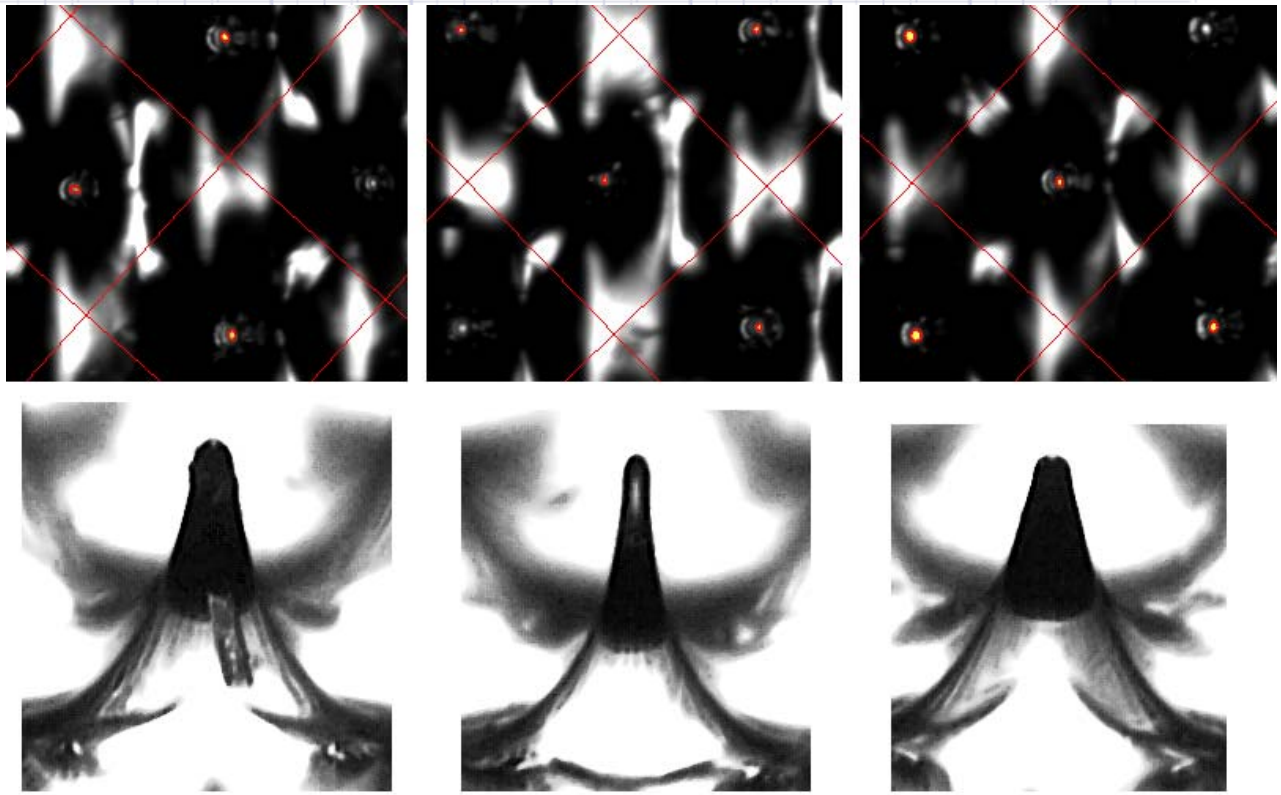
Lens can NOT be used

Control the finished Plate



- Measure the dot area of various patches
- Collect data in the statistics
  - Draw curve
  - Compare with reference curve
  - Calculate average and standard deviation
- Use the image compare to evaluate the dot loss between mask and finished plate
- Print a report
- Save images and compare plate before and after print

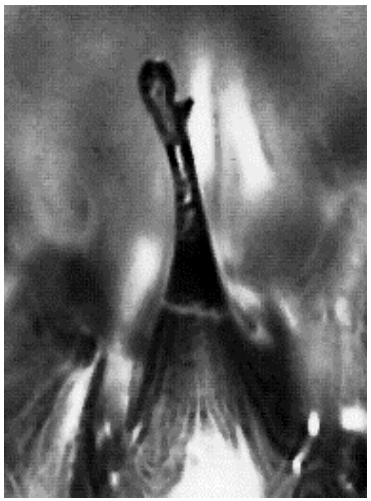
Let‘s talk about the minimum DOT

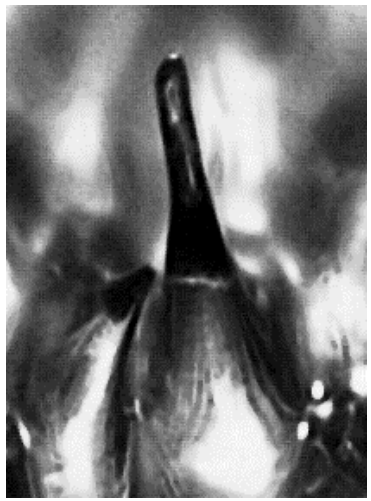


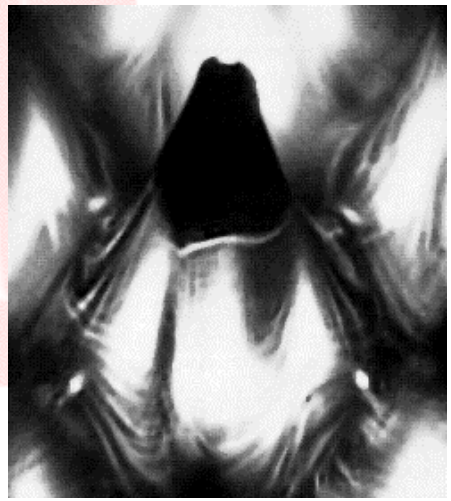
Dots are looking the same from top while looking quite different in 3D!

TOP View analyzes is not sufficient to control high light dots!

While the transmission image still shows dots, the dots are not stable enough to print during the entire run of the job.

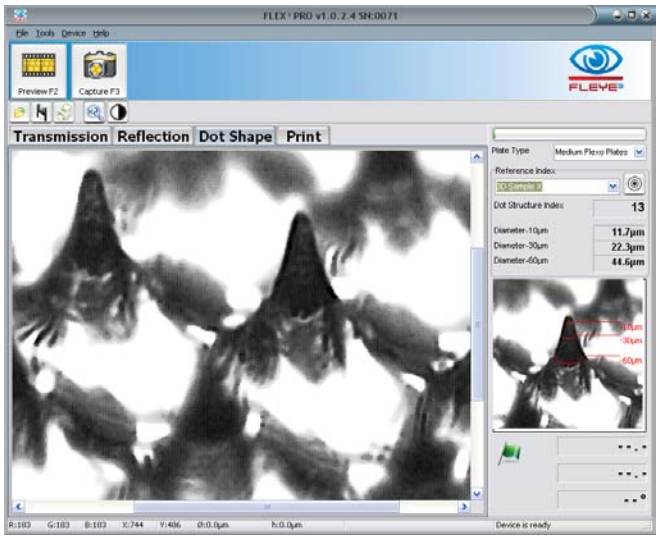






Will this dot print as a dot or will it break at the beginning of the job and print as a line?	For how long will this dot print as a dot before breaking?	This dot might be stable enough to print for the entire run of the job

FLEX³PRO Dot Shape function



$$Index := \frac{(D10+D30+D60) * (D60-D10)}{50\mu m}$$

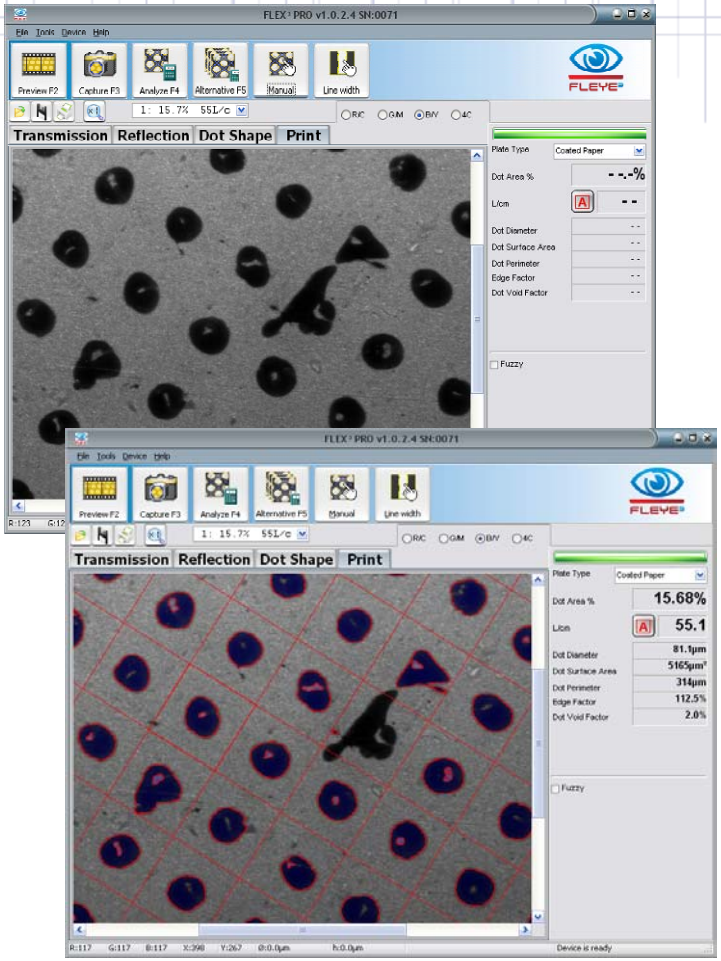
Use the Dot Shape function to make sure:

- That the dots look the same at the left side, the right side and in the middle of the plate
- The dots on the magenta plate look the same as the dots on the cyan plate and the yellow plate
- The dots of the re-make job look the same as the dots of the original job
- Compare highlight dots before print and after print

Don‘t use the Dot Shape function to

- compare one plate material / process with another plate material / process!
- The required dot shape is defined by plate material, screen type, printing environment, substrate, inks, number of copies, and many other parameters …

Control your printing product



- A densitometer is used to control density and dot gain on print
- A spectrophotometer is used to control the visual impression of the printed color (CIE Lab)
- Mechanical characteristics of the dot are measured with FLEX³PRO
  - Mechanical dot size, dot deformation
    - control pressure plate : substrate
  - Dirt / little ink spots around the dot – visual control
    - Pressures to high
  - Dot Void (low density areas inside the dot)
    - Ink problem or pre treatment of substrate
- Compare plate image with print image
  - Check mechanical dot gain
  - Check changes in screen ruling because of plate stretching

Complete process control with FLEX³PRO

- Control laser by controlling mask
- Control processor / exposure / washout by controlling finished plate
- Control minimum dots to avoid dot gain problems on highlights during print
- Control plate before print and after print
- Control mechanical dot size and shape on print

Thank you