

Assessment of Mixing Quality for an Industrial Pulp Mixer using Electrical Resistance Tomography

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Abstract

Mixing quality in an industrial chlorine dioxide bleaching stage was evaluated using electrical resistance tomography (ERT) as a function of process operating conditions including chemical flow and production rate. The uniformity was quantified based on mixing index, defined based on coefficient of variation of image pixels. An increase in mixing index or lower mixing quality was observed when the chemical flow rate increased. In addition, the mixing quality decreased when the production rate decreased. The results show that ERT can be used to evaluate mixer performance and to monitor the changes in the mixing quality as a function of operating conditions in the process. The results are compared with those in the literature based on other measurement techniques for similar mixer installations and good agreement is observed.

Keywords: pulp fibre suspensions, bleaching operations, static mixers, mixing quality, electrical resistance tomography