



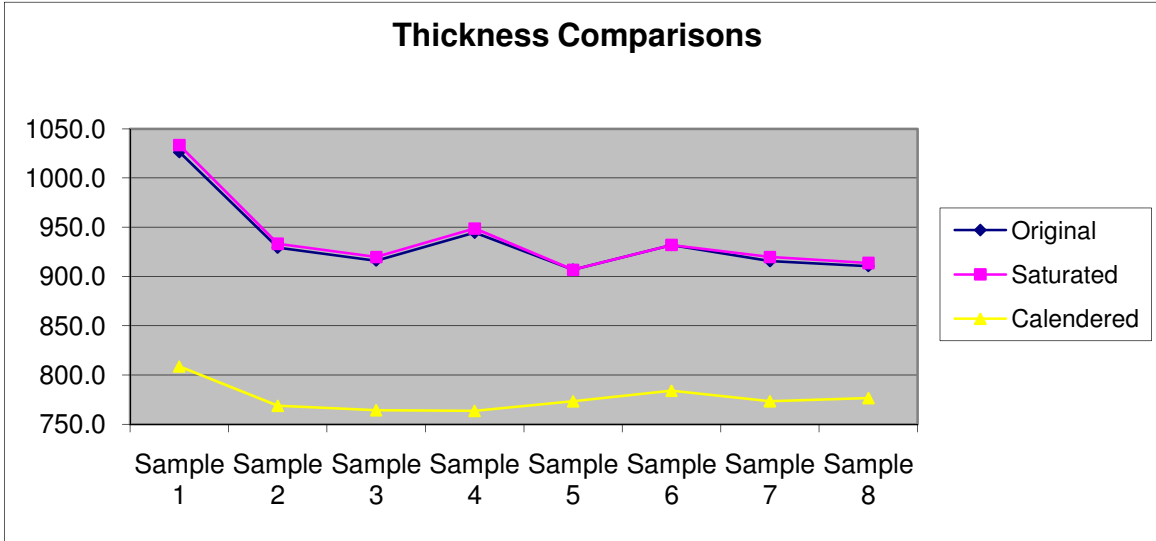
Out-of-Plane Ultrasonic System (OPUS)

Application Note 001

A customer was interested in tracking the changes during a multi-stage process used in converting their custom papers. The sample set could not be tested using conventional destructive methods because of this converting process. SoniSys was able to detect changes in the ZD Tensile Index (also known as Specific Stiffness) and ZD Young's Modulus as a result of the saturation and calendering process using our non-destructive longitudinal out-of-plane ultrasonic technology.

Eight samples measuring 8½ x 11 inches were sent to SoniSys by the manufacturer for a series of tests. The samples were marked by the manufacturer using a template that would be reused through this experiment. This procedure insured that the same locations could be identified after the saturation and calendering stages of the converting process. For each testing round, the samples were conditioned, measured, and weighted according to TAPPI standards. The grammage was calculated for each sheet and the indicated areas were tested using the SoniSys ultrasonic test instrument.

Using the measured soft-platen thickness and traveling time, ZD Tensile Index and Young's Modulus were reported for each sheet as shown in the figures below. Figures 1, 2, and 3 show how the SoniSys instrument successfully tracked changes in the paper's Tensile Index and Young's Modulus throughout this process. The results show that the saturation process had a profound effect on Tensile Index and Young's Modulus while the thickness remained the same. As expected, the calendering process lowered the Tensile Index and Young's Modulus along with the thickness.



NOTE: The above thicknesses are measured in μm .

