Subject:
Optimised refining of pulps containing high shares of filler or ash for the production of highly filled papers

Background/Problem area
For the production of highly filled fine and speciality papers such as decor papers, refining must sometimes be accomplished after the addition of fillers. Increased ash contents during refining must also be accepted in the production of recycled-fibre based multiply packaging papers. The same applies to the treatment of highly pigmented broke from coated paper production. In all these cases, papermakers are faced with the problem of refining processes failing to produce the desired results especially with respect to strength development. They complain that their “Refining treatment doesn’t respond”, and are in many cases at a loss how to solve the problem. The filler influence on refining has not been the subject of systematic investigations so far. It has yet to be clarified how fillers influence the refining behaviour of pulps and up to which filler level refining action is evident.

Objective/Research results
The project aims at improving the quality of highly filled papers through the optimised refining of specific pulp furnishes. Refining processes for the production of décor papers and white-lined multiply packaging papers are to be optimised paying special attention to the filler content. The main focus is on ensuring the desired strength and optical properties of the papers.

The pulps and recovered papers to be investigated in the project were procured from paper mills, and characterized by means of their suspension and paper properties from the application-technological point of view. A detailed experimental design was developed in preparation of the pilot plant trials. Initial preparatory trials for the disperging of calcium carbide and kaolin fillers to be used as beating additives were successfully concluded.

Application/Economic benefits
Time efficiency - i.e. availability - is the critical parameter for the economic success of high-speed, large-width paper or paperboard machines. It depends on many factors, but is on principle the higher the more consistent the quality of the furnishes used. The results of the project are expected to improve the homogeneity of pulps for specific applications. This will contribute to productivity gains in production systems for white-lined packaging papers, folding box board and décor papers.

In 2000, about 90.000 t woodfree white recovered papers of grades 3.18.01 and 3.16 were recycled by the German paper industry, which corresponds to a value of about 27m €. These recovered paper grades were mainly used as raw materials for the production of white liners for coated and uncoated folding box board, white-lined and mottled corrugating stock and in part also for graphic paper production. Over the past few years, folding box board and corrugating stock producers have registered annual growth rates of 4,5 %. The further development in this sector is characterized by the planned reconstruction of several companies as well as full-scale new investments. These innovations require decisions based on reliable, verified data on raw materials use and suitable treatment technologies.

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Remarks
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