

Colour Consistency

Ever since Macs and PCs entered the workplace, the industry has been addressing the problem of inconsistency of colours between monitors and printers. It's getting better, but we're still not there yet and we should all be aware that there is still an area for potential problems.

Every monitor will show colours slightly differently - different models vary and even identical models may be calibrated differently or not at all. There are significant differences in colour display between Macs and PCs which use different default gamma values - gamma being mid-tone brightness. The same image viewed on a Mac and a PC will look darker on a PC. Office lighting also affects the way monitor colours are perceived - fluorescent strip lighting is particularly bad.

All office printers will output the same file slightly differently. Some printers may use CMYK powder, some use liquid, some use waxy sticks. And you can be sure that the different paper types used will also affect the output result. So there is currently no practical way of having one document that will look identical on all monitors and will print consistently.

So how do we address this problem? Firstly we need to understand the issues ourselves so that we can manage expectations and manage print production and proofing to get the best out of an imperfect process.

Colour Theory

Colour theory is an extremely complex subject, but a basic guide is that there are a number of different colour models which have been created for different purposes and there can be difficulties in getting an accurate translation from one model to another. Common models are: CMYK (cyan, magenta, yellow and black) - the four process colours used for professional printing. (Black is referred to as "K" not "B" to avoid confusion with the blue "B" in RGB - see below). PMS (Pantone Matching System) - "spot" or "special" colours used for professional printing. RGB (red, green & blue) - the colours generated on most monitors by light emitted from three cathode ray tubes Websafe - a limited palette of 216 RGB colours displayable by all monitors (but not necessarily similarly!)

In order to try and demonstrate the translation problems from one model to another, take the colour "red". Designers may perhaps choose a Pantone colour initially - say PMS 485. When this colour is professionally printed the printer would mix up equal amounts of Pantone Rubine Red and Pantone Yellow ink to make PMS 485. During the design process, we'd look at PMS 485 on our monitors (which, remember "paint" with light!). QuarkXPress, Adobe Illustrator and Adobe Photoshop (the Big Three design applications) all give different translation values from PMS 485 into CMYK and all three also give different values into RGB! So the designers pick one set of values (usually Photoshop's) and make an Acrobat PDF which is emailed to our clients who look at it on their uncalibrated monitor, print it out on their uncalibrated printer and is then disappointed that it doesn't match the printers' proofs!

We also ought to be aware that no two people see the same thing identically. You don't have to be colour blind (though many are!) to see a colour differently to someone else.

Managing expectations & Proofing procedures

In order to navigate this minefield of incompatibilities, we need to do several simple, practical things:

- 1) Try to manage expectations regarding accuracy of colour in electronic documents generally. (Greater accuracy for a particular colour may be possible by a manual/visual selection process if we know whether the client is using a PC or Mac and which software programme they'll be viewing it in).
- 2) Although proofing by Acrobat PDF is becoming increasingly the norm, PDFs don't display colour accurately and should not replace initial laser proofs followed by printers' proofs. PDFs should only be used to replace the initial laser proofs when;
 - a) colour isn't an issue (e.g. the job uses the client's agreed corporate colours), or
 - b) as an extra "notification" stage prior to a laser proof. Our emails now contain a warning about inaccurate colour representation which should serve as a reminder to both *onebrandgroup* and the client.
- 3) A common misunderstanding is that websafe colours will display similarly on all monitors. The short answer is that they won't! They may be closer than a non-websafe RGB colour, but they still depend on the accuracy of the calibration of the viewer's monitor.

Despite all these potential pitfalls, an excellent print job is easily attainable providing enough time is scheduled to allow the correct proofing system to be followed. The creation of websites, on-screen presentations and other digital work is also going to be smoother if we are all aware of potential colour issues.