Subject:
Measures to assure the quality of deinked pulps produced from sorted graphic papers for deinking containing increasing shares of unsuit papers.

Background/Problem area
Almost one third of Germany's paper recycling mills operate deinking plants. Thanks to the highly efficient collection systems established throughout the country, most of the paper and board products can be recovered, which has led to an increased share of packaging papers in sorted graphic papers for deinking. As a result, the deinked pulps contain higher amounts of disturbing unbleached and coloured fibres (DCF) today. Another undesired effect is the (potential) accumulation in mill systems of water-based printing inks, which are increasingly being used in package printing today. Packages printed with these inks - especially full-surface prints - are difficult to identify during manual sorting, which is why they are often retained in the sorted graphics for deinking. Because they resist removal by conventional flotation processes, the water-based inks accumulate in the circuit waters of deinking mills. To compensate for the quality variations of sorted graphic papers for deinking, methods must be developed to remove DCF and especially the water-based printing inks from the system. This is also a prerequisite for the increased utilisation of recovered papers in the production of high-grade graphic papers, and for maintaining the currently very high recovered paper utilisation rate in newsprint mills.

Objectives/Research results
Against the background of increasing shares of packaging papers printed with water-based inks being present in sorted graphic papers for deinking, the project aims at ensuring a consistent quality of deinking and at enhancing the quality of deinked pulps. Methods are to be designed for the selective removal of water-based inks from circuit waters by means of suitable additives, and for DCF reduction in the deinked pulps.

The impact of increasing shares of water-based inks from packaging papers in sorted graphic papers for deinking on the optical characteristics of DIP and the filtrate quality was determined. Water-based inks accumulate in the circuit water of deinking plants and decrease the optical characteristics of deinked pulps. Studies in the removal of water-based inks by circuit water treatment show that circuit water treatment with suitable additives can remove these ink particles.

Application/ Economic benefits
The results of systematic investigations into the removal of water-based inks and the development and evaluation of process-technological solutions will help paper recyclers to compensate for quality variations and increase the product quality of recycling processes of low-cost recovered papers. The results will also be useful for companies of the chemical and engineering industries, specifically for the targeted development of suitable process chemicals and further improvement of treatment processes.

Project period: 01.11.2002 – 31.10.2004

Remarks
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