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Research area: Product aims

Paper, paperboard and board // Graphic papers

Key words:

Inkjet printing

TITLE:**Assessing the suitability of papers for high speed inkjet printing****Background/Problem area**

The influences on print results in High Speed Inkjet (HSI) printing (paper, ink, typographical parameters etc.) are highly complex, and so is their metrological and visual assessment. This complexity is the reason why it has not been possible to date to reliably predict HSI print results based on paper characteristics, ink data and typographical parameters.

To solve this issue, paper producers and printers as well as their suppliers are pursuing different paths: One is the more detailed and typographically relevant characterisation of printing papers, another the simulation of industrial print processes on laboratory scale. Both options have not yet been exhausted. Focus of this project is the typographical simulation of HSI printing on lab scale and the complex analysis and evaluation of print results.

Objectives/Research results

Aim of the research project is the development of a method to determine the suitability of different papers for HSI printing as well as the corresponding classification of commercial inkjet papers.

A laboratory printing station was assembled featuring two industrial print heads (OCE/KYOCERA) in the first stage of development and enabling printing speeds of up to 100 m/min as well as ink configurations (K, C) up to 200 %. Four printing plates were developed to evaluate the print result in terms of

- print density and chromaticity coordinates
- ink penetration (wipe test)
- mottling/ print unevenness
- streakiness
- share of missing dots or light areas
- wicking and bleeding characteristics.

The evaluation methods have already been used to assess the print quality of 21 papers from the following grade groups: uncoated papers with and without inkjet optimisation, pigmented inkjet papers, and coated inkjet papers. The printing station has meanwhile been equipped and tested with two further industrial print heads (M, Y), and can now be used with additionally developed printing plates for four-color HSI printing tests. The latter are currently under way, varying important typographical parameters like colour layout and evaluating the print results. The conventional evaluation of the papers used has already been completed.

The test prints could be compared with industrial print results only qualitatively so far because the test printing plates cannot be used in industrial presses. However, the ranking results of papers printed with industrial print heads in the lab could be compared with those of industrially printed papers.

Application/Economic benefits

The HSI printing test station and evaluation method developed in the project will benefit paper producers, printing press and ink manufacturers, additive producers, printers and instrument manufacturers. The envisaged technical and economic benefits will mainly result from:

- reduced development efforts of paper manufacturers
- easier and more reproducible paper evaluations to determine the suitability for inkjet printing
- fast and systematic improvements of printability properties
- cost and time savings for end users.

Project period: 01.07.2014 – 30.06.2016

Remarks

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