

WORKFLOW TRENDS

COLOUR MANAGEMENT

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In today's market place, corporate companies want to print on a multitude of materials and substrates ranging from flexible textiles to rigid boards and just about everything in between. Marketers and advertisers demand that corporate logos and images be consistent with the emphasis on achieving exact colours.

Often companies do not realise the full potential of their equipment purchases because the training addresses the product purchased and not your workflow outside the product. Invariably, the installer is unable to address any workflow concerns.

Colour Management is the process of controlling colour as it moves between devices, from the input end (cameras/scanners) to the output end (screens, projectors and printers). This is achieved through a combination of two key processes: calibration (setting a device to a known, repeatable state) and profiling (creating an accurate description of that state so that image colours can be translated into the best matching device colours).

Colour management is a very complex topic, and the internet in particular is full of mis-information and poor understanding of what's actually going on with colour in digital images. It's not surprising, really, as colour management is a relatively new field of science, and for a long time, good tools and techniques were not available. Fortunately, in recent years, prices have come down at the same time as knowledge has increased, and today it is much easier to achieve truly world class results in digital imaging, if armed with a relatively small budget and a good working knowledge.

If we have to be honest with ourselves, Colour Management has not been the major priority for many sign and graphics shops. Many signs are bespoke items, and it is easy to tweak the colour and print out a second one. In the past, it was enough to produce a big sign, but as everything gets more integrated and closer together, like litho prints with banner displays and so on, so many customers require that their logos are produced correctly or as close as possible on different printing technologies. Good colour management is all about printing the right colours without the trial and errors or unexpected surprises. It means that you can print a job a year later even if you have changed your media. It also means the ability to get the colour the same on a bigger job that runs across several different media and printing technologies.

Fortunately, all the different vendors have signed up to use the same system, as developed by the International Colour Consortium (ICC). The ICC profile has been primarily designed for commercial printing such as offset litho, rather than super-wide format inkjet printers that are more commonly made for sign making. There is also a variation in the tolerances between different technologies. On a UV printer, the colour differences across different media is not as great as you might expect as the ink sits on the surface of the material.



With solvent, the ink really gets into the media, therefore the colour difference is greatly affected by the media.

The entire system hinges on having profiles, but it is not as simple as having a profile for your printer, instead, each output profile must accurately describe the colour characteristics for the combination of media, ink and printer settings. So, if you have one type of printer and have six different media then you will need six different profiles. Customised colour profiling provides customers with a dedicated profile for their own particular substrates and application requirements.

There are good reasons for making your own custom printer profiles. Some of them include: if you cannot get one for the particular ink, media and printer combination that you are using or if you want greater control over your colour accuracy. What most customers fail to realise is putting down the right amount of ink. For this, you will need a spectrophotometer for analysing those measurements and creating a profile. Italian firm Barbieri Electronic is a manufacturer and supplier of intelligent colour measurement systems that ensure the highest image quality for professional digital printing. Barbieri produces a range of spectrophotometers, including one designed specifically for use with Large format printers. The Spectro LFP series features automatic reading of a large colour patch chart, and will handle both transparent and reflective material, including textiles, glass, backlit film, papers, vinyl, cardboards, plastic plates, gypsum plates, wood, stone and ceramic plates. Barbieri Electronic is the colour measurement market leader for large format, flatbed and industrial printing.





COLOUR MANAGEMENT IS NOT AN OBSTACLE TO DIGITAL TECHNOLOGIES, BUT AN EFFECTIVE TOOL WHICH WILL HELP YOUR COMPANY BUILD A ROBUST REPUTATION OF QUALITY



Many people regard Colour management as something that is difficult to do, but most vendors have worked hard to simplify the whole process. Most RIP and Colour Server solutions offer wizards to take you through the small number of simple steps, such as Caldera's Easy Media.

Caldera is a software company with close to 25 years of experience in developing, marketing and supporting high-quality technological software for wide-format imaging, with a commitment to increasing productivity, cost-efficiency and colour output. They offer a suite of award-winning, production-orientated print and Print-and-Cut workflow programmes and provide colour management, imaging and processing solutions for large and grand-format peripherals.

The implementation of colour management within your company is a decision that joins the majority of the experts in the graphic arts field. With a professional and complete solution in colour management, you will save money and time, besides offering essential services to your customers. This solution will make your company more competitive.

Contrary to popular belief, colour management is not an obstacle to digital technologies, but an effective tool which will help your company build a robust reputation of quality, in an adequate and reproducible colour environment throughout the process of creation, proof approval and printing.

Many companies that attempt to implement a colour management solution on their own fail to provide adequate time for their personnel to learn the new tools and diagnose problems. Each shop's equipment, software and conditions are different and it takes time to comprehend how each piece of software or hardware handles colour. When results are not achieved it takes time to research and determine what has gone wrong. In production, many shops end up going back to what they know and abandon colour management entirely. A reputable colour consultant can help you navigate through these issues and design a workflow that will suit your shop.

