MONITORING FLOCCULATION OF FILLERS IN PAPERMAKING

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Abstract

To optimise the retention of filler, a new measuring methodology has been developed. It utilises FBRM to control flocculant dosage and monitor the flocculation process - the interaction of fines and fillers with the flocculant is the key to filler retention. This feature presents a study of the interaction of calcium carbonate fillers - GCC and PCC - with three different flocculants, from the point of view of i) their flocculation, de-flocculation and re-flocculation; and ii) the influence of filler flocculation on retention and the drainage process. The FBRM technique, was transferred to papermaking from crystallisation processes by the author et al, and is now an established system for measuring flocculation. The methodology presented in this feature enables the optimisation of flocculant dosage, by monitoring, in real time, the mean chord size - the distribution of the chord lengths of filler particles and the number of counts - while a polymer solution is gradually added. The author describes the differences between ground and precipitated calcium carbonate in relation to flocculation mechanisms, floc properties and their effects on the retention and drainage processes. The retention of GCC particles is lower than PCC retention because GCC is more dispersed. But, PCC particles have a negative effect on drainage time, probable due to the blockage of pores.