

Prediction of Temperature and Moisture Content Profiles of Paper in a Multicylinder Drying Process

임정훈, 이성철*
한양대학교
(scyi@hanyang.ac.kr*)

The process of papermaking involves water removal on the papermachine wire, in the press section and in the dryer section. In dryer section, liquid water in the wet web is removed mainly by evaporation. In conventional machines this is achieved by passing the web over a number of steam heated dryer cans.

In order to develop improved drying techniques, it is essential to understand the fundamentals of the transport processes involved during drying of paper sheet.

A theoretical model modified is presented to simulate the paper drying process on a production paper machine. The paper sheet is represented as matrix of pulp fibres which contains water, water vapor and air. The model is dependent upon a range of physical data including permeability, thermal conductivity, specific heat capacity, density, diffusion coefficients as well as heat and mass transfer behaviour at the interfaces.

A drying process of paper on a heated cylinder roll calculated based on a two-dimensional model which concerns nonsteady heat and mass transfer in the direction of paper thickness.