This has a positive impact on their competitiveness. The possibility to forgo time-consuming preliminary experiments will
likely to cause chemical ghosting and have the potential to increase the quality of production and lower the number of com-
ences of the printing inks used and of the interval between face and reverse printing, their influence is rather low.
In order to prevent chemical ghosting, aldehyde absorbers were added to the coating colours. Depending on the chemical
composition and reactivity, stabilized copolymers based on polyamide performed best. On lab scale, the polyamide addi-
tives reduced chemical ghosting significantly and reproducibly by up to 5 units in the visual ranking performed by Fogra.
Coated papers systematically prepared on laboratory and pilot scale with recipes and properties showing the influence
of coated paper on the occurrence of ghosting effects were investigated. Additionally, it was determined whether the use of
additives in the coating colour can reduce the activity of aldehydes formed during ink drying.
The lab scale results indicated that coarser GCC pigments promoted ghosting especially in single coating or, in the case of
multiple coated papers, in the top coating layer. This is why pigment screening was performed as a next project step. Pig-
ment type (GCC, PCC, clay, talcum), pigment shape (aragonite, scalenohedral, rhombohedral) and particle size distribution
were evaluated.
Binder type and chemical composition have an influence on chemical ghosting as well. Among the binders investigated, a
tendency for chemical ghosting was observed. The worst chemical ghosting was observed with casein, followed by polyure-
thane, styrene-acrylate, starch dextrin and styrene-butadiene.
To transfer these lab results to a level more relevant to production, pilot coating trials and sheet-fed offset printing trials
were performed as a last project step.
It can be concluded that coated and uncoated papers can have an effect on chemical ghosting, but compared to the influ-
ences of the printing inks used and of the interval between face and reverse printing, their influence is rather low.
Application/Economic benefits
The project deals with a presently not fully understood problem of the printing industry. Deeper knowledge of the influences
of paper and ink ingredients on ghosting effects will enable ink and paper manufacturers to use materials which are less
likely to cause chemical ghosting and have the potential to increase the quality of production and lower the number of com-
plaints.
This has a positive impact on their competitiveness. The possibility to forgo time-consuming preliminary experiments will
lead to faster job throughputs in the printing industry and higher flexibility of production - with a positive impact on their cur-
rently tight revenue situation.
Period of time: 01.12.2008 – 31.05.2011
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