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Research area: Product aims

End products made of paper, paperboard and board // Print products

Key words:

Fluorescence, optically brightened paper, digital proofs

TITLE: Developing a method for overcoming fluorescence related differences between proof and production prints**Background/Problem area**

Progress in inkjet printing has led to the fact that conventional prints can be simulated well in the form of digital proofs by inkjet systems.

In the past few years, the optical properties of graphic paper for production printing have changed significantly. There has been a shift to bluer white nuances achieved primarily by the use of blue tinting dyes and/or optical brighteners. Currently, this gives rise to a situation in which production prints are simulated on optically brightened paper by proofs that contain little or no brightener. If the chromaticity co-ordinates of the unprinted paper deviate significant from the chromaticity co-ordinates of the proof paper, the proof system can usually achieve a colourimetric simulation of the paper chromaticity co-ordinates by printing. If, however, a much brighter optical production paper is to be simulated, very great visual deviations appear between the proof paper with the colourimetric production paper simulation and the production paper.

Objectives/Research results

The objective of this research project was to develop a manageable solution for the considerable problems with balancing digital proofs and production prints that can be transferred quickly from the firms in the printing industry into everyday practice. For this purpose, we resorted to the colour measurement procedures that are established and standardised in the paper and printing industry.

Within the scope of the project, a methodology for improving the visual agreement of proofs with brightened production prints was developed. Based on proofs and production prints, the effects of pure fluorescent changes and simultaneous fluorescence and dyeing changes on the colourimetric description of prints were determined with the help of various colour measurement techniques and different UV segments of the illumination of the instruments used. Depending on the actual UV segment of the sample illumination, the tolerance thresholds of visual acceptance between proofs and production prints whose substrates differ in fluorescence were visually determined. In addition, digital proofs and production prints on paper with graduated contents of optical brighteners were described colourimetrically by comprehensive testing. Their climate- and light-induced ageing behaviour was also studied. In so doing, the standard measurement technology used in the print and paper industries was employed with and without UV filters.

Application/Economic benefits

The tolerance thresholds to be developed and the findings regarding the dependence of fluorescence differences between different substrates on the UV segment of the sample illumination will in future permit a targeted proof production and thus reduced make-ready times in production printing, thus rendering previous empirical adaptation trials unnecessary. These improvements are also conducive to improved communication between the printing industry and even towards print buyers and paper manufacturers.

Period of time: 01.07.2010 – 30.06.2013

Remarks

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