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## Ink-Saving Technology

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### Ink-Saving results on colour separation

No Ink saving, 350% TAC, Ink coverage

Cyan Magenta Yellow Black Composite

Ink saving, 220% TAC, Ink coverage

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### Why to go for Ink-Saving technologies

- An average newspaper faces a consumption of 20.000 kg of black ink and a total of 50.000 kg of coloured ink per year per.
- Calculate € 2 per kg, in this example we're talking about € 140.000 on Ink-costs per year
- The following presentation is about the possibility to eliminate approximate 10% to 15% costs with an investment in ink saving technology
- In the above mentioned example, appr. € 14.000 to € 21.000 less expenses can be achieved – means saved per year

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### Ink-Saving

- Example from a big printing plant:
  - Ink consumption for 1.2 million copies in kg, 4/4 colour

	C	M	Y	K	Total
without Ink Saver	329,9	408,7	852,6	268,2	1859,4
with Ink Saver	232,1	264,6	755,0	346,0	1597,7
difference	-97,8	-144,1	-97,6	+77,8	261,7
% saving					14,09 %

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### How is Ink-Saving working

- Ink-Saving is a question of colour matching
- The sum of colour elements which addition results in grey will be replaced by black only
- GCR – Grey Component Replacement
- Grey components:
  - 70% Cyan + 70% Magenta + 70% Yellow = Dark Grey
  - 30% Cyan + 30% Magenta + 30% Yellow = Light Grey
- So: why printing grey with expensive coloured ink
- Solution: Printing grey with black ink only

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### Ink-Saving colour effects!

- No visually observable effect, people watching the printed image do not see any difference.
- Colorimetric values in the composite image remain unchanged.
- Achromatic areas, 3 color grey areas resulting of similar contingents of Cyan, Magenta, Yellow (e.g. 30% Cyan, 30% Magenta, 30% Yellow) are converted to Black
- Heavy changes in the single colour separations:
  - Cyan, Magenta, Yellow are reduced
  - Black is increased

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## Benefits of Ink-Saving

- Between 10 and 20% less consumption (and also cost reduction) of expensive coloured Ink
- Better printability of paper and stable grey balance
- Reduces colour variations during the print run
- Better drying because of less ink has to penetrate the paper
- Less smearing on guide and draw rollers
- Reduced Fountain solution, reduced Ink mist
- Less shine through
- Smooth process in mailroom
- Less waste in total

## InkSaving by FM (frequency modulated) screening

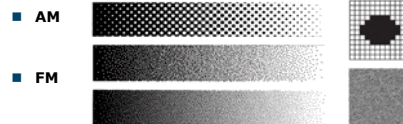
- Embedded in the RIP
- Using FM-screening or Hybrid screening technology
  - requires an investment in screening technology, mostly for multiple RIP's
- Lot's of suppliers are on the market
  - without any claim on completeness: Adobe Brilliant Screen, Agfa Sublima, Kodak Staccato, Heidelberg Diamond Screening
- Results vary, some user confirm Ink-savings with FM, but there are also some discussions about it. Individual testing is required – in any case.

## InkSaving Methods

- ICC-Profiles
- FM (Frequency-Modulated) screening
- Concentric Screening
- DeviceLink standard (=static) ICCprofiles
- Vendor-specific static DeviceLink profile
- Real-time dynamic DeviceLinking and immediate recalculation depending on specific data analysis per single file.

