Droplet to film

StudioRIP is a market leader in inkjet color separation (on EPSON's 2016 Drupa stand StudioRIP was demonstrating the color separation capabilities of the EPSON printers on film and offset plates). Due to our patented technologies, as well as our high quality consumables, our inkjet films have the sharpest edges and smoothest tints on the market.

Working principle — 1

❶	❷	❸	❹a	❹b	❹c
PDF file processed on StudioRIP	Printed directly on film by an EPSON SureColor T printer	No further processing needed, the film is exposed directly	Flexography	Screen printing	Conventional & dry offset

2 — Components and consumables

EPSON SureColor T3200/5200/7200	EPSON SureColor T3400/3405/5400/5405	EPSON SureColor T2100/3100/5100	EPSON EcoTank L1300/ET-14000	StudioRIP software	StudioRIP DTF UV-blocking ink	StudioRIP DTF water resistant film

Advantages — 3

- Small investment, about 10% of a laser imagesetter
- Low cost consumables, about 50% of the conventional film production costs
- Eco-friendly, simple operation (no chemical processing)
- The printer can be used for proofing and color printing

4 — Ink and film quality

- DMax > 5.0 for the UV range
- Excellent water resistance (the film resists under water for a long time)
- Excellent scratch resistance (incomparably better than the original EPSON inks, unintentional scratches almost impossible)

Image quality — 5

- 2880×2880 dpi
- 30–175 lpi halftones with sharp dots
- The smooth halftones and sharp edges are achieved by our Dynamic Density Modulation, Edge Enhancement, Ink Spread Compensation and RIP-based MicroWeaving technologies
- The registration accuracy is of ±0.1 mm for cut sheets, and of approx. ±0.2 mm on roll media for jobs below 400 mm length

6 — RIP features

- The RIP was designed for the high end market (laser CTP devices), having a much wider range of features than the inkjet RIPs
- Trapping, imposition, ganging, user-definable pre-press marks, dispro, client-server architecture, zoomable and color managed preview, dotmeter tool etc.
- User-friendly interface
- High processing speed by SIMD assembly code

7 — Printing speed*

- 2× higher speed than the competition with our 4-channel printing technique which uses the MK and PK channels together
- 2880×2880 dpi: 3 sqm/hour on normal quality settings (further quality improvement on lower speeds)
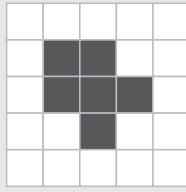- 1440×1440 dpi: 10 sqm/hour (recommended for 65 lpi or below)

* speed figures are for the T3200/5200/7200 series; The speed of other printers may differ on the cartridge configuration and printer type
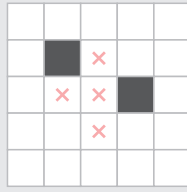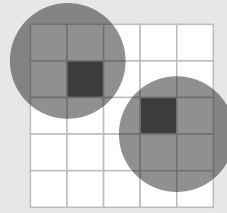
Dynamic density modulation

8

Broken halftone dots in competitor RIPs
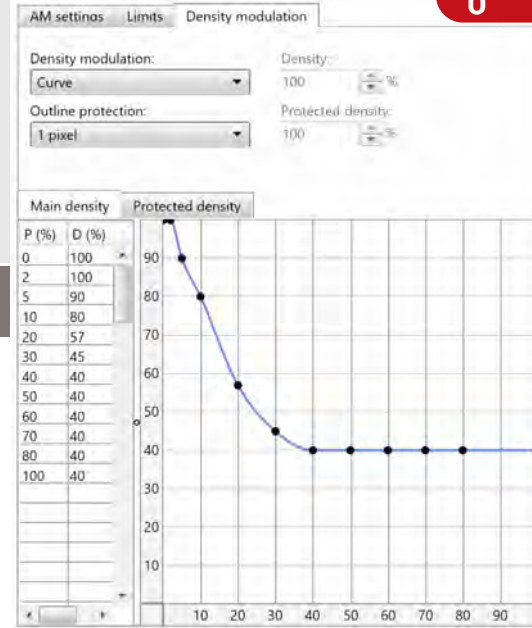
halftone dot of 6 pixels

