,

LATERAL DEFLECTIONS OF WEBS IN AIR-FLOTATION OVENS

by

P.M. Moretti
Oklahoma State University
USA
http://www.mae.okstate.edu/Faculty/moretti/moretti.html

ABSTRACT

A long web span supported by many, regularly spaced, alternating air-bars is studied. The focus is on the lateral forces on the web due to the interaction of lateral curvature with out-of-plane deflections. The effect of stretching of the elastic web material is included, and the effect of high web speed is handled by distinguishing between the tension in the material T_{mat} and the apparent tension $T_{app} = T_{mat} - \mu v^2$.

The governing Partial Differential Equations for a continuous representation of the web's lateral deflection, stability, and control is developed for both straight and cambered webs. The dimensionless parameters for web-tension effect, web-camber effect, and stretching effect are identified.

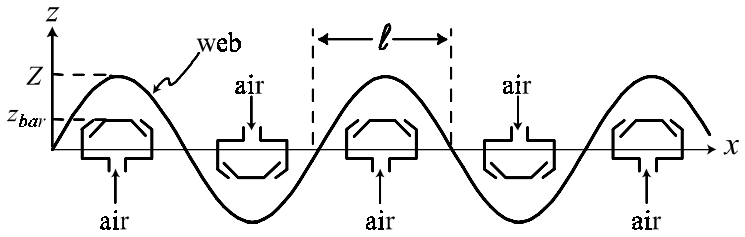

Figure 1: Nomenclature; the sine-wave is drawn with exaggerated amplitude—actual amplitudes are small, and z_{bar} may be negative.