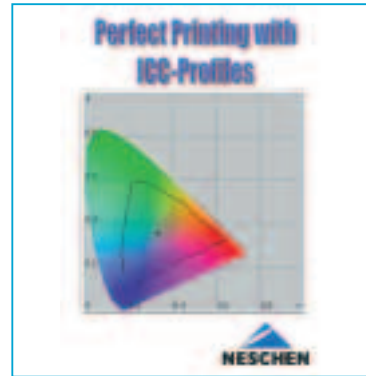
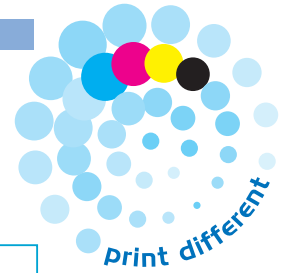


Color-Management

Why use colour management for large-format printers?

- *Optimum print quality*
- *Reduced ink and media waste*
- *Improved production and quality assurance*
- *Reproducible results*
- *The creation of one colour and communication level for all production machines*
- *Simplification of the internal production process*
- *WYSIWYG: „What you see is what you get“ -
– high visual accuracy and matching colours throughout the whole workflow*



Definition

What does ICC mean?

- ICC – International Colour Consortium – www.color.org
The most important producers of hard- and software for the publishing industry founded the International Color Consortium in 1993. The ICC defines an open standard for the creation of profiles.

What is a colour profile?

- A colour profile describes the colour properties of a feed (e.g. scanner), a display (e.g. monitor) or an output (e.g. printer device). The profile is used by the Colour Management System to assure an accurate colour reproduction within a production environment.
- **For example:**
 - A feed-source profile (e.g. scanner) analyses the colour resources of the scanner and corrects any colour inaccuracies.
 - A monitor profile analyses the colour characteristics of the monitor and corrects the colour accuracy in assuring an accurate colour representation.
 - An output profile (e.g. large-format inkjet printer) analyses the colour characteristics of the printer and corrects any colour inaccuracies taking into account the printing system, the media and the ink used.

A complete utilisation of an ICC-profile in a workflow (scanner, monitor, RIP and printer) ensures colour consistency and reproducibility.

ICC-profile for inkjet prints:

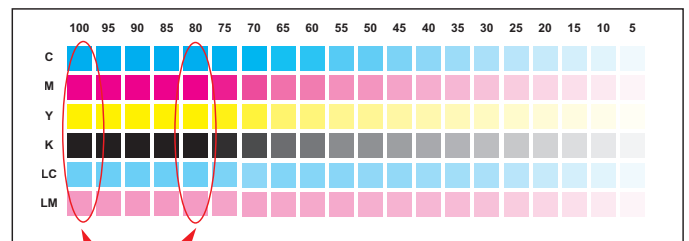
- Every media ICC-profile contains information about the printer, ink, media and RIP. If one of the components is changed, a new profile must be generated.

How are profiles for inkjet printers created and how do they work?

1. *Colour application test (individual examination of the colours)*
2. *Linearisation of the printer*
3. *Determination of the ink limit (examination of the complete colour application)*
4. *Generation of a profile*
5. *Working with a profile in a RIP*

1. 1. Colour application test (individual examination of the colours)

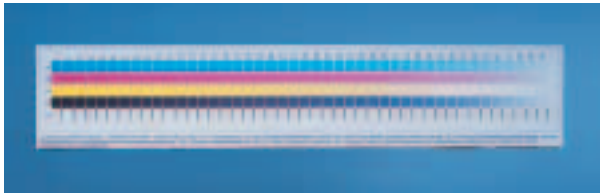
Printing of an uncalibrated colour application test chart!



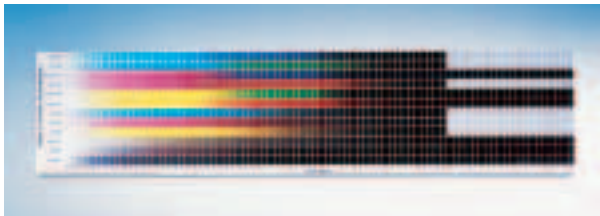
There is no visible difference between the tones printed at 80% from those printed at 100%. This means that the maximum colour application limit can be reduced to 80%.

2. Linearisation of the printer (individual colours)

- The printing and subsequent analysis of the linearisation chart sets the printer on a specific standard which allows an exact reproduction of the chosen colours at any time. The measuring data is then read into a RIP online, either manually or with a densitometer / spectral photometer.



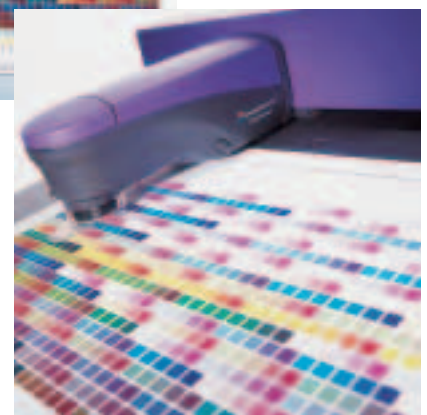
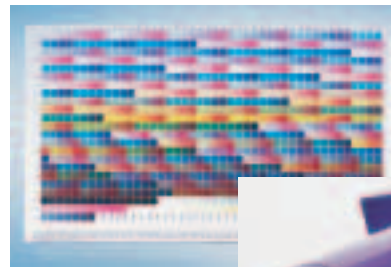
3. Determination of the ink limit
(examination of the complete ink load)



- Even when the total ink limit is reduced to 80%, the maximum application level (only CMYK are counted as LM and LC are only supplemental colours) is 320%. This amount is too much for many inkjet media.
- For this reason, it is necessary to reduce the total level of ink load in the RIP. Otherwise, various problems may occur, such as bleeding of the ink and drying problems.

