Background/Problem area:
Despite the considerable progress made in stickies research in recent years, the number of process disruptions and quality defects due to stickies has not diminished in German paper mills. This is mainly due to their high utilisation rates of recovered papers, the growing shares of non-paper components in recovered papers, and the increasing closure of mill water circuits. Paper makers are becoming more and more aware of the fact that in order to successfully combat their stickies problems, they must view all mechanical and physico-chemical stages of the stock preparation and constant sections as one complex system of mutually interacting processes. Each individual process stage has its own specific relevance for the control of macro- and micro-stickies and colloidal substances.

No standardised and universally applicable tool is currently available to analyse the situation and evaluate the overall process design of paper mills from the pulper to the headbox under the aspect of “stickies control”. Because the analytical requirements for stickies detection are considerable, the tool must be capable of identifying the crucial sampling points for each particular case. Further research is necessary especially in the areas of microstickies and colloidal substances, and to identify relevant interactions between individual process stages. Targeted optimisations of stock preparation systems aimed at minimising stickies deposits must be based on a complex analysis of the overall system. In this context, it is important to precisely define the stickies removal targets of the individual process stages, as well as grade-specific benchmarks for absolute stickies loadings.

Objective/Research results:
The research project aims at developing a systematic approach for overall system analysis in paper mills producing test liner, in order to identify the stickies potentials of their individual process stages and derive effective measures to combat and reduce stickies problems. The envisaged final result is a standardised tool for “stickies control in paper mills” which provides practically relevant results quickly and at minimum cost, and allows recommendations to be derived for directly applicable practical measures.

Initial studies were conducted in a test liner mill. Samples were taken from the process waters, fibre suspensions and paper products at the outlets of different stages of the stock preparation and constant sections, and analysed for macro- and microstickies as well as colloidal substances. Simultaneously, all relevant process parameters were measured and recorded. The results yielded important findings for the envisaged prioritisation procedures of standardised mill system analyses and system mappings. It seems advisable to analyse the stock preparation systems of the mills first globally, and then in detail.

Application/Economic benefits:
A complex stickies analysis of mill systems reveals weak points in the process and provides information on the stickies removal efficiency of individual plant components. Apart from preventing highly expensive process disruptions and quality losses due to stickies, the results of a systematic process analysis can indicate general starting points for the optimisation of overall process chains.

Project period: 01 July 2003 – 30 June 2005

Remarks:
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