Colorflo, a division of Midcomp (Pty) Ltd is equipped with almost two decades of digital print colour reproduction knowledge on how to properly implement and train your staff on how to get the best results from your software and hardware investments. You will benefit from the expertise of more than 18 years of real life colour management. The goal is to obtain a production workflow using quality control from the first to the last step of production.

Benefits from using Colorflo:

- Faster colour management implementation by the users.
- Decrease of waste in time and materials.
- Increase of production and quality.

- Elimination of the trials and errors using a common workflow.
- Predictable colour.
- Simulate the final printed copy.
- Get more hours of production.
- Get new value added contracts due to the ability to please customers.
- Better blacks and greys.
- Stability of colours.
- Increase of the feeling of membership and the pride of the employees on the quality of their work and on their recognition of their importance in the company by giving them technical training in colour management.

If you think there's nothing new in the area of colour management, think again. Researchers and vendors continue developing new products, standards, and technologies to get colour under control. In some respects, the idea of attaining perfect colour control is an unattainable goal. Colour, after all, will always be somewhat subjective, as we know every human eye sees colour a bit differently. Nevertheless, new measurement tools, calibration hardware, profiling software, and some agreements on colour standards have come a long way to giving print providers control over their colour output.

Now we'll delve into a white paper written by Tanja Polegubic during an internship with Barbieri Electronic as a research component to the *Master in Color Design and Technology (1st edition)* from the Politecnico di Milano, Italy.

WHAT IS PROCESS CONTROL IN DIGITAL PRINTING?

Process control in digital printing is a series of actions which ensure output meets expectation by managing variables which can impact production. The main objective is to ensure accurate and consistent colour reproduction by creating a tailored solution for each printer and media combination. The FOGRA Process Standard Digital² (PSD) is an evolving set of guidelines used to evaluate colour in digital print production. Its three objectives are:

1. Output process control to achieve repeatable results.
2. Evaluating colour fidelity using a media relative method.
3. PDF/-X compliant workflows.

CHALLENGES IN DIGITAL PRINTING

Digital printing professionals must ensure colours are accurately reproduced. As technologies evolve and demands change, digital print volumes are increasing and extending into textile, ceramic, glass, laminate and automotive applications among others. Printers will increasingly need to cater to a range of different media, evolving imaging technologies and inks.

Without a cost effective process control, businesses can be impacted by:

- Production downtime.

- Wasted ink and media.
- Shipping, application and removal costs.
- Damaged client relations and reputation.
- Lost revenue and missed opportunities through lack of competitiveness.

On a day to day basis, changes to printer conditions can go undetected, occurring if there is any change to temperature and humidity, media and ink.

STANDARD PRINTING WORKFLOW

The workflow for printer configuration involves selecting a printer configuration and material combination. Calibration and profiling is then performed. The verification process then analyses if printing conditions have changed. Measurements are then made on a control strip, generating a quality report and enabling evaluation over time and in multiple locations.

WHAT ARE THE BENEFITS OF PROCESS CONTROL IN DIGITAL PRINTING?

Improving process control has a range of benefits in digital print production.

- Assesses print conditions daily, before production starts.
- Eliminates the need to cut large format media (using a portable device).
- Processes measurements on the spot (using a portable device).
- Enables production to be monitored over time and in multiple locations.
- Uses a benchmark, or initial reference file, to determine printing conditions.

BARBIERI DOC PROCESS CONTROL SOLUTION

The Barbieri DOC Process Control Solution provides an instant pass/fail report, analysing if printing conditions have changed before production starts, saving time, ink and media. It addresses the shortcomings of current practice in process control.

THE REFERENCE FILE AND REFERENCE PRINTING CONDITIONS

A basic requirement for colour measurement is a reference file. This reference file uses the defined printer/media combination to match measurements made

on a control strip. Reference printing conditions use a characterization data set to match CMYK data to the printed output. This characterization data set is based on the required measurement mode (eg. M0, M1 or M2) and measuring conditions such as illumination (eg. D50), media backing and observation angle (eg. 2°).

ABOUT THE CONTROL STRIP

Barbieri DOC operates with an industry compliant, proprietary control strip. It also supports the FOGRA wedge, IDEAlliance and custom strips. The control strip is a set of patches which meet ISO requirements. The ISO standard recommends a 48 patch minimum, including solid process primary and secondary colours, their mid and shadow tones and greys.

Digital wide and large format, flatbed and industrial printing professionals require a cost effective process control solution to achieve accurate and consistent colour. This is especially important given the current and forecast growth of the digital printing industry.

As innovations and production techniques evolve, the guidelines for process control for digital printing also evolve. Outdated practices and limited technologies impact production and revenue by causing printer downtime and wastage. Unseen factors unnecessarily impact production.

The Barbieri DOC Process Control Solution is cost effective and easy to use. It offers flexibility with media types and evaluation methods, customisation and instant results. 

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