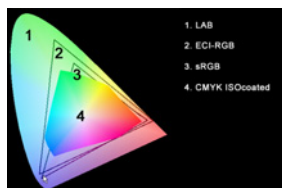
## FM (Frequency modulated) screening

- Plenty of FM rastelements are closely arranged to each other. They absorb more light than a comparable amount of standard AM rastelements. This results in a lower area of printing dots, which requires in the end less ink



## InkSaving by using ICC-profiles

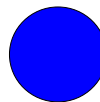
- Using ICC Colour management
  - requires investment in ICC-profiles (some are free, like IFRA ISOnewspaper26v4.icc), usage during RGB-CMYK conversion
  - requires manpower and know how



## Concentric Screening

- 5-15% Ink saving

Conventional Screening



Concentric Screening



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### InkSaving by DeviceLink profiles

- **DeviceLink Profiles, depending on standard ICC which can be embedded in applications like Photoshop**
  - specific DeviceLink profiles which connects Input CMYK channels directly with output CMYK channels, without the loop to L\*a\*b\*
- **Colour Server DeviceLink technology**
  - dedicated colour server with applied vendor specific static device link profiles
  - dynamic real-time device linking by analyzing the file, generating a temporary DeviceLink profile (Input-Output profile) and immediate recalculating the colour channels.

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### Inksaving- suppliers (no claim on completeness)

Manufacturer	Software	Web	City
Agfa	Optiink	www.agfa.com	Mortsel, Belgium
Alwan	CMYK Optimizer	www.alwancolor.com	Ste Foy les Lyon, France
Apago	PDF Enhancer	www.impressed.de	Hamburg, Germany
Binuscan	PDF Server	www.binuscan.com	Monaco
Callas	PDF Color Convert	www.callassoftware.com	Berlin, Germany
CGS	Oris Ink Saver	www.cgs.de	Hainburg/Germany
Color Solutions	basiccColor Devil	www.basiccolor.de	Penzberg, Germany
Colorlogic	CoLiPri	www.colorlogic.de	Rheine, Germany
Fotoware	Color Factory	www.fotoware.de	Hamburg, Germany
GMG	Ink Optimizer	www.gmgcolor.com	Tuebingen, Germany
Heidelberg	Printect Color Editor	www.impressed.de	Heidelberg, Germany
Helios	UB+	www.helios.de	Garbsen, Germany
Kodak	ColorFlow	www.kodak.com	La Hulpe - Belgium
MMS Software GmbH	DuoScreen	www.mms-heidelberg.de	Heidelberg, Germany
New Prolmage Ltd.	OnColor ECO	www.newsday.com	Netanya, Israel
OneVision	Asura-PlugSavelink	www.onevision.com	Regensburg, Germany
PPI	PPI Inksaver	www.ppi-media.com	Hamburg, Germany
Presteligenze	Ink-Miser	www.presteligenze.com	North Canton, Ohio, USA
Quickcut	ICC 2	www.quickcut.de	Frankfurt, Germany
SolidAM	Teleso-IO	www.solidam.com	Utrecht, NL
wobe-team GmbH	PDFCorrect	www.wobe-team.com	Kiel, Germany

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### Device Linking - Preparation for specific output devices

- **ICC-based or dynamic server based recalculation of the values of the different colour channels**

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### Inksaving: Workflow Integration

- **Some years ago there were only 2 suppliers for Inksaving technology**
- **Meanwhile there are more than 20 suppliers – still increasing**
- **For customers (e.g. Newspapers) it's a hard task to do a preselection, to test and to choose the right, matching application**
- **We're facing that customers meanwhile simply expect, that their software workflow supplier delivers an Inksaving solution as part of the workflow system**

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### Workflow with Inksaving tools

- **Inksaving can happen on single elements in case of usage with standard applications like Photoshop**
- **Inksaving can happen on a stand alone Colour Server, running the whole page before ripping**
- **Inksaving can be part of the RIP in case of using ICC-profiles or FM-screening**

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### Inksaving ROI-calculation

- **Testing: choose your preferred suppliers, specify your expectations, and go for a preselection**
- **Onsite and live testing will take some time, but is the only chance to come to reliable results**
- **Investment: expect between 7.000 and 25.000 Euros until a colour-server is implemented**
- **Compare the investment cost with the saved costs on ink**
- **Keep in mind, that print quality is increasing**
- **Mostly, companies invest if the ROI is less than 18 months**

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