4. Generation of a profile

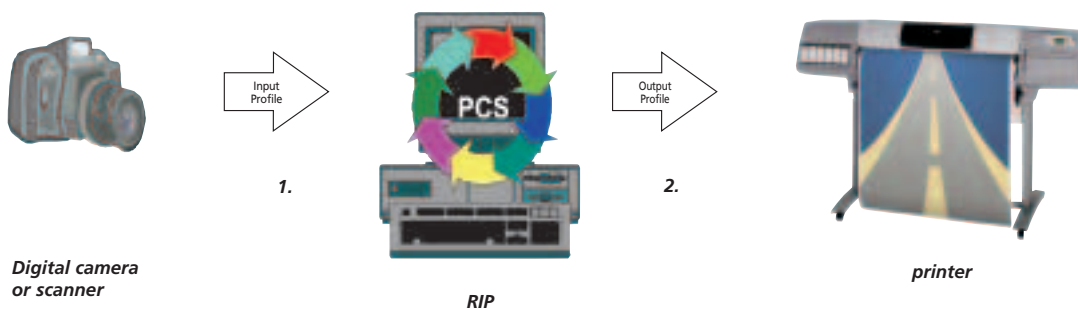
- After the completion of the individual ink load tests, the linearisation of the printer and the determination of the ink limit, the profile chart is printed and measured.
- A profile software generates a profile taking into account the GCR* or UCR* separation adjustments, which are dependent on the individual media.



5. Working with a profile in a RIP

- The generated profile is read into a colour management capable RIP.
- The colour information of the image is transformed from the source colour space, i.e. RGB, to the PCS* - appliance-independent reference or link colour space (e.g. CIELAB). The link colour space can also be RGB or CMYK. These are mainly utilised for correction purposes.
- Transformation of the colour information of the image from the PCS* reference colour space to the output device colour space / target colour space (e.g. CMYK).

A typical colour management workflow (CMS):





The colour information of the image from the source colour space (RGB), over the PCS reference colour space (CIELAB) to the output / target colour space is compared during transformation. The defined colour corrections occur automatically.

The method of colour transformation depends on on the CMM* (colour matching method). Various RIP's utilise different CMM's, e.g. Heidelberg, Logo/Gretag, ColorBlind...

Glossary

*CMM

Color Matching Method

RIP's (Raster Image Processor) from different manufacturers use different CMM's. For this reason, an individual profile must be created for each RIP.

*PCS

Profile Connecting Space (PCS)

Hardware-independent reference or link colour spaces (mostly CIELAB). The colour transformation (e.g from RGB through PCS to CMYK) are carried out over these colour spaces.

*GCR

Grey Component Replacement

Grey Component Replacement (GCR) is the procedure used in the colour separation process to reduce, or remove a grey component made up of yellow, magenta and cyan inks and replace it with a suitable amount of black ink. The application of GCR improves shadow detail, reduces ink weight and renders cleaner colours.

*RIP

(Raster Image Prozessor)

converts the digitally stored data (e.g. PDF, Postscript) into dots - in order that they can be printed.

*UCR

Under Color Removal

When the values for cyan, magenta and yellow combine to make a neutral grey or black, then those three colours are replaced with black ink, to save on ink. UCR tends to confine ink replacement to the darker tones.

Achieve an optimal print quality with our ICC-profiles!



Visit our download area under www.neschen.com!



In the download area you will also find:

- ◆ *Compatibility lists*
- ◆ *A user guide for profile installation*
- ◆ *A log-in user guide*



Neschen-Color-Concept

Many businesses have problems acquiring the correct ICC-Profile, or have problems implementing the profile into their RIP-software. The **"Neschen Color Concept" (NCC)** stands for "color management for everyone". This means a free in-house profile service for all customer.

The situation in the market is that many inkjet suppliers are under the impression, that you **WANT** to earn money with your printing system!

little differently, and that is, that you **MUST** earn money with your printing system.

For this reason, we offer:

- ▶ a cost-free, in-house profiling service from a **"Neschen-certified consultant"**, with professional hard- and software
- ▶ know-how in regard to the complete workflow
- ▶ reproducibility of the printing results
- ▶ increased production reliability
- ▶ reduced production expenses (ink, set-up time, etc...)
- ▶ Problem support
- ▶ 10 years of CMS experience

Neschen Color Concept



How does the Neschen Color Concept work?

The Neschen Color Concept consists of a cost-free profile service; the matching of your RIP-software, printer and ink to **Neschen Inkjet media!** This service is only available to Neschen customers.

The profiling charges will be billed to you.

This sum is reimbursed to you in the form of product discounts. The service is then, in effect, free of charge.

Always the right profile

The Neschen Color Concept (NCC) is an initiative of the companies Neschen AG, Color Concepts and elementa:res.

**"NCC" allows you to determine the quality yourself!
Take advantage of this unique concept of the Neschen AG!**

Become an NCC-certified customer!

Please contact your sales advisor.