4 pixels removed by density control
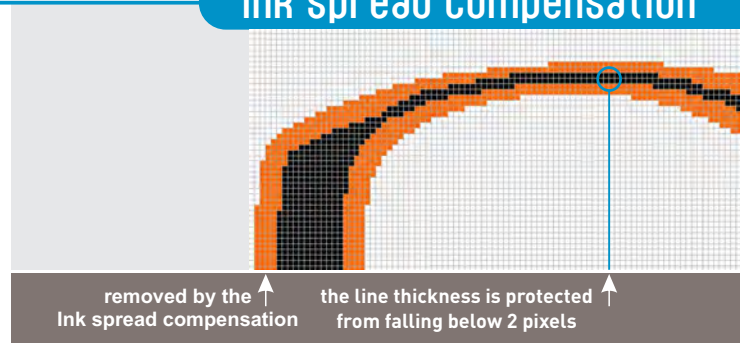
slightly misplaced droplets don't touch

- Films or papers can only take about 40% of ink on 2880×2880 dpi, 100% ink causes ink flow
- A 40% ink density is achieved by removing 60% of the droplets
- Competitor RIPs apply uniform density control across the entire halftone percentage range, resulting in broken halftone dots (see the above illustration)
- StudioRIP applies different ink density to the different halftone percentages
- This way small halftone dots have no pixels removed
- The result is sharp, compact, round dots across the entire halftone tonal range

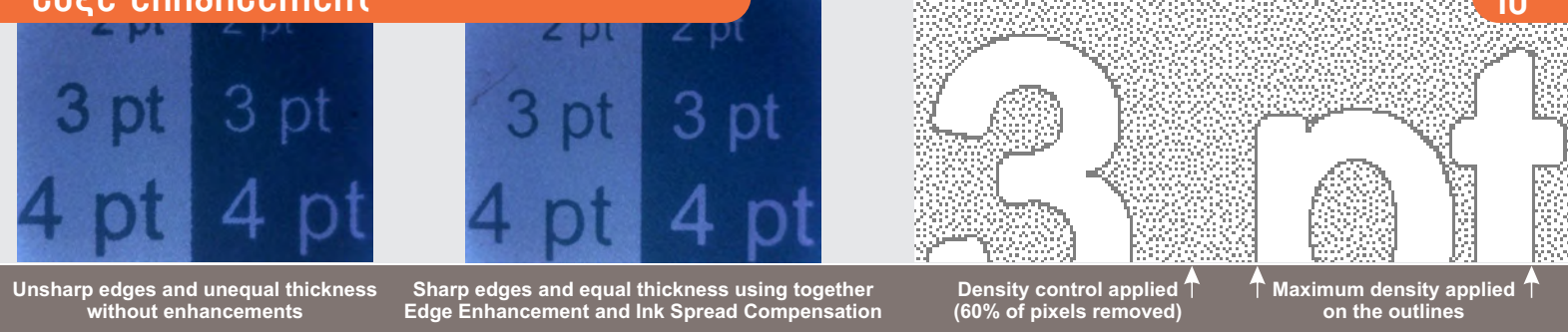| P (%)	D (%)
0	100
2	100
5	90
10	80
20	57
30	45
40	40
50	40
60	40
70	40
80	40
100	40

Ink spread compensation

9

- Thin lines and texts print too thick on inkjet printers due to various factors (droplets of 35 microns, mechanical inaccuracy)
- StudioRIP compensates this by making objects thinner by 1–3 pixels, this way the actual result will have the desired thickness
- Very thin lines are protected from being removed by the Ink Spread Compensation algorithm, the line thickness is not allowed to fall below 2 pixels (or any other user definable amount)

removed by the ↑ Ink spread compensation

the line thickness is protected ↑ from falling below 2 pixels

Edge enhancement

10

Unsharp edges and unequal thickness without enhancements

Sharp edges and equal thickness using together Edge Enhancement and Ink Spread Compensation

Density control applied ↑ (60% of pixels removed)

↑ Maximum density applied on the outlines

- Printing the edges with full ink density on 2880×2880 dpi creates a local ink excess that which makes all lines thicker but sharper
- The wrong thickness will be then corrected by the Ink Spread Compensation technology
- The result is a sharp edge with accurate line/text thickness, just as sharp as the output of a laser imagesetter

RIP-based interlacing (MicroWeave)

11

- The printer builds the 2880 dpi image from 720 dpi head scans with an interlacing algorithm called MicroWeave
- This algorithm is optimized for high speed color prints, and is not suitable for high LPI color separations
- StudioRIP is the only RIP bypassing the MicroWeaving module of the EPSON printer firmware, controlling the head directly
- This allows StudioRIP to improve the quality on the expense of the speed by using less nozzles or doing more scans