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SHEET FED OFFSET PRINTING PROCESS: COLOR MATCHING TECHNIQUES ON DIFFERENT PAPER SUBSTRATES

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ABSTRACT

In printing industry printer is expected to reproduce the identical replica of the original, both should be identical to each other in every manner. But practically, sometimes printed product does not satisfy the customer as colors printed, are not matching with original. On different papers, printed ink appears different due to quality of paper, color separation, etc. so in this project, study will be done on color matching strategy on various paper substrates in Sheet Fed Offset Printing Process.

Keywords: *color, ink, color separation, sheet fed offset.*

I. INTRODUCTION

Color management provides a unified environment for handling colors, where a common color reference is used at each step of production, from photography through design, plate making and printing. It aims to unify the image throughout the entire production by using the profiles of the various devices to adjust their colors.

Monitors and printers have their own color idiosyncrasies and it is impossible to make them a perfect match. However, it is possible to convert the color data of each device via a common color space (a color space independent of any device)so that the various colors can match more closely. This is the basic principle of color management.

II. COLOR MEASUREMENT

Both densitometry and, increasingly, colorimetric processes and instruments are used for color measurement son the print. While colorimetric measurements are based on techniques where colors are measured asthey are perceived by the human eye densitometry techniques are basically a measurement of ink film thickness that has been adapted to the inks used in the print, and where the processing of the measuring values is adapted to human perception/sensitivity in relation to changes of lightness/saturation with varying ink film thicknesses. Measuring optical density is a common process, and there are tried and tested measuring instruments available. Such densitometers can determine not only the optical density, but also the parameters that characterize halftone printing, such as dot gain and relative printing contrast; the fact that ink acceptance/trapping can also be measured is an important feature in multicolor printing.

Color measurement can be done in two ways which are as follows:-

- Densitometry Measurement Systems
- Spectral Color Measurement

Densitometry Measurement Systems: -Hand-held densitometers are suitable for quality control, provided that only a few measurements are required on a sheet. Random checks undertaken in the interest of offset printing standardization and random checks of tone values represent typical examples of the use of the hand-held densitometer. However, the constant monitoring of a print run or the continuous adaptation of the ink feed in the press requires an abundance of additional measured values. Automated measurement systems have been developed for this purpose

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Scanning densitometers were primarily developed for offset printing in order to be able to scan the control bars that are printed at the sheet tail, for instance, and span the entire width of the printed sheet.

Spectral Color Measurement: - The correct comparison of solid tone colorings on different prints based on density measurements is only possible if, for the specification of reference values, prints have been used for which the same paper and the same ink were used as for the job. For this reason, density measurement is very effective for quality control within a print run. However, it is less suitable for a comparison between proof and production since different materials are employed for each of these processes. These problems in densitometry have been overcome with the help of color measurements. The measuring of colors as they are perceived by the human eye has made it possible to start-up a production press in accordance with suitable colorimetric values of a proof, and to adjust the press to the specified color values within narrow tolerances.

Color correction/Color balancing
Color correction/Color balancing refers to the process of removing an overall color bias from an image. For example, if an image appears too red, it is said to have a red cast. Removing this red cast brings the image back into balance. Color casts can arise from many different causes: the way the original scene was illuminated, the film and filters you use, variations in film processing and printing, or from the scanning process. Since it is difficult or impossible to control all the factors that can create a color imbalance, it is usually easiest to correct the problem at the end of the process. Color correction can be done in two ways as shown below:-

- Color correction using CC filters with the Filter Transformation
- Color correction using the Color Balance Transformation

III. RESEARCH OBJECTIVES

In printing industry printing is all about What You See on monitor, What You Get on paper, both should be identical to each other in every manner. But practically, sometimes printed product does not satisfy the customer as colors printed are not matching with original. The aim of this study is :-
To analyze different techniques to match color shade with final print obtained on press.

IV. RESEARCH METHODOLOGY & DATA ANALYSIS

Customer often complains about the mismatch of color of the printed job with original. To match color with customer's specifications in minimum possible time and efforts. The study work will be done at P.R. PACKAGINGS LTD. on daily basis& data will be analyzed using appropriate tools and instruments.
Results and Discussion

Review of literature shows that numerous works has been done on current subject. By considering all perspective related to this subject, I get some indication & reach at a conclusion that there is some scope on current research objectives. In this research wok, result so obtained from the data collected and analyzed to draw framework for color matching. This will lead to find out or optimize the best possible way to match color shade provided by the customer on various substrates using sheet fed printing process

REFERENCES

1. *http://www.heidelberg.com/www/binaries/bin/files/dotcom/en/prinect/image_control_guideline_en.pdf, Dated: 23/01/2014.*
2. *Jonathan Sachs "Color Balancing Techniques" 1996-1999 Digital Light & Color. www.dl-c.com/color%20balance.pdf, Dated: 23/01/2014.*
3. *H. Kipphan "Handbook of Print Media" (ISBN 3-540-67326-1)..*