

Dynamic modeling and simulation of wet end part in the paper plant

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A dynamic model representing the wet-end of a paper mill has been developed to characterize its dynamic behavior. The model is based on the mass balance relationships written for the simplified wet-end white water network. The dynamic response of the wet-end is influenced both by the white water volume and by the level of wire retention. Effects of key manipulated variables such as the thick stock flow rate, the ash flow rate and the retention aid flow rate on the major controlled variables were analyzed by numerical simulations. And the model equation is converted into laplace transform in order to make transfer function of the high-order. Then we also consider the problem of optimally approximating high-order transfer functions by low-order ones with a time delay. Manual and least-square methods were combined to make modified LS method as a delay searching method. It can be said that the tendency of the model and low order transfer function with plant data seems to be reasonably good and the model can be used as a tool for plant analysis and control.