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Using digital printers in spot color proofing

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INTRODUCTION:

spot colors are premixed inks that accurately reproduce colors that are outside the gamut of process colors. Spot colors are used in printing industry in all types of products specially packaging, and brand or logo colors for their unique color appearance. The increased use of CTP systems to make plates direct from computer, that cause lack in films that were used to make proofs before. Today digital printing becomes popular because its various features. Therefore we used digital system to make printed proofs. This cause the need to examine digital presses to meet the need of spot color printing. Matching spot colors on digital printers depends on the wide of the digital printer gamut, which is combining between media, software, and ink. This study aims to examine a digital laser printing system and its software to match spot colors in the printed proof.

PROBLEM STATEMENT: The increased usage of digital printing to produce digital proofs for lithograph printing, led to the need to study the relationship between digital printers with their Rips and spot color, to produce reliable proofs for spot colors.

AIMS AND OBJECTIVES: The aim of this study is to examine digital laser printers and their gamut, and find out how the ability of these printers and their Rips to match spot colors, to use these printers in spot color proofs.

SIGNIFICANCE OF THE PROBLEM: The importance of this study comes from the importance of the printed proof as a contract document, and guide in the printing process to adjust colors.

EQUIPMENTS AND MATERIALS: Adobe In design to create the spot color test chart - laser printer (Canon image press C800) with its RIP (fiery command work station 10) – spectrophotometer – 2 types of paper.

METHODOLOGY:

- To examine digital printers we calibrate the printer at the beginning. We print test chart and read it with spectrophotometer so that the RIP can compensate for the values to make correction. This correction or calibration ensures that the device's color reproduction conforms to a set specification.

- We create a test chart contains 134 spot color patch. All colors come from the InDesign library. We save the file with no color conversion, this helps to evaluate the RIP of the printer better

This study contains 2 experiments:

- First experiment we print the test chart with the basic settings of the printer without using any ICC profile.
- Second experiment we print the test chart with ICC profile we created as a destination profile, and with ISO Coated fogra39 profile as a source profile.

RESULTS:

	Average Delta E without profile	Average Delta E with profile
Coated paper	4.68	4.67
Un coated paper	6.55	5.21

DISCUSSION:

- Digital laser printers ability to match spot colors is based on developed ink system and RIP system which interprets colors. That assure a wide color gamut included a bigger number of spot colors.
- Samples printed on coated paper had a better results in the number of colors that is under 4 DE, and the average of color differences is better than samples that is printed on uncoated paper.
- Uncoated paper had a significance improve in the color differences after Using ICC profiles.
- Using RIP system provides the ability to use the digital printer as a proofing system. It allows us to use a source profile that we are simulating and a destination profile that characterize the printer with the paper.
- Always describe spot colors with $L^*a^*b^*$ values not CMYK so RIPs can understand them as spot